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GLOBAL VIEW
AUGUST 2022

ESG IN ACTION: 2022

SEE DISCLOSURE APPENDIX OF THIS REPORT FOR IMPORTANT DISCLOSURES AND ANALYST CERTIFICATIONS

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PORTFOLIO MANAGER'S SUMMARY

Inflation and recession fears have defined the market so far in 2022. Investors have not faced such a combination of economic variables since the early 1980s. In short, this is not your grandparents' recession. For ESG investors in particular, factors that worked in previous years are no longer working. What ESG stocks should investors own today in a market consumed by inflationary fears in a time of slowing growth?

As we head into a recession/slowdown, factors such as Quality, Low Volatility, and Yield tend to hold up the best. Among ESG themes, **diversity & inclusion** and **circular economy** themes are well positioned in times of slowing growth and recession, with relatively low volatility, high FCF yield, and higher quality at a reasonable price. The **sustainable infrastructure** theme is also well positioned with high ROE and low PE, despite having above-average volatility and lower FCF yield.

At the individual stock level, we have identified over 30 underappreciated ESG improvers and enablers that are set to outperform in a recessionary environment. Some companies are actively improving their ESG practices. For example, **Mercedes-Benz** is accelerating its transition toward net zero while **Nestlé** has committed to paying living wages to all cocoa farmers. From a fundamental point of view, both companies also benefit from strong pricing power to navigate a recession.

Elsewhere, battery makers such as **CATL** are key enablers of the green transition, which could also benefit from lower component costs if we head into a recession. **Edwards Lifesciences** improves access to high-quality structural heart therapy and is recession-proof, given pent-up demand for heart therapy procedures.

Even among more controversial sectors and "sin" stocks, could better governance lead to a multiples rerating at **Constellation Brands**? Will **Philip Morris** become investable by ESG investors as it transforms its portfolio toward next-generation products? How about **Ethereum** — which has been blamed by the ESG community for its high energy consumption — as it moves from a proof-of-work consensus mechanism to the much less energy-intensive proof-of-stake model? Globally and across sectors, our analysts have identified over 30 new ideas to demonstrate that ESG improvers and enablers with resilient fundamentals can provide alpha generating opportunities — and not only in the good times.

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August 11, 2022

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Strategy

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WHAT ESG STOCKS TO OWN IN AN INFLATION-LED SLOW DOWN OR RECESSION?

HIGHLIGHTS

- **Factors that worked for ESG investors in 2020 are no longer working in today's market.** This has challenged conventional wisdom about ESG investing and weighed on performance. Energy shortages, exacerbated by sanctions against Russia, have pushed energy prices higher. Meanwhile, clean energy ESG darlings have underperformed in an inflationary environment. This doesn't bode well for ESG investors who are underweight oil & gas and other commonly excluded sectors such as defense, while overweighting longer duration names in the clean energy supply chain.

- **How should investors position for slowing growth and inflation?** In the US and Europe, we recommend a barbell approach, owning Quality at a reasonable price on one hand and Value exposure on the other hand as an inflation hedge. If we head into a recession, Quality, Low Volatility, and Yield are the factor exposures that tend to hold up best in such an environment. In Asia, defensive stocks with low volatility, high yield, and high quality are also better positioned in today's macro environment. Within defensives, we find low volatility stocks to be best suited to manage current macro uncertainties in Asia.

- **Which ESG themes and stocks to own in today's macro environment?** We looked at the factor exposures of various ESG themes to see which ones align best with the macro regimes. The **diversity & inclusion** and **circular economy** themes are well-positioned in times of slowing growth and recession with relatively low volatility, high FCF yield, and higher quality at a reasonable price. In a tight labor market today, companies that are able to attract and retain talent at a reasonable cost by offering a diverse and inclusive culture are better positioned to navigate market uncertainties and inflationary pressure. The circular economy is another theme with investment opportunities across recycling and waste management, recyclable and reusable materials, circular supply chain design, regenerative agriculture, and secondhand marketplaces enabling a shared economy. The **sustainable infrastructure** theme is also well-positioned, with high ROE and low PE, despite having above-average volatility and lower FCF yield. We believe the regulatory and market push for sustainable infrastructure development will give rise to investment opportunities across the value chain, benefiting players in energy efficiency and electrification (e.g., Legrand and Schneider Electric), construction software and digital technology (e.g., Siemens and Honeywell), as well as new materials and carbon capture technology (e.g., Air Liquide and BASF).

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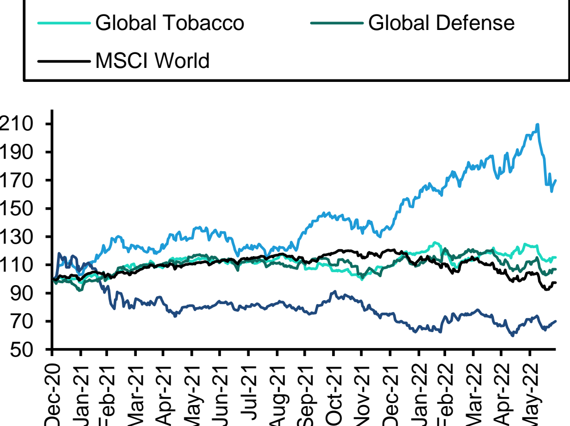
ESG PERFORMANCE UNDER PRESSURE...IT'S NO LONGER 2020

In today's market environment, energy shortages, exacerbated by sanctions against Russia, have pushed energy prices higher. Meanwhile, ESG darlings in the clean energy space have underperformed in a higher inflation for longer environment (see Exhibit 1 and Exhibit 2). This doesn't bode well for ESG investors who are underweight oil & gas and other commonly excluded sectors such as defense, while overweighting longer duration names in the clean energy supply chain (see Exhibit 3 to Exhibit 7). In short, factors that worked for ESG investors in 2020 are no longer working in today's market, which has challenged conventional wisdom about ESG investing and has weighed on ESG's performance.

EXHIBIT 1: **Commonly excluded sectors such as traditional energy have outperformed in an inflationary environment...**

Normalized Stock Price of Clean Energy vs. Commonly Excluded Sectors

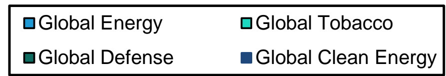


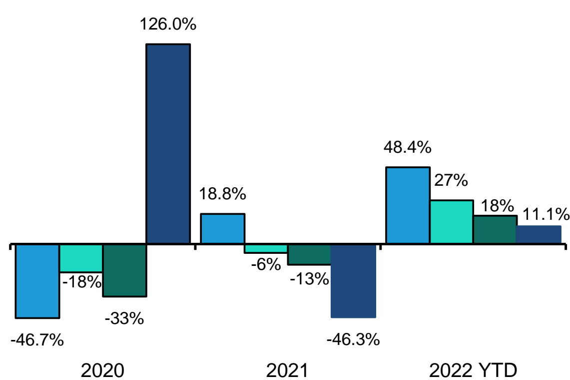
Note: Data as of June 22, 2022

Source: Bloomberg and Bernstein analysis

EXHIBIT 2: **...while clean energy has underperformed relative to commonly excluded sectors**

Total Excess Returns vs. MSCI World Benchmark





Note: Data as of June 22, 2022

Source: Bloomberg and Bernstein analysis

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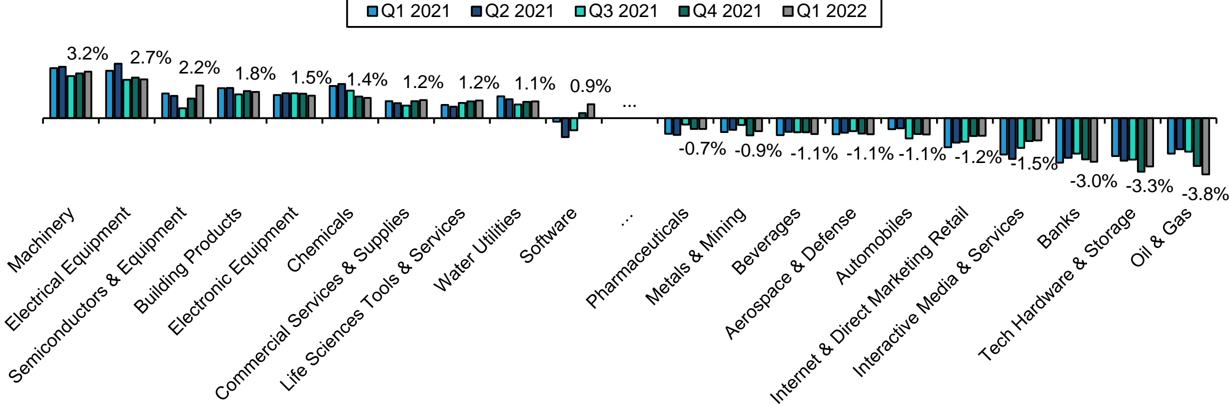
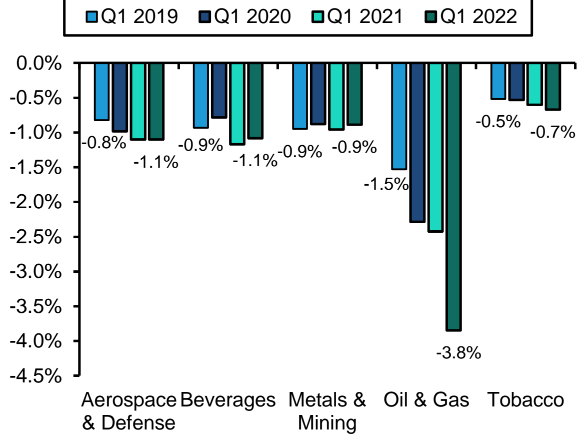
EXHIBIT 3: **Global ESG funds continue to underweight oil & gas while overweighting the clean energy supply chain**



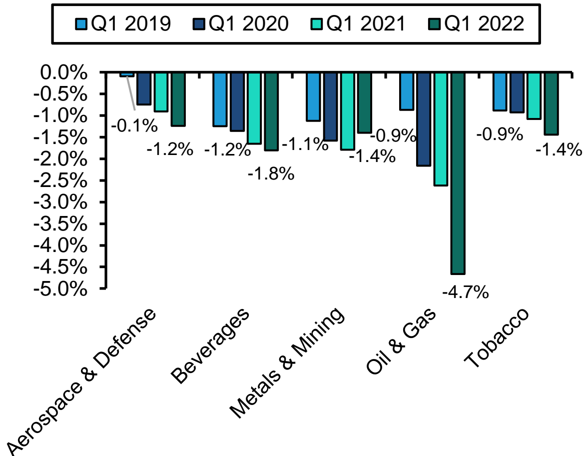
Source: FactSet, Morningstar, and Bernstein analysis

EXHIBIT 4: **When it comes to commonly excluded sectors, global ESG investors are underweight oil & gas, defense, beverages, mining, and tobacco**



Source: FactSet, Morningstar, and Bernstein analysis

EXHIBIT 5: **European ESG investors are underweight a similar set of sectors**



Source: FactSet, Morningstar, and Bernstein analysis

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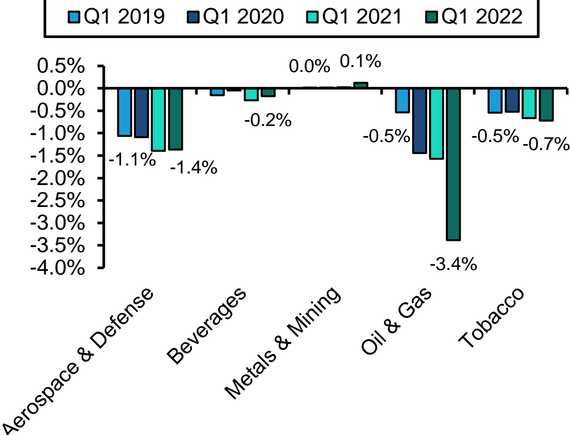
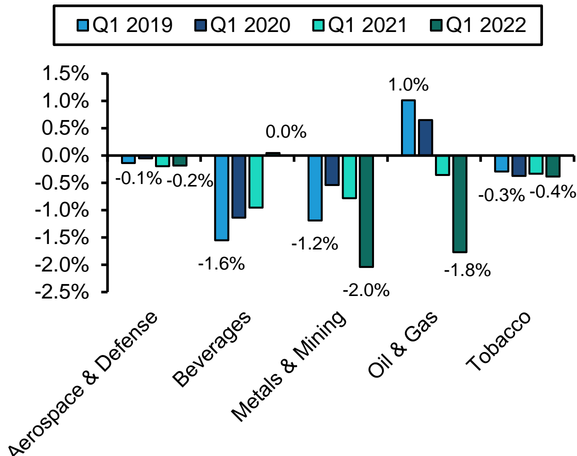
EXHIBIT 6: **North American ESG investors are also underweight oil & gas, defense, and tobacco, but less so in mining and beverages**



Source: FactSet, Morningstar, and Bernstein analysis

EXHIBIT 7: **It's unclear if Asian ESG investors are excluding these sectors on a concerted basis as it's still early days**



Source: FactSet, Morningstar, and Bernstein analysis

While ESG funds historically outperformed non-ESG funds across regions, global, US, and European ESG funds have underperformed in 2022 YTD (see Exhibit 8 to Exhibit 13). Notably, ESG funds with global mandates have underperformed non-ESG funds by 95bps in 2022 through May. In contrast, global ESG funds outperformed non-ESG funds by 104bps in 2021. US ESG funds have also underperformed non-ESG funds by 49bps so far this year, while European ESG funds have underperformed by 38bps in 2022 YTD.

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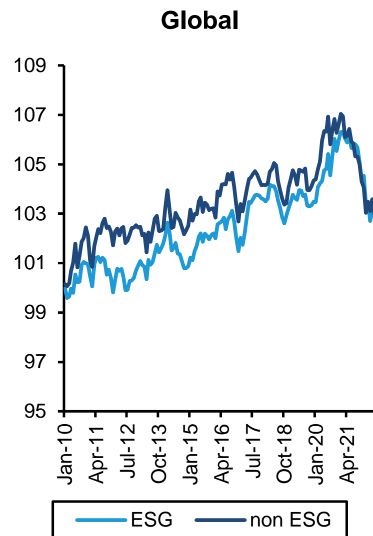
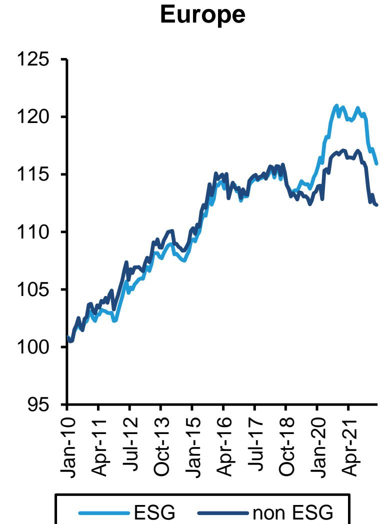
EXHIBIT 8: **ESG vs. Non-ESG fund cumulative returns — Global**



Note: Returns are in USD, gross of fees vs. benchmark; 2022 YTD through May 31.

Source: eVestment, Morningstar, MSCI, S&P, FactSet, and Bernstein analysis

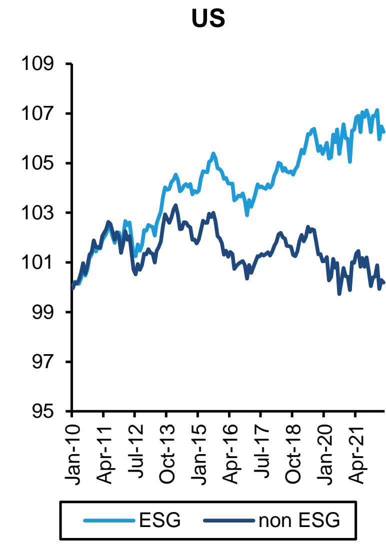
EXHIBIT 9: **ESG vs. Non-ESG fund cumulative returns — Europe**



Note: Returns are in USD, gross of fees vs. benchmark; 2022 YTD through May 31.

Source: eVestment, Morningstar, MSCI, S&P, FactSet, and Bernstein analysis

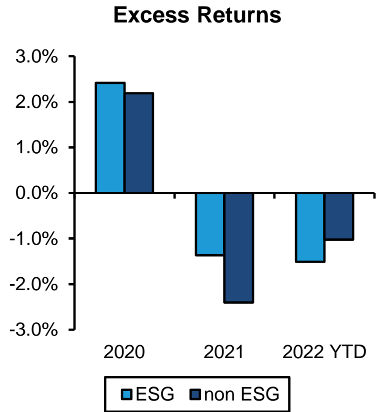
EXHIBIT 10: **ESG vs. Non-ESG fund cumulative returns — US**



Note: Returns are in USD, gross of fees vs. benchmark; 2022 YTD through May 31.

Source: eVestment, Morningstar, MSCI, S&P, FactSet, and Bernstein analysis

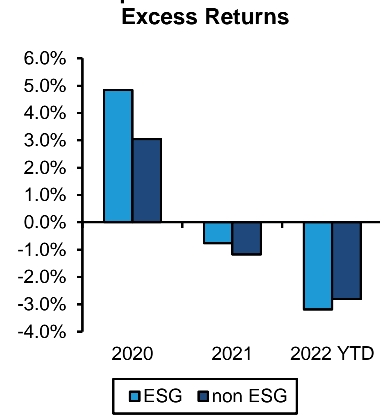
EXHIBIT 11: **ESG vs. Non-ESG fund excess returns by year — Global**



Note: Returns are in USD, gross of fees, vs. benchmark; 2022 YTD through May 31.

Source: eVestment, Morningstar, MSCI, S&P, FactSet, and Bernstein analysis

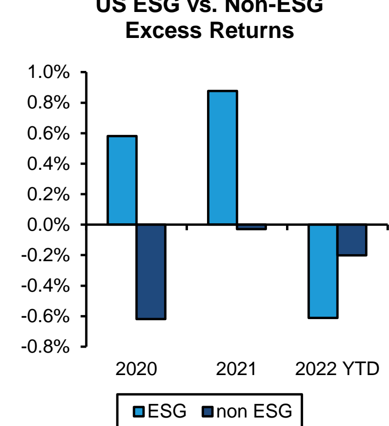
EXHIBIT 12: **ESG vs. Non-ESG fund excess returns by year — Europe**



Note: Returns are in USD, gross of fees, vs. benchmark; 2022 YTD through May 31.

Source: eVestment, Morningstar, MSCI, S&P, FactSet, and Bernstein analysis

EXHIBIT 13: **ESG vs. Non-ESG fund excess returns by year — US**



Note: Returns are in USD, gross of fees, vs. benchmark; 2022 YTD through May 31.

Source: eVestment, Morningstar, MSCI, S&P, FactSet, and Bernstein analysis

The weaker performance in 2022 YTD has weighed on ESG fund flows, with flows into ESG equity globally slowing down to US$41Bn in 2022 YTD (through April), vs. US$93Bn in the last four months of 2021 (September to December). ESG continues to hold up better than

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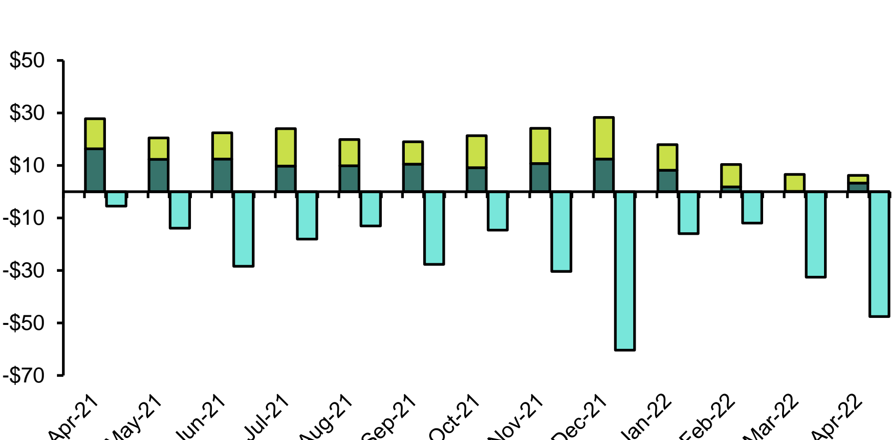
non-ESG active equity, which has experienced notable outflows of US$108Bn so far this year (see Exhibit 14). However, a more sustained period of underperformance could further weigh on ESG sentiment and flows in the near term.

EXHIBIT 14: **Inflows into ESG equity have slowed down in 2022 YTD on the back of weaker performance**



Source: EPFR and Bernstein analysis

POSITIONING FOR SLOWING GROWTH AND INFLATION — US AND EUROPE

In positioning for an environment where growth is slowing but inflation is still high, we think a barbell approach is necessary. (1) Quality stocks at a reasonable price tend to outperform in a slowing economy, and (2) Value exposure remains important as an inflation hedge. At this later stage in the cycle, the more defensive parts of Value have performed better.

QUALITY: GOOD TIME TO BUY AT A REASONABLE PRICE

Quality is rarely cheap. However, Quality stocks have derated substantially relative to the market since the start of the year (see Exhibit 24 and Exhibit 25). They now trade at 1.02x the forward PE of the market in the US and 1.75x in Europe, down from recent peaks late last year of 1.3x and 2.4x, respectively. For more details see report: Portfolio Strategy: A good time to buy Quality in Europe, Quality on Sale model update. Quality stocks tend to do well as economic growth is slowing and are a hedge against rising volatility. Higher Quality sectors (plus Energy) historically had positive earnings growth one year and two years forward following peak growth periods. A strong or appreciating dollar is also good for Quality stocks in Europe (see Exhibit 26). In the US, the Quality factor has been very effective during slowdowns and recessions as defined by the OECD leading economic indicators (see Exhibit 20 and Exhibit 21). Valuation, Low Volatility, and Dividend Yield have also been attractive exposures historically during slowdowns and recessions. According to

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the OECD, we are currently in the "slowdown" phase of the cycle (see Exhibit 18). In Europe, the LEI composite is still above 100 but slowing (see Exhibit 19).

Quality stocks are suffering as part of "long duration" trade, as there is an overlap between High Quality and Long Duration stocks (those negatively exposed to rising bond yields). However, given the different growth outlook this year vs. last year, we think Long Duration stocks which are Low Quality are most vulnerable. For details see report: Portfolio Strategy: Are Long Duration Stocks Still Vulnerable? (Amended). The Bernstein Quality Model was specified using 30 years of data and includes seven factors: ROE, 5-Year Earnings Stability, Sales Growth, EBIT Margins, Net Cash Ratio Volatility, Debt Ratio, and the Stability of ROE. For more information on how we define Quality see report on the construction of the model: Bernstein Quality Model.

VALUE: STILL IMPORTANT TO KEEP SOME VALUE EXPOSURE AS INFLATION HEDGE; WE PREFER THE DEFENSIVE END OF VALUE

While the Value factor has continued to outperform this year (see Exhibit 15), our conviction on the Value trade has diminished somewhat, given the bigger downside risks to the economy that are now in place post the Ukraine invasion. Also, the earnings support for Value is waning — Value stocks are now in aggregate being net downgraded relative to the market in Europe. However, we still think it is important to retain some exposure to Value despite the list of macro risks as an inflation hedge in a portfolio. The inflation outlook is still uncertain. The latest US CPI 8.5% number demonstrated that Value is still linked to inflation. Value outperformed in Europe and the US after the higher-than-expected number (see Exhibit 16 and Exhibit 17). Value stocks are still extremely cheap relative to history, and the valuation spread within the market both in Europe and the US still has ample scope to narrow further (see Exhibit 29 and Exhibit 30).

Our preferred part of Value, given the slowing growth outlook, is its defensive side. So far this year, defensive parts of Value have outperformed the more cyclical parts (see Exhibit 15). FCF Yield and Dividend Yield have been the best performing Value factors (see Exhibit 15). These are also the Value factors that have historically performed better in slowdowns (see Exhibit 22). Sectors that have the highest and lowest dividend yields and FCF yields in both the US and Europe are shown in Exhibit 33 to Exhibit 36.

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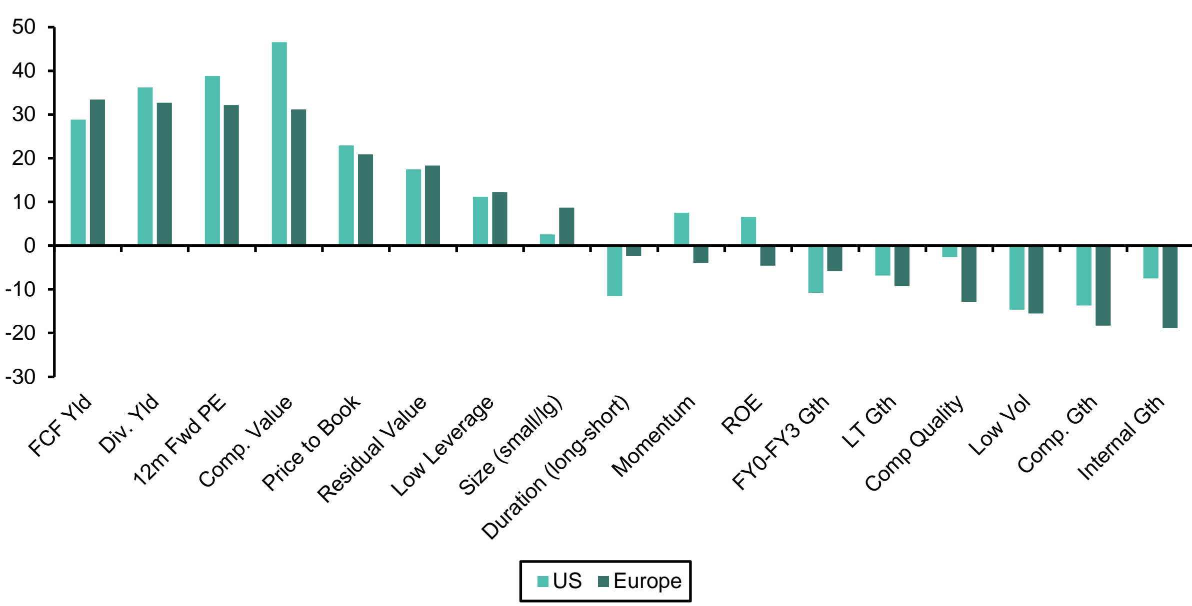
EXHIBIT 15: **European and US factor performance — YTD**

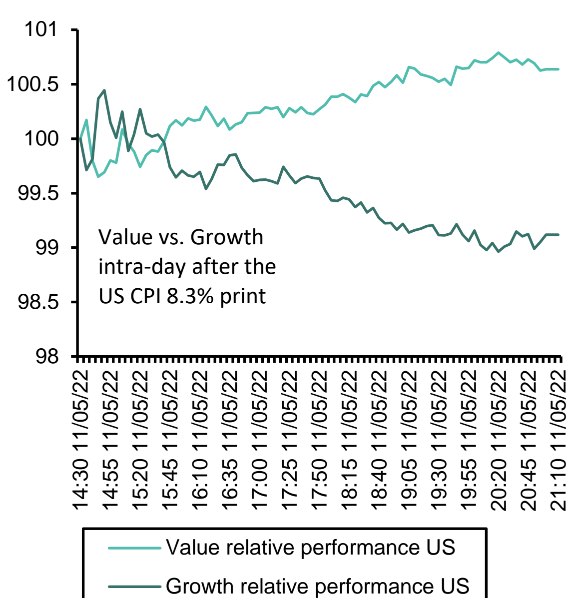


Note: Long-short factor performance of our US and European Style Factor indices; sorted on European factor performance (as of May 6, 2022)

Source: MSCI, IBES, and Bernstein analysis

EXHIBIT 16: **US Value vs. Growth performance intra-day on May 11, 2022 (post 8.3% CPI number)**

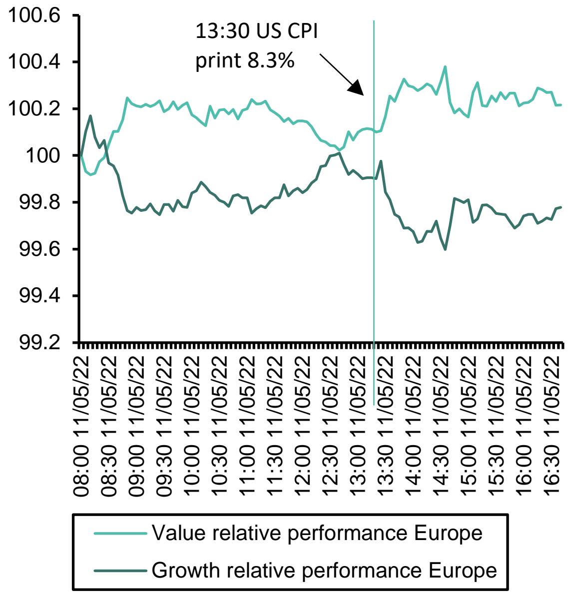
Performance of MSCI US Value and MSCI US Growth relative to the market on 11th May



Source: MSCI, Bloomberg, and Bernstein analysis

EXHIBIT 17: **Europe Value vs. Growth performance intra-day on May 11, 2022 (post 8.3% CPI number)**

Performance of MSCI Europe Value and MSCI Europe Growth relative to the market on 11th May



Source: MSCI, Bloomberg, and Bernstein analysis

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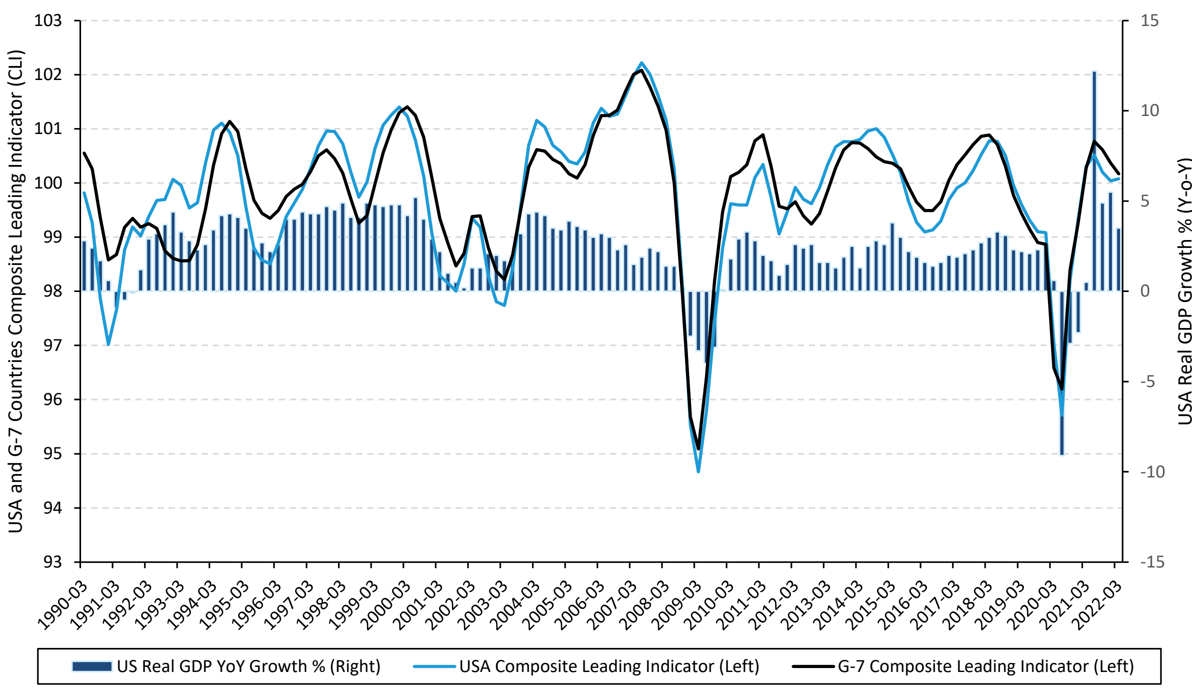
EXHIBIT 18: **US and G7 countries composite leading indicators and US GDP growth**



Note: The composite leading indicators are from the OECD, see: https://data.oecd.org/leadind/composite-leading-indicator-cli.htm
US Real GDP YoY growth is from Bloomberg

Source: OECD, Bloomberg, and Bernstein analysis

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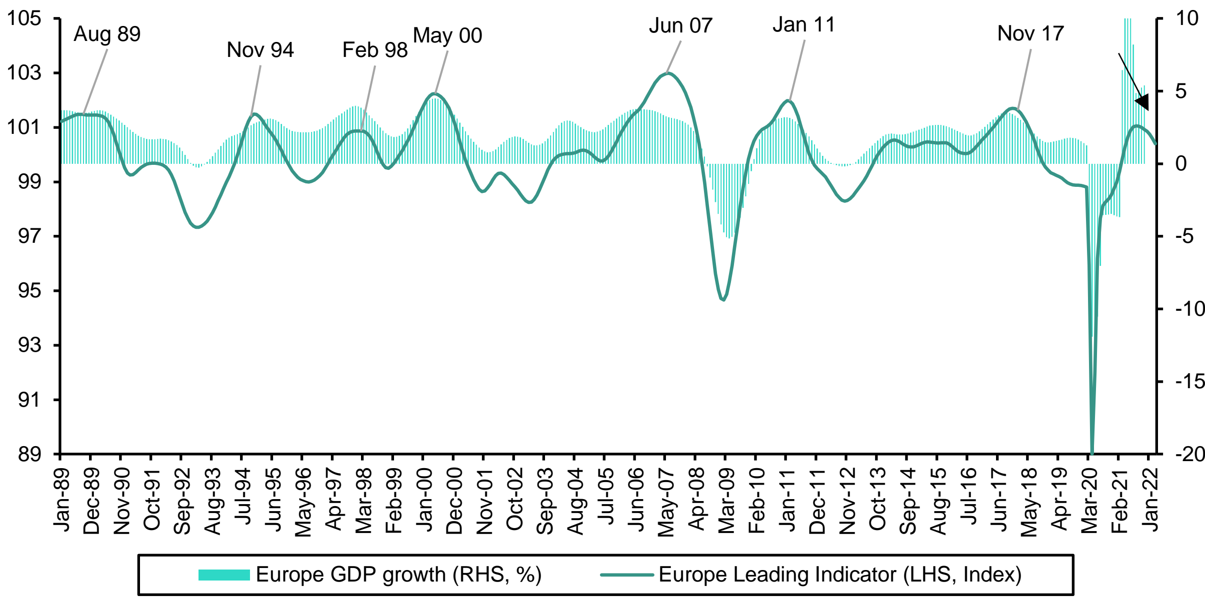
EXHIBIT 19: **European OECD Leading Indicator is slowing but still above 100 at the end of March**



Note: Chart shows major peaks in the European OECD Leading Indicator. The bars show year on year change in Europe GDP change.

Source: OECD, Bloomberg, and Bernstein analysis

EXHIBIT 20: **US factor performance in different economic cycles, January 1990 to May 2022**

In a slowdown, Quality, Low Volatility, Dividend Yield, and Value have been the most attractive factor exposures.

Macro Cycle	Valuation (Cheapest - Most Expensive)	Growth (Highest - Lowest)	Quality (Highest - Lowest)	Low Volatility (Lowest - Highest)	Dividend Yield (Highest - Lowest)	Dividend Growth (Highest - Lowest)
Expansion	-10%	7%	-3%	-18%	-13%	1%
Slowdown	11%	1%	15%	17%	14%	4%
Recovery	13%	-16%	-16%	-32%	-6%	-12%
Recession	2%	0%	8%	16%	8%	3%

Note: Shows annualized return for factor portfolios in different economic cycles. Factor returns are defined as the long-short return of the top-bottom quintile from the 1,500 largest stocks in the US. Portfolios have been rebalanced monthly and returns are on equal-weighted total return basis. Periods of economic cycles are defined by the normalized seasonally adjusted composite G7 leading indicator from the OECD. We divide up the states of the world into four phases, with an expansionary level (>99) and positive first differential of the leading indicator being classified as an "expansion" and a negative first differential being a "slowdown." A contraction level (<99) and positive first differential being classified as a "recovery" and a contraction level with negative first differential being a "recession."

Source: FactSet, The Center for Research in Security Prices (CRSP), OECD, and Bernstein analysis

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EXHIBIT 21: **US factor performance in different economic cycles, January 1962 to May 2022**

We see a similar pattern when we extend this analysis back to 1962.

Macro Cycle	Valuation (Cheapest - Most Expensive)	Growth (Highest - Lowest)	Quality (Highest - Lowest)	Low Volatility (Lowest - Highest)	Dividend Yield (Highest - Lowest)	Dividend Growth (Highest - Lowest)
Expansion	-4%	1%	-3%	-16%	-9%	0%
Slowdown	9%	-2%	14%	10%	10%	2%
Recovery	3%	-6%	-8%	-27%	-8%	-5%
Recession	11%	-7%	7%	15%	15%	0%

Note: Annualized return for factor portfolios in different economic cycles. Factor returns are defined as the long-short return of the top-bottom quintile from the 1,500 largest stocks in the US. Portfolios have been rebalanced monthly and returns are on equal-weighted total return basis. Periods of the economic cycles are defined by the normalized seasonally adjusted composite G7 leading indicator from the OECD. We divide the states of the world into four phases, with an expansionary level (>99) and positive first differential of the leading indicator being classified as an "expansion" and a negative first differential being a "slowdown." A contraction level (<99) and positive first differential being classified as a "recovery" and a contraction level with negative first differential being a "recession."

Source: FactSet, CRSP, OECD, and Bernstein analysis

EXHIBIT 22: **In Europe, High ROE, Low Volatility, and Yield tend to do well during periods of slowing economic growth**

Factor	All Periods	Recession	Recovery	Expansion	Slowdown	t-stat			
Europe: Composite Value	2.98	-7.50	22.34	3.98	-1.30	-1.01	1.76	0.21	-0.85
Europe: 12m FWD PE	2.67	-10.70	9.47	5.94	0.33	-1.31	0.72	0.66	-0.45
Europe: Price to Book	2.46	-8.33	33.99	4.73	-6.39	-0.99	2.54	0.50	-1.78
Europe: DY	3.64	-2.67	5.32	2.64	5.57	-0.74	0.23	-0.25	0.44
Europe: ROE	0.87	4.92	-18.67	-2.97	9.68	0.47	-2.53	-1.25	2.99
Europe: Composite Growth	-0.50	-1.33	0.18	-0.66	0.34	-0.12	0.08	-0.06	0.24
Europe: LTG	-0.45	-5.09	4.95	0.47	-1.57	-0.79	0.90	0.33	-0.34
Europe: Internal Growth	0.46	2.40	-10.42	-1.38	5.89	0.27	-1.66	-0.74	1.78
Europe: FY0FY3	-1.05	0.79	7.86	0.72	-5.74	0.24	0.95	0.58	-1.38
Europe: Momentum	1.91	8.23	-31.41	3.73	7.67	0.43	-2.16	0.36	1.02
Europe: FCF Yield	5.48	4.59	-5.06	6.44	7.46	-0.14	-1.64	0.37	0.63
Europe: Low Leverage	1.17	8.74	1.09	0.29	0.34	1.40	-0.02	-0.35	-0.29
Europe: Residual Value	3.18	-0.61	20.43	4.05	-2.17	-0.59	2.40	0.29	-1.54
Europe:Low Vol	-0.17	20.28	-40.81	-3.94	9.25	1.39	-3.15	-0.78	1.84
Europe: Combined Yield	5.84	8.35	6.74	3.60	6.77	0.35	0.12	-0.55	0.21
Europe: Size (Small/Large)	-0.47	-8.54	29.73	1.25	-8.39	-1.06	4.25	0.59	-2.45

Note: Annualized return for factor portfolios in different economic cycles from January 1990 to April 2022. Factor returns are defined as the long-short return of the top-bottom quintile from the 300 largest stocks in the MSCI Europe index. Portfolios have been rebalanced quarterly and returns are on equal-weighted total return basis. Periods of the economic cycles are defined by the normalized seasonally adjusted composite European leading indicator from the OECD. We divide up the states of the world into four phases, with an expansionary level (>99) and positive first differential of the leading indicator being classified as an "expansion" and a negative first differential being a "slowdown," a contraction level (<99) and positive first differential being classified as a "recovery," and a contraction level with negative first differential being a "recession." T-stats are calculated using two samples t-test (Welch's t-test) with unequal sample sizes and unequal variances.

Source: OECD, Bloomberg, and Bernstein analysis

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EXHIBIT 23: **Higher Quality sectors (plus Energy) had positive earnings growth one year and two years following peak growth periods historically**

Peak Economic Growth	Forward Horizon	Market	Industrials	Basic Materials	Cons. Disc.	Cons. Staples	Energy	Banks	Insurance	Healthcare	Real Estate	Technolog y	Telecom	Utilities	Metals Mining
Aug-89	12mth	23.1	25.0	11.4	13.1	25.5	19.8	25.4	24.4	27.0	27.0	64.8	33.9	47.2	-2.2
	24mth	-0.5	-10.2	-31.0	-21.9	7.8	4.5	2.5	4.6	10.5	0.3	33.4	34.8	61.9	-48.8
Nov-94	12mth	17.3	31.8	62.8	25.6	10.2	27.7	7.2	8.0	12.1	14.1	53.7	5.4	11.9	42.6
	24mth	21.1	24.6	37.0	20.0	11.6	40.9	14.3	24.6	6.3	15.5	64.1	25.8	12.8	24.1
Feb-98	12mth	-3.2	1.5	-11.4	3.0	1.3	-28.7	-4.2	12.1	-7.9	8.6	31.5	7.9	16.5	-33.8
	24mth	-2.3	6.5	-21.1	-4.7	-0.6	-7.1	-2.0	22.5	-16.5	14.1	37.6	-9.4	-5.9	-32.1
May-00	12mth	-0.7	-0.2	2.1	-18.6	6.2	21.5	-7.5	11.0	7.5	12.0	-3.2	-25.5	15.1	-13.7
	24mth	1.9	-8.4	-2.1	-14.8	23.4	27.5	-6.2	22.7	30.3	42.0	-55.5	-20.0	32.9	-13.7
Jun-07	12mth	17.3	20.4	39.5	22.3	16.9	38.8	-2.1	11.2	16.5	9.7	8.2	22.5	23.4	40.5
	24mth	-32.3	-31.3	-47.2	-49.1	2.9	-22.8	-65.4	-32.8	12.6	-37.9	-32.6	-1.9	1.2	-60.2
Jan-11	12mth	-12.3	-14.7	-20.9	-4.6	-7.1	-1.0	-21.8	-10.9	-4.2	-12.1	-20.7	-18.6	-20.6	-36.1
	24mth	-3.1	-0.2	-18.6	0.8	6.7	-12.0	6.9	-2.0	2.0	4.2	-4.1	-13.4	-11.9	-32.0
Nov-17	12mth	3.5	-0.6	10.1	1.7	0.1	38.3	-5.4	4.5	-0.8	3.1	3.2	-8.6	-3.0	13.1
	24mth	2.3	1.5	-6.5	-5.8	7.3	30.9	-8.0	5.8	8.1	4.4	7.2	-6.0	3.9	-9.1
Aug-21	12mth	?													
	24mth	?													

Earnings growth trajectory following economic growth peaks which rolled over into a slowdown

		Market	Industrials	Basic Materials	Cons. Disc.	Cons. Staples	Energy	Banks	Insurance	Healthcare	Real Estate	Technology	Telecom	Utilities	Metals Mining
Average	12mth	4.8	8.7	8.8	3.7	7.2	7.8	-0.2	8.9	6.9	9.9	25.2	0.6	14.0	-8.6
	24mth	3.4	2.4	-7.2	-4.1	9.8	10.7	3.1	14.5	6.5	15.2	15.1	3.6	18.0	-20.5

Earnings growth trajectory following economic growth peaks which rolled over into a major recession

		Market	Industrials	Basic Materials	Cons. Disc.	Cons. Staples	Energy	Banks	Insurance	Healthcare	Real Estate	Technology	Telecom	Utilities	Metals Mining
Average	12mth	10.4	9.9	24.8	12.0	8.5	38.5	-3.7	7.9	7.8	6.4	5.7	6.9	10.2	26.8
	24mth	-15.0	-14.9	-26.8	-27.4	5.1	4.0	-36.7	-13.5	10.3	-16.7	-12.7	-4.0	2.6	-34.6

Change in 12m and 24m forward consensus earnings (%) following peak growth levels

Note: 12-month and 24-month changes in European Market and Sector consensus; 12-month forward EPS following a rollover in future economic activity as indicated by the OECD Europe composite leading indicator. Averages are shown for all rollovers in the indicator; when rollovers were not followed by a major recession (i.e., YoY GDP growth does not fall below -1%) and when the rollover in the indicator is followed by a major recession (i.e., when YoY GDP growth falls below -1% — shown in gray shade). The red shading indicates where EPS growth is less than 1.5x the market and the green shading indicates where sector EPS growth is 1.5x greater than the market.

Source: OECD, Bloomberg, Refinitiv Datastream, and Bernstein analysis

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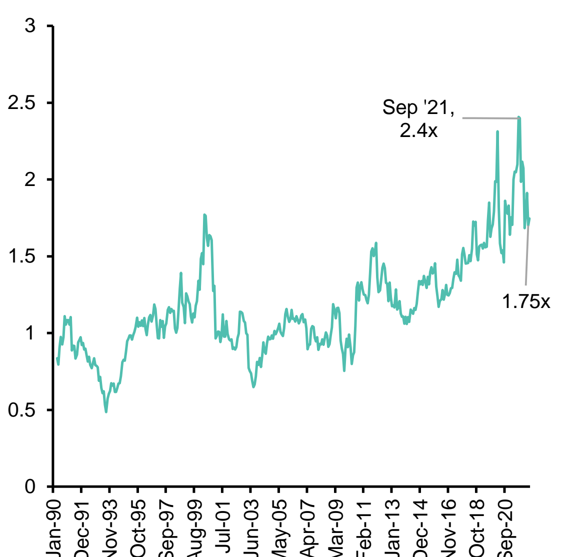
EXHIBIT 24: **European Quality stocks are still expensive but have derated substantially relative to the market since the end of last year**

Eurpean Composite Quality Valuation -12 month forward PE

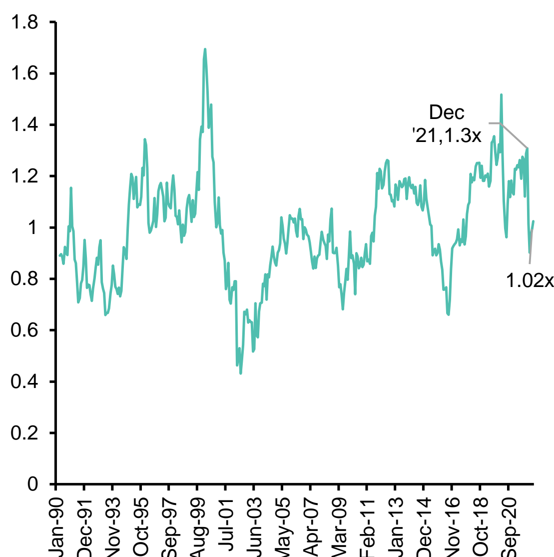


Note: 12-month forward PE of the high composite quality quintile relative to the low composite quality quintile of the largest 300 stocks in the MSCI Europe index. The stocks are rebalanced quarterly. We have changed the Quality model used to a newer version, so numbers are slightly different to those in the March 10, 2022 note.

Source: MSCI, IBES, FactSet, and Bernstein analysis

EXHIBIT 25: **Quality stocks in the US have also derated vs. the market**

US Composite Quality Valuation - 12 month forward PE

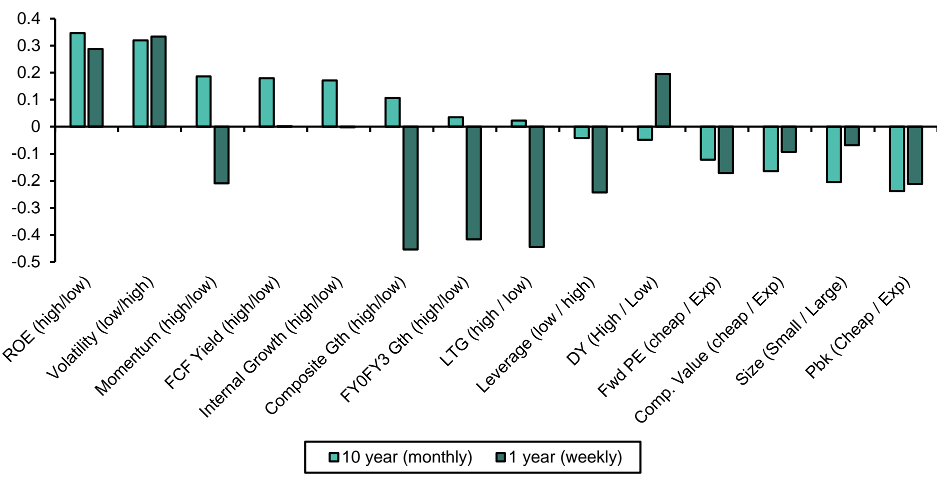


Note: 12-month forward PE of the high composite quality quintile relative to the low composite quality quintile of the MSCI US universe. The stocks are rebalanced quarterly. We have changed the Quality model used to a newer version, so numbers are slightly different to those in the March 10, 2022 note.

Source: MSCI, IBES, FactSet, and Bernstein analysis

EXHIBIT 26: **European Quality stocks benefit from a strong dollar**

Correlation of long-short factor returns and changes in USD-EUR



Note: The correlation coefficient of monthly long-short factor returns vs. monthly changes in the EUR-USD exchange rate where a positive correlation indicates outperformance when the dollar is appreciating and a negative correlation shows underperformance when the dollar is appreciating. The dark colored bars show correlations using weekly long-short factor returns over the last year.

Source: MSCI, IBES, and Bernstein research

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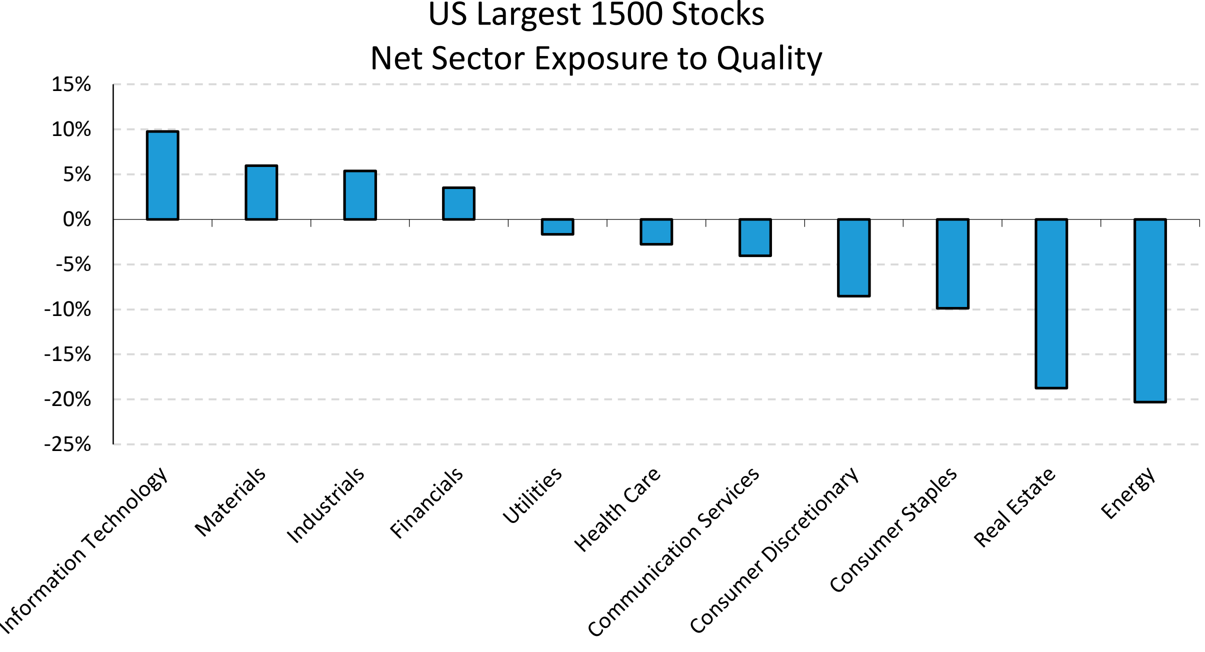
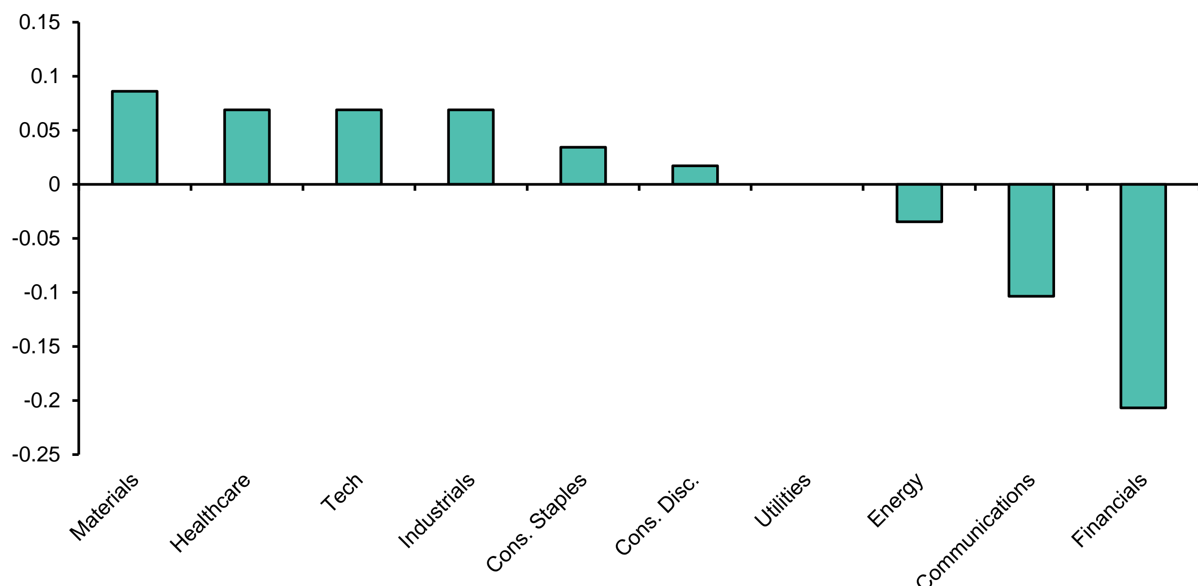
EXHIBIT 27: **Share of Quality stocks by sector in the US**



Note: Share of stocks in Best Quintile of Quality Model net of share of stocks in Worst Quintile of Quality Model

Source: FactSet, CRSP, and Bernstein analysis

EXHIBIT 28: **European composite quality — net sector exposure**



Note: Percentage sector weight in the long side of the style minus the percentage sector weight in the short side of the style.

Source: MSCI, FactSet, and Bernstein research

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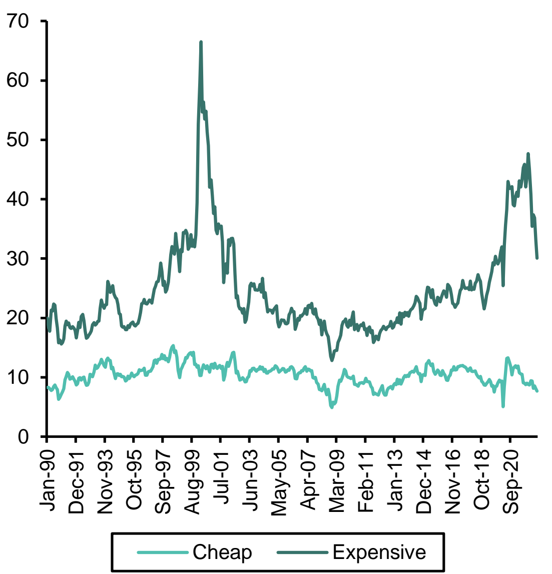
EXHIBIT 29: **European expensive stocks have derated but are as expensive as anytime outside of the pandemic and the TMT bubble**

Europe cheap and expensive composite value - 12 month Forward pe

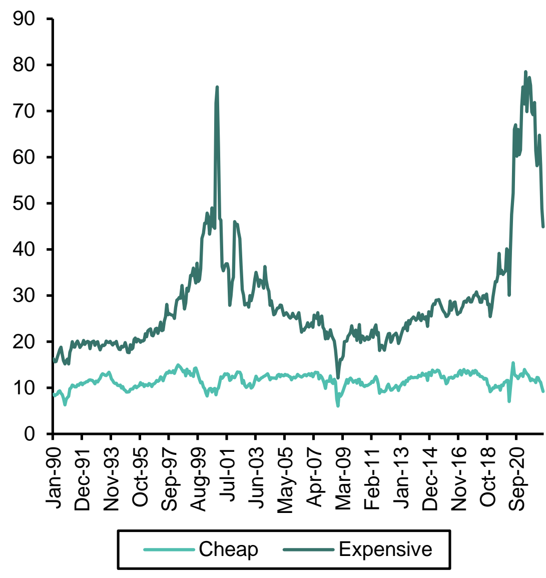


Note: Median 12-month forward PE of the cheap and expensive quintile on composite value (a blend of PB, 12-month forward PE, and dividend yield). The screening universe is the 300 largest stocks in the MSCI Europe index. Baskets are rebalanced quarterly.

Source: MSCI, IBES, and Bernstein research

EXHIBIT 30: **US expensive stocks have derated but are as expensive as anytime outside of the pandemic and the TMT bubble**

US cheap and expensive composite value - 12 month Forward pe

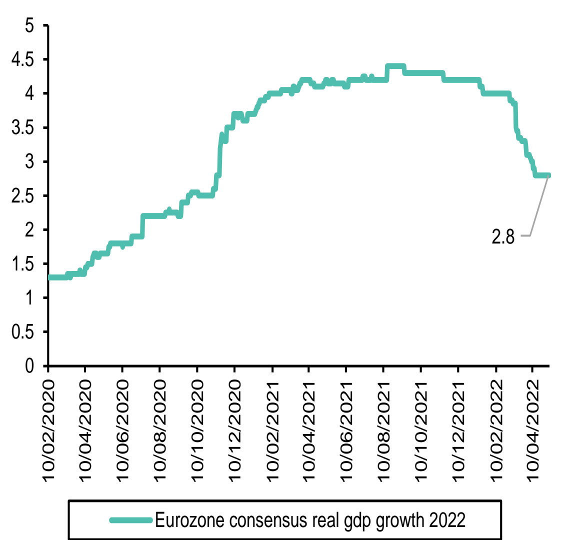


Note: Median 12-month forward PE of the cheap and expensive quintile on composite value (a blend of PB, 12-month forward PE, and dividend yield). The screening universe is the MSCI US index. Baskets are rebalanced quarterly.

Source: MSCI, IBES, and Bernstein research

EXHIBIT 31: **Eurozone consensus real GDP growth forecast 2022**

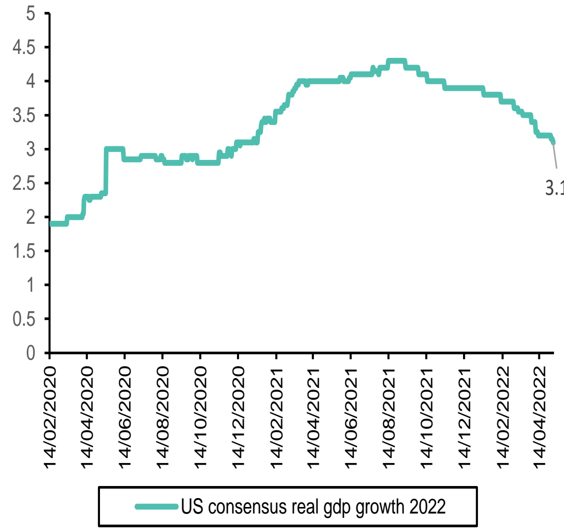
Consensus Forecast



Source: Bloomberg and Bernstein analysis

EXHIBIT 32: **US consensus real GDP growth forecast 2022**

Consensus Forecast



Source: Bloomberg and Bernstein analysis

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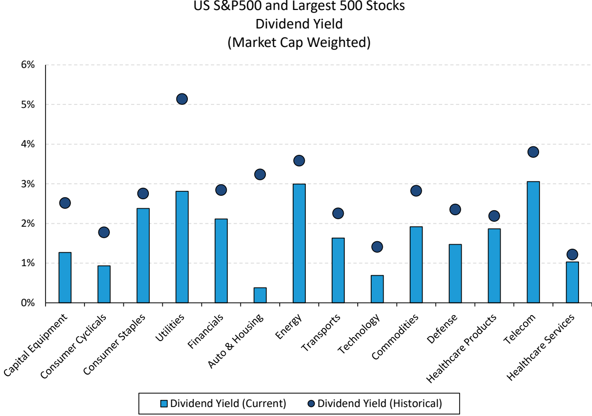
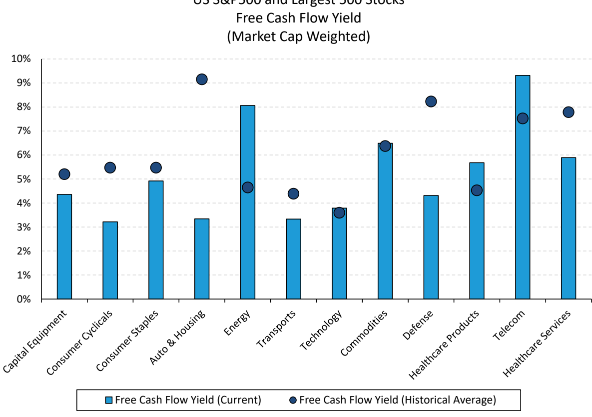
EXHIBIT 33: **US dividend yield by sectors**



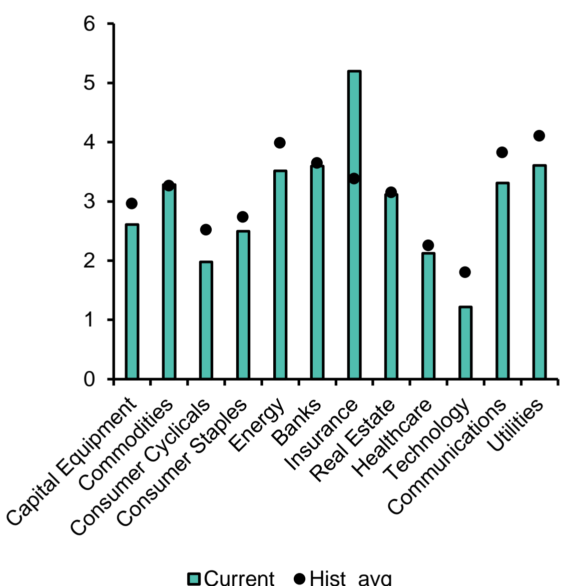
Source: FactSet, CRSP, and Bernstein analysis

EXHIBIT 34: **US FCF yield by sectors**



Source: FactSet, CRSP, and Bernstein analysis

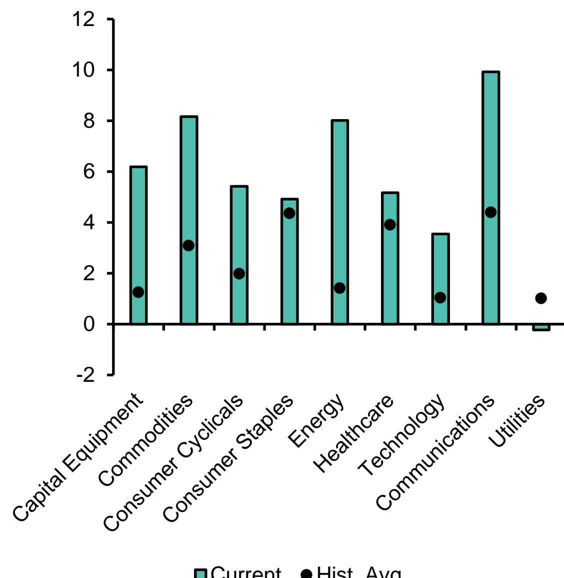
EXHIBIT 35: **European sector dividend yield**



Note: Current dividend yield and post-1988 historical average dividend yield

Source: FactSet, and Bernstein US Quant team and analysis

EXHIBIT 36: **European sector FCF yield**



Note: Current FCF (cash flow from operations-capex) yield and post-1988 historical average dividend yield

Source: FactSet, and Bernstein US Quant team and analysis

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ASIA POSITIONING IN A SLOWING-GROWTH AND HIGH-INFLATION ENVIRONMENT

The macro backdrop of slowing growth, moderating inflation expectations, and rising yields in the US is best suited for defensive stocks in Asia. There are three broad categories of stocks that can be looked at to add more defensive exposure — stocks with Low Volatility or High Yield or High Quality. Tactically, we find Low Volatility stocks as best suited to manage current macro uncertainties — this has been our preferred trade since February 2022 and has outperformed the market by 8.3% since then. Even YTD, it has been the best performing style, down -4.6% while markets are down ~18%. High Yield has been a close second, down ~6%, while Quality has suffered (probably due to its high exposure to long-duration stocks) (see Exhibit 37). We think Low Volatility is the best exposure to own right now in Asia, though High Yield remains one of our strategic trades for the region.

Which styles work well in Asia during slowing growth, moderating inflation expectations, and rising US yields?

- **Global growth slowdown vs. Asia styles:** In Exhibit 38, we show the performance of long-short factors in Asia from 1999 to June 2019 across different global economic regimes as defined by OECD composite leading indicators. Historically, Low Volatility and Quality has done well in Asia during times of global slowdown, while Deep Value stocks and small caps take the most hit. However, Defensive Value, i.e., High Yield tends to act as a great late-cycle Value play and has historically done well as economies slow down.

- **Moderating inflation expectations in the US vs. Asia styles:** To understand the relative performance of different factors in Asia with changing dynamics between inflation and real yields, we ran linear regressions over the last 10 years with returns of our long-short factor portfolios and contemporaneous changes in 10-year US real yields and change in inflation expectations, proxied by the change in the 10-year breakeven spread. Historically, we note that Value stocks in Asia have done quite well during times of increasing inflation expectations in the US, while defensive styles such as Quality/Low Vol/High Yield tends to significantly underperform. However, as inflation expectations in the US start rolling-off (we are already seeing this happen) even though inflation remains at elevated levels, the outlook for Value/cyclical stocks in Asia looks weak while the outlook for defensives looks good. Again, interestingly, the impact on High Yielding names with inflation expectations moderating in the US would be more positive unlike that for Deep Value stocks (see Exhibit 39).

- **What is short duration in Asia right now?** Rising yield is typically aligned with Value rotation; however, Low Volatility is the best short-duration defensive trade in the region right now. But as one would expect in a late-cycle, defensive parts of Value, i.e., High Yield are finding tailwinds from rising US yields though Deep Cyclical Value stocks are now negatively correlated with US yields. This is one of the reasons why we are not very bullish on Value rotation and think the Value trade with more legs is High Yield (see Exhibit 40).

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Within defensives, we prefer Low Volatility stocks: Apart from the strong macro support, historically, Low Volatility has been the best style, outperforming the markets in all eight previous instances of significant market correction. Spikes in oil prices and market volatility have also coincided with outperformance of Low Volatility stocks (see Exhibit 41 and Exhibit 42). One of the biggest challenges for investors is to find defensive stocks at reasonable valuations in times of market distress, and in this context we find a Low Volatility portfolio has a significant valuation advantage as it is trading at average levels of 14.5x PE. This can be attributed to the fact that Low Volatility exposure in the region is as much about Value as it is about Quality. Given the conflicting macro forces at play, of slowing growth on one hand and rising inflation/yields on the other, we believe this balance between cyclicals and defensives is very much needed. This has been a key reason why Low Volatility stocks have gained momentum and still have enough headroom to trend higher. Within defensives, Low Volatility is the only style finding earnings support tactically with increased pace of upgrades vs. High Volatility stocks and these names have never been so unloved, providing a contrarian buy-signal. For our recent Low Volatility stock screen and more details, see: Asia Quant Strategy: Min Vol - the best equity exposure right now. Our thesis in 15 charts.

Asia High Yield trade: As highlighted in the previous section, different Value stocks react differently to different parts of the macro cycle. High yielding stocks are the defensive Value exposure that tend to do well in an economic slowdown and during times of high inflation, and we are happy to hold this kind of Value exposure in Asia. Within High Yield, we prefer sustainable yield companies, i.e., the ones with a blend of high dividend yield and FCF yield overlaid with sustainability of growth in dividend or FCF. Apart from the strong macro tailwinds expected for High Yield stocks, these stocks look very attractive on valuations — the portfolio is currently trading at a historical discount to markets on both PB and 12-month forward PE (see Exhibit 43 and Exhibit 44). But not just tactically, we also like Sustainable Yield stocks as a long-term Value exposure in Asia — it has delivered strong outperformance to the markets over the long term, generating 17% annualized returns since 1999 and 9% p.a. since 2010 compared to 10% p.a. /6% p.a. by the market. Even YTD, it has been quite resilient, down -5% while markets are down -18%. Even on a risk-adjusted basis, these stocks have performed better than the benchmark over the long term (see Exhibit 45 and Exhibit 46).

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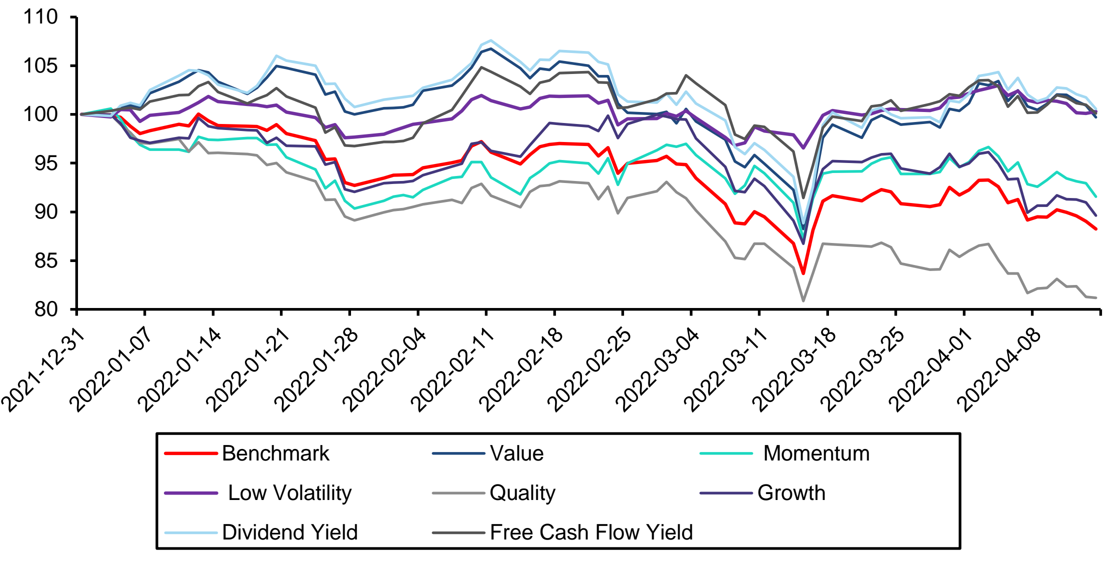
EXHIBIT 37: **YTD Low Volatility has been the best style in Asia, down -4.6% while markets are down -18%; High Yield has also done well down ~6%**



Note: Performance of long-only top decile for each factor within MSCI Asia Pacific ex Japan Index. Benchmark refers to MXAPJ Index on an equal-weighted basis. Data as of May 19, 2022.

Source: MSCI, FactSet, and Bernstein analysis

EXHIBIT 38: **Historically, Low Volatility and Balance Sheet Quality have been the best performing styles in Asia during times of global economic slowdown, while Deep Value stocks and small-cap names suffered the most**

Factor Performance	All Periods	Recession	Recovery	Expansion	Slowdown	t-stat			
Composite Value (Cheap vs. Exp.)	20.63	25.55	45.47	8.68	15.44	0.45	2.03	-1.39	-0.51
12m FWD PE (Cheap vs. Exp.)	19.87	9.79	36.02	22.09	15.54	-0.93	1.37	0.20	-0.45
Price to Book (Cheap vs. Exp.)	14.61	13.30	37.99	20.09	-4.86	-0.12	1.76	0.39	-2.18
Div. Yield (High vs. Low)	8.90	21.71	11.18	-0.86	9.01	1.66	0.35	-2.22	0.02
FCF Yield (High vs. Low)	12.97	4.11	11.39	12.14	23.95	-1.12	-0.20	-0.13	1.62
Price Momentum 12m (High vs. Low)	-3.23	-4.07	-19.54	-5.17	14.22	-0.05	-1.12	-0.13	1.66
Price Momentum 6m (High vs. Low)	0.31	-13.20	-18.08	15.73	10.41	-0.91	-1.54	1.27	1.00
Price Momentum 9m (High vs. Low)	0.58	-5.73	-14.70	4.78	14.07	-0.46	-1.14	0.37	1.36
Low Vol (Low vs. High)	-3.70	26.45	-28.04	-23.94	23.80	1.90	-1.94	-1.60	2.30
Size (Small vs. Large)	11.36	0.28	24.41	30.33	-7.63	-1.27	1.23	1.29	-2.76
ROIC (High vs. Low)	10.38	8.56	-0.60	8.11	24.05	-0.20	-1.14	-0.27	1.77
Gross Profitability (High vs. Low)	6.97	4.89	3.64	11.35	5.96	-0.40	-0.44	0.71	-0.21
EBIT/Int (High vs. Low)	5.37	15.93	-7.35	-4.00	19.08	1.48	-1.47	-1.38	2.30
Low Leverage (Low vs. High)	-4.19	10.26	-6.77	-14.02	-1.55	2.01	-0.27	-1.09	0.46
ROE (High vs. Low)	7.18	7.39	6.44	1.87	14.58	0.03	-0.09	-0.77	1.21
Composite Growth (High vs. Low)	-0.48	-12.13	8.03	5.37	-2.44	-1.37	1.10	0.67	-0.28
Long-term growth (High vs. Low)	4.00	0.19	7.47	12.48	-4.88	-0.60	0.54	1.52	-1.69
Internal Growth (High vs. Low)	5.67	-1.39	6.27	11.06	5.23	-0.67	0.05	0.72	-0.07
FY0FY3 Growth (High vs. Low)	0.95	-12.09	5.47	10.62	-1.33	-1.71	0.66	1.78	-0.40

Source: OECD, MSCI, FactSet, and Bernstein analysis

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EXHIBIT 39: **Moderating inflation expectations in the US have historically worked in favor of defensive styles in Asia such as Low Volatility, Quality, and High Yield**

Factor	Label	INTERCEPT	US_REAL_YIELD	BREAKEVEN
Composite Value	Coeff	0.00	0.00	0.14
	T	-0.17	-0.08	2.71
12m FWD PE	Coeff	0.00	0.00	0.08
	T	0.28	0.31	1.88
Price to Book	Coeff	-0.01	0.00	0.18
	T	-1.57	-0.15	4.09
Dividend Yield	Coeff	0.03	0.00	-0.08
	T	3.55	-0.47	-1.94
ROE	Coeff	0.01	0.00	-0.14
	T	1.58	0.02	-5.10
Price Momentum 12m	Coeff	0.03	0.00	-0.06
	T	2.62	1.15	-0.97
EPS Momentum 12m	Coeff	0.03	0.00	-0.01
	T	3.93	1.34	-0.15
Low Vol	Coeff	-0.02	0.00	-0.20
	T	-1.96	-0.27	-3.65
Free Cashflow Yield	Coeff	0.01	0.00	-0.12
	T	1.12	0.09	-3.89
Small Caps	Coeff	-0.01	0.00	0.04
	T	-0.94	-0.40	1.40
ROIC	Coeff	0.04	0.00	-0.22
	T	5.44	0.69	-5.79
Gross Profitability	Coeff	0.02	0.00	-0.01
	T	4.78	0.38	-0.26
Composite Growth	Coeff	0.00	0.00	0.10
	T	0.53	0.72	2.37
LTG	Coeff	0.02	0.00	0.04
	T	2.23	1.24	1.13
Internal Growth	Coeff	0.01	0.00	0.00
	T	1.29	0.12	0.19
FY0FY3 Growth	Coeff	0.02	0.00	0.02
	T	3.10	0.86	0.67
Low Leverage	Coeff	0.03	0.00	-0.13
	T	4.42	0.17	-4.23

gNote: Regressions on six-month returns of factors based on MSCI Asia Pacific ex Japan Index against six-month changes in the 10-year Asia real yields and Asia 10-year CPI. Data is from December 2009 to January 2021. The green (red) shading highlights where the relationship is statistically significant.

Source: MSCI, FactSet, Bloomberg, and Bernstein analysis

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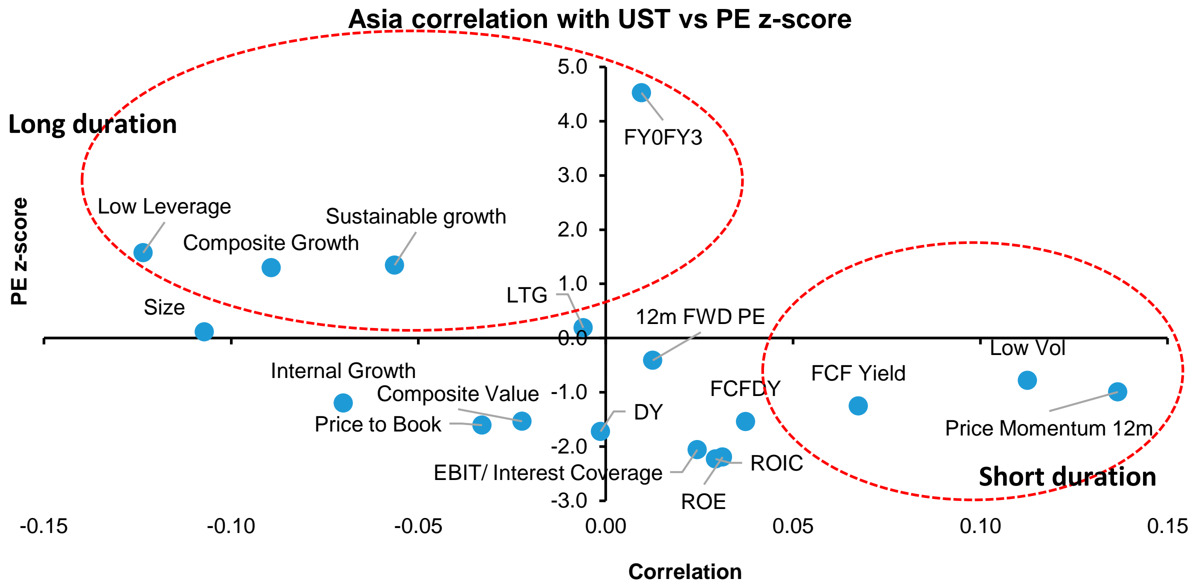
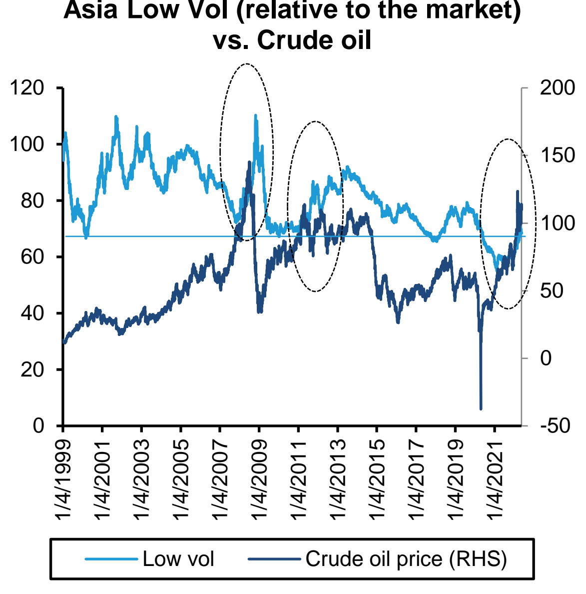
EXHIBIT 40: **Low Volatility is the best short-duration defensive trade in Asia right now followed by High Yield**



Note: X-axis is about correlations of factors with US 10-year yield (60-day rolling correlation) and Y-axis is about factors' historical PE z-score. Data as of May 18, 2022.

Source: IBES, MSCI, FactSet, Bloomberg, and Bernstein analysis

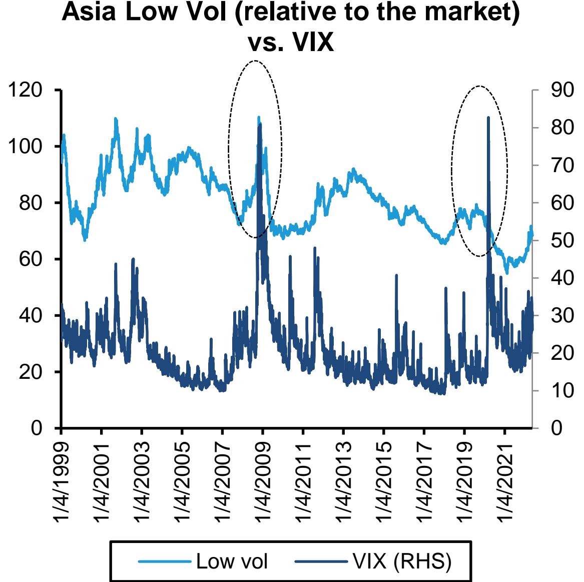
EXHIBIT 41: **Low Volatility in Asia has historically outperformed when crude oil has moved higher than ~US$85/bbl**



Note: Data as of May 19, 2022

Source: MSCI, FactSet, Bloomberg, and Bernstein analysis

EXHIBIT 42: **Spike in market volatility has also coincided with outperformance by Asia Low Volatility**



Note: Data as of May 19, 2022

Source: MSCI, FactSet, Bloomberg, and Bernstein analysis

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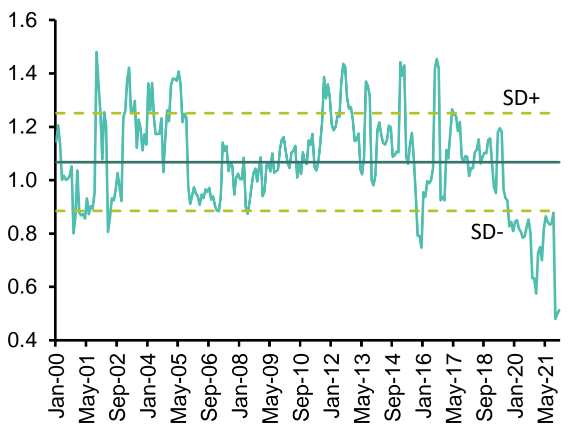
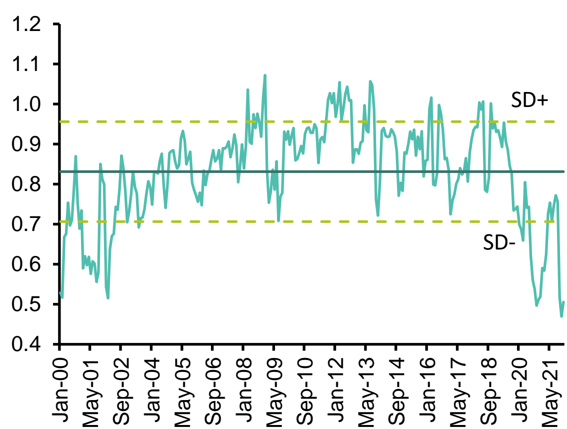
EXHIBIT 43: **High Sustainable Yield stocks are trading at historical discount to markets on PB basis**



Note: Data as of May 2022

Source: IBES, MSCI, FactSet, and Bernstein analysis

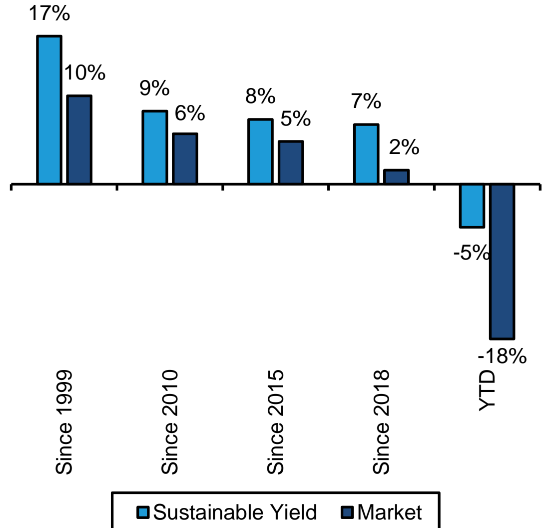
EXHIBIT 44: **Even on PE basis — this deep discount to the market was last seen in 2000**



Note: Data as of May 2022

Source: MSCI, IBES, FactSet, and Bernstein analysis

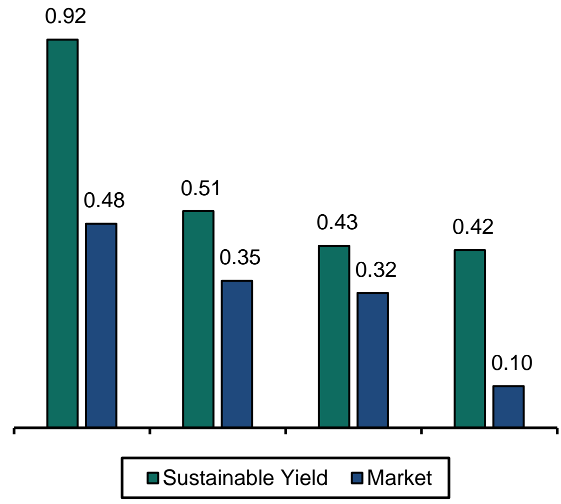
EXHIBIT 45: **Asia High Sustainable Yield portfolio has generated a 17% CAGR since 1999 (vs. 10% p.a. by market) and is quite resilient YTD with market down -18%**



Note: Data as of April 2022

Source: MSCI, IBES, FactSet, and Bernstein analysis

EXHIBIT 46: **Even on a risk-adjusted basis, Sustainable Yield has outperformed the markets over long and short terms**



Note: Data as of April 2022

Source: IBES, MSCI, FactSet, and Bernstein analysis

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WHICH ESG THEMES TO OWN IN TODAY'S MACRO ENVIRONMENT?

We would like to see where ESG investors can get more positive exposure to the different aspects of the current macro environment, but most past periods of inflation, recession, rising rates, etc., pre-date the rise of ESG investing. So rather than look at the performance of ESG stocks in past regimes, we chose to look at the factor exposures that worked in those regimes and then map them to current ESG themes. Globally, Value factors such as forward PE and dividend yield along with high ROE and low volatility have historically outperformed during times of a slowdown. In a recessionary environment, low volatility, FCF yield, and ROE have historically generated outperformance.

Which ESG themes are best-positioned in a slowing and potentially recessionary inflationary environment?

- The **diversity & inclusion** and **circular economy** themes are well-positioned in times of a slowdown and recession as far as factor exposures go, with relatively low volatility, high FCF yield, low PE, high dividend yield, and high ROE (for circular economy) (see Exhibit 47).[1]
  - **Diversity & Inclusion:** We believe that having a diverse and inclusive workforce is critical for companies where talent is the No.1 asset (e.g., in creative industries, R&D heavy industries, hotel & lodging, as well as financials). In a tight labor market today, companies able to attract and retain talent at a reasonable cost by offering a diverse and inclusive culture are better positioned to navigate market uncertainties and inflationary pressure. See our report on diversity & inclusion here (Global ESG Research: Is diversity & inclusion investable?) and the great resignation here (Global ESG Research: The 'great resignation' is a 'great wake-up call' to invest in culture) for details (see Exhibit 48).
  - **Circular economy** is another theme that spans across multiple sectors and supply chains as we move toward a low-carbon economy. Key investment opportunities include recycling and waste management, recyclable and reusable materials, circular supply chain design, regenerative agriculture, as well as secondhand marketplaces enabling a shared economy. See our report on EV battery lifecycle assessment here (Global ESG Research: Circular economy series - a product life cycle assessment of EV batteries) and circular fashion here (Circular Economy Series: Circular fashion is the new black) for detail (see Exhibit 49 to Exhibit 51).
- In addition to these themes, the **sustainable infrastructure development** theme could also be well-positioned with high ROE and low PE, despite having above-average volatility and lower FCF yield. We believe the regulatory and market push for sustainable infrastructure development will give rise to investment opportunities across the value chain, benefiting players in energy efficiency and electrification (e.g.,

[1] Infrastructure Development = Global X US Infrastructure Development ETF; Water = iShares Global Water UCITS ETF; Clean Energy = iShares Global Clean Energy ETF; Circular Economy = BNP Paribas Easy ECPI Circular Economy Leaders; Health & Wellness = Global X Health & Wellness Thematic ETF; Diversity & Inclusion = iShares Thomson Reuters Inclusion And Diversity.

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Legrand and Schneider Electric), construction software & digital technology (e.g., Siemens and Honeywell), as well as new materials and carbon capture technology (e.g., Air Liquide and BASF). See our report on sustainable buildings: Global ESG Research: Sustainable buildings... Next wave of the green transition?.

EXHIBIT 47: **Factor exposure by ESG themes**

Factor	ESG Themes: Infrastructure Development	Water	Clean Energy	Circular Economy	Health & Wellness	Diversity & Inclusion	MSCI ACWI
Avg. Mkt Cap ($USD Mn)	$12,084	$5,607	$8,631	$96,707	$9,207	$101,347	$35,322
P/B	2.91x	3.03x	2.31x	3.07x	2.95x	1.70x	2.56x
12M Forward P/E	12.59x	18.63x	31.54x	14.50x	15.63x	11.12x	14.82x
Div. Yield	1.44%	2.99%	2.13%	2.82%	2.08%	3.34%	2.51%
ROE	23.08%	13.42%	1.90%	21.41%	14.44%	14.81%	15.34%
LTG EPS	14.16%	3.38%	24.02%	9.36%	15.72%	6.84%	11.79%
Momentum	2.71%	-16.84%	-10.08%	1.62%	-18.19%	-9.69%	-1.88%
FCF Yield	3.92%	2.02%	-5.39%	5.59%	3.83%	6.32%	5.02%
Volatility	21.78%	15.04%	30.81%	16.20%	22.07%	16.91%	17.22%
Debt/Equity	0.80x	1.25x	1.06x	0.96x	0.78x	2.16x	1.35x

Note: 12-month forward PE = market value/sum of EPS forward 12-month contributions from holdings (EPS forward 12-month of security*# of shares). PB = price/book value per share, aggregated by weighted average. Dividend Yield = (net dividends per share/closing price)*100, aggregated by weighted average. ROE= (total portfolio net income (losses) - total portfolio cash preferred dividends)/ total portfolio avg common equity*100. LTG EPS = current estimated CAGR of operating EPS over company's next full business cycle (typically three to five years), calculated as the weighted harmonic mean of each member holding value. FCF Yield=(trailing 12-month FCF per share/last price)*100, aggregated by weighted average. Total Debt/Common Equity = (total portfolio debt/total portfolio common equity)*100. Momentum = % change over last six month in the one-month moving average of share price relative to benchmark. Volatility (260 day)=annualized standard deviation of the relative price change for the 260 most recent trading days closing price.

Source: Bloomberg and Bernstein analysis

EXHIBIT 48: **Culture 500 — top 10 companies across nine cultural value categories**

Culture 500 - Top 10 Companies Across 9 Cultural Value Categories									
Ranking	Agility	Collaboration	Customer	Diversity	Execution	Innovation	Integrity	Performance	Respect
1	Nvidia	Bain & Company	BMS	Cummins	HubSpot	Nvidia	Rockwell	Paycom	Ultimate Software
2	SpaceX	Discount Tire	Genentech	Schlumberger	Netflix	Tesla	TI	Stryker	MathWorks
3	Paylocity	In-N-Out	Takeda	Flextronics	Facebook	SpaceX	Colgate-Palmolive	Enterprise	Nokia
4	Netflix	Advocate Aurora Health	BlackRock	Nokia	Ultimate Software	Red Bull	Nvidia	Forrester	DocuSign
5	Ceridian	MathWorks	Ralph Lauren	HP Inc.	Northwestern Mutual	Northwell	Forrester	Kraft Heinz	DuPont
6	Slalom	Eastman	Massachusetts General Hospital	HSBC Holdings	Edward Jones	Amazon	Charles Schwab	Nvidia	Forrester
7	HubSpot	St. Jude Children's	Northwestern Mutual	HCSC	Uber	Global Foundries	Cummins	Aflac	St. Jude Children's
8	Zillow	Lululemon	Raymond James	TD	SpaceX	NY-Presbyterian	Eastman	Goldman Sachs	LinkedIn
9	Uber	Chick-fil-A	Chick-fil-A	Cleveland Clinic	Nvidia	Accenture	Northern Trust	Bain & Company	Toyota Motor North America
10	Tesla	Aéropostale	Boston Scientific	MD Anderson Cancer Center	DoorDash	Atos-Syntel	John Deere	Northwestern Mutual	Paylocity

Source: MIT Sloan Management Review and Bernstein analysis

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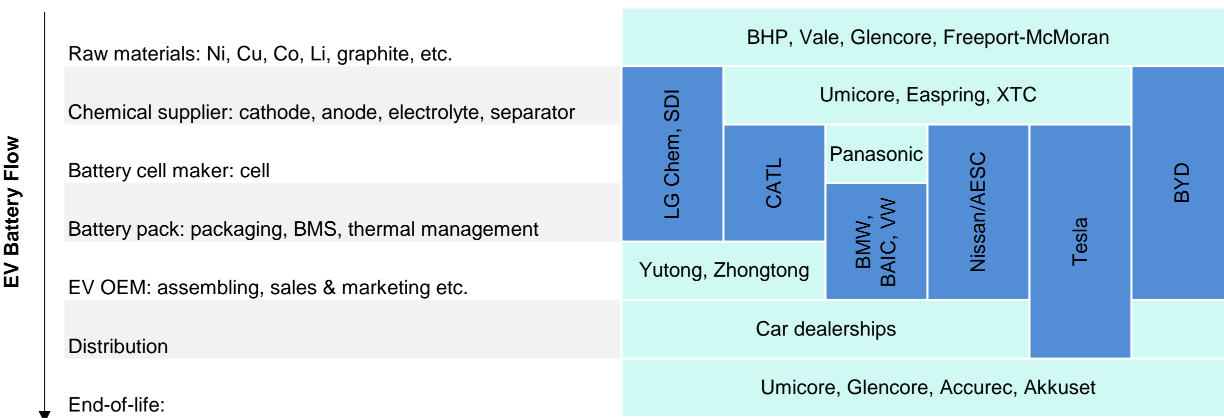
EXHIBIT 49: **Key players in the EV battery supply chain as well as emerging players in the end-of-life phase**



Source: World Economic Forum, Kelleher Research Study on Reuse and Recycling of Batteries, and Bernstein analysis

EXHIBIT 50: **Secondhand fashion market landscape**

Source: Rebag and Bernstein analysis

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EXHIBIT 51: **Among luxury goods companies, Hermès and LVMH stand out in terms of having a more sustainable footprint**

	Hermès	LVMH	Tiffany	Kering	Farfetch	Moncler	Burberry	EssilLux	Prada	Richemont	Swatch
Reliability & Predictability	**94**	**87**	**92**	**74**	**35**	**76**	**70**	**81**	**50**	**46**	**50**
Forecasts Dispersion	94	100	70	92	69	80	78	62	41	75	0
Earnings Beats & Misses	100	95	98	73		87	47	93	62	0	80
Revenue Beats & Misses	100	93	99	85		65	100	93	20	50	61
Beta	83	60	100	45	0	71	55	73	76	58	60
Scale Advantage	**56**	**62**	**24**	**45**	**16**	**10**	**14**	**19**	**12**	**23**	**6**
Group Sales	11	100	6	28	0	1	4	31	4	25	13
Sales / Store	100	25	43	62	32	19	24	7	19	20	0
Mega-Brand Health	**79**	**69**	**31**	**41**	**100**	**57**	**38**	**4**	**52**	**36**	**15**
Digital Traffic	97	98	83	97	100	92	96	0	94	57	12
Growth Momentum	18	23	8	16	100	28	0	15	3	5	10
Entry-price Exposure	100	57	17	47	0	31	38	0	47	62	17
Off-price Exposure	100	100	14	3	0	75	20	0	66	22	22
Manufacturing of the Future	**82**	**47**	**65**	**18**	**47**	**0**	**18**	**100**	**15**	**53**	**76**
Distribution of the Future	**81**	**81**	**100**	**71**	**100**	**70**	**74**	**14**	**77**	**35**	**0**
Management Compass	**85**	**52**	**54**	**55**	**0**	**73**	**67**	**53**	**32**	**41**	**35**
Stability	86	100	91	64		77	79	91	51	68	76
Altitude	100	9	28	0	0	76	66	15	43	33	29
Direction	68	47	42	100		66	57	52	3	20	0
Average Score	**79**	**67**	**61**	**50**	**50**	**48**	**47**	**45**	**40**	**39**	**31**
Rank	1	2	3	4	5	6	7	8	9	10	11

Note: EssiLux historical scores based on Luxottica; Tiffany is part of LVMH since 2021.

Source: Company reports, and Bernstein estimates and analysis

Which ESG stocks should investors own in today's environment?

Finally, to bring this down to the stock level, we look at matching the factors that work during slowdowns to our global stock universe. Factors that have been most effective during periods of slowing growth are FCF Yield, Dividend Yield, High ROE, and Low Volatility (see Exhibit 52). These four factors are also attractive during recessionary periods. We then use these metrics to help us identify a subset of ESG-related stocks that should have favorable exposure to the current macro environment. The screen in Exhibit 53 lists outperform-rated stocks that are either in the top three quintiles of ESG score or ESG improvement, and that also have positive exposure to the four quant factors listed earlier. Regional, country-specific, or other customized screens are also available on request.

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EXHIBIT 52: **Global factor performance by economic cycle**

		Economic Cycle (OECD lead indicator)							
Factor	**All Periods**	**Recession**	**Recovery**	**Expansion**	**Slowdown**	**t-stat**			
World: Composite Value	7.29	2.86	14.44	0.17	14.11	-0.58	1.10	-1.22	0.82
World: Price to Book	2.66	-7.11	18.69	0.77	0.16	-1.78	2.68	-0.41	-0.42
World: 12m FWD PE	9.87	6.28	12.63	4.58	17.75	-0.43	0.37	-0.83	0.91
World: DY	6.33	8.26	5.93	-3.25	17.68	0.27	-0.06	-1.78	1.46
World: ROE	8.26	15.35	-1.50	0.93	21.75	1.28	-1.63	-1.81	2.40
World: LTG	0.27	-3.45	2.35	6.70	-5.53	-0.67	0.46	1.50	-1.21
World: Internal Growth	4.81	9.01	-2.96	4.48	9.81	0.95	-1.80	-0.10	1.32
World: FY0FY3 Growth	-0.19	-9.62	6.62	8.57	-7.05	-2.07	1.74	2.61	-1.55
World: Composite Growth	1.55	1.72	0.37	6.65	-3.78	0.03	-0.29	1.30	-1.26
World: Momentum	3.79	6.51	-7.38	13.04	2.08	0.26	-1.40	1.43	-0.23
World: FCF Yield	8.21	15.79	4.21	1.49	14.35	1.78	-0.94	-2.51	1.53
World: Low Vol	0.26	19.22	-17.27	-10.18	17.09	2.02	-2.69	-2.24	2.45
World: Low Leverage	3.03	1.07	2.34	6.67	1.35	-0.49	-0.21	1.02	-0.42

Note: 1. Composite Value includes Price-to-Book, Dividend Yield, and Forward P/E
2. DY - Dividend Yield
3. LTG - Long Term Earnings Growth Estimate
4. FY0FY3 Growth - Forecasted Earnings Growth three years forward
5. Internal Growth: (1- dividend payout ratio)* 3 year average trailing ROE
6. Composite Growth: Blend of LTG, Internal Growth and FY0FY3

Economic cycle periods are defined by the normalized seasonally adjusted composite leading indicator from the OECD. We divide up the states of the world into four phases, with an expansionary level (>99) and positive first differential of the leading indicator being classified as an "expansion," a negative first differential being a "slowdown," a contraction level (<99) and positive first differential being classified as a "recovery," and a contraction level with negative first differential being a "recession."

Source: FactSet, CRSP, MSCI, OECD, and Bernstein analysis

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EXHIBIT 53: **Stocks with favorable ESG and macro exposures**

Outperform-rated stocks in the top three quintiles of Free Cash Flow Yield, Dividend Yield, ROE, and Low Volatility that are also in the top three quintiles of either ESG Score or ESG year-over-year improvement.

Ticker	Company	Country	Market Cap ($Mil.)	Analyst	Rating	Free Cash Flow Yield (1 = Highest)	Dividend Yield (1 = Highest)	Return on Equity (1 = Highest)	Return Volatility (1 = Lowest)	ESG Rank (1 = Best)	ESG Improver Rank (1 = Best)	Year to Date Return (Dollars)
KO US	COCA COLA (THE)	U.S.	273,765	Elliott, Callum	O	3	2	1	1	3	1	8%
AVGO US	BROADCOM	U.S.	238,791	Rasgon, Stacy	O	2	2	1	3	3	1	-12%
ABT US	ABBOTT LABORATORIES	U.S.	207,703	Hambright, Lee	O	3	3	1	1	4	1	-16%
BHP AU	BHP GROUP (AU)	Australia	161,999	Brackett, Bob	O	1	1	1	3	2	3	24%
UPS US	UNITED PARCEL SERVICE B	U.S.	158,401	Vernon, David	O	2	2	1	2	3	3	-14%
COP US	CONOCOPHILLIPS	U.S.	148,197	Brackett, Bob	O	2	3	2	3	5	3	57%
DTE GR	DEUTSCHE TELEKOM	Germany	102,156	Noel, Stan	O	1	2	2	1	2	4	12%
AI FP	AIR LIQUIDE	France	82,660	Zechmann, Gunther	O	3	3	3	1	1	4	1%
INFO IN	INFOSYS	India	81,450	Malhotra, Rahul	O	3	3	1	2	1	4	-23%
FDX US	FEDEX CORP	U.S.	59,660	Vernon, David	O	2	3	1	2	3	3	-13%
HEIA NA	HEINEKEN NV	Netherlands	57,891	Stirling, Trevor	O	2	3	2	2	3	3	-10%
BAS GR	BASF	Germany	50,465	Zechmann, Gunther	O	2	1	3	3	5	1	-20%
002304 C2	JIANGSU YANGHE A (HK-C)	China	37,354	McLeish, Euan	O	3	3	2	4	4	3	-3%
CMI US	CUMMINS	U.S.	29,911	Dillard, Chad	O	2	2	1	2	2	5	-3%
AD NA	AHOLD DELHAIZE	Netherlands	28,796	Woods, William	O	1	2	2	1	3	5	-19%
ASSAB SS	ASSA ABLOY B	Sweden	27,315	Green, Nicholas	O	3	3	2	3	2	4	-19%
ROK US	ROCKWELL AUTOMATION	U.S.	24,727	Luecke, Brendan	O	3	3	1	2	3	1	-38%
HPE US	HEWLETT PACKARD ENT CO	U.S.	20,406	Sacconaghi, Toni	O	1	2	3	3	1	1	0%
ANTO LN	ANTOFAGASTA	U.K.	18,358	Brackett, Bob	O	1	1	2	4	4	3	5%
TECHM IN	TECH MAHINDRA	India	14,749	Malhotra, Rahul	O	3	3	2	3	1	4	-37%
BJAUT IN	BAJAJ AUTO	India	14,402	Garre, Venugopal	O	3	2	1	1	4	3	16%
JMT PL	JERONIMO MARTINS SGPS	Portugal	12,856	Woods, William	O	1	3	1	2	2	5	-10%
SW FP	SODEXO	France	10,969	Clarke, Richard	O	2	2	3	3	4	1	-14%
BHE IN	BHARAT ELECTRONICS	India	7,368	Garre, Venugopal	O	3	3	2	3	3	1	8%

Note: Universe=MSCI ACWI

Analyst Ratings: O= Outperform, M=Market-Perform (Bernstein Brand)/N=Neutral (Autonomous Brand), U = Underperform rating. Further details of the research and important disclosures of the above covered securities are available on the Bernstein Research website: https://bernstein-autonomous.bluematrix.com/sellside/Disclosures.action

ESG scores for the US and Europe are from Sustainalytics and ESG scores for Asia are from S&P Global due to broader Asian coverage.

Source: FactSet, MSCI, Sustainalytics, S&P Global, and Bernstein estimates and analysis

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Commodities & Industrials

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CATL: HOW WOULD A RECESSION IMPACT CATL?

HIGHLIGHTS

- CATL, the world's leading battery maker by market share with industry-leading growth, is under margin pressure due to rising raw material prices. The company is expected to increase capacity from 170GWh in YE21 to 670GWh by YE25 (41% CAGR). We expect CATL's share of total nameplate battery capacity to increase from 19% in 2021 to 22% in 2025. CATL market share of xEV battery demand will also likely increase from 33% in 2021 to 36% by 2025. Despite being the market leader, CATL has chosen to absorb rather than fully pass through higher raw material prices. This has led to a collapse in gross profit margin (GPM) to 14% in 1Q22 (from 27% in 1Q21) and operating profit margin (OPM) to 5% (from 15%).
- The biggest positive of a recession is a decline in costs of lithium, nickel, and other components, which could lead to higher margins for CATL; there are already signs of a topping out of prices of some battery metals, which could boost margins in the coming quarters. While a recession would inevitably slow down vehicle purchases and revenue growth, it may not be as severe as some expect, given long order backlogs and pent-up demand. A decline in some component prices, in particular electrolytes and precursor materials, is already underway according to recent price data. This could help CATL margins recover in the next few quarters, although getting back to 30% gross margins may be a challenge.
- CATL is not as expensive as it may appear, given the highly visible growth outlook which will see Li-ion battery demand increase from 400GWh to 12,000GWh by 2050. CATL trades on an EV/sales of 3.5x (2023) and EV/EBITDA of 23x (2023). While this is not inexpensive, the company is set to expand capacity by 300% through to 2025. CATL trades on 28x 2025 PE but, given high barriers to entry and the growth outlook, we do not believe this is unreasonable.

INVESTMENT IMPLICATIONS

We rate CATL Outperform with a price target of RMB600. While a recession will clearly be negative for stocks in general, and especially growth stocks, the shift to electric vehicles is a trend that will continue, given the clear policy support. Slower growth and a fall in metal prices could, however, be a positive for margins. We assume a long-term operating margin of 10% and market share of 27% of the battery TAM for CATL, which gets us our target price.

A RECESSION MIGHT HELP RESTORE THE MARGIN FOR CATL

Despite impressive performance over the past few years, CATL has had a difficult 2022. Part of this stems from the rise in the risk-free rate that has impacted all clean energy stocks and led to their underperformance. However, in CATL, a large part of the damage was self-inflicted following its decision not to raise prices after higher raw material cost

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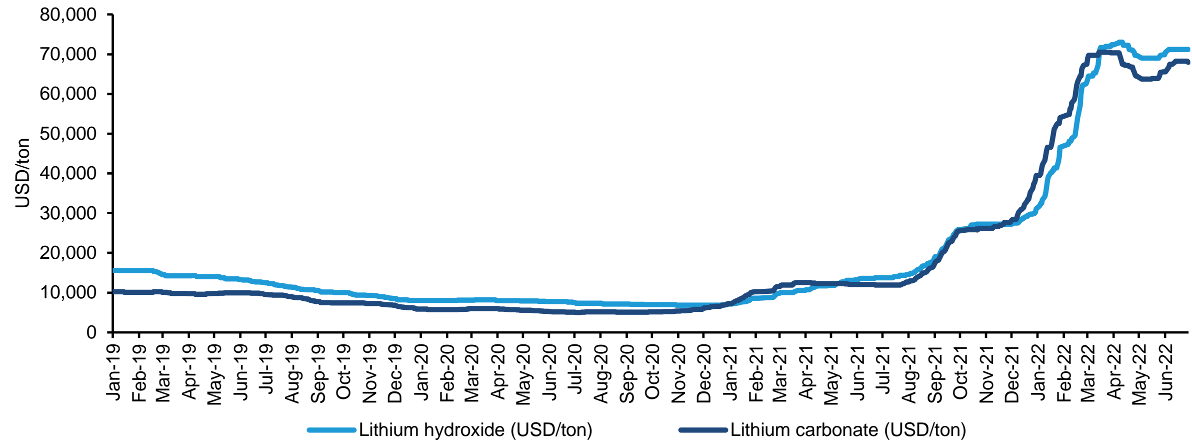
inflation. While a recession will damage almost every sector, particularly growth stocks, we think there is a silver lining for battery makers. Margins have shifted to the upstream part of the value chain with higher metal prices. A recession brings about the possibility of lower metal prices helping to restore margins of CATL, making it more defensive relative to other clean energy stocks (see Exhibit 1).

EXHIBIT 1: **CATL stock price suffered in 1Q22 on margin pressure, but is starting to recover**



Note: Price until June 29, 2022

Source: Bloomberg and Bernstein analysis

CATL is a leader when it comes to industry growth. Globally, battery demand for passenger vehicles is up 66% YoY year to date. BYD and CATL have shown remarkable growth in 2021 and YTD, helped by strong China EV sales that helped them gain market share (see Exhibit 2). CATL has increased PV battery sales by 116% YTD while BYD has increased it by 218%, although from a lower base. Outside China, SK grew strongly at 127% YoY, which also exceeded the market growth rate. LGES, SDI, and Panasonic have seen slower than market growth to date.

EXHIBIT 2: **YoY growth for PV battery demand — BYD, SK On and CATL have seen fastest growth YTD**

	2018	2019	2020	2021	YTD
Sunwoda	0%	583%	(72%)	1345%	663%
BYD	129%	(3%)	(5%)	221%	218%
Guoxuan	160%	(3%)	3%	205%	182%
CALB	356%	652%	133%	130%	152%
SVOLT	0%	0%	0%	429%	146%
SK On	188%	140%	249%	114%	127%
CATL	187%	73%	14%	241%	116%
Other	115%	(21%)	(15%)	88%	84%
SDI	48%	27%	99%	67%	53%
Panasonic	113%	35%	(6%)	34%	13%
LGES	47%	64%	124%	122%	7%

Note: Only lithium-based battery chemistries are included in this data set. xEVs captured in this data set include BEV, PHEV, and HEV.

Source: SNE Research and Bernstein analysis

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Through exceptional growth, CATL has maintained a leading market share at 31.8% (see Exhibit 3) in 2022 YTD, helped by strong China sales plus exports. LGES remains in second place in terms of passenger EV battery sales, although sales weakened in recent months, reflecting battery recalls. BYD has overtaken Panasonic as the third-largest battery maker with a market share of 12.1%, while Panasonic has fallen to 10.5% (from 13.2% last year). Samsung SDI has declined to sixth place in terms of passenger EV battery installation (5% market share) behind SK.

EXHIBIT 3: **Market share of EV battery demand — CATL and BYD gained market share YTD**

	2017	2018	2019	2020	2021	YTD
CATL	12.7%	17.2%	23.0%	20.6%	30.5%	31.8%
LGES	14.6%	10.1%	12.8%	22.6%	21.8%	15.8%
BYD	10.5%	11.3%	8.5%	6.3%	8.8%	12.1%
Panasonic	29.0%	29.1%	30.5%	22.6%	13.2%	10.5%
SK On	0.9%	1.2%	2.2%	6.0%	5.6%	6.6%
SDI	6.7%	4.6%	4.6%	7.1%	5.2%	5.4%
CALB	0.1%	0.3%	1.6%	2.9%	2.9%	4.5%
Guoxuan	2.0%	2.5%	1.8%	1.5%	2.0%	2.8%
Sunwoda	0.0%	0.1%	0.7%	0.2%	0.9%	1.7%
SVOLT	0.0%	0.0%	0.0%	0.5%	1.1%	1.4%

Note: Only lithium-based battery chemistries are included in this data set. xEVs captured in this data set include BEV, PHEV, and HEV.

Source: SNE Research and Bernstein analysis

Following the equity issuance and recently announced capacity expansion plans, we expect CATL's battery capacity will increase from 170GWh in YE21 to 670GWh by YE25 (Exhibit 4), which represents a +41% CAGR. Based on our outlook, CATL's market share of total battery capacity will increase from 19% in 2021 to 22% in 2025. Among the top 6 players, CATL market share will likely account for 30% of the top 6 players' capacity and 22% of total capacity. CATL's market share of xEV battery demand will also likely increase from 33% in 2021 to 36% by 2025.

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EXHIBIT 4: **Capacity and supply expansion of leading battery makers**

in Gwh

By Company	2019	2020	2021	2022E	2023E	2024E	2025E	21-25 CAGR
Capacity - Bernstein Estimates								
CATL	53	80	170	327	469	575	670	41%
LGES	60	120	155	195	260	395	520	35%
SDI	20	30	42	55	70	90	123	31%
SKI	5	30	40	60	85	140	200	50%
BYD	40	60	80	100	120	140	160	19%
Panasonic	49	52	59	72	87	121	156	28%
Other	138	218	347	504	726	968	1,214	37%
Total Capacity	**365**	**590**	**893**	**1313**	**1816**	**2429**	**3043**	**36%**
Supply - Benchmark Mineral Estimates								
CATL	34	43	88	107	160	210	287	34%
LGES	19	38	66	79	100	130	159	25%
SDI	6	10	13	22	30	37	47	38%
SKI	3	7	19	32	46	56	92	49%
BYD	12	18	29	46	64	94	129	45%
Panasonic	30	33	39	41	43	43	46	4%
Other	57	75	141	246	335	442	552	41%
Total Supply	**160**	**224**	**393**	**573**	**778**	**1011**	**1311**	**35%**
Demand (xEV) - SNE Research								
CATL	33	36	98	170	244	316	369	39%
LGES	12	34	60	68	104	158	208	36%
SDI	4	8	14	17	23	32	46	36%
SKI	2	8	17	24	34	56	80	47%
BYD	11	10	26	33	42	56	72	29%
Panasonic	28	26	35	43	52	73	94	28%
Other	23	20	45	60	87	126	158	37%
Total Sales	**115**	**143**	**295**	**416**	**586**	**816**	**1,026**	**37%**
Govt Target PV+CV	*115*	*142*	*286*	*399*	*521*	*689*	*891*	
Rapid Case PV+CV	*115*	*142*	*286*	*428*	*594*	*838*	*1,138*	

Source: Benchmark Minerals, company reports, and Bernstein estimates and analysis

While CATL experienced strong revenue growth of 155% YoY in 1Q22 to RMB49Bn (see Exhibit 5), the COGS increased more than revenue growth by 199% YoY, which led to GPM falling from 27% in 1Q21 to 14% in 1Q22 (see Exhibit 6). Operating margins also fell from 13% in 1Q21 to 3% in 1Q22 (see Exhibit 7). CATL had been reluctant to hike prices during 1Q22, but has started to pass through higher input costs.

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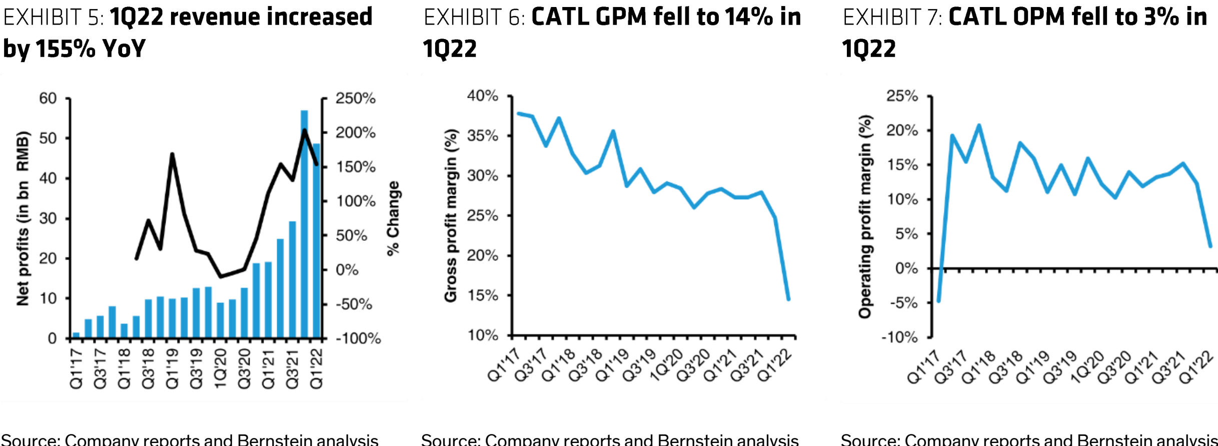
EXHIBIT 5: **1Q22 revenue increased by 155% YoY**

EXHIBIT 6: **CATL GPM fell to 14% in 1Q22**

EXHIBIT 7: **CATL OPM fell to 3% in 1Q22**



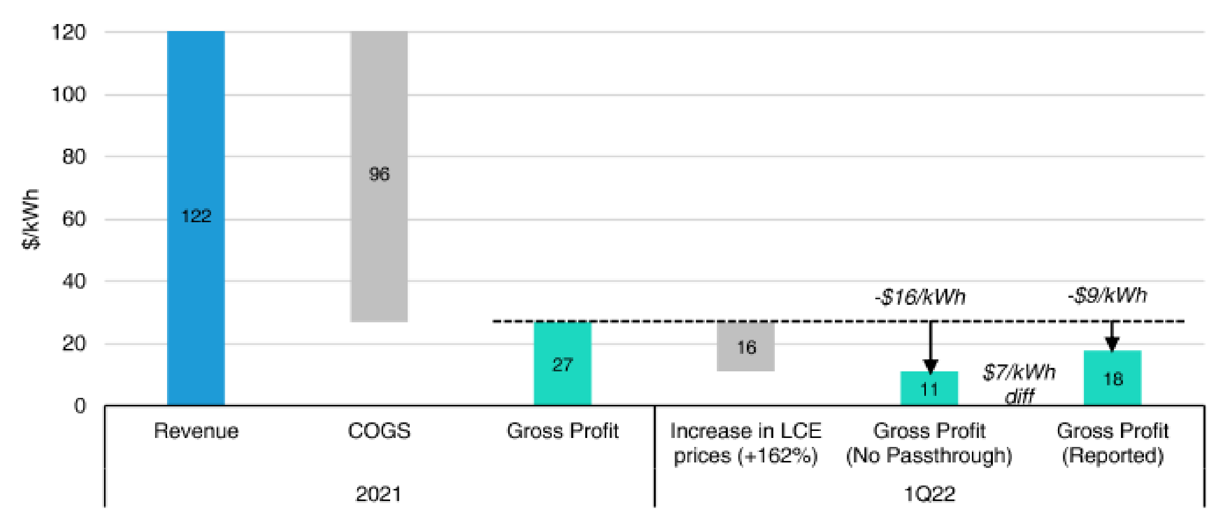
Source: Company reports and Bernstein analysis

Source: Company reports and Bernstein analysis

Source: Company reports and Bernstein analysis

As the largest battery supplier, CATL has absorbed a lot of the raw material price hikes to maintain market stability and relationships with OEMs. Our analysis later in this chapter suggests CATL was able to pass through more than 40% of the lithium carbonate equivalent (LCE) price increases during 1Q22, which means it internalized 60% of the higher lithium prices. In 2021, ASP was US$122/kWh and COGS was US$96/kWh, which implies a gross profit of US$27/kWh. The increase in lithium carbonate prices during 1Q22 was ~162% higher compared to 2021 levels or US$16/kWh based on our estimates. If CATL had no pass through, then gross profit would have fallen to US$11/kWh in 1Q22. Given that reported gross profits came in higher at US$18/kWh (US$7/kWh higher than no pass through of the US$16/kWh increase in costs), this implies CATL was able to pass through more than 40% of higher LCE costs to customers (see Exhibit 8).

EXHIBIT 8: **We estimate CATL was able to pass through more than 40% of higher lithium carbonate costs during 1Q**



Source: Company reports, and Bernstein estimates and analysis

A challenge for CATL has been the rapid rise in raw material prices, although there are signs that these costs are peaking and even declining for some commodities. Lithium carbonate

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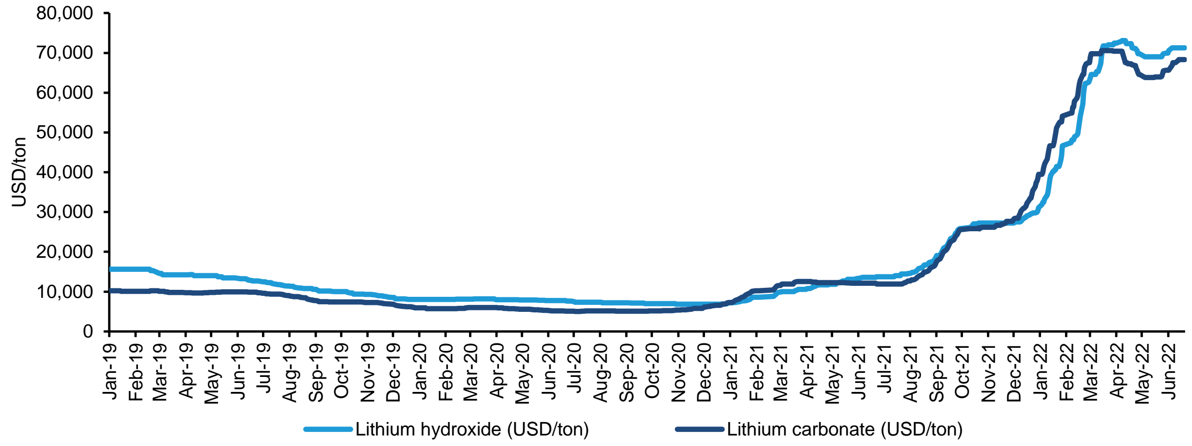
and lithium hydroxide prices, which rose 5-6x over the past three years, are showing signs of flattening out (see Exhibit 9). While we don't expect prices to fall to the marginal cash cost of US$10k per ton any time soon, we could see prices start to fall as demand slows and supply starts to ramp up. In a recession, we could see a significant price correction.

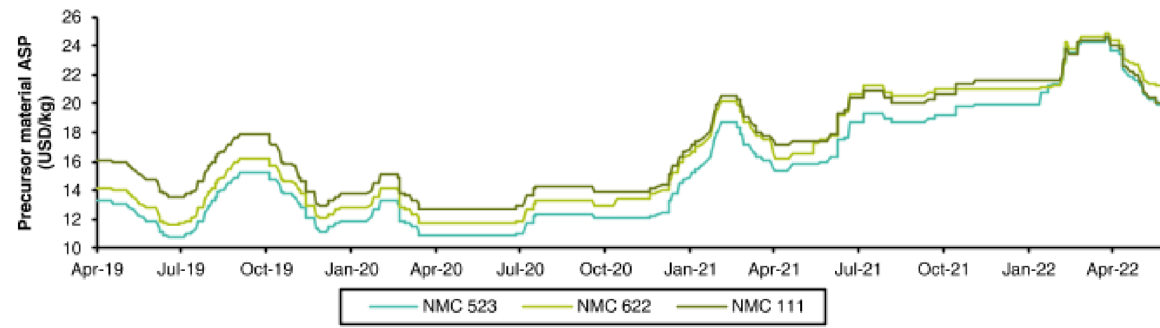
EXHIBIT 9: **Lithium carbonate and lithium hydroxide prices remain high, but are showing signs of topping out**



Source: Wind and Bernstein analysis

Cathode material (precursor) prices also show signs of peaking, although they remain at very elevated levels. The surge in nickel prices pushed NMC precursor prices to over US$60/kg in 1Q22. Although prices remain high, there are signs that prices of precursor material for NMC batteries is starting to decline (see Exhibit 10), which will benefit CATL margins.

EXHIBIT 10: **NMC precursor prices have started to fall from the peak in 1Q22**



Source: Wind and Bernstein analysis

Electrolyte material is one area which is clearly showing price deflation. Although electrolyte material makes up a relatively small part of the cost of a battery cell (8%), there are clear signs that costs are declining (see Exhibit 11). A recession could be beneficial in driving input costs down lower.

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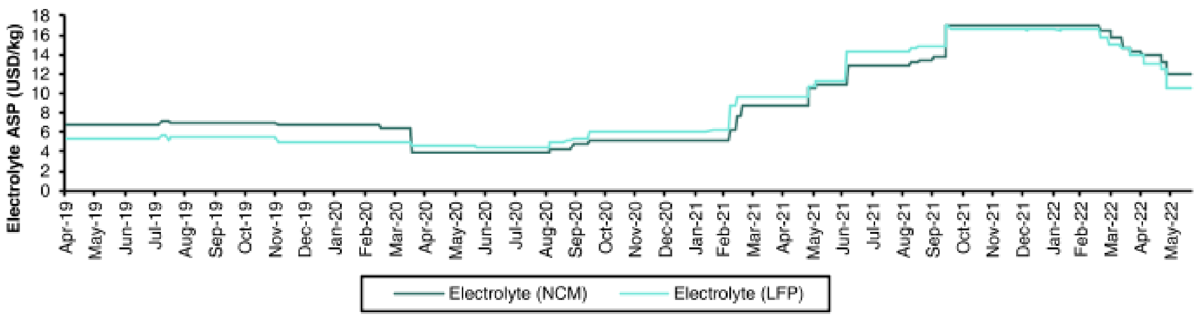
EXHIBIT 11: **Electrolyte prices have been falling since 1Q22**



Source: Wind and Bernstein analysis

In summary, while a recession will clearly be negative for stocks in general, and especially for growth stocks, the shift to EVs is a trend which will likely continue, given the clear policy support. Slower growth and a fall in metal prices could be a positive, particularly for Chinese battery makers that have seen margin erosion on higher commodity prices.

VALUATION METHODOLOGY

The RMB600 target price for CATL, rated Outperform, is based on the DCF model. Our DCF model is based on annual free cash flow forecasts until 2050, plus a terminal value estimate to capture the continuing value of the company.

Exhibit 12 highlights the key assumptions that underpin our DCF model (revenue growth, share of TAM, EBIT margins, and WACC) for each of the companies we cover and related target prices. For CATL, we assume a long-term operating margin of 10% and market share of 27% of the battery TAM, which gets us our target price of RMB600.

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EXHIBIT 12: **Global battery makers**

Market	LGES	CATL	Samsung SDI	2050 TAM ($bn)
PV Battery	Y	Y	Y	611
CV Battery	Y	Y	Y	127
Energy Storage System	Y	Y	Y	182
TAM				**919**
% Revenue from Batteries				**SUM/AVG**
2021	100%	81%	47%	64%
Revenue from Batteries ($B)				
2020	10	6	4	10
2021	16	16	6	22
2025	44	59	19	78
2050	189	248	79	327
% of TAM	***21%***	***27%***	***9%***	***36%***
Batteries Revenue Growth				
2021-25	29%	38%	35%	37%
2020-50	10%	13%	11%	12%
2025-50	6%	6%	6%	6%
2050 EBIT Margin	9%	10%	9%	10%
WACC	11%	11%	12%	
DCF EV (USD bn)	**79**	**215**	**25**	
	KRW	CNY	KRW	
Target Price	**400,000**	**600**	**816,000**	
Current Price (08 Aug, 2022)	447,000	502	597,000	
Potential Upside/Downside	**-11%**	**20%**	**37%**	
Rating	**M**	**O**	**O**	

Y	Core market
S	Secondary market

Source: SNE Research, company research, and Bernstein estimates and analysis

Although CATL trades on a PE of 102x 2022 earnings, and 3.4x 2023 sales, the strong growth in battery sales means the company trades on 2025 EV/sales. Given the long runway of growth ahead of the industry, this does not seem unreasonable (see Exhibit 13).

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EXHIBIT 13: **CATL key financial metrics and valuation**

CATL RMB M	2020A	2021A	2022E	2023E	2024E	2025E	21-25 CAGR
Sales	50,319	130,356	255,809	364,746	437,198	492,834	**39%**
Gross Profit	13,970	34,262	48,707	84,023	101,727	115,081	**35%**
Operating Profit	6,121	18,347	18,032	42,587	54,244	61,528	**35%**
Earnings	5,583	15,931	11,992	29,714	37,611	42,685	**28%**
EPS	2.40	6.84	5.03	12.16	15.39	17.47	**26%**
FCF	4,157	(2,077)	(11,814)	23,829	37,803	34,622	**n.a.**
GPM	*28%*	*26%*	*19%*	*23%*	*23%*	*23%*	
OPM	*12%*	*14%*	*7%*	*12%*	*12%*	*12%*	
P/S	*24.3*	*9.4*	*4.8*	*3.4*	*2.8*	*2.5*	
EV/S	*25.5*	*9.8*	*5.0*	*3.5*	*2.9*	*2.6*	
P/E	*219.2*	*76.8*	*102.1*	*41.2*	*32.5*	*28.7*	
PEG Ratio		*0.4*	*-3.9*	*0.3*	*1.2*	*2.1*	
ROACE	*9%*	*14%*	*8%*	*15%*	*16%*	*15%*	
FCF yield	*0%*	*0%*	*-1%*	*2%*	*3%*	*3%*	
Net Debt to Equity	*38%*	*-34%*	*-12%*	*-24%*	*-50%*	*-72%*	

Source: Bloomberg, and Bernstein estimates and analysis

While CATL is not only the battery maker in China facing margin pressure, it remains to be seen how much CATL and other Chinese battery makers can pass costs down to customers. Exhibit 14 shows a sensitivity of CATL target price to different GPM/OPM and market share of the EV market. Our base assumption is that CATL can achieve a GPM/OPM of 21%/10% and 27% market share, which implies a DCF of RMB600/share.

EXHIBIT 14: **CATL target price sensitivity to margins and market share**

TP (RMB/share)

	GPM (2025+)	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%	21.0%	22.0%	23.0%	24.0%	25.0%	26.0%
	OPM (2025+)	3.0%	4.0%	5.0%	6.0%	7.0%	8.0%	9.0%	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%
M/S (2030+)	20.0%	320	360	390	420	450	490	520	550	590	620	650	680	720
	21.0%	330	360	390	430	460	490	530	560	590	630	660	690	730
	22.0%	330	360	400	430	470	500	530	570	600	630	670	700	740
	23.0%	330	370	400	440	470	510	540	570	610	640	680	710	750
	24.0%	340	370	410	440	480	510	550	580	620	650	690	720	760
	25.0%	340	370	410	450	480	520	550	590	620	660	690	730	760
	26.0%	340	380	410	450	490	520	560	590	630	670	700	740	770
	27.0%	350	380	420	450	490	530	560	600	640	670	710	750	780
	28.0%	350	390	420	460	500	530	570	610	640	680	720	760	790
	29.0%	350	390	430	460	500	540	580	610	650	690	730	760	800
	30.0%	350	390	430	470	510	540	580	620	660	700	730	770	810
	31.0%	360	400	430	470	510	550	590	630	670	700	740	780	820
	32.0%	360	400	440	480	520	560	590	630	670	710	750	790	830
	33.0%	360	400	440	480	520	560	600	640	680	720	760	800	840
	34.0%	370	410	450	490	530	570	610	650	690	730	770	810	850
	35.0%	370	410	450	490	530	570	610	650	690	730	770	810	860

Source: Company reports, and Bernstein estimates and analysis

Comparing valuations across battery companies, CATL is trading at 3.5x 2023 EV/sales, which is in line with LGES at 353x and slightly higher than other Chinese battery makers. SDI is trading the lowest at 2.3x on 2023 EV/sales. In terms of EV/EBITDA, CATL is trading at 23x, which is also in line with LGES at 23x and in line with Chinese peers at 23-27x. Overall, CATL is trading slightly higher to SDI but largely in line with LGES and Chinese peers (see Exhibit 15).

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EXHIBIT 15: **Battery makers valuation comparisons**

	Peer Multiples						
Prices as of Aug-08	Enterprise Value USD Bn	2022 EV/Sales x	2023 EV/Sales x	2022 EV/EBITDA x	2023 EV/EBITDA x	2021 EV/Capacity $M/GWh	2021 EV/Shipment $M/GWh
CATL	191	4.8	3.5	34.6	22.6	1,121	2,121
LGES	79	4.7	3.5	33.4	22.5	511	1,136
SDI (large battery business)	24	3.2	2.3	29.8	19.1	579	1,844
Average (LGES + SDI)		***4.0***	***2.9***	***31.6***	***20.8***	***545***	***1,490***
EVE	29	5.9	3.6	48.7	26.9	1,326	-
Guoxuan	10	3.5	2.3	38.2	23.2	275	2,478
Average (All)		***4.4***	***3.0***	***36.9***	***22.8***	***762***	***1,895***

	CATL Valuation Discount/Premium					
% Difference	2022 EV/Sales x	2023 EV/Sales x	2022 EV/EBITDA x	2023 EV/EBITDA x	2021 EV/Capacity $M/GWh	2021 EV/Shipment $M/GWh
LGES	1%	0%	4%	0%	120%	87%
SDI (large battery business)	49%	50%	16%	18%	93%	15%
Average (CATL + SDI)	***20%***	***20%***	***9%***	***9%***	***106%***	***42%***
Average (All)	***8%***	***14%***	***-6%***	***-1%***	***47%***	***12%***

Note: SDI is based on DCF value of the large battery (EV + ESS) battery business only

Source: Bloomberg estimates, SNE Research, and Bernstein analysis

For valuation comparisons of global battery companies, see Exhibit 16.

EXHIBIT 16: **Global battery companies' comparison**

Company	Price 8-Aug	Currency	EV USD mn	Mkt cap USD mn	Revenue 20A	Revenue 21A	Revenue 22E	Revenue 23E	EV/Sales 20A	EV/Sales 21A	EV/Sales 22E	EV/Sales 23E	Sales 21-23
LGES	447,000	KRW	79,146	80,675	10,477	14,429	16,678	22,893	7.6	5.5	4.7	3.5	26%
CATL	502	CNY	190,538	181,296	7,653	19,094	39,778	55,134	24.9	10.0	4.8	3.5	70%
Samsung SDI	597,000	KRW	34,109	31,873	10,498	11,531	14,752	17,844	3.2	3.0	2.3	1.9	24%
Panasonic	1,122	JPY	26,644	20,246	71,652	61,233	56,004	57,702	0.4	0.4	0.5	0.5	-3%
BYD	292	HKD	127,012	127,203	22,587	34,854	53,317	71,237	5.6	3.6	2.4	1.8	43%
SK Innovation	195,500	KRW	25,301	13,814	31,991	38,556	58,409	57,588	0.8	0.7	0.4	0.4	22%
Gotion High Tech	39	CNY	11,836	10,300	951	1,485	3,373	5,173	12.4	8.0	3.5	2.3	87%
EVE	96	CNY	29,178	27,054	1,335	2,683	4,921	8,089	21.9	10.9	5.9	3.6	74%
QuantumScape	12	USD	4,202	5,400	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Company	LTM %	Rel LTM %	LTM High	LTM Low	GPM (%) 22E	OPM (%) 22E	ND/E 19A	ND/E 20A	EV/EBITDA 20A	EV/EBITDA 21A	EV/EBITDA 22E	EV/EBITDA 23E	P/B 21A
LGES	-23%	2%	910,000	437,000	19%	5%	95%	62%	103.8	42.3	33.4	22.5	12.6
CATL	-3%	26%	692	353	22%	11%	1%	38%	112.9	52.2	34.6	22.6	13.6
Samsung SDI	-23%	2%	828,000	462,500	22%	9%	2%	15%	20.9	16.7	14.0	11.3	2.6
Panasonic		-19%	1,541	1,019	29%	5%	1%	21%	4.5	5.4	5.1	5.0	0.7
BYD	11%	45%	333	165	13%	4%	11%	-13%	40.7	39.4	29.4	22.5	7.6
SK Innovation	-18%	7%	278,500	158,500	11%	8%	4%	50%	-26.3	8.1	4.3	5.6	0.9
Gotion High Tech	-36%	-28%	66.6	22.7	18%	4%	7%	35%	73.8	63.2	38.2	23.2	3.5
EVE	-16%	9%	152.9	52.5	20%	10%	1%	39%	96.8	56.4	48.7	26.9	10.0
QuantumScape	n.a.	n.a.	43.1	8.2	n.a.	0%	n.a.	-88%	n.a.	n.a.	n.a.	n.a.	3.7

Note: Panasonic, BYD, SK Innovation, QuantumScape, Gotion High Tech, and EVE are not covered by Bernstein

Source: Bloomberg (consensus estimates) and Bernstein analysis

Closing prices, target prices, and ratings of our covered battery makers are summarized in Exhibit 17.

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EXHIBIT 17: **Ratings and target prices of covered global battery makers**

Ticker	Rating	Currency	8-Aug-2022 Closing Price	Target Price
300750.CH	O	CNY	502.00	600.00
006400.KS	O	KRW	597,000.00	816,000.00
373220.KS	M	KRW	447,000.00	400,000.00
MXAPJ			524.70	

Source: Bloomberg, and Bernstein estimates and analysis

RISKS

Global energy storage

Risks to global energy storage companies include increasing market competition globally, which could negatively impact growth and price outlook. In addition, further increases in raw material costs could put additional pressure on the EV value chain. Given the industry is still at a nascent stage, positive or negative changes in government policy and subsidy programs will likely impact growth outlook.

Contemporary Amperex Technology Co Ltd

Key risks include: (1) stronger-than-expected competition in the space, (2) raw material costs increasing further, putting additional pressure on the EV value chain, and (3) CATL battery costs falling slower than expected due to either poor execution or higher input costs (from suppliers).

LG Energy Solution

Key upside risks include 1) increasing market share with customer diversification which could increase sales, 2) rising margins with better costs control and raw material passthrough and 3) improved battery quality which could lower the risks of recalls. Downside risks include 1) slower than expected expansion of US and European capacity, 2) lower sales due to customer switching battery suppliers, and 3) lower margins due to inability to passthrough higher raw material costs.

Samsung SDI Co Ltd

Key risks include: (1) Samsung SDI's earnings growth depends on the adoption of EVs and energy storage systems. Any change in strategy by automakers or lack of cost declines would reduce this upside. (2) Display still plays a large role in the equity income line. Small battery profit recovery depends on utilization of its polymer lines improving, which in turn depends on orders from customers, including parent Samsung Electronics. Risks to display (driving equity income) include supply/demand balance pressuring pricing and, hence, margins. (3) Upside risks include better-than-expected EV battery/ESS sales and faster-than-expected technology breakthrough.

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TRIMBLE: SOFTWARE MAY EAT THE WORLD, BUT GHG EMISSIONS ARE THE APPETIZER

HIGHLIGHTS

- **Trimble is a high-impact ESG enabler.** It helps address the reduction of18% of global GHG emissions. The main markets are construction (8% of GHG), commercial transportation (7% of GHG), and crop production (3% of GHG), and they represent +80% of Trimble sales.
- **Trimble is less cyclical.** With each subsequent recession, revenue amplitude is lower, and we expect the trend to continue. The more cyclical hardware business is a smaller share of revenues (declined from 90% in GFC to 45% today and could fall below 40% in the next few years). Recurring revenue also grew from <30% in 2017 to +40% today.
- **Secular tailwinds will likely offset the macro headwinds.** Construction software penetration is set to grow, offsetting slower demand. Cutting material waste will likely unlock US$450Bn of value and chip away at the 8% of GHG emissions from buildings. Trimble software, such as Tekla, targets this issue. Structurally, higher energy prices (making up most material costs) will likely be an adoption catalyst. Faster adoption is set to drive gross margin growth. Rationalizing Trimble's technology stack will likely grow incremental margins by 5%.

INVESTMENT IMPLICATIONS

We maintain our Outperform rating on Trimble. We apply a 25x multiple to get to our target price of US$81. Since shares peaked in August 2021, TRMB has underperformed the S&P 500 and the tech sector by +20%. Though Street EPS may need to fall by 5%, the PE fell by +35%, suggesting a lot of the downside is priced in.

TRIMBLE IS THE QUINTESSENTIAL ESG ENABLER

Customers who use Trimble' s products can produce the same amount of output with less GHG input. Of the 36.3 billion tons of GHG emissions generated globally, Trimble's products address roughly 18%, which comprises building construction (8% of GHG emissions), commercial transportation (7% of GHG emissions), followed by crop production (3% of GHG emissions). These markets account for more than 80% of Trimble revenues: construction is 45% (spans the Building & Infrastructure and Geospatial business segments), commercial vehicles is 22% (Transportation segment), and agriculture is 15% (Resources & Utilities segment). Trimble products reduce material/fuel usage in construction (lower rework by as much as 50%, 30% productivity benefits, and 30% fuel savings). Its products in agriculture increase crop yields by as much as 30% and can lower input usage (reduce herbicide input by as much as 90%). Its transportation

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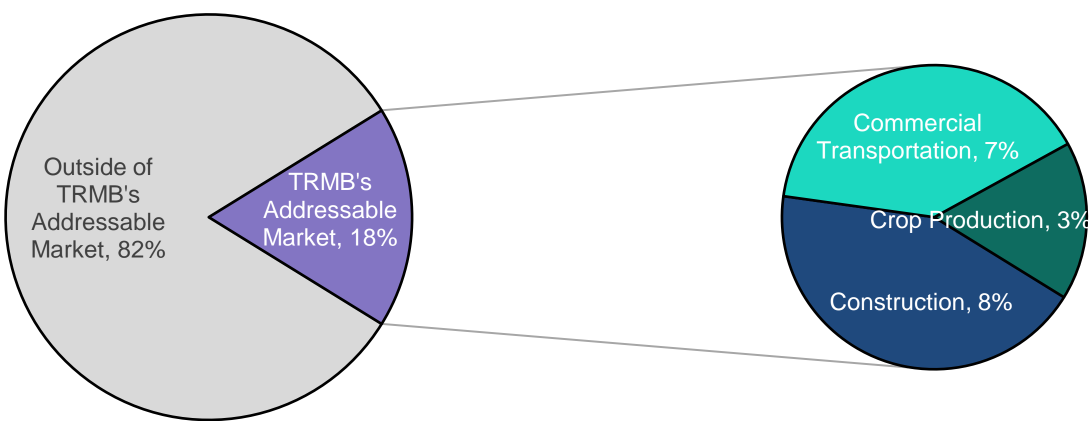
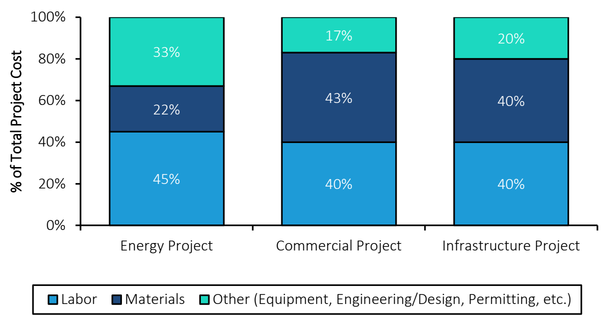
products can drive as much as a 20% increase in fuel efficiency and 30% improvement in truck utilization (see Exhibit 1 to Exhibit 4).

EXHIBIT 1: **Trimble's product portfolio addresses mitigation of ~20% of global GHG emissions**



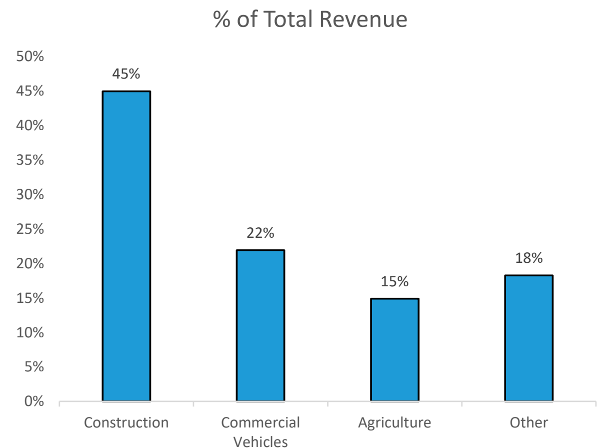
Source: International Energy Agency (IEA), Energy Information Administration (EIA), company reports, and Bernstein analysis

EXHIBIT 2: **40% of construction project cost comes from materials (mainly concrete, steel, and glass)**



Source: Bernstein analysis

EXHIBIT 3: **Trimble generates 80% of revenues from construction, commercial vehicles, and agriculture (three target markets for GHG reduction)**



Source: Company reports and Bernstein analysis

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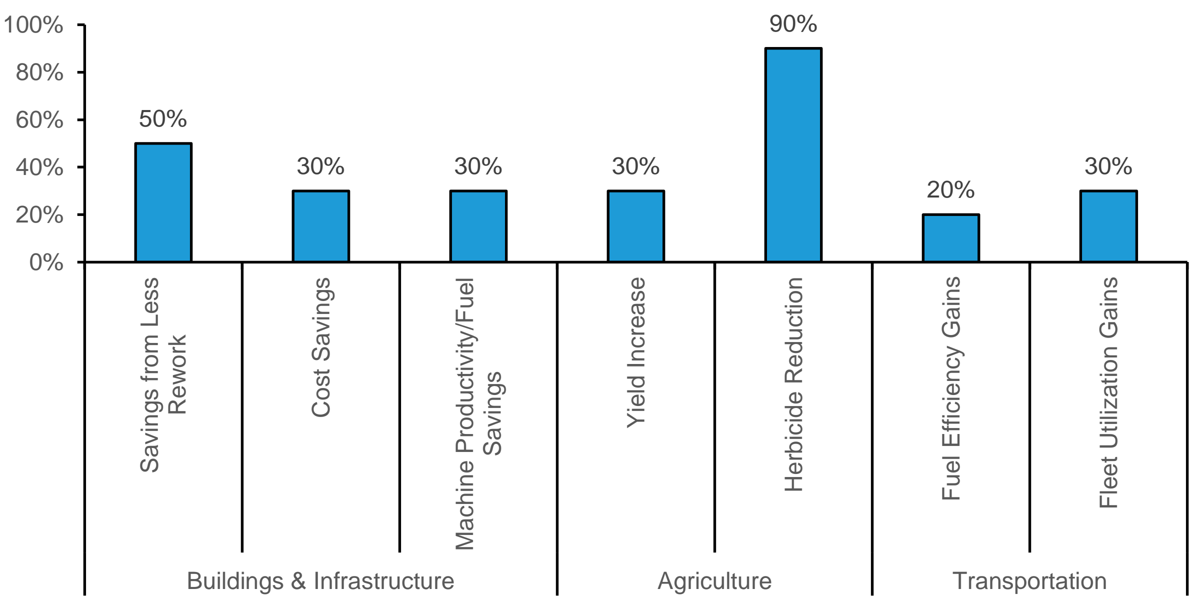
EXHIBIT 4: **Trimble's product efficiency savings translate to a lower carbon footprint for its customers**



Source: Company reports and Bernstein analysis

SPOTLIGHT ON CONSTRUCTION

Trimble's biggest growth area is the construction industry and the biggest opportunity for its products to make a positive impact on GHG emissions is by reducing raw material use during a construction project. Roughly 40% of construction spending comes from materials (mainly steel, aluminum, and glass), which account for nearly 30% of GHG emissions from construction and 11% of total GHG emissions, and waste increases project costs by 14%. Given global construction totals US$8Tn, we estimate elimination of materials waste is a US$448Bn opportunity. For every ton of GHG emissions that Trimble products help to mitigate, it creates US$825 of economic value. Trimble's Tekla, a software used by structural concrete/steel engineers to design buildings, will likely be one of the biggest beneficiaries of this trend. Tekla accounts for ~15% of segment sales or US$200Mn.

Going into the next downturn, we expect Trimble revenues tied to construction to be more resilient for two reasons. First, infrastructure spending is poised to accelerate starting in 2023 and continuing through 2025 before slowing in 2026 (five-year stimulus). This stimulus will likely increase non-residential construction spending by US$110Bn, giving a 15% boost to this market (the trough will be higher). Second, we expect construction software to see accelerating penetration over the next several years. This product category represents 50-60% of Trimble's construction practice. In fact, we have started to see evidence of accelerating penetration over the last two years and expect infrastructure spending to act as an accelerant of adoption. Trimble's Building & Infrastructure segment organic growth is accelerating at a faster rate than the broader construction market, much like it did back in the early 2010s, when the hardware side of the business was going through its own penetration cycle (GPS and telematics adoption) (see Exhibit 5 to Exhibit 10).

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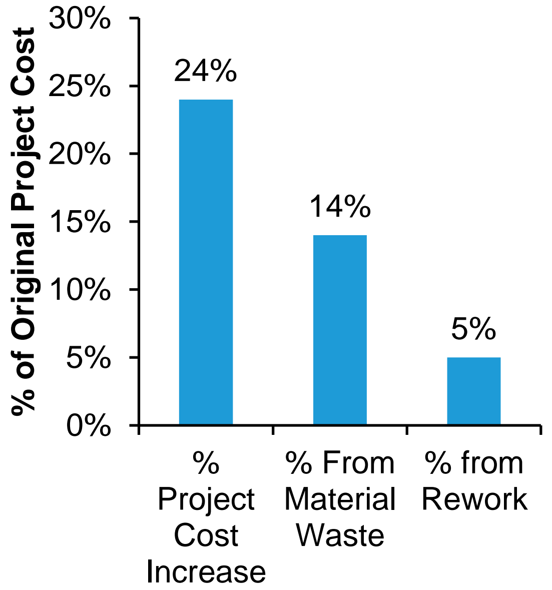
EXHIBIT 5: **Building & Infrastructure market emits 13.7 billion tons of GHG, with 30% coming from the actual construction process**

	Non-Infrastructure	Infrastructure	Total	% of Total Construction GHG Emissions
Financing	0.01	0.01	**0.02**	0%
Design & Planning	0.02	0.01	**0.03**	0%
Raw Material Processing	2.66	1.22	**3.88**	28%
Construction Activity	0.19	0.08	**0.27**	2%
Upgrading	0.07	0.03	**0.1**	1%
Operations	9.4	0.01	**9.41**	69%
Total (billions of tons)	**12.35**	**1.36**	**13.71**	**100%**

Source: McKenzie, and Bernstein estimates (% of total construction GHG emissions) and analysis

EXHIBIT 6: **Material waste increases construction project costs by 14%**



Source: Company reports and Bernstein analysis

EXHIBIT 7: **Cutting material waste will likely unlock US$450Bn of value from the US$8Tn construction market (each ton mitigated creates US$825 of value)**

Construction Market Size (B)	**$8,000**
Materials	40%
Material Spend (B)	$3,200
% Wasted	14%
Material Waste (B)	**$448**

Materials Spent in Construction ($B)	$3,200
GHG Generated from Producing Construction Material (GtCO2e)	3.88
Value Created from Reducing GHG Emissions ($/ton)	**$825**

Source: IHS, company reports and Bernstein estimates (material waste and value created from reducing GHG emissions) and analysis

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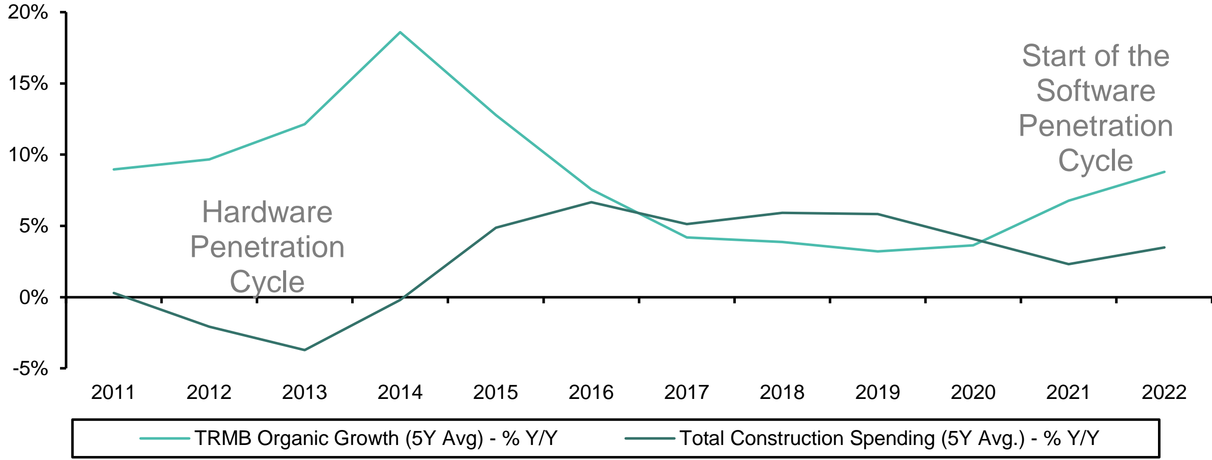
EXHIBIT 8: **Trimble's construction software product offerings**

Product Name	Who Uses	Type	Product Description	Product Benefits
e-Builder	Owners	Construction Management Software	End-to-end construction management solution. Connects major stakeholders (owners, GCs, subcontractors, etc.) and connect departments within contractor's business to share information across the project life cycle.	Improves efficiency, enhances communinications, reduces costs/increases profitability and improves risk management.
Viewpoint	Contractors	Construction Management Software	Integrates field projects with back-office controls.	Connect data and workflows between office, team, and field, leading to enhanced productivity and fewer errors.
Tekla	Contractors	BIM	Structural, steel, and concrete engineers use it to design buildings and bridges.	Can connect directly with supply chain to share specifications for components and assemblies. Also allows customers to create own applications if they wish using API.
Sketch Up	Architects, Engineers	BIM	Tool used to put together 3D ideas quickly during brainstorming and conceptual stage.	Allows various stakeholders across the project to share CAD and BIM data in standardized formats.
Trimble Connect	Multiple stakeholders	Construction Management Software	Cloud-based application and development platform powered by AWS that allows project data to be shared across all stakeholders throughout the project life cycle.	Project data hub allows for synchronization across many programs, documents, and file types.

Source: Trimble and Bernstein analysis

EXHIBIT 9: **Trimble product penetration is accelerating; on a relative basis, organic revenues are growing faster than broader construction spending**



Source: US Census Bureau, company reports, and Bernstein analysis

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EXHIBIT 10: **Trimble's Building & Infrastructure organic revenue is growing at a 2x rate of broader non-residential construction spending**

	TRMB B&I Organic Revenue	Total Non-Resi Construction Spending	Construction Equipment Industry
2007	**17%**	19%	-17%
2008	**0%**	9%	-21%
2009	**-22%**	-8%	-45%
2010	**24%**	-14%	16%
2011	**26%**	-4%	38%
2012	**20%**	7%	23%
2013	**12%**	1%	0%
2014	**10%**	9%	10%
2015	**-5%**	11%	0%
2016	**0%**	5%	-12%
2017	**3%**	0%	11%
2018	**11%**	5%	13%
2019	**7%**	9%	2%
2020	**-3%**	2%	-30%
2021	**16%**	-4%	16%
2022	**13%**	5%	9%
2016-21	**6%**	**3%**	**0%**

Denotes Industrial Recession

Source: US Census Bureau, company reports, and Bernstein analysis

TRIMBLE'S CYCLICALITY WILL LIKELY BE LOWER IN THIS RECESSION

Trimble's cyclicality will likely be lower in the next recession. Trimble has transitioned to a more stable business as annualized recurring revenue represents a higher proportion at the present. In 1999, Trimble appointed Steven Berglund as the new President and CEO, first surveying software for processing GPS and optical data. Fast-forward, the software business went from 11% in 2009 to ~55% currently (see Exhibit 11), which helped Trimble drive its recurring revenue. Over the last five years, ARR went from 29% to ~37% (see Exhibit 12). Moreover, Trimble's organic growth constantly outperformed IP and Machinery IP growth. Trimble managed to grow above the sector during upturns and also managed to beat the industry during cyclical downturns (see Exhibit 13 and Exhibit 14).

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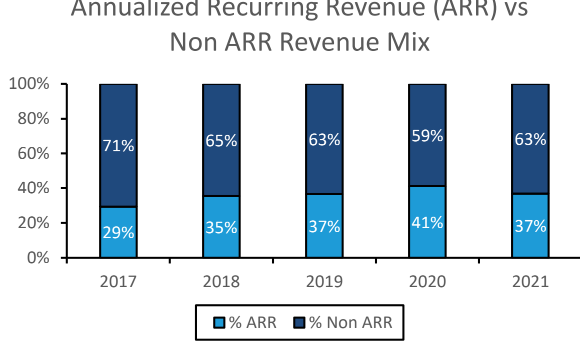
EXHIBIT 11: **The software business grew as a proportion of total sales from 11% in 2009 to ~55% today**

Hardware - Software Mix Evolution

100%
80%
60%
40%
20%
0%
11%
89%
39%
61%
58%
42%
56%
44%
2009 - GFC
2015 - Commodity Collapse
2020 - Covid Pandemic
Current Mix
Hardware
Software

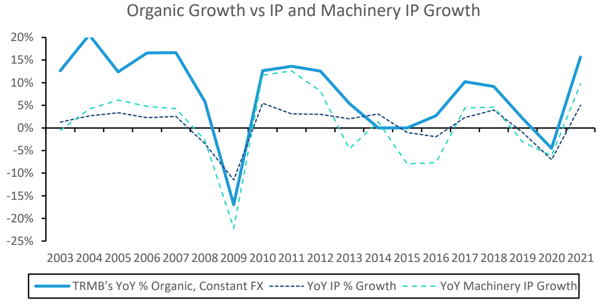
Source: Company Reports and Bernstein analysis

EXHIBIT 12: **Trimble's recurring revenue is growing as a share of total**



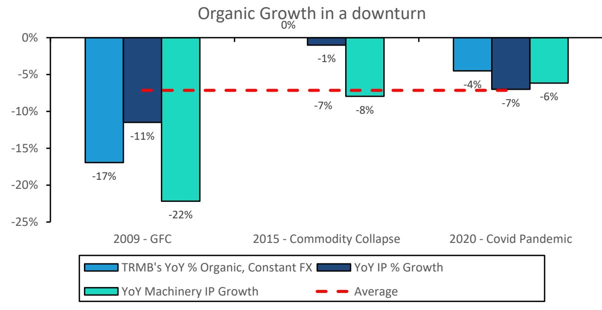
Source: Company reports and Bernstein analysis

EXHIBIT 13: **Trimble's organic growth managed to beat the IP and Machinery IP growth over the last two decades**



Source: Bloomberg, company reports, and Bernstein analysis

EXHIBIT 14: **During a downturn, Trimble's organic growth declines have become less pronounced and it tends to outperform the broader market**



Source: Bloomberg, company reports, and Bernstein analysis

SECULAR TAILWINDS WILL LIKELY MINIMIZE EFFECTS OF THE NEXT RECESSION

An influx of construction work related to infrastructure is expected and the industry is not prepared. The industry will require more technology and Trimble will be a key supplier. The industry has lagged significantly behind other industries on IT spending, which will be needed to expand productivity, which has also lagged the overall economy. Moreover, the lack of contractor profitability in this last cycle will likely drive more tech adoption and Trimble is poised to address the main problems contractors experience, helping projects stay under budget. Trimble's focus on the software business will likely drive margin expansion, as software/recurring revenues carry 75-85% gross margins (vs. hardware's 40% gross margin). Simplification of the back office will likely improve Trimble's ability to sell products and it could contribute to incremental margins growing from 25-30% to 30-35% (see Exhibit 15 to Exhibit 18).

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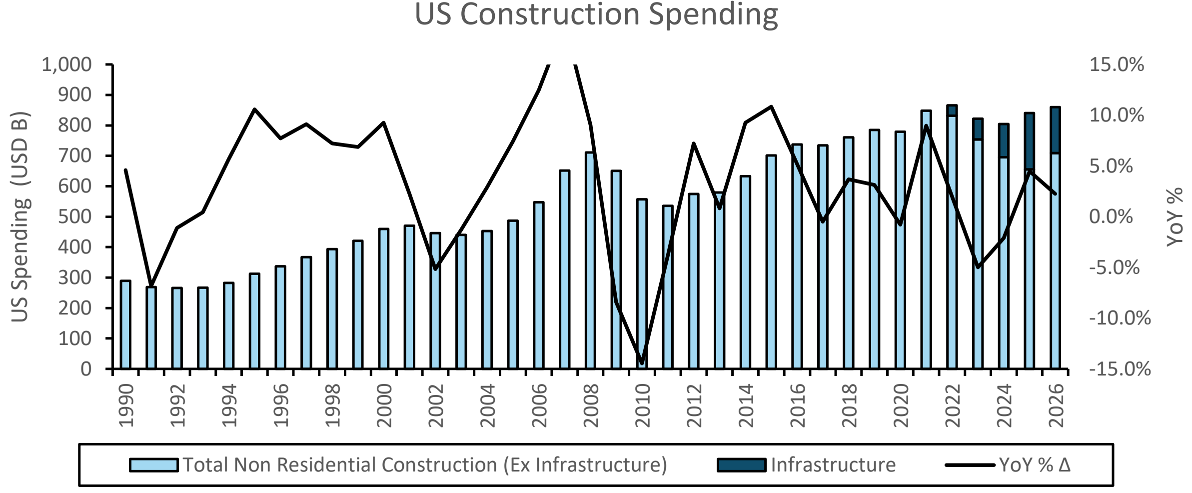
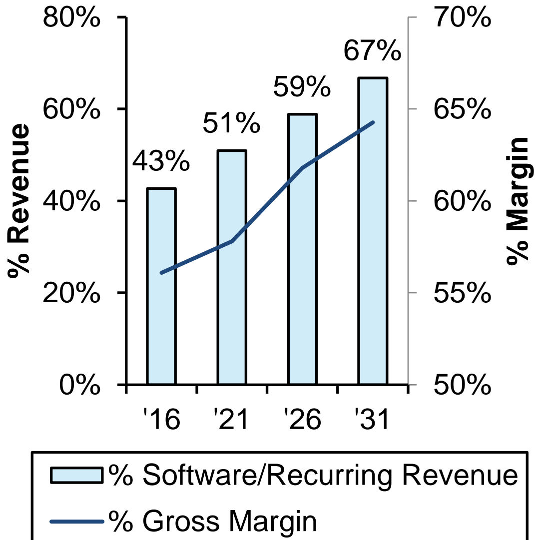
EXHIBIT 15: **US infrastructure spending will likely help offset broader construction spending declines over the next few years**



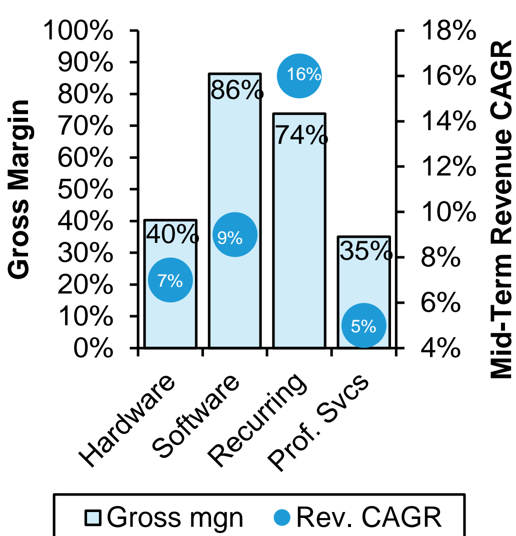
Source: IHS, Bloomberg, and Bernstein estimates (2021+) and analysis

EXHIBIT 16: **Improving software/recurring revenue mix will likely drive gross margins above 60%**



Source: Company reports, and Bernstein estimates (2021+) analysis

EXHIBIT 17: **Higher margin businesses are growing faster than lower margin businesses**



Source: Company reports and Bernstein analysis

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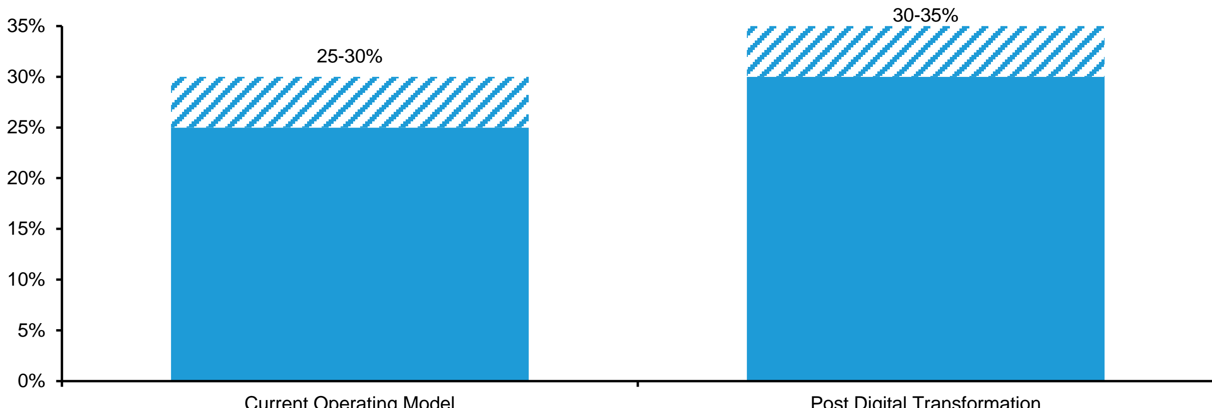
EXHIBIT 18: **Trimble's digital transformation journey could drive incremental margins up 5%**



Source: Company reports, and Bernstein estimates and analysis

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BRIDGE TO THE NEXT TROUGH EARNINGS (SCENARIO)

In a downturn scenario, Trimble is positioned to generate ~US$3.50 of EPS in the next trough, which is 59% above the 2020 trough (see Exhibit 19).

EXHIBIT 19: **Trimble is positioned to generate ~US$3.50 of EPS in the next downturn**

$ M	B&I	Geospatial	R&U	Transport	Total
Hardware Revenue					
2020	380	481	341	203	1,403
Delta	48	60	28	-8	128
Trough HW Revenue	**427**	**541**	**369**	**195**	**1,531**
Cross-Cycle Revenue CAGR	*3%*	*3%*	*2%*	*-1%*	2%
Software Revenue					
2020	851	170	288	437	1,747
Delta	771	45	134	7	957
Trough SW Revenue	**1,623**	**214**	**422**	**445**	**2,704**
Cross-Cycle Revenue CAGR	*18%*	*6%*	*10%*	*0%*	10%
Total Revenue	2,050	755	791	639	4,235
% Chg vs. 2020	*67%*	*16%*	*26%*	*0%*	*34%*
% Chg vs. 2022	*34%*	*-14%*	*-5%*	*0%*	*9%*
Gross Profit					
Hardware (@ 40% Mgn.)	171	216	147	78	613
Software (@ 80% Mgn.)	1,298	172	338	356	2,163
Total Gross Profit	**1,469**	**388**	**485**	**434**	**2,776**
% Margin	*72%*	*51%*	*61%*	*68%*	*66%*

	Total
Sales & Marketing	593
General & Admin	381
R&D	593
Non-GAAP Operating Profit	**1,209**
% Margin	*29%*
Other Non Op. Exp	44
Interest	60
Profit Before Tax	1,105
Net Income	895
Trough Earnings Per Share	**$3.54**
% Difference vs. 2024 Street	*-3%*
% Difference vs. 2020 Trough	*59%*

Source: Company reports, and Bernstein estimates (2021+) and analysis.

THE WORST OF THE MULTIPLE COMPRESSION IS BEHIND US, WHILE RERATING MAY BE AHEAD

Trimble has already experienced significant multiple compression since shares hit a peak in August 2021, which suggests number cuts are priced in. Over that timeframe, the stock has pulled back by 30% (vs. a 4% EPS revision risk), underperforming the broader market, industrials/IT sectors by more than 15%. As the market comes to realize the margin expansion potential toward the mid-1960s, we expect it to receive a 25x multiple, which on our 2024 scenario, suggests a US$90 fair value (+37% upside), while on our 2023 estimate of US$3.24, we get an US$81 fair value or 27% upside (see Exhibit 20 and Exhibit 21).

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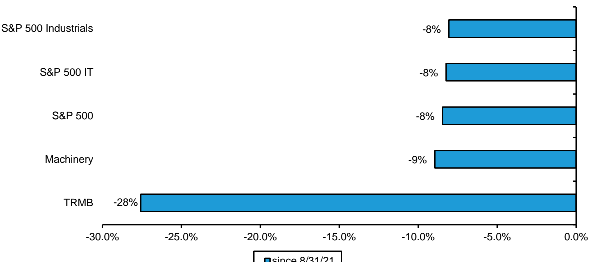
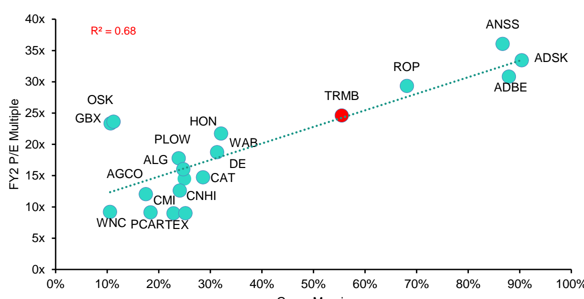
EXHIBIT 20: **Trimble shares have pulled back by ~30% since the August 2021 peak, underperforming the broader market, tech and industrials by +20%**



Source: Bloomberg and Bernstein analysis

EXHIBIT 21: **If Trimble achieves a +65% gross margin, then the PE multiple should rerate toward the mid-1920s**



Source: Bloomberg, and Bernstein estimates and analysis

VALUATION METHODOLOGY

US Machinery: We calculate 12-month target prices for our coverage using a mix of PE and EV/EBITDA methodologies based on each company's mode of value creation. We use multiples from the appropriate place in the cycle to triangulate our valuations.

Trimble Inc: We apply a 25x PE multiple to our 2023 earnings to arrive at our price target. This multiple reflects our view of the margin expansion potential and the fact that we are likely in the early stages of a cyclical upturn.

EXHIBIT 22: **Rating and target price**

Ticker	Rating	Currency	8-Aug-2022 Closing Price	Target Price
TRMB	O	USD	68.00	81.00
SPX			4,140.00	

Source: Bloomberg, and Bernstein estimates and analysis

RISKS

US machinery: Upside/downside risks to our view include: (1) better-/worse-than-expected cyclical recovery; (2) higher/lower market share gains/losses; (3) higher/lower products penetration; (4) better/worse cost structure management; and (5) more/less aggressive deployment of balance sheet.

Trimble Inc: Downside risks to our view include: (1) slower-than-expected transition toward recurring/software revenue; (2) slower penetration of construction digitization technology; (3) slower-than-expected cyclical recovery; (4) price competition; and (5) higher-than-expected churn rates.

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SANDVIK: FEWER EMISSIONS, LESS CYCLICALITY, AND OTHER BENEFITS OF THE ALLEIMA SPIN

HIGHLIGHTS

- **Sandvik is about to enjoy an "ESG promotion."** At 26 tons CO2/US$Mn sales, Sandvik is our most emissions-intensive name. It similarly lags on other metrics, because Alleima is so energy intensive. Following the spin, Sandvik will see a 41% reduction in CO2 emissions, 50% cut in energy consumption, and 30% less waste (see Exhibit 2) — a step change ahead.

- **ESG targets are likely to get better.** Sandvik has committed to net zero by 2050, a fair target but one that lags more ambitious peers. Following the Alleima spin, it will have achieved 60% emissions reduction since 2019. We suspect new targets will follow, and this may include net zero by 2030. We encourage management to grasp this nettle.

- **Earnings will become higher margin, less cyclical.** Alleima is the most cyclical, lowest margin, and lowest return division in Sandvik's portfolio. Sandvik already offers proven pricing power and exposure to the electrification and autonomy of underground mining. Following the spin, Sandvik will also offer an even higher quality earnings stream.

INVESTMENT IMPLICATIONS

In this chapter, we look at how the spin of Alleima (Materials Technology) in 3Q22 makes Sandvik's growth story even more exciting. We find Sandvik is trading ~20% below fair value on a relative basis, exceeding the ~9% cut we see to earnings. Already beaten up as a cyclical, we believe it offers good exposure to recovery with limited downside.

PROLOGUE

In our recent sector downgrade, Sandvik emerged as our top pick for navigating an environment of high inflation, slowing growth, and rising interest rates. In particular, we found that, even after stripping out the contribution from the Materials Technology business that will be spun off August 31, 2022:

- The stock offers earnings and dividend compounding, with ~4% top line CAGR out to 2025, ~3% dividend yield, and ~60bps margin expansion.

- Valuation is ~27% too low, of which 22% relates to stock-specific sell off, which we cannot justify with fundamentals.

- As we find our 24-month forward earnings estimates are 9% below consensus, we infer from this that the buy-side has already priced in the risk of earnings downgrades;

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indeed, we conclude the stock has oversold, as the fall in valuation exceeds the expected earnings cut.

In this chapter, we seek to highlight how the spin-off of Materials Technology will mechanically improve both the earnings profile of the stock and its ESG credentials (see Exhibit 1).

EXHIBIT 1: **We see Sandvik as an attractive way to combine earnings compounding, ESG improvement, a valuation rerating, and a healthy dividend**

European Capital Goods: Evaluation Framework (24M Forward, to Mar-2024)

	Bernstein Recommendation & Target Price					1. Is there growth?				2. Expectations Reasonable?				
Stock	M Cap ($bn)	Rating	Price (19-Jul-22 / TP)		+/-	Sales CAGR	EBITDA Growth	ROIC	Dividend Margin	EBITDA vs Cons.	Net Debt / EBITDA	EBITDA Margin ▲ (bps)	Div Margin ▲ (bps)	Balance Sheet ▲
Sandvik	20	O	172	**197**	+14%	+4%	+12%	14%	6.7%	-9%	0.8x	+62	+27	+2%

	3. Valuation Above or Below Fair Value?								4. Strategy OK?			Sentiment		
Stock	Re-Rating Potential	… Which is Market-Related	… Which is Stock-Specific	Latest Val'n	Fair Valuation (Abs / Rel)		Divi Yield	FCFf Yield	Industry 4.0	ESG Rating	M&A Dry Powder	Sell-Side Ratings (B / H / S)		
Sandvik	+27%	+5%	+22%	7.9x	10.0x	1.25x	2.9%	7.0%	◑	◑	+28%	71%	18%	11%

Source: Bloomberg, and Bernstein estimates and analysis

SANDVIK IS ABOUT TO ENJOY AN "ESG PROMOTION"

Investors can expect a step change in Sandvik's key ESG emissions metrics following the spin-off of its energy-intensive Materials Technology business. We set out the key datapoints in Exhibit 2 and summarize the magnitude of the change.

To date, Sandvik has lagged the peer group on ESG metrics due to its poor emissions scores. The combined business, for example, had a 2021 CO_2 emissions intensity of ~26tons/US$Mn sales, the highest in our coverage group. Energy usage is high at ~220MWh/US$Mn sales; as is material waste, at 38tons/US$Mn sales.

These characteristics are largely because of the Materials Technology division. Materials Technology is essentially a specialist steel manufacturing business, creating specialist alloys and other materials. The business is planned to be spun around September 2022, under the new name of Alleima.

Alleima is highly emissions intensive. Energy intensity is 6x higher than the rest of the group (~840MWh/US$Mn vs. ~125MWh/US$Mn). Scope 1 and 2 emissions intensity is 4x higher (~77tCO2/US$Mn vs. ~17tCO2/US$Mn). 51% of Group energy consumption and 41% of CO2 emissions come from Alleima. This division also has 2.5x the waste intensity and 5x the NOx emissions intensity.

Following the spin, Sandvik will see an immediate 41% reduction in its CO2 emissions. Its emissions intensity will improve by a third, to ~17tCO2/US$Mn sales and roughly mid-table in terms of the Capital Goods peer group. Energy consumption will halve, and energy intensity will improve 43%. Sandvik will make 30% less waste and see an 18% improvement in waste intensity.

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EXHIBIT 2: **Following the spin of Materials Technology, Sandvik will see a 41% reduction in CO2 emissions, a halving of energy consumption, and 30% less waste; its emissions intensity will improve by a third, energy intensity by over 40%, and waste intensity by 18%**

Sandvik: Impact of Materials Technology Spin on Key Emissions Metrics

	Sandvik 2021A	Materials Technology 2021A	Sandvik Proforma	Change
Revenue (SEKm)	**99,105**	**13,405**	**85,700**	**-14%**
Revenue (USDm) (@ 10.8 SEK:USD)	9,176	1,241	7,935	-14%
Energy Consumption (MWh)	2,038,057	1,039,409	998,648	-51%
Energy Intensity (MWh/$m Sales)	*222.1*	*837.4*	*125.9*	*-43%*
Total Scope 1 & 2 CO_2 Emissions (Market Based)	234,000	95,940	138,060	-41%
Emissions Intensity (Scope 1-2) (tons CO2/$m Sales)	*25.5*	*77.3*	*17.4*	*-32%*
Water Consumption (1000 m3)	7,733	na	na	na
Water Intensity (m3/$m Sales)	*842.7*	*na*	*na*	*na*
Waste (tons)	352,000	102,080	249,920	-29%
Waste Intensity (kg/$m Sales)	*38,359*	*82,243*	*31,495*	*-18%*
NOx Air Emissions (tons)	338	145	193	-43%
NOx Air Emissions (tons)/$m Sales	*0.04*	*0.12*	*0.02*	*-34%*

Source: Company reports, and Bernstein estimates and analysis

SANDVIK'S ESG TARGETS ARE LIKELY TO GET BETTER

Sandvik has committed to a 50% reduction in emissions by 2030. In its 2019 CMD, Sandvik pledged[1] to reduce its Scope 1 and 2 CO2 emissions 50% from a 2016-18 average baseline (356,000tCO2). Management has also signed up to the Science Based Targets initiative, which brings consistency and auditability to numbers, including becoming net zero by 2050.

This target is good, but being critical we could say it lacks ambition. We find around one-third of the Capital Goods peer group has committed to net zero emissions by 2030. Compared to its broader peer group, Sandvik's goal of 50% emissions reduction is slightly limited, albeit we note, in line with closest competitor Epiroc.

Sandvik has achieved a ~32% emissions reductions so far. Standardized against a sector-wide 2019 base-year (342,000 tons), Sandvik's 2021A emissions of 234,000 tons imply it has already reduced emissions by 32% (see Exhibit 3). This is an impressive achievement, and suggests it is on course to achieve its existing commitment.

The Alleima spin exceeds its target, but also renders it obsolete. If we then account for the Alleima spin in 2022, Sandvik will have reduced emissions to ~138,000 tons — that is, it will have achieved a 60% reduction vs. its 2019 emissions. This beats its previous target but also complicates it, as the spin has not organically reduced its emissions.

[1] https://www.home.sandvik/en/news-and-media/news/2019/05/sandvik-capital-markets-day-with-new-financial-and-sustainability-targets/

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We expect more ambitious targets in the near future, hopefully net zero. The obvious conclusion is that Sandvik will issue new emissions targets after the Alleima spin, complete with restated pro forma baseline emissions. We would welcome this. More importantly from an investors' point of view, we see a reasonable chance that Sandvik upgrades its target to net zero by 2030. We encourage management to do so — this would be peer-leading among machinery names and allow the stock to enjoy a genuine ESG premium.

EXHIBIT 3: **Sandvik has achieved a 32% reduction in S1 and S2 CO2 emissions since 2019; spinning Alleima will achieve a ~60% reduction; we encourage management to raise the bar for Capital Goods and issue a net-zero-by-2030 target following the spin**

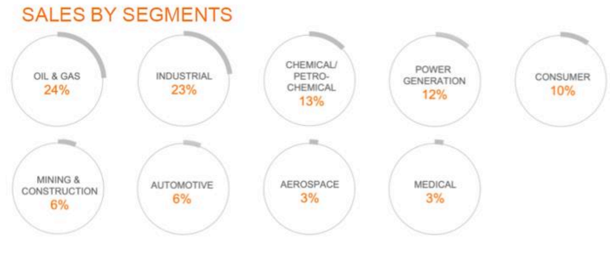
	Net Zero by 2030?	Commitment by 2030	Commitment by 2030 (Standardised)	Nature of reduction	Reference Year	Reference Emissions (Mgt)	Reference Emissions (Standardised)	Emissions 2021A	% Reduction Achieved (Standardised)	Net Zero by 2050?	Signed up to SBTi?
Sandvik	No	50%	-48%	Direct reductions	Avg outcome 2016-2018	356,000	342,000	234,000	**-32%**	Yes	Yes

Source: Company reports, and Bernstein estimates and analysis

EARNINGS ARE BECOMING HIGHER MARGIN, LESS CYCLICAL

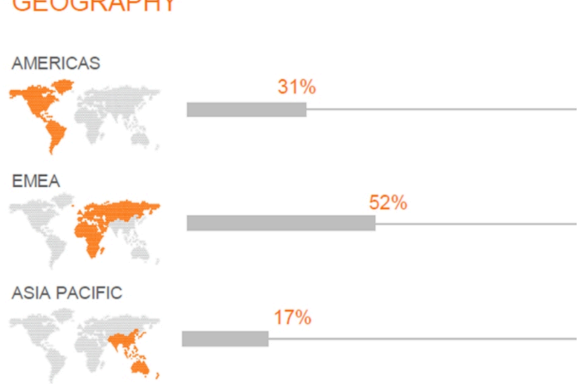
Materials Technology is principally exposed to energy, natural resources, and power end-markets. Materials Technology is essentially a specialist steel manufacturing business, creating specialist alloys and other materials. The business is 24% exposed to oil & gas, 13% to petrochemicals, 12% to power generation, 23% to general industry, and 6% to Mining (2020 figures; see Exhibit 4). The business has broad geographical exposure but is principally focused upon EMEA (see Exhibit 5).

EXHIBIT 4: **Materials Technology's main end-markets include oil & gas, general Industry, petrochemicals, and power generation**



Source: Company presentation (rolling 12-month to 3Q20)

EXHIBIT 5: **Materials Technology is primarily exposed to EMEA and then the Americas**



Source: Company presentation (rolling 12-month to 3Q20)

Materials Technology is a cyclical business. The fortunes of the Alleima business move with that of its industrial customers. There is no "aftermarket" to speak of, little "sales and services," and instead the business principally sells specialist material products. The result is that the business is more cyclical than the rest of Sandvik. The YoY change in sales growth has been negative five times in the past 20 years (see Exhibit 7). In contrast,

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Sandvik's Manufacturing & Machining division has generally shown less cyclicality (see Exhibit 11) and the Mining & Rock Solutions division marginally less so (see Exhibit 13).

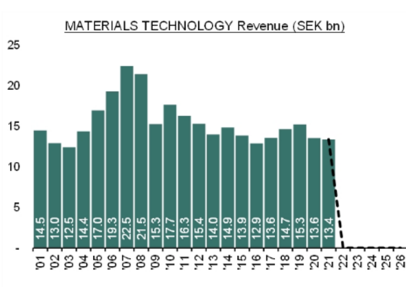
Materials Technology is also lower margin than the group. Over the past 10 years, the Materials Technology division generated an average EBITDA margin of 14.3% (see Exhibit 8). These 10-year average figures compare to 27.4% for Manufacturing & Machining (see Exhibit 11), 18.6% for Mining & Rock Solutions (see Exhibit 14), and 19.7% for the Group as a whole (see Exhibit 23).

- Most recent margins, as of December 31, 2021, show a similar trend. Materials Technology achieved 17.8%. This compares to 28.9% for Manufacturing & Machining, 24.7% for Mining & Rock Solutions, 19.0 % for Rock Processing, and 24.7% for the Group as a whole.
- As a result, the Materials Technology division is effectively margin dilutive.

Accordingly, we expect Sandvik to become less cyclical after the spin. Our "economic beta" analysis (see Exhibit 15), which looks at the sensitivity of revenue to changes in the wider economy, shows that over the past 10 years Sandvik's sensitivity sits at 1.4x — that is, for a 1% change in the wider economy, Sandvik could expect to respond around 1.4%. This is consistent with our comment on medium cyclicality. After the spin of Alleima, we may expect Sandvik's cyclicality to reduce somewhat, perhaps to around 1.2x.

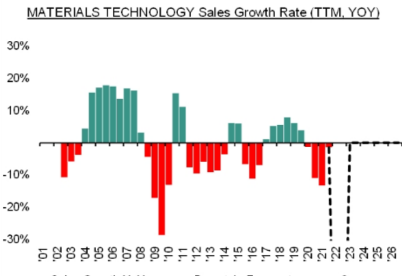
We also see higher margins. Our financial forecast sees ~60bps margin expansion over the next few years. Approximately 100bps of this is mechanical, the positive mix effect of removing the lower-margin division from the group, offset by mild trimming of recently high margins in other areas of the group. A similar result will be found in return on capital employed, because the Materials Technology division represents ~12% of group capital employed yet generates only ~10% of group EBITDA (see Exhibit 6, Exhibit 9, Exhibit 10, and Exhibit 12).

EXHIBIT 6: **Materials Technology revenue**



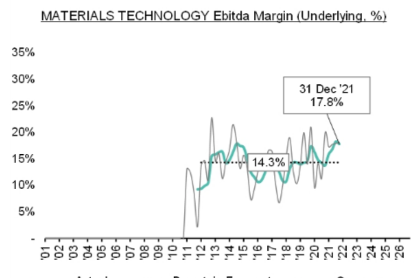
Source: Company reports, and Bernstein estimates and analysis

EXHIBIT 7: **Materials Technology growth**



Source: Company reports, and Bernstein estimates and analysis

EXHIBIT 8: **Materials Technology margin**



Source: Company reports, and Bernstein estimates and analysis

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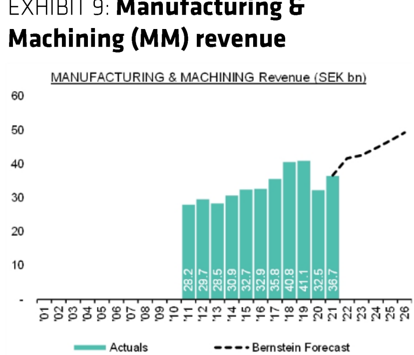
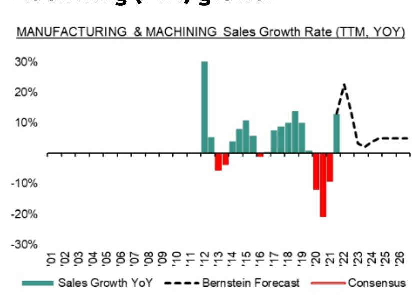
EXHIBIT 9: **Manufacturing & Machining (MM) revenue**



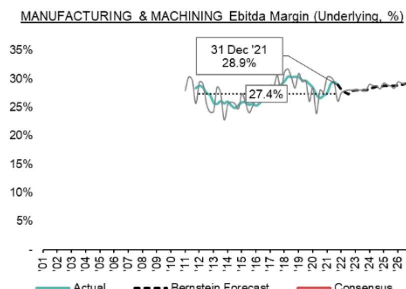
Source: Bloomberg, and Bernstein estimates and analysis

EXHIBIT 10: **Manufacturing & Machining (MM) growth**



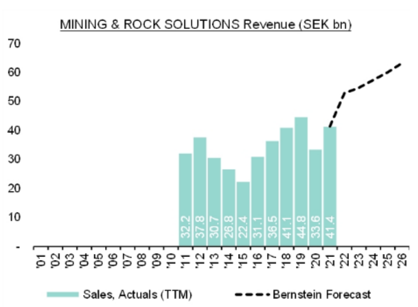
Source: Bloomberg, and Bernstein estimates and analysis

EXHIBIT 11: **Manufacturing & Machining (MM) margin**



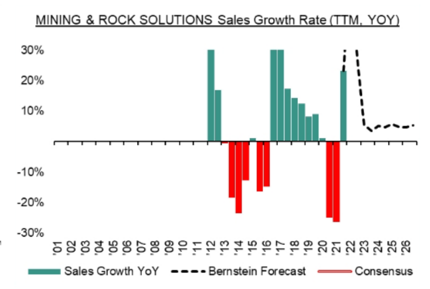
Source: Bloomberg, and Bernstein estimates and analysis

EXHIBIT 12: **Mining & Rock Solutions revenue**



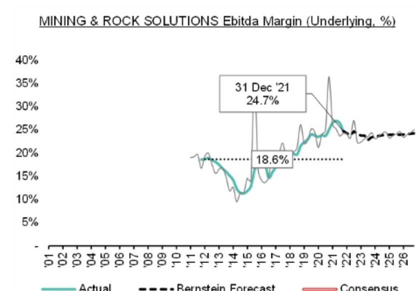
Source: Bloomberg, and Bernstein estimates and analysis

EXHIBIT 13: **Mining & Rock Solutions growth**



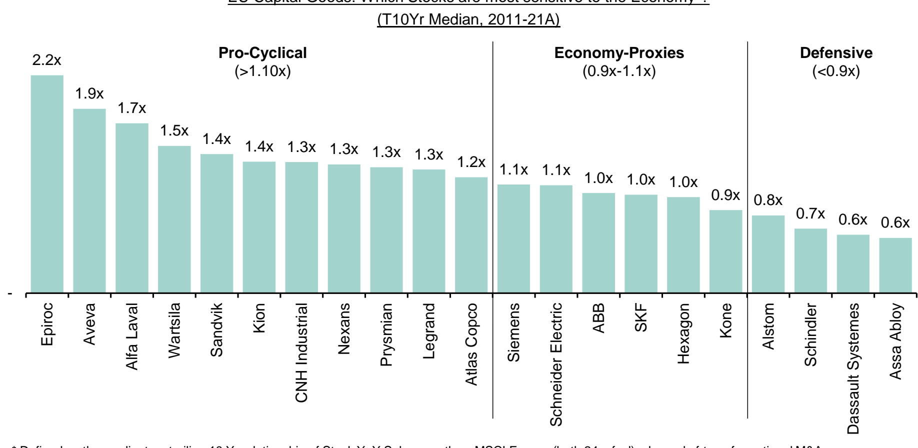
Source: Bloomberg, and Bernstein estimates and analysis

EXHIBIT 14: **Mining & Rock Solutions margin**



Source: Bloomberg, and Bernstein estimates and analysis

EXHIBIT 15: **Our "economic beta" analysis, which looks at sensitivity of revenue to changes in the wider economy, shows that over the past 10 years Sandvik's sensitivity sits at 1.4x (medium cyclical); after Alleima spin, we anticipate it will drop to ~1.2x**



Source: Bloomberg, company reports, and Bernstein estimates and analysis

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VALUATION HAS OVERSOLD

Sandvik's valuation multiple has fallen 32% YTD as of July 2, 2022, from 11.6x to 7.9x at present (see Exhibit 16).

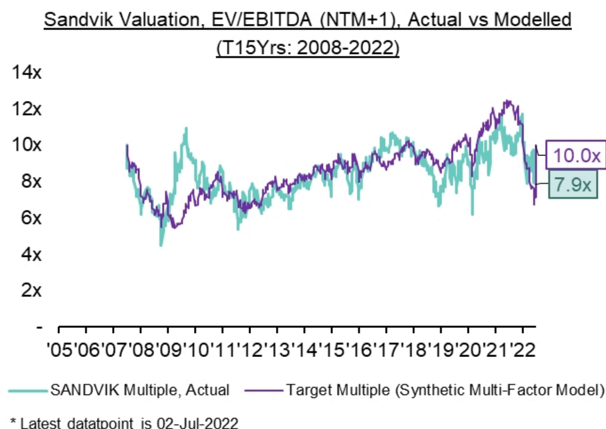
This principally reflects the fall in the market multiple. But on a relative basis, it also reflects a 14% reduction in Sandvik's multiple relative to the MSCI Europe, from 1.2x to 1.0x (see Exhibit 17).

As set out in this chapter, Sandvik's relative attractiveness as a stock will increase following the spin. We have discussed improved cyclicality, better margin, and better sales growth rates. We understand at present that the management team intends to maintain its dividend level. If so, this means Sandvik will enjoy a step up in "dividend margin" or paid-out dividend as a percentage of sales. We find dividend margin is the single strongest driver of valuation in EU Capital Goods, and so all else being equal, its relative valuation should increase (see Exhibit 19).

Put together, our analysis of Sandvik's relative sales growth rate, paid-out cash dividends, and returns all suggest the stock should be worth around 1.25x the market multiple. This is shown in the purple/black line in Exhibit 17. There is some volatility in numbers as the sell-side adjusts for the Alleima spin, and the market adjusts to a moderately cyclical stock coming off a period of extraordinary high order intake. When the dust settles after the Alleima spin, however, we see fair value around 1.25x.

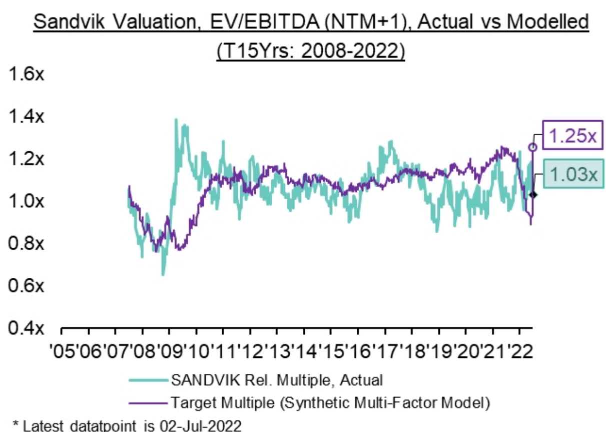
Using a conservative market multiple of 8.0x, this suggests Sandvik is worth 10.0x, almost 30% higher than the multiple at present. We use 10.0x in our target price calculation (see Exhibit 18 and Exhibit 20).

EXHIBIT 16: **Sandvik absolute valuation**



Source: Bloomberg, and Bernstein estimates and analysis

EXHIBIT 17: **Sandvik relative valuation**



Source: Bloomberg, and Bernstein estimates and analysis

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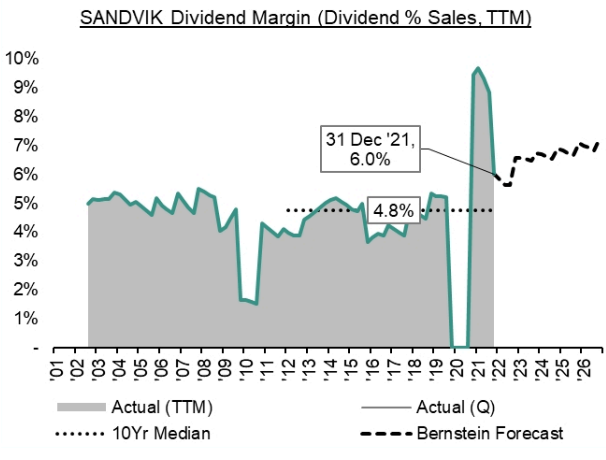
EXHIBIT 18: **Sandvik share price history**

Source: Bloomberg, and Bernstein estimates and analysis

EXHIBIT 19: **We expect Sandvik to maintain dividend payment after the Alleima spin; this means its dividend margin will increase; as it is the strongest driver of relative valuation, this should also support a rerating of the stock**



Source: Company reports, and Bernstein estimates and analysis

TARGET PRICE

We derive our target price using the valuation methodology set out in the Valuation methodology set out in Exhibit 20. Specifically, for Sandvik, we calculate its current fair value as being 1.25x the MSCI Europe (10.0x absolute) on EV/EBITDA 24-months forward. See our financial forecasts in Exhibit 21, Exhibit 22, and Exhibit 24 to Exhibit 28.

Key risks to our Outperform investment case include a material slowdown in the mining and commodity cycles.

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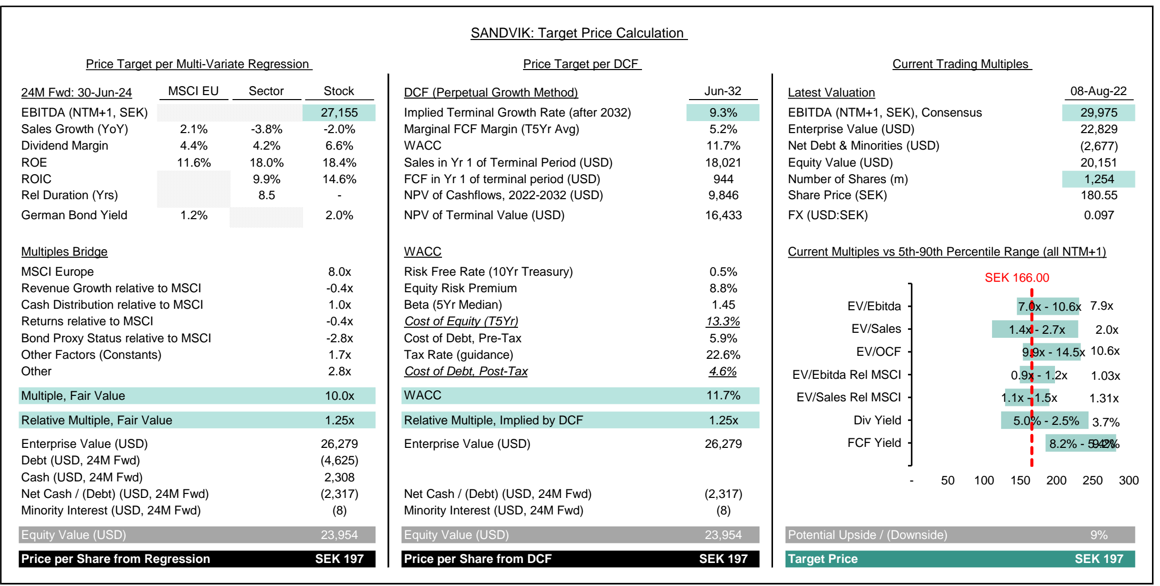
EXHIBIT 20: **We value Sandvik at 1.25x the MSCI Europe (10.0x), on our forecast of 24-month forward EBITDA**



SANDVIK: Target Price Calculation

Price Target per Multi-Variate Regression

24M Fwd: 30-Jun-24	MSCI EU	Sector	Stock
EBITDA (NTM+1, SEK)			27,155
Sales Growth (YoY)	2.1%	-3.8%	-2.0%
Dividend Margin	4.4%	4.2%	6.6%
ROE	11.6%	18.0%	18.4%
ROIC		9.9%	14.6%
Rel Duration (Yrs)		8.5	-
German Bond Yield	1.2%		2.0%
Multiples Bridge			
MSCI Europe			8.0x
Revenue Growth relative to MSCI			-0.4x
Cash Distribution relative to MSCI			1.0x
Returns relative to MSCI			-0.4x
Bond Proxy Status relative to MSCI			-2.8x
Other Factors (Constants)			1.7x
Other			2.8x
Multiple, Fair Value			10.0x
Relative Multiple, Fair Value			1.25x
Enterprise Value (USD)			26,279
Debt (USD, 24M Fwd)			(4,625)
Cash (USD, 24M Fwd)			2,308
Net Cash / (Debt) (USD, 24M Fwd)			(2,317)
Minority Interest (USD, 24M Fwd)			(8)
Equity Value (USD)			23,954
Price per Share from Regression			**SEK 197**

Price Target per DCF

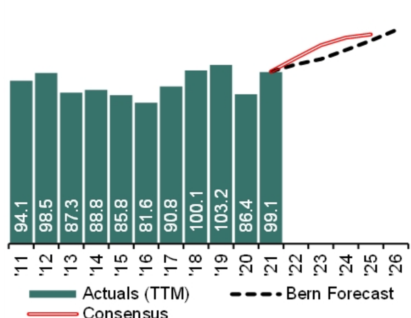
DCF (Perpetual Growth Method)	Jun-32
Implied Terminal Growth Rate (after 2032)	9.3%
Marginal FCF Margin (T5Yr Avg)	5.2%
WACC	11.7%
Sales in Yr 1 of Terminal Period (USD)	18,021
FCF in Yr 1 of terminal period (USD)	944
NPV of Cashflows, 2022-2032 (USD)	9,846
NPV of Terminal Value (USD)	16,433
WACC	
Risk Free Rate (10Yr Treasury)	0.5%
Equity Risk Premium	8.8%
Beta (5Yr Median)	1.45
Cost of Equity (T5Yr)	*13.3%*
Cost of Debt, Pre-Tax	5.9%
Tax Rate (guidance)	22.6%
Cost of Debt, Post-Tax	*4.6%*
WACC	11.7%
Relative Multiple, Implied by DCF	1.25x
Enterprise Value (USD)	26,279
Net Cash / (Debt) (USD, 24M Fwd)	(2,317)
Minority Interest (USD, 24M Fwd)	(8)
Equity Value (USD)	23,954
Price per Share from DCF	**SEK 197**

Current Trading Multiples

Latest Valuation	08-Aug-22
EBITDA (NTM+1, SEK), Consensus	29,975
Enterprise Value (USD)	22,829
Net Debt & Minorities (USD)	(2,677)
Equity Value (USD)	20,151
Number of Shares (m)	1,254
Share Price (SEK)	180.55
FX (USD:SEK)	0.097
Potential Upside / (Downside)	9%
Target Price	**SEK 197**

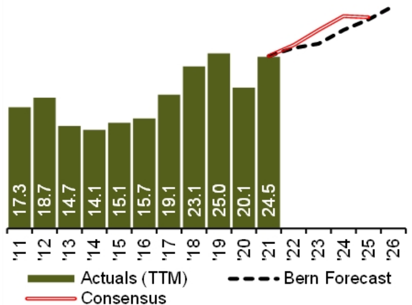
Source: Bloomberg, and Bernstein estimates and analysis

EXHIBIT 21: **Revenue vs. Consensus**



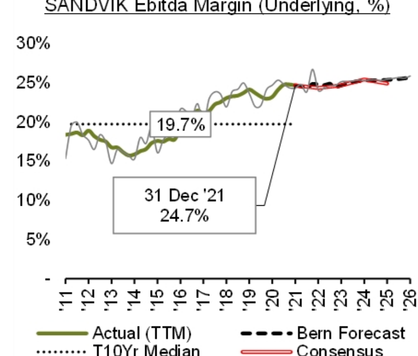
Source: Bloomberg, and Bernstein estimates and analysis

EXHIBIT 22: **EBITDA vs. Consensus**



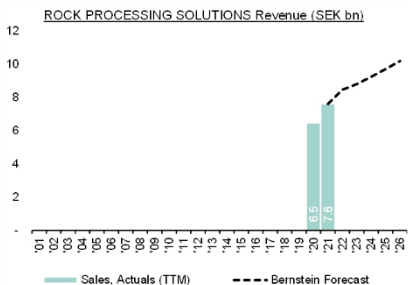
Source: Bloomberg, and Bernstein estimates and analysis

EXHIBIT 23: **Margin vs. Consensus**



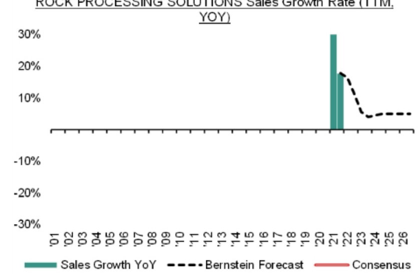
Source: Bloomberg, and Bernstein estimates and analysis

EXHIBIT 24: **SRP revenue**



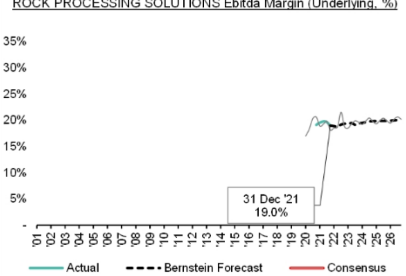
Source: Bloomberg, and Bernstein estimates and analysis

EXHIBIT 25: **SRP growth**



Source: Bloomberg, and Bernstein estimates and analysis

EXHIBIT 26: **SRP margin**



Source: Bloomberg, and Bernstein estimates and analysis

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EXHIBIT 27: **Sandvik: Income statement, balance sheet, cash flow statement**

SANDVIK: Annual Financial Summary 2017A-2026E (SEKm, IFRS)

	2017A	2018A	2019A	2020A	2021A	2022E	2023E	2024E	2025E	2026E
Income Statement										
Revenue	**90,827**	**100,072**	**103,238**	**86,404**	**99,105**	**103,069**	**106,161**	**111,382**	**116,757**	**122,801**
Period growth (TTM)	*11.4%*	*10.2%*	*3.2%*	*-16.3%*	*14.7%*	*4.0%*	*3.0%*	*4.9%*	*4.8%*	*5.2%*
Cash Costs of Sale	(71,751)	(76,969)	(78,278)	(66,326)	(74,634)	(77,472)	(79,932)	(83,206)	(87,103)	(91,242)
EBITDA	**19,076**	**23,103**	**24,960**	**20,078**	**24,471**	**25,597**	**26,229**	**28,176**	**29,653**	**31,559**
DD&A	(4,519)	(4,558)	(5,751)	(5,521)	(5,840)	(6,186)	(6,000)	(6,125)	(6,325)	(6,910)
EBIT	**14,557**	**18,545**	**19,209**	**14,557**	**18,631**	**19,412**	**20,229**	**22,051**	**23,328**	**24,649**
Contribution Margin, % of Sales (TTM)	*64.8%*	*64.0%*	*66.2%*	*64.7%*	*64.4%*	*67.6%*	*64.6%*	*65.3%*	*65.7%*	*66.2%*
EBITDA % of Sales (TTM)	*21.0%*	*23.1%*	*24.2%*	*23.2%*	*24.7%*	*24.8%*	*24.7%*	*25.3%*	*25.4%*	*25.7%*
EBIT % of Sales (TTM)	*16.0%*	*18.5%*	*18.6%*	*16.8%*	*18.8%*	*18.8%*	*19.1%*	*19.8%*	*20.0%*	*20.1%*
Non-Recurring Items	3,460	65	(5,832)	(3,347)	27	(1,102)	-	-	-	-
Net Financing Costs	(1,081)	(795)	(1,237)	54	(194)	(841)	(700)	(638)	(455)	(263)
Income Tax Expense	(3,780)	(4,646)	(3,421)	(2,517)	(3,967)	(3,162)	(4,491)	(4,817)	(5,260)	(5,577)
JV Profits & Minority Interests	70	55	25	20	(27)	(27)	(27)	(27)	(27)	(27)
Net Income	**13,226**	**13,224**	**8,744**	**8,767**	**14,470**	**14,280**	**15,011**	**16,569**	**17,586**	**18,782**
Earnings per Share (Diluted)	10.49	10.08	6.80	6.95	11.52	12.95	11.96	13.20	14.01	14.96
Dividends per Share	3.50	4.25	-	6.50	4.75	5.40	5.70	6.13	6.59	7.10
Dividend per Share Growth Rate (TTM)	*27.3%*	*21.4%*	*-100.0%*	-	*-26.9%*	*13.7%*	*5.6%*	*7.5%*	*7.4%*	*7.8%*
Effective Tax Rate (TTM)	*-22.3%*	*-26.1%*	*-28.2%*	*-22.3%*	*-21.5%*	*-18.1%*	*-23.0%*	*-22.5%*	*-23.0%*	*-22.9%*
Balance Sheet										
Property, Plant & Equipment	24,398	25,362	28,815	26,866	29,916	31,098	30,761	30,430	30,082	29,685
Other Operating Assets	2,219	2,295	2,390	2,598	3,270	3,270	3,270	3,270	3,270	3,270
Intangible Assets	17,376	22,250	20,074	21,004	47,809	49,697	49,160	48,630	48,074	47,440
Net Working Capital	20,062	24,352	23,411	19,816	27,508	33,886	33,448	34,178	34,547	36,336
Other Capital Employed	653	(3,027)	(2,576)	(4,009)	(3,001)	(2,782)	(2,782)	(2,782)	(2,782)	(2,782)
Capital Employed	**64,708**	**71,232**	**72,114**	**66,275**	**105,502**	**115,168**	**113,858**	**113,726**	**113,191**	**113,950**
Cash & Cash Equivalents	(12,724)	(18,089)	(16,953)	(23,752)	(13,585)	(15,609)	(23,545)	(31,458)	(40,191)	(48,126)
Interest Bearing Debt & Leases	23,819	23,929	20,644	17,888	34,350	47,792	47,792	47,792	47,792	47,792
Debt-Like Items	4,891	7,229	6,565	7,057	7,405	1,808	1,808	1,808	1,808	1,808
Shareholders' Equity	48,694	58,121	61,844	65,081	77,200	81,127	87,728	95,487	103,662	112,333
Minority Interests	28	42	14	1	132	51	74	97	120	143
Enterprise Value	**64,708**	**71,232**	**72,114**	**66,275**	**105,502**	**115,168**	**113,858**	**113,726**	**113,191**	**113,950**
Net (Debt) / Cash, Bernstein Calculated	(11,095)	(5,840)	(3,691)	5,864	(20,765)	(32,183)	(24,247)	(16,334)	(7,601)	334
Net Debt:EBITDA	0.6x	0.3x	0.1x	-0.3x	0.8x	1.3x	0.9x	0.58x	0.3x	-0.0x
Gearing, Reported (Net Debt/Equity)	*22.8%*	*10.0%*	*6.0%*	*-9.0%*	*26.9%*	*39.6%*	*27.6%*	*17.1%*	*7.3%*	*-0.3%*
ROACE (TTM NOPAT/Avg CE)	*16.5%*	*20.4%*	*22.0%*	*17.4%*	*17.1%*	*14.7%*	*13.7%*	*15.1%*	*15.9%*	*16.8%*
NWC days (NWC/Sales x 365)	*81*	*89*	*83*	*84*	*101*	*120*	*115*	*112*	*108*	*108*
Cash Flow Statement										
EBITDA	**19,076**	**23,103**	**24,960**	**20,078**	**24,471**	**25,597**	**26,229**	**28,176**	**29,653**	**31,559**
Tax, Interest & JV Cashflows	(3,635)	(3,787)	(4,660)	(4,197)	(4,813)	(4,691)	(5,191)	(5,455)	(5,715)	(5,841)
Other Operating Cashflows	(470)	(650)	(786)	249	(2,288)	(3,445)	(1,600)	(1,600)	(1,657)	(1,781)
Other Investing Cashflows	12	(62)	(12)	91	(190)	(417)	(40)	(64)	(67)	(70)
Product & Services Cash Flow	**14,983**	**18,604**	**19,502**	**16,221**	**17,180**	**17,045**	**19,399**	**21,057**	**22,214**	**23,867**
% of Sales (TTM)	*16.5%*	*18.6%*	*18.9%*	*18.8%*	*17.3%*	*16.5%*	*18.3%*	*18.9%*	*19.0%*	*19.4%*
Change in Working Capital	(685)	(3,198)	(447)	2,055	(3,726)	(6,378)	438	(730)	(370)	(1,789)
Capital Expenditure	(3,590)	(3,921)	(4,136)	(3,198)	(3,578)	(3,601)	(3,800)	(3,871)	(3,987)	(4,362)
FCF (Underlying)	**10,708**	**11,485**	**14,919**	**15,078**	**9,876**	**7,066**	**16,036**	**16,457**	**17,857**	**17,716**
% of Sales (TTM)	*11.8%*	*11.5%*	*14.5%*	*17.5%*	*10.0%*	*6.9%*	*15.1%*	*14.8%*	*15.3%*	*14.4%*
M&A Activity	5,026	(300)	(1,336)	(2,227)	(22,564)	(6,103)	(1,327)	(1,392)	(1,433)	(1,518)
Non-Recurring Items	-	(554)	(1,413)	(2,838)	(467)	(245)	-	-	-	-
Other Financing Cashflows	-	-	-	-	(1)	(395)	-	-	-	-
FCF to Firm	**15,734**	**10,631**	**12,170**	**10,013**	**(13,156)**	**323**	**14,709**	**15,064**	**16,424**	**16,198**
% of Sales (TTM)	*17.3%*	*10.6%*	*11.8%*	*11.6%*	*-13.3%*	*0.3%*	*13.9%*	*13.5%*	*14.1%*	*13.2%*
Dividend & Share Buybacks	(3,458)	(4,390)	(5,340)	-	(8,140)	(5,955)	(6,774)	(7,151)	(7,691)	(8,263)
Net Change in Debt and Equity	(8,370)	(876)	(7,966)	(3,214)	11,129	7,656	-	(0)	-	0
Movement in Cash	**3,906**	**5,365**	**(1,136)**	**6,799**	**(10,167)**	**2,024**	**7,936**	**7,913**	**8,734**	**7,935**
Cash Conversion (FCFu/EBITDA) (TTM)	*56%*	*50%*	*60%*	*75%*	*40%*	*28%*	*61%*	*58%*	*60%*	*56%*
Distribution Cover (FCFe/Dist) (TTM)	*4.6x*	*2.4x*	*2.3x*	-	*-1.6x*	*0.1x*	*2.2x*	*2.1x*	*2.1x*	*2.0x*

Source: Company reports, and Bernstein estimates and analysis

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EXHIBIT 28: **Sandvik: Divisional trading**

SANDVIK: Annual Financial Summary 2017A-2026E (SEKm, IFRS)

	2017A	2018A	2019A	2020A	2021A	2022E	2023E	2024E	2025E	2026E
Operations & KPIs										
Workforce (Period Avg)	**42,881**	**42,440**	**41,097**	**38,666**	**40,636**	**42,159**	**40,784**	**42,405**	**44,470**	**46,696**
Productivity (Sales per Head, TTM)	2,118	2,358	2,512	2,235	2,439	2,445	2,603	2,627	2,626	2,630
Brand Indicator (SG&A % Sales, TTM)	*-20.7%*	*-19.5%*	*-20.9%*	*-18.8%*	*-17.9%*	*-18.5%*	*-18.5%*	*-18.5%*	*-18.5%*	*-18.5%*
Innovation Indicator (R&D % Sales, TTM)	*-3.5%*	*-3.5%*	*-3.6%*	*-4.0%*	*-3.7%*	*-3.9%*	*-3.9%*	*-3.9%*	*-3.9%*	*-3.9%*
Cash Indicator (Dividend % Sales, TTM)	*4.8%*	*5.3%*	-	*9.4%*	*6.0%*	*6.6%*	*6.7%*	*6.9%*	*7.1%*	*7.3%*
Growth Indicator I (M&A % Sales, TTM)	*5.5%*	*-0.3%*	*-1.3%*	*-2.6%*	*-22.8%*	*-5.9%*	*-1.3%*	*-1.3%*	*-1.2%*	*-1.2%*
Growth Indicator II (Capex % Sales, TTM)	*-4.0%*	*-3.9%*	*-4.0%*	*-3.7%*	*-3.6%*	*-3.5%*	*-3.6%*	*-3.5%*	*-3.4%*	*-3.6%*
M&A Share of Investment (TTM)	*350%*	*7%*	*24%*	*41%*	*86%*	*63%*	*26%*	*26%*	*26%*	*26%*
Manufacturing & Machining										
Revenue	**35,777**	**40,757**	**41,123**	**32,477**	**36,681**	**41,767**	**42,602**	**44,732**	**46,969**	**49,318**
Period growth (TTM)	*8.9%*	*13.9%*	*0.9%*	*-21.0%*	*12.9%*	*13.9%*	*2.0%*	*5.0%*	*5.0%*	*5.0%*
EBITDA, Underlying	**10,367**	**12,364**	**11,956**	**8,796**	**10,612**	**11,625**	**11,929**	**12,831**	**13,529**	**14,371**
% of Sales (TTM)	*29.0%*	*30.3%*	*29.1%*	*27.1%*	*28.9%*	*27.8%*	*28.0%*	*28.7%*	*28.8%*	*29.1%*
Capital Employed	-	-	-	-	50,828	55,485	54,854	54,790	54,532	54,898
Mining & Rock Solutions										
Revenue	**36,495**	**41,058**	**44,777**	**33,572**	**41,409**	**52,836**	**54,754**	**57,405**	**60,080**	**63,291**
Period growth (TTM)	*17.4%*	*12.5%*	*9.1%*	*-25.0%*	*23.3%*	*27.6%*	*3.6%*	*4.8%*	*4.7%*	*5.3%*
EBITDA, Underlying	**7,257**	**8,831**	**10,605**	**8,404**	**10,216**	**12,760**	**12,795**	**13,712**	**14,392**	**15,335**
% of Sales (TTM)	*19.9%*	*21.5%*	*23.7%*	*25.0%*	*24.7%*	*24.2%*	*23.4%*	*23.9%*	*24.0%*	*24.2%*
Capital Employed	-	-	-	-	33,814	36,912	36,492	36,450	36,278	36,521
Materials Technology										
Revenue	**13,617**	**14,697**	**15,279**	**13,598**	**13,405**	**-**	**-**	**-**	**-**	**-**
Period growth (TTM)	*5.3%*	*7.9%*	*4.0%*	*-11.0%*	*-1.4%*	*-100.0%*	-	-	-	-
EBITDA, Underlying	**1,486**	**2,107**	**2,649**	**1,870**	**2,385**	**-**	**-**	**-**	**-**	**-**
% of Sales (TTM)	*10.9%*	*14.3%*	*17.3%*	*13.8%*	*17.8%*	-	-	-	-	-
Capital Employed	-	-	-	-	12,785	13,956	13,798	13,782	13,717	13,809
Rock Processing Solutions										
Revenue	**-**	**-**	**-**	**6,459**	**7,610**	**8,466**	**8,805**	**9,245**	**9,708**	**10,193**
Period growth (TTM)	-	-	-	-	*17.8%*	*11.3%*	*4.0%*	*5.0%*	*5.0%*	*5.0%*
EBITDA, Underlying	**-**	**-**	**-**	**1,236**	**1,446**	**1,638**	**1,705**	**1,833**	**1,932**	**2,053**
% of Sales (TTM)	-	-	-	*19.1%*	*19.0%*	*19.3%*	*19.4%*	*19.8%*	*19.9%*	*20.1%*
Capital Employed	-	-	-	-	4,322	4,718	4,664	4,659	4,637	4,668
CORPORATE / OTHER										
Revenue	4,938	3,560	2,059	298	-	-	-	-	-	-
EBITDA, Underlying	(34)	(199)	(250)	(228)	(188)	(426)	(200)	(200)	(200)	(200)

Source: Company reports, and Bernstein estimates and analysis

VALUATION METHODOLOGY

We believe that over time, valuation for EU Capital Goods is driven by the ability of a company to generate cash flow and grow its business. Several names in our sector are also used by the market as bond proxies, and so their valuation moves with 10-year bond yields. We find the market considers both attributes in reference to the wider economy and so it is the relative performance of each that appear to be the principal driver of valuation.

We find the market's preferred valuation metric in this sector is EV/EBITDA, relative to the MSCI Europe, and 24-months forward (NTM+1). Our target multiple is based upon this metric. We use our proprietary holistic valuation model to derive a fair value target multiple for each stock, based upon its cash generation relative to the economy and to its sector peers.

We apply our target multiple to our forecast for the company's EBITDA 24-month-forward to give enterprise value. We deduct our expectation for net debt and minority interests in the period for which the multiple is applied. This generates our target price, typically

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reflecting the latest forex rates. We do not use our discounted cash flow analysis to derive target price, albeit it is calculated alongside as a reference point.

Specifically for Sandvik, we calculate its current fair value as being 1.25x the MSCI Europe (10.0x absolute), on EV/EBITDA 24-months forward.

We rate SAND.SS Outperform with a target price of SEK197. It closed at SEK181 and is benchmarked against the MSDLE15 that closed at 1,745.03. Closing prices as of August 8, 2022.

RISKS

As industrial staples, the key risk to European capital goods is a slowdown in manufacturing, industrial production, and the wider economy. The majority of our names would be negatively impacted by such a slowdown. Our stocks are also valued relative to the wider economy, and so their valuation moves up and down with general sentiment on equities. In both cases, our target prices would be significantly impacted by any material move in the wider stock market.

Specifically for Sandvik, key risks to our Outperform investment case include a material slowdown in the mining and commodity cycles.

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NORTHROP GRUMMAN: STRONG ESG, RESILIENT TO RECESSION AND INFLATION; CENTRAL TO DEFENSE

HIGHLIGHTS

- ESG funds with defense exclusions underperformed the S&P 500 as of June 2022 and could remain so in the longer term. Russia's invasion of Ukraine and related rhetoric have amplified the need for deterrence of adversaries. Bernstein's ESG team surveyed ESG investors and found few funds have formally changed exclusion policies, but 14% increased defense holdings. The survey also found ESG investors to have serious concerns about recession and inflation.

- Northrop Grumman stock has outperformed the S&P 500 by 451% over the last 10 years. Defense stocks, such as NOC, also tend to outperform through recessions and are uncorrelated with inflation. At a time when inflation is high and there are significant recession fears going forward, defense stocks should be attractive, particularly NOC with relatively high growth from its bias toward advanced technologies, including space, cyber, and C4ISR. Northrop Grumman has exited or is exiting its limited exposure related to key controversial weapons.

- Despite its attractive financial returns, Northrop Grumman remains excluded by many ESG-oriented funds because it is a defense company and, specifically, is involved in delivery systems designed as part of the US nuclear deterrent. The ability to own Northrop Grumman in an ESG fund depends on whether or not one can own exposure to nuclear deterrence. For some, Russia's actions have now made deterrence a social good, with broad political support in the US and Europe for higher defense budgets. ESG defense exclusions will have no impact on defense policies. Beyond nuclear exclusions, Northrop Grumman holds up well under ESG with high and rising ESG ratings from Robeco and MSCI. On Environmental, the company is targeting net zero carbon by 2035 and has many efforts underway in that direction. Its record on Social and Governance issues is strong, with a new Chief Sustainability Officer named in the summer of 2021.

INVESTMENT IMPLICATIONS

We rate Northrop Grumman Outperform, with a US$516 target price. We see NOC as a long-term growth play, driven by its exposure to restricted space, nuclear modernization, and C4ISR.

CHANGING VIEW OF ESG? SHOULD DEFENSE STILL BE EXCLUDED?

As ESG funds underperform the broader market in 2022 and Russia's invasion of Ukraine highlights the importance of a strong defense in Europe and the US, we have found many investors reevaluating their portfolios. The invasion of Ukraine has been accompanied by

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aggressive statements by Russian President Putin about recreating the Russian empire and the possible use of nuclear weapons.

Bernstein's ESG team recently surveyed ESG investors and found there has been an increase in defense holdings at 14% of the funds since the Russian invasion. The survey did not, however, find that formal rules on defense exclusions have yet been changed. For details of the survey, see Bernstein's June 14, 2022 ESG report: *Global ESG Research: How has ESG investing evolved given geopolitical uncertainties? (Proprietary surveys)*. Anecdotally, we have seen many investors who had not previously invested in defense now examining opportunities in the space.

We have stressed for multiple years that exclusions for defense do little to drive positive ESG outcomes, with a few exceptions in small areas such as cluster munitions and land mines. Exclusions have also led to worse financial performance for investment portfolios over short and long time frames. There was an exception during the pandemic period in 2020-21 in which tech-driven stocks outperformed defense. But, that has rarely happened historically. There have been few periods like that over more than 50 years (including during the last six months). For more on this subject, see our June 24, 2021 Research Call: *Global Defense and Quant: ESG and Defense Stocks - Can you own them? Should you own them?*.

Government policies in the US and Europe related to defense have not been influenced by defense exclusions. And now, after the Russian invasion of Ukraine, those policies that emphasize a strong defense have become even more important. This has been reflected in rising defense budgets across Europe and in the US. While defense programs are typically considered a social negative in ESG funds, we now see many who are beginning to view defense capabilities as a social positive when adversaries show no intention of backing away from aggressive postures.

The other benefit defense stocks have is that they are resilient in recessions (tend to outperform) and they are uncorrelated with inflation. The ESG investor survey referenced earlier highlighted that ESG investors were concerned about recession risks and inflation.

We see Northrop Grumman as a particularly interesting choice among defense stocks, as it has a disproportionate mix of capabilities in advanced technologies, including space, C4ISR, and nuclear deterrence. These areas are set to grow strongly over a long time period. Northrop Grumman has also had a strong focus on ESG across all dimensions, which has helped NOC obtain high ratings by third-party firms (e.g., MSCI and Robeco).

Here, we describe the strength of defense stocks during recessions and inflation. We show how Northrop Grumman performs in a range of ESG areas. We describe the outlook for Northrop Grumman and why it is attractive relative to other defense stocks. Lastly, we show how defense exclusions have led historically to underperformance.

For broader context on defense, see our December 2021 *Blackbook*: *Global Defense: Games Without Frontiers, War Without Tears*. For a summary of recent CEO perspectives, including from Northrop Grumman CEO Kathy Warden, see our June 7, 2022 Research Call: *US Defense: CEO views from Bernstein's Strategic Decisions Conference - Navigating the new growth environment*.

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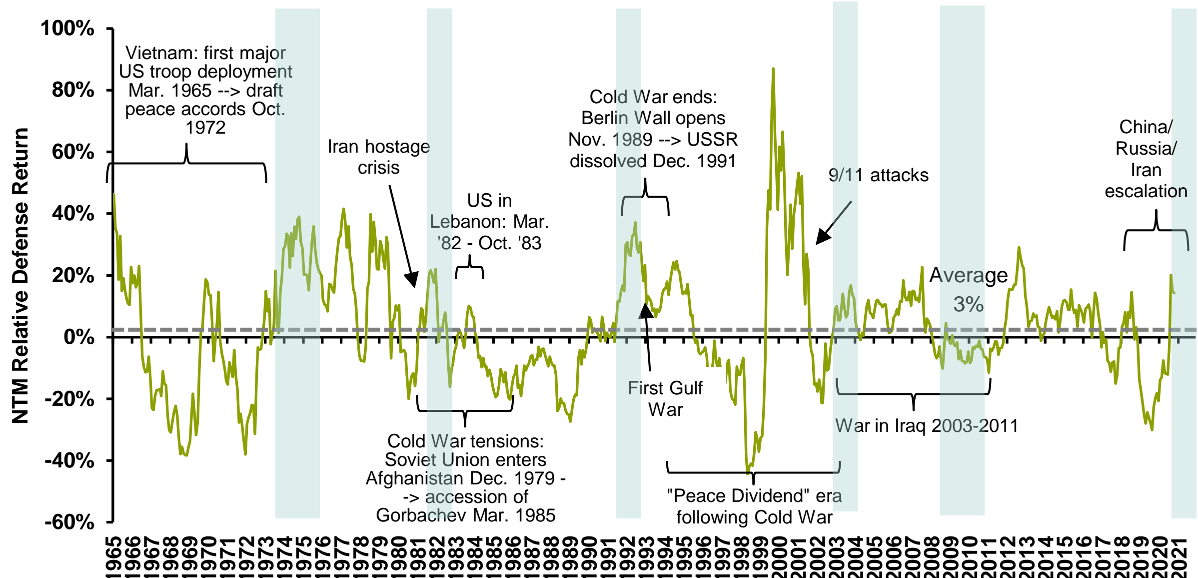
RECESSIONS ARE NOT A PROBLEM FOR DEFENSE STOCKS

Exhibit 1 shows the history of NTM relative defense returns, with recessionary periods shaded. Recessions are not a problem for defense stocks. As the exhibit shows, defense stocks outperformed during recessions in the 1970s, 1980s, and 1990s, and post 9/11. They did not outperform during the Global Financial Crisis. That timing came on the back of the war in Iraq when defense spending had peaked, leading to modest underperformance. During the Covid-19 pandemic recession, which began in 2Q20, defense stocks initially underperformed. But, outperformance has come more recently out of that recession, as the result of heightened geopolitical tensions (e.g., the Russian invasion of Ukraine) and upward budget trends. One period of outperformance that was not tied to budget increases was around 1991. This was a period of sharply rising margins, as fixed-price development contracting was ended, eliminating huge losses that had plagued defense contractors under policies in the Reagan-Lehman period. Other periods of strong performance were largely tied to rising tensions, such as the Cuban Missile Crisis, Vietnam War escalation, Cold War escalation, 9/11 attacks, and the war in Iraq.

EXHIBIT 1: **NTM relative defense return**



Source: FactSet, Bernstein Strategy team, and Bernstein analysis

Valuations tied to geopolitical threats. Exhibit 2 shows the history of pension-adjusted relative EV/EBITDAP multiple for a basket of defense stocks vs. the S&P 500. When this exhibit is combined with Exhibit 1, one can see that defense stocks can still work at high valuations, which we also have today. Defense outperformed in much of the seven years after 9/11, despite elevated valuations. Similarly, defense stocks outperformed in the early 1980s during the Reagan defense buildup, despite high valuations. More recently, defense stocks outperformed through most of the 2013-18 period, with elevated valuations, as the budget grew out of post-Iraq war trough levels with rising threats from China, Iran, and North Korea.

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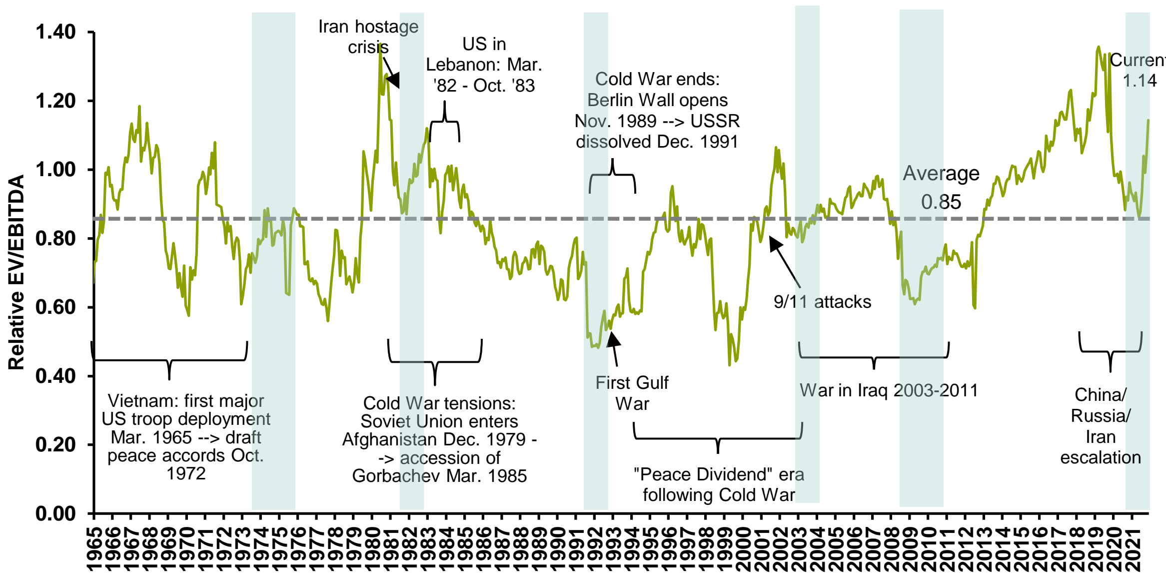
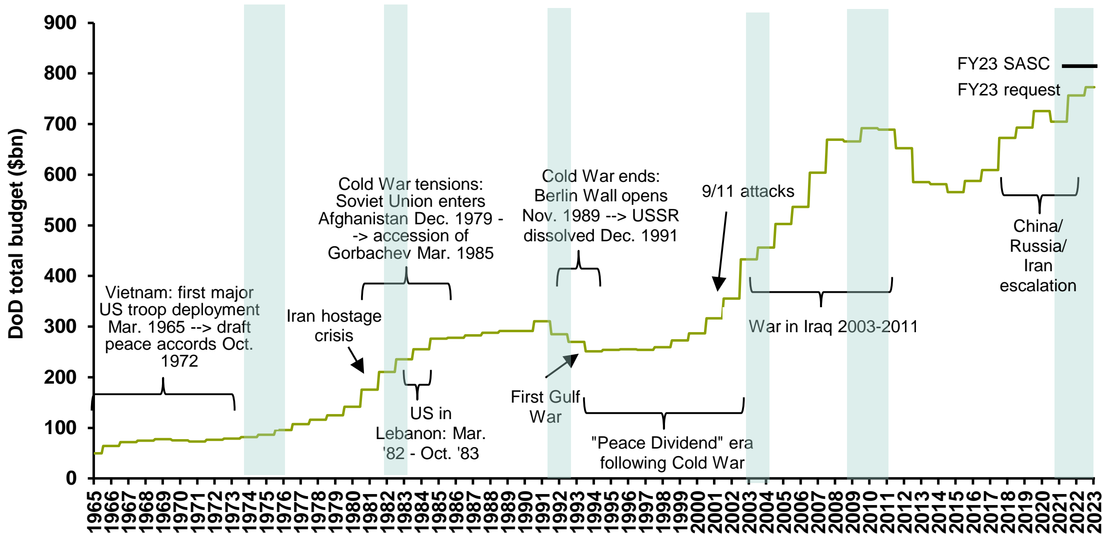
EXHIBIT 2: **Pension-adjusted relative EV/EBITDAP multiple for defense vs. S&P 500**



Source: FactSet, Bernstein Strategy team, and Bernstein analysis

EXHIBIT 3: **Total budget (US$Bn)**



Source: OMB, DoD, and Bernstein analysis

Defense stocks move with defense budgets — and they are rising. Exhibit 3 shows the DoD budget history. Defense stocks tend to outperform during periods of rising budgets. When looking at the budget authority values in Exhibit 3, the impact on stocks tends to happen one year earlier. This is because the President's budget is normally submitted to Congress seven to eight months before the fiscal year begins, with leaks typically coming earlier. Budget increases are tied to geopolitical threats. Those budget increases lead to revenue growth at defense primes, as we expect they will again over the next two to three years. We

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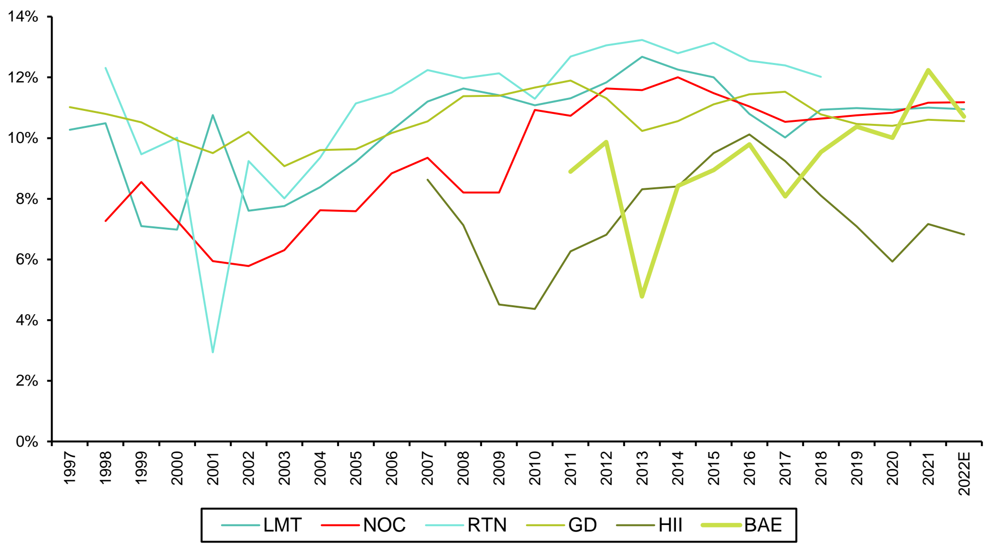
have seen the 2023 President's budget raise the top line by 4.1%. Congress is now adding more money to that budget. We expect this value will move higher as Congress completes its budget.

INFLATION NOT A MATERIAL FACTOR FOR DEFENSE STOCKS

No inflation impact on defense margins. The lack of inflationary input pressures can be seen in the history of defense segment operating margins (see Exhibit 4). When one looks at the 25-year history of the CPI up to 4Q21 (see Exhibit 5), there is no correlation with margins for defense primes. In periods with relatively high inflation, such as 2006-08 and 2011-13, defense margins increased.

EXHIBIT 4: **Defense segment operating margins by company — no correlation with inflation**



Source: Company reports, and Bernstein estimates and analysis

EXHIBIT 5: **CPI minus trend line — to 4Q21**

Source: Thomson Reuters and Bernstein analysis

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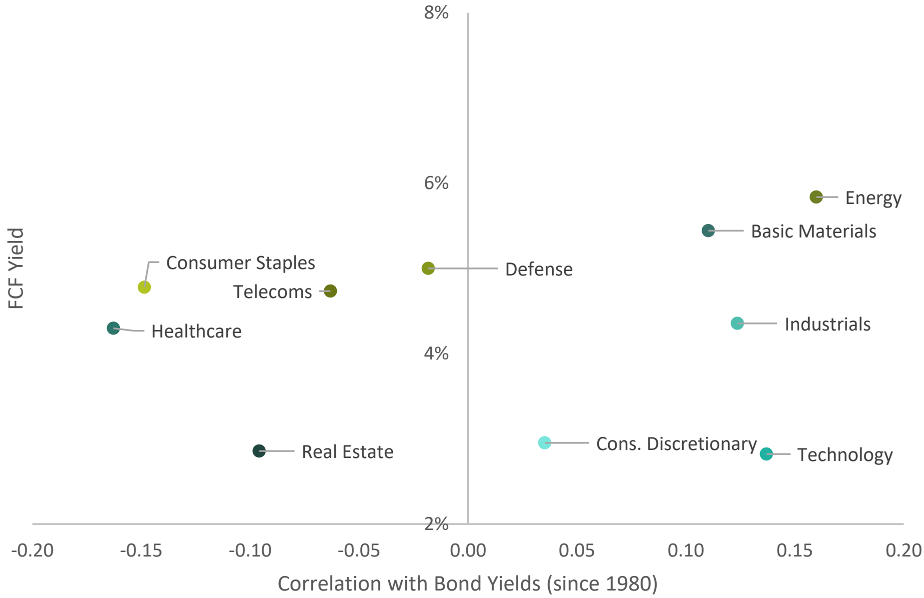
Defense stocks — uncorrelated with inflation, high FCF yields

Defense is unique among other high-quality, stable-dividend, and high-FCF sectors in that it is not negatively affected by an upward trend in yields or inflation expectations. The scatter plot in Exhibit 6 shows the relationship of sectors to the direction of bond yields, and FCF yield levels of the sectors. Defense stocks allow one to avoid having to predict inflationary trends and still have attractive FCF yields.

EXHIBIT 6: **Sector correlation with bond yields vs. sector FCF yield**



Note: The x-axis shows the correlation of monthly relative sector returns with monthly changes in the level of US 10-year nominal bond yield since 1980. The y-axis shows current FCF yield.

Source: Thomson Reuters and Bernstein analysis

The few inflationary risks that do exist for defense

While risks associated with inflation are small for defense stocks, they are not zero. They include:

- **Budget crowding.** One of the biggest concerns about inflation and defense is that a budget can be set and then inflation effects push the sum of spending on specific elements above the budget limit. This pressure can come from operating costs (e.g., fuel prices) as well as higher program costs. The good news for defense contractors right now is that both the Pentagon and Congress are well aware of inflationary pressures. Members of the Congressional committees related to defense have already expressed the need to take budgets higher in order to account for inflationary pressures — a move that appears to be supported by the Pentagon.

- **Short-term fixed-price contract impact.** For fixed-price contracts that are already in the middle of a performance period, inflation can put short-term pressure on margins. That impact is offset by escalators in many contracts, as well as long-term contracts

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for many inputs. Also, once a contract period ends, the next tranche will be repriced and normally includes cost adjustments for inflation.

- **Upside from cost-plus work and escalators.** Although most worries we hear on inflation are about the issues discussed earlier, there is another side. For cost-plus contracts and fixed-price contracts with escalators, inflation can benefit a contractor, as it can drive up revenues without a margin penalty (depends on the details of the contract structure).

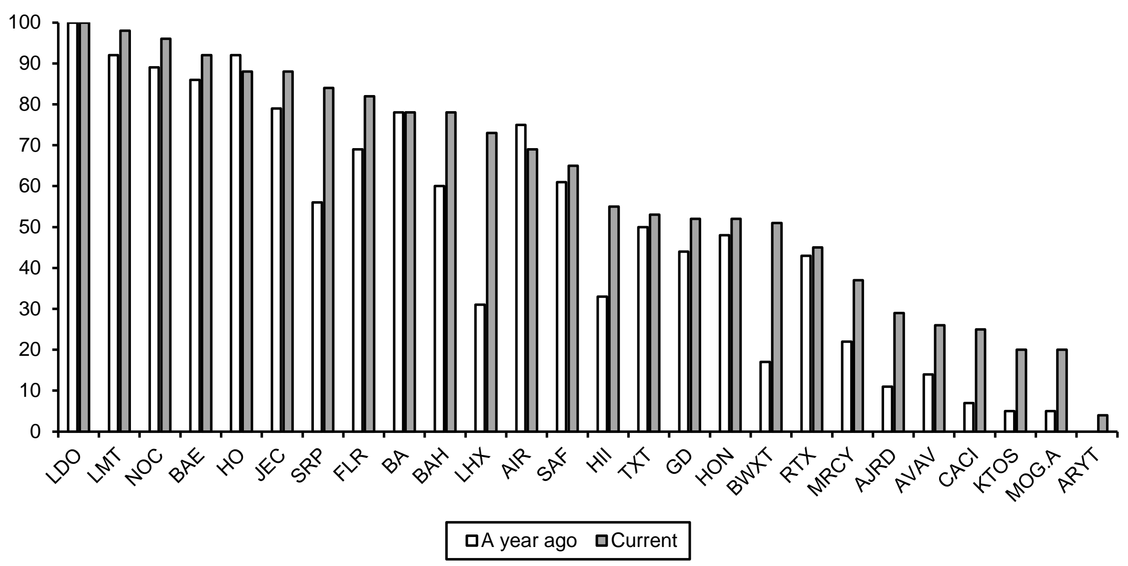
We see the net effect of these factors as very small relative to the inflation impact on commercial industrial companies, including commercial aerospace.

NORTHROP GRUMMAN AS A STRONG ESG COMPANY

We view ESG for Northrop Grumman in three areas: (1) the company's positioning against broader (i.e., not defense-specific) ESG objectives, such as diversity, gender equality, and climate-related actions and disclosures, (2) involvement with controversial weapons unrelated to nuclear, and (3) nuclear triad modernization programs.

If an ESG investor can get by the nuclear deterrence issue, Northrop Grumman can be highly attractive from an ESG point of view. It has received an "AA" ESG rating from MSCI and a 96% score from Robeco, which places it near the top among defense firms. Exhibit 7 shows how Northrop Grumman stands with Robeco ESG ratings. The company recently brought in a new Chief Sustainability Officer and has already been making extensive ESG disclosures. It has shown success on many traditional ESG metrics.

EXHIBIT 7: **Robeco overall ESG rankings**



Source: Bloomberg and Bernstein analysis

Northrop Grumman has been recognized for its success on many dimensions, including diversity, shareholder rights, and environmental progress. Recognitions include:

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- **Environmental:** Carbon Disclosure Project — earned leadership score at 'A-' performance; Task Force on Climate Related Financial Disclosures (TCFD) — published first TCFD report in 2022; and Dow Jones Sustainability Index — included for six consecutive years

- **Social:** Diversity Inc Top 50 — ranked number 20 in diversity among US corporations; Equileap Gender Equality — ranked in top 25 among the S&P 500 for gender equality; and Corporate Equality Index — achieved a perfect score and designated a "Best Place to Work for LGBTQ+ Equality."

- **Governance:** CPA-Zicklin Index of Corporate Political Disclosure and Accountability — perfect score; and Global Reporting Initiative — one of 70 US companies recognized.

Environmental — goal of net zero carbon in 2035

Exhibit 8 shows environmental initiatives taken by Northrop Grumman on the ESG front with updates for 2021. Beyond these climate initiatives are others that focus on reduced impact on landfills and bringing suppliers along with Northrop Grumman's objectives.

EXHIBIT 8: **NOC: ESG initiatives summary**

Goal: Net zero greenhouse gas emissions by 2035	
2021 updates	
Management	Named Michael Witt as Vice President and Chief Sustainability Officer
Climate related risk	TCFD efforts to better reflect the risks and opportunities related to climate change. Published a summary report in 2022
GHG performance	Implemented 75 GHG and energy reduction projects, expected to reduce 7,110 MT of CO2e annually, Invested in HVAC equipment upgrades reducing 1,200 MT CO2e annually, Completed 36 LED lighting upgrades reducing 1,890 MT CO2e annually
Energy conservation	2021 electricity consumption remained constant and natural gas usage increased by 12.9% yoy, but realized <3% increase over 2019 performance for both measures
Renewable opportunities	Installation of a 1.1 megawatt onsite solar array at company facility in Rolling Meadows, Illinois, and explored onsite solar opportunities with 15 other campuses, Moving forward with four renewable energy projects in 2022.
Zero emission vehicles	EV Workplace Charging Program: In 2021, 529 new drivers enrolled in this program, 32% increase in enrollment since 2020. Three additional sites began providing EV charging for employees in 2021, adding a total of 64 new charging connections
Environmental and efficiency (E&E) program	E&E allocation of $1mn distributed across six projects focused on driving water conservation in water-stressed regions, like California, reducing 12 mn gallons of water withdrawals annually, Plan to grow this investment in 2022.

Source: Company reports and Bernstein analysis

Governance — emphasis on independence and responsiveness to shareholders

Policies are in place to ensure greater responsiveness to shareholders, board independence, and emphasis on ESG. These include:

- 10% of incentive compensation is tied to ESG metrics: Climate, quality, customer satisfaction, diversity/equity/inclusion, and employee experience.

- Twelve of 13 directors are independent, with stock ownership requirements.

- Annual assessments are made of each board member's performance.

- Shareholders are provided the ability to act by written consent, call a special meeting, and communicate directly with board members.

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NON-NUCLEAR CONTROVERSIAL WEAPONS

Non-nuclear controversial weapons – where ESG has been effective

Several classes of defense business areas have been identified as controversial, including land mines, chemical weapons, small caliber ammunition, cluster munitions, and depleted uranium. For now, we exclude systems related to nuclear deterrence, which is discussed in the next section. No major defense companies in the US or Europe produce land mines, chemical weapons, or nuclear weapons. Another concern can be support for governments engaged in conflicts seen as a human rights issue (e.g., Yemen).

The Northrop Grumman business mix changed when it acquired Orbital ATK. Northrop Grumman acquired a business in small caliber arms (referred to as Lake City) and a small business (Aging & Surveillance) that could be linked to testing cluster munitions. It also acquired a business in depleted uranium armaments, used as antitank weapons. Separately, Northrop Grumman has long had a services JV with the Saudi government called Vinnell (part of the TRW acquisition in 2002). It has been criticized by ESG investors for supporting Saudi government activities.

Not that large — after planned divestitures only about 1% of revenues

In Exhibit 9, we show the controversial weapons businesses and their percent of Northrop Grumman revenues. These businesses represented roughly 2.5% of revenues in 2021. Northrop Grumman exited small caliber ammunition and Aging & Surveillance. It plans to exit depleted uranium, leaving negligible exposure (<1%) to controversial businesses outside of nuclear. The exits have been driven by ESG considerations, which we see as a positive force from ESG. This is a demonstration of how ESG activism can effect change. But, as discussed later in this chapter, ESG activism will have no effect on nuclear-related programs, as they are tied to firm policy decisions in the US and Europe, which are now receiving broad support.

EXHIBIT 9: **Controversial revenues – percentage of NOC revenues***

Business	% revenue	Description	ESG issue	Potential actions
Depleted uranium	0.3%	Provides armor-piercing anti-tank ammunition	Depleted uranium munitions are classified as a controversial weapon because, as a toxic metal, uranium can create destructive effects on human health, creating risks for civilian populations	Planning exit
Aging & Surveillance program	0.0%	Provides testing and decommissioning services for cluster munitions components that are being taken out of service	Despite not producing cluster munitions this business was viewed as tied to cluster munitions because of its role in stockpiling cluster munitions components (even though those components are decommissioned)	Exited business
Comm'l small caliber ammunition	0.0%	Largest manufacturer of small caliber ammunition to DoD	Commercial small caliber ammunition viewed as a controversial weapon	Exited business
Vinnell Arabia	1.1%	JV with Saudi Arabian government to provide training and support for Saudi security forces	Viewed as a human rights problem because of issues with actions by the Saudi National Guard	No plan to exit business

*Small caliber ammunition and Aging & Surveillance businesses set to be exited

Source: Northrop Grumman reports, interviews, and Bernstein analysis

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NUCLEAR EXCLUSIONS — NOT USEFUL AND LIKELY COUNTERPRODUCTIVE

"I have seen a shift emerging where anything nuclear was viewed as not a capability that some would want to invest in. And so, our support on B-21 or GBSD, even though we aren't working in the nuclear enterprise, we're building missiles in the case of B-21 a bomber that is mission capable for nuclear weapon delivery. ... My view though is that, that part of our business is key to deterring aggression, deterring conflict and protecting human rights. Aggressors would choose to move and maneuver much more freely if those capabilities didn't exist in the world. It is unlikely, they would disarm themselves." Northrop Grumman CEO Kathy Warden (June 6, 2022, Bernstein's Strategic Decisions Conference).

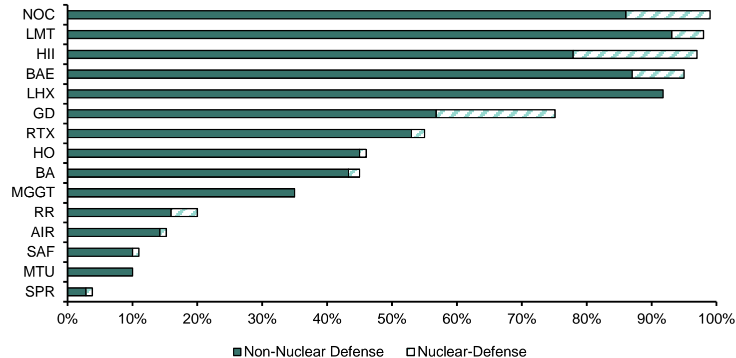
With the Russian invasion of Ukraine and rhetoric from Russia discussing the potential use of nuclear weapons, references to potential attacks on space assets, and statements about the Russian empire under Peter the Great, concerns about defense in Europe and the US have been amplified. Defense budgets are rising in the US and in Europe, with the previously non-aligned countries of Sweden and Finland (with strong ESG orientations) planning to join NATO.

Northrop Grumman and other major defense companies do not produce nuclear weapons. But they are involved in related programs, particularly delivery systems. Nuclear exclusions differ from others because nuclear deterrence is viewed as a necessity by the US, the EU, Canada, Japan, South Korea, Australia, and other allies, as long as China, Russia, North Korea, and potentially Iran, have nuclear arsenals. China appears to be scaling up its nuclear arsenal and delivery systems, (e.g., DoD's recent report, "Military and Security Developments Involving the People's Republic of China"), which raises the importance of nuclear deterrence. ESG investors will not be able to persuade US or European governments to unilaterally disarm. For this reason, we do not see ESG nuclear exclusions as productive.

Material programs and growing

Exhibit 10 shows the percentage of revenues from defense by company. Also shown is the percentage that could be considered "nuclear-related." Nuclear-related includes programs that are considered by many ESG funds to be controversial because they are related to potential delivery of a nuclear weapon (e.g., bomber, rocket, and submarine). 13% of Northrop Grumman revenues are "nuclear-related."

EXHIBIT 10: **Percentage of revenues from defense, including "nuclear-related"**



Source: Company reports and Bernstein analysis

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Northrop Grumman is prime contractor on the B-21 bomber and GBSD (Ground-Based Strategic Deterrent). Each program is strategically important for the US and each has a lifetime program value of US$80- US$100Bn.

THE NUCLEAR EXCLUSION FAILURE IN ESG

Tied to defense policy; exclusions lead to fund underperformance

Unlike cluster munitions and land mines, nuclear weapons are directly tied to the defense policies of most countries in Western Europe, North Asia, and North America. This means excluding companies involved with nuclear weapons should mean the fund should also not support the budgets (i.e., debt instruments) of most Western countries or broad swathes of companies in these countries that provide products and services for nuclear weapons facilities. Furthermore, we see no chance that Western nations will move to unilateral nuclear disarmament. This means defense companies in the US and Western Europe will find it untenable to exit related business areas simply because it is a goal of ESG investors. The pressure to change behavior here must come at the government level, which is the only place that necessary bilateral and multilateral treaties can be negotiated.

ESG funds that exclude any company with nuclear involvement, such as Airbus and Safran for a single rocket, are missing the positive ESG investment opportunities these companies provide. As we show later in this chapter, this type of exclusion sets funds up for underperformance, given artificial constraints on portfolios.

No formal treaties: From a treaty standpoint, the nuclear issue is complex. There is no formal treaty to ban nuclear weapons, although in July 2017, a UN vote was held on a draft treaty to prohibit them. The Nobel Peace Prize was awarded to ICAN (International Campaign to Abolish Nuclear Weapons). While 122 nations voted in favor of the draft treaty in the UN, no countries that have nuclear weapons supported this treaty (i.e., the US, Russia, China, India, Pakistan, North Korea, Israel, France, and the UK). In addition, many countries that consider nuclear weapons as a necessary deterrent against others with nuclear weapons would not support this treaty, including nearly all EU countries, Türkiye, Japan, Saudi Arabia, South Korea, Canada, Australia, and Ukraine.

What constitutes involvement? An important question is: What constitutes involvement in nuclear weapons? Generally, nuclear weapons are produced by governments, not by publicly traded companies. Still, many components and materials for these weapons come from publicly traded companies, as do delivery vehicles and maintenance services. Companies such as Microsoft and Cisco provide products for nuclear weapons laboratories. For funds that intend to exclude involvement in nuclear weapons, it is typical that investment is excluded in companies that provide fissile materials (e.g., BWX Technologies), produce missiles, aircraft, and/or submarines that are primarily designed to deliver nuclear weapons (e.g., GD, Huntington Ingalls, Airbus, Boeing, and Northrop Grumman), or actively maintain nuclear weapons-related operations (formerly LMT). Also often excluded are companies that make propulsion systems for delivery vehicles (e.g., Safran). One should also note that, once on a list, it is very hard to get off, even if a product is no longer produced or supported.

For nuclear weapons involvement, exclusion is typically not done for companies that make components of nuclear weapons or delivery vehicles. This means that producing electronic

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equipment, such as guidance systems, is normally not an issue. Also, exclusions that should not be an issue are dual-use products or services. This means producing screws that are used in a nuclear weapon, but could be used for other things is not an issue. Similarly, providing services such as facilities maintenance or food services for a government nuclear weapons laboratory (e.g., Los Alamos and Oak Ridge) is not an issue. This even extends to delivery vehicles. An F-16 or F-22 can be used to deliver a B61 tactical nuclear weapon, but these aircraft normally engage in non-nuclear activities. Therefore, these aircraft do not typically violate the criteria.

The principles around exclusion for nuclear weapons have gray areas, which is why the sets of companies excluded by different ESG funds vary widely. We find it ironic that few investment firms have difficulty with French, UK, or US government bonds, which support governments that directly produce nuclear weapons. Many ESG funds have also not applied the same exclusion approach to fixed-income investments in defense companies

Broader ESG context for defense

Our work with Bernstein's quant team has shown over many time periods that portfolios excluding defense stocks should underperform the S&P 500 and industrials. The difference can be seen in cumulative returns on industrials vs. ex-defense industrials in Exhibit 11.

EXHIBIT 11: **Industrial sector performance excluding conflict names resulted in significantly lower returns**

Source: FactSet, Center for Research in Security Prices (CRSP), and Bernstein Quantitative Research analysis

We also ran simulations using stocks from all Industrials within the largest 1,500 US stocks (see Exhibit 12). The average annual performance deficit of a portfolio of constrained industrials stocks (excluding nuclear weapons) is -0.4% vs. the unconstrained industrials portfolio. If we invested US$100 at the start of the year 2000, we would have US$559 today, based on our unconstrained industrials simulations. However, excluding nuclear-exposed stocks, our final portfolio value shrinks to US$524. If all aerospace & defense

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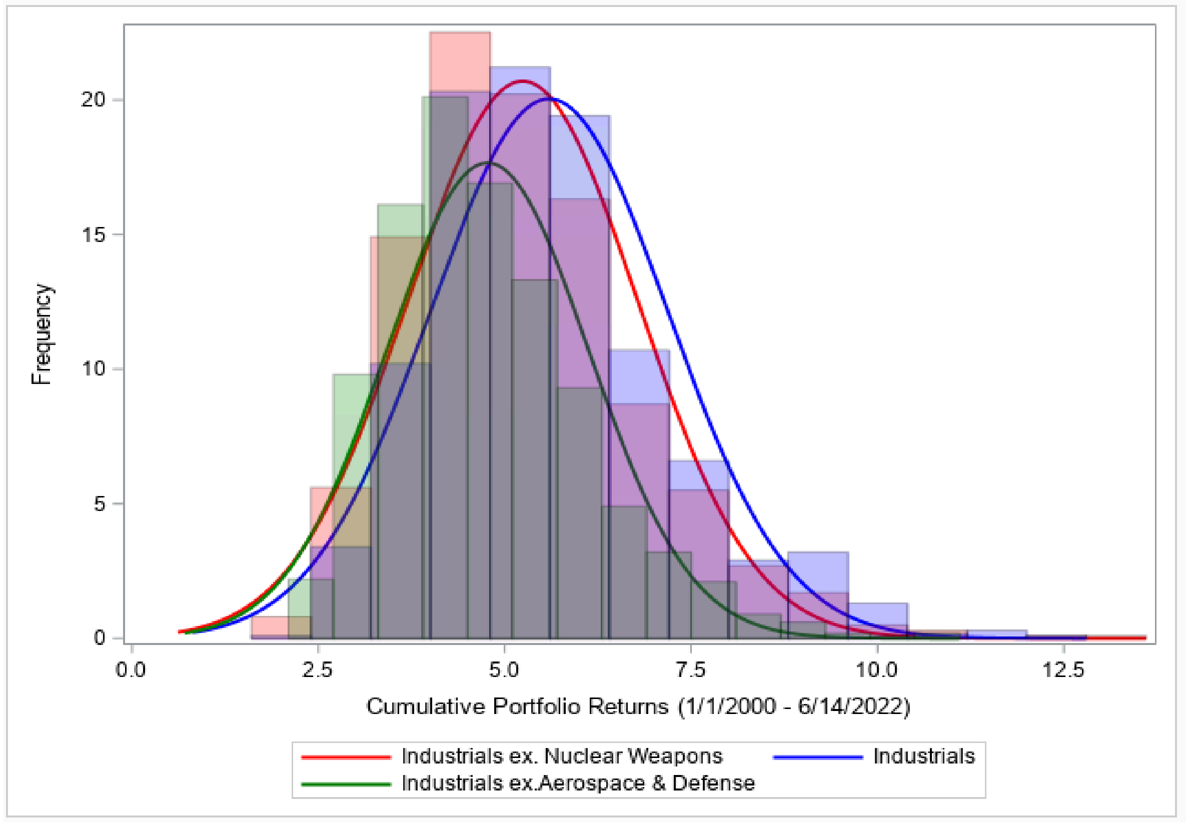
stocks are screened out, the ending portfolio value would fall further to US$477. None of this is good if you expect ESG alignment to deliver superior financial performance.

During the pandemic period of mid-2020 through most of 2021, the broader market outperformed defense stocks, as the tech stock upside dominated. But there have been few such periods. In 2022, YTD, NOC outperformed the S&P 500 by 38 percentage points.

EXHIBIT 12: **When Aerospace & Defense stocks with nuclear/cluster exposure were excluded from industrial portfolios, thousands of portfolio simulations again demonstrated underperformance**



Source: FactSet, CRSP, and Bernstein Quantitative Research analysis

COMPANY OVERVIEW: NORTHROP GRUMMAN (OUTPERFORM, US$516) – LONG-TERM GROWTH FROM CLASSIFIED SPACE, B-21, AND GBSD

We see Northrop Grumman as a long-term growth play, driven by its exposure to restricted space, nuclear modernization, and C4I. Most important is space, which is expected to be over 30% of segment revenue in 2022, the highest in the peer group. Space is the single fastest growing area of the DoD budget and should continue to grow strongly. Many programs are classified, which limits visibility. Also important are the two nuclear replacement programs: the B-21 bomber and GBSD; each has a total program value approaching US$100Bn and should continue to drive growth into the late 2020s. GBSD is expected to grow significantly through 2023 as design review and flight test milestones are completed. Funding is then expected to plateau, as the development phase completes before the production phase ramps in the later 2020s. On the B-21, the Air Force had previously said the program is making good progress toward a test flight in 2023, which should lead to strong budget growth as the program moves into production in subsequent years.

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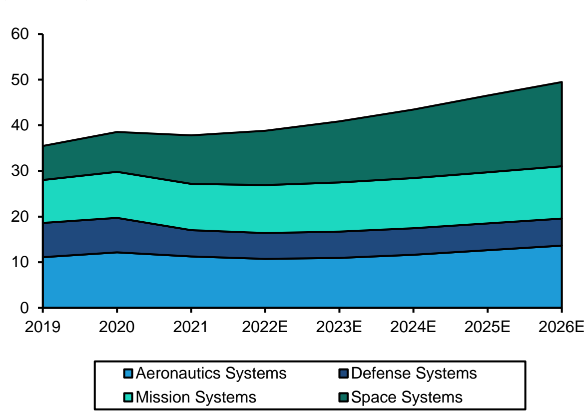
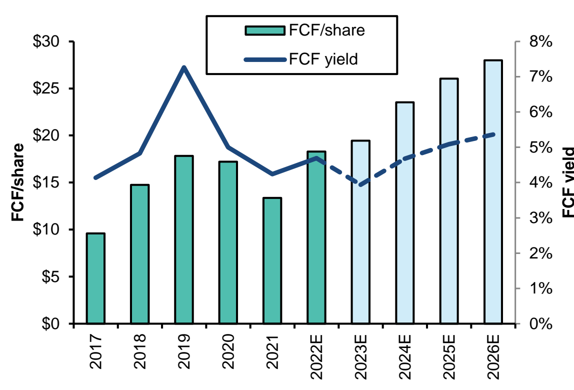
Exhibit 13 shows our outlook for Northrop Grumman's revenues by segment. Exhibit 14 shows our outlook for FCF per share and FCF yield. Northrop Grumman FCF is expected to return strongly from 2022 (2021 FCF was impacted by disposals).

EXHIBIT 13: **Northrop Grumman revenue outlook (US$Bn)**



Source: Company reports, and Bernstein estimates and analysis

EXHIBIT 14: **Northrop Grumman FCF/share and FCF yield outlook**



Source: Company reports, Bloomberg, and Bernstein estimates and analysis

VALUATION METHODOLOGY

To value aerospace & defense companies, we estimate a terminal Enterprise Value four years in the future, using an EV/EBITDA method, based on assumed multiples relative to the market multiple. We adjust for net debt to arrive at a terminal equity value, discount that to our valuation date, and add the discounted value of cash distributions to shareholders between now and the terminal date, to reach our 12-month targets. In determining the equity portion of the terminal value, we treat the after-tax shareholder liability for pension/retirement benefit underfunding as a debt equivalent. Our current assumed market EV/EBITDA multiple four years forward is 12x. For NOC we use a relative EV/EBITDA multiple of 115%, which leads to our target price. We rate NOC Outperform, target price US$516. The closing prices for NOC and the S&P 500 on August 8, 2022 were US$470.05 and 4140.06, respectively.

RISKS

Principal downside risks to our rating and target price for defense company stocks are program execution and changes to defense funding levels, and in acquisitions intended to diversify the business base. Upside risks include better-than-expected program execution, program wins, and international sales. For NOC, principal downside risks to our rating and target price are program execution and changes in defense funding levels. Upside risks include stronger defense budget levels and increased levels of risk retirement.

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WIZZ AIR: BEST-PLACED AIRLINE AS EUROPEAN SHORT-HAUL ABSORBS €5BN EXTRA CARBON COSTS

HIGHLIGHTS

- **If all short-haul airlines were as carbon-efficient as Wizz Air, intra-European flights would emit 20% less CO_2.** Wizz Air follows the ultra-low-cost model to the letter, including by operating a young fleet (five years old) of high-gauge aircraft (212 seats per plane and rising). This minimizes fuel consumption per available seat kilometer (ASK), with Wizz achieving emissions on average 20% below the industry on intra-European routes. Unit emissions will likely continue to fall in the 2020s as Wizz takes delivery of more A321neos into the fleet.

- **Two factors will likely push up the price of carbon, eliminating aggregate sector profits unless fares rise.** In 2019, airlines emitted 68.1 billion tons of carbon in the scope of the European Emissions Trading Scheme (ETS) and received free allowances covering 31 billion tons. For the remainder, they paid ~€24 per ton, a total of €919Mn. This was the easy part. ETS certificates that confer the right to emit a ton of carbon have already more than tripled in price to >€80, and free allowances are set to be fully phased out by 2027. Assuming a 10% efficiency improvement until then, the total carbon bill for the sector will rise from less than €1Bn to more than €5.5Bn on the same amount of flying; or from €1 to more than €6 per seat. That likely exceeds the total profits generated by the short-haul aviation sector; capacity is going to need to come out and fares will need to rise.

- **Headwinds far greater for peers; Wizz Air gains an advantage from a level playing field.** Not all airlines benefit equally from free allowances today. These are fixed in quantity, based on the total amount of flying in the early 2010s. Wizz has grown fastest since then, and only 28% of its emissions are covered by free allowances today vs. ~40-50% for the rest of the sector. The phaseout of free allowances would thus hurt Wizz less than others and eliminate a competitive disadvantage. Add to that the gains from the A321neo, and Wizz is poised for a relative improvement in economics vs. peers. With fares needing to rise sector-wide, an improvement in profit per passenger looks likely.

INVESTMENT IMPLICATIONS

Wizz Air is the best long-term story in European aviation. The company is compounding capacity at a 15-20% CAGR on the lowest unit cost base in Europe. The best positioning from an emissions perspective adds further appeal, as this issue will become more salient over the next five years when the costs start hitting airlines' P&Ls. On our numbers, Wizz is on 7x FY24 PE or 4x FY25 (March year-end), for the strongest earnings growth story in the sector.

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WIZZ AIR IS THE MOST CARBON-EFFICIENT AIRLINE IN EUROPE

Wizz Air operates the classic ultra-low-cost carrier model. It executes this well, maximizing aircraft efficiency, which implies high load factors, high gauge, and a young fleet to minimize cost per seat. With the youngest fleet in our coverage and high-gauge A321neos, Wizz is and will likely remain the most fuel-efficient airline in our coverage, with 10% less carbon emissions per ASK than Ryanair. If all airlines in Europe could achieve its levels of efficiency, European airlines could cut emissions by ~20%.

- **LCC business models are inherently more fuel efficient...** Differences in business models translate into differences in fuel efficiency between LCCs and legacy airlines, with LCCs having lower fuel consumption measured in grams per passenger-km. The most important of these differences are as follows:

  - **Cabin classes.** LCCs operate a single cabin class, while legacy airlines have more business and first class seats. These take up more space on the aircraft, limiting the available space for more seats and increasing fuel consumption per passenger.

  - **No business passengers = higher load factors.** Legacy airlines have a significant share of corporate travelers, ~30% at groups such as Lufthansa. Business passengers often book in the last weeks before the flight, at higher prices even for the same cabin class. Legacy airlines, therefore, must be careful not to sell out of seats early on and at a low price, to avoid cannibalizing more lucrative sales later on. This typically leads to lower load factors on legacy airlines and, therefore, higher fuel consumption per passenger-km.

  - **Variable operating costs matter more at LCCs, creating incentives for a younger fleet.** LCCs operate a short-haul, point-to-point, efficiency-focused business model that relies on high productivity and more flight hours per day. By contrast, ensuring connections at large hubs requires network airlines' aircraft to wait longer at airports, lowering productivity. Thus, the price of the aircraft is relatively more important than aircraft efficiency to network airlines, and they are incentivized to keep them for longer. In contrast, for LCCs, variable operating costs are more important, and investing in the newest aircraft technology, with lower fuel burn, is worth it sooner.

- **...and Wizz is best-in-class in Europe.** Wizz Air entered the European market in 2003, after two decades of business model structuring for Ryanair, copying the European LCC leader cost structure, but better (see Exhibit 1).

  - **Size matters — the A321neo is a game-changer.** By choosing to fly Airbus rather than Boeing aircraft, Wizz has the best fleet upgrade opportunity in the 2020s. The A321neo is the most fuel-efficient narrowbody plane, burning ~9.6kg of fuel per seat-hour, lower than the ~9.8kg at Ryanair's MAX-8200, and 22% below the 12.3kg of an A320ceo (see Exhibit 4). A key strength of the A321neo that the Boeing plane cannot match is its gauge: with 239 seats, it fits 22% more passengers than the MAX-8200 (see Exhibit 2), contributing to Wizz Air's fuel and carbon efficiency falling **10% more than** Ryanair's per ASK.

  - **Highest growth means the youngest fleet.** Wizz Air is uniquely well-placed to grow rapidly for the next decade, pushing up toward 20% p.a. and a target of 500

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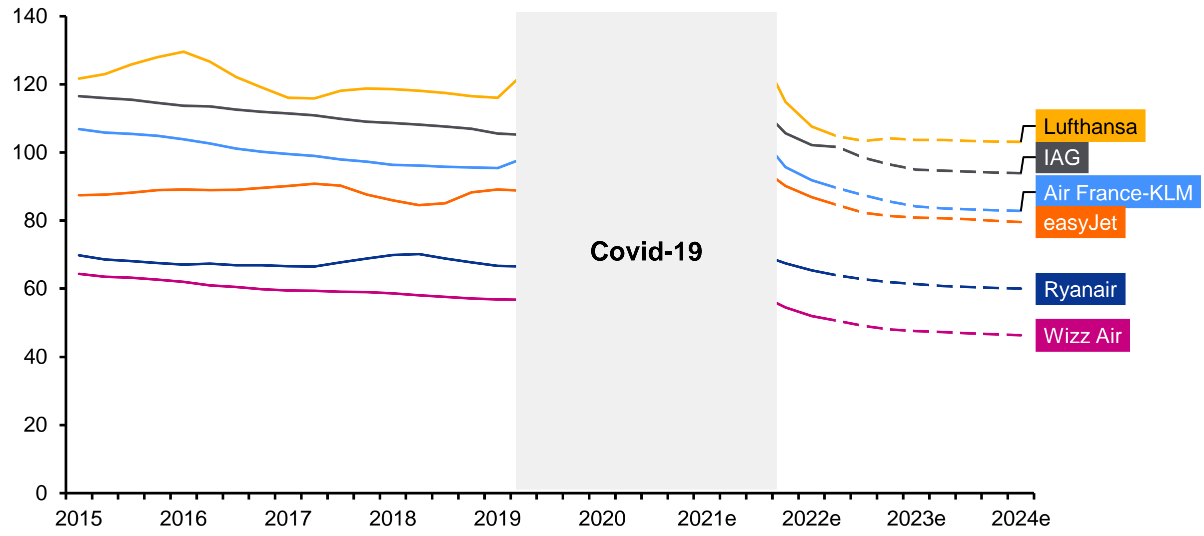
planes by 2030. The airline has started accelerating deliveries. We expect 178 deliveries in the five-year period from FY21 to FY25, against a baseline of 121 aircraft. The group is also expecting to retire 56 aircraft in the same period: older and higher-cost A320s and A321s. By the mid-late 2020s, Wizz Air should have ~80% of its seats on high-gauge, low-cost A321neos and XLRs. And the group is only just getting started — the fleet is on track to more than triple to 500 aircraft by 2030. The fleet is already the youngest in Europe: around five years average vs. eight to nine years at other LCC peers, and with the planned levels of growth, this should remain the case. Wizz will likely continue to operate the most fuel-efficient planes (see Exhibit 3).

- **If all airlines were as fuel efficient as Wizz, ~20% less carbon would be emitted by airlines in Europe.** Only Ryanair even comes close to Wizz Air's carbon intensity on intra-European routes, with unit emissions in line with those at Wizz; Wizz has an advantage across the total network, but that may be due to longer flights beyond European borders. Across the rest of the market, airlines in our coverage emit between 11% and 35% more carbon per ASK in the scope of the European ETS. At an aggregate market level, if all airlines were able to match Wizz Air's efficiency within Europe, the sector could cut emissions by 20% (see Exhibit 5 and Exhibit 6).

EXHIBIT 1: **Wizz Air is the most carbon efficient airline in our coverage per passenger-kilometer**

CO2 intensity — g/RPK



Source: Company reports, and Bernstein estimates and analysis

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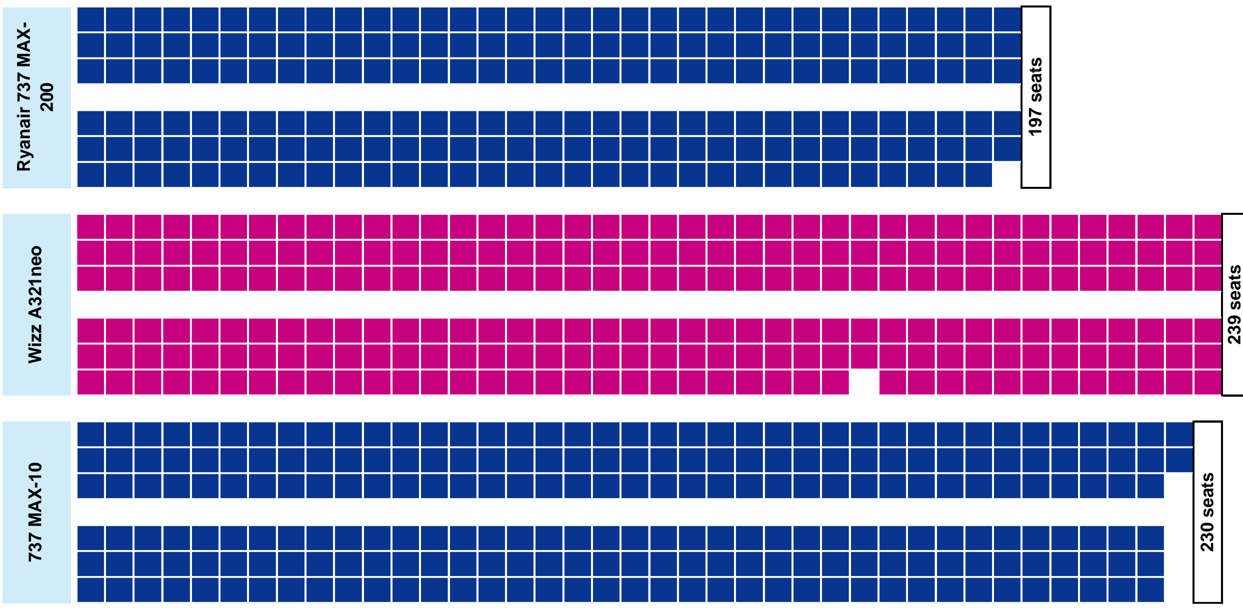
EXHIBIT 2: **More seats = lower unit cost: Wizz's advantage increases on the new fleet type**

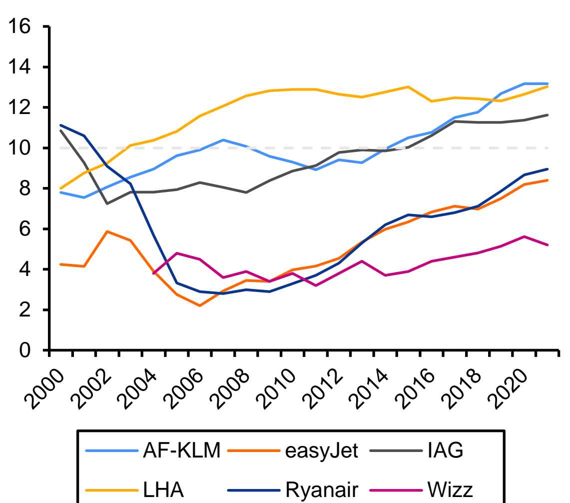


Note: Ryanair MAX-200 layout assumed (not yet published)

Source: Seatmaestro and Bernstein analysis

EXHIBIT 3: **Wizz Air has the youngest narrowbody fleet in Europe**

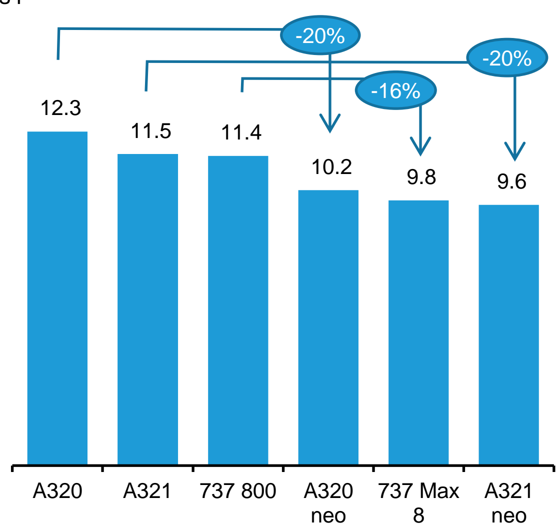
Narrowbody aircraft average age



Source: Company reports and Bernstein analysis

EXHIBIT 4: **New aircraft reducing fuel consumption per seat hour significantly – fuel consumption per aircraft model**

Kg per seat hour



Source: RDC and Bernstein analysis

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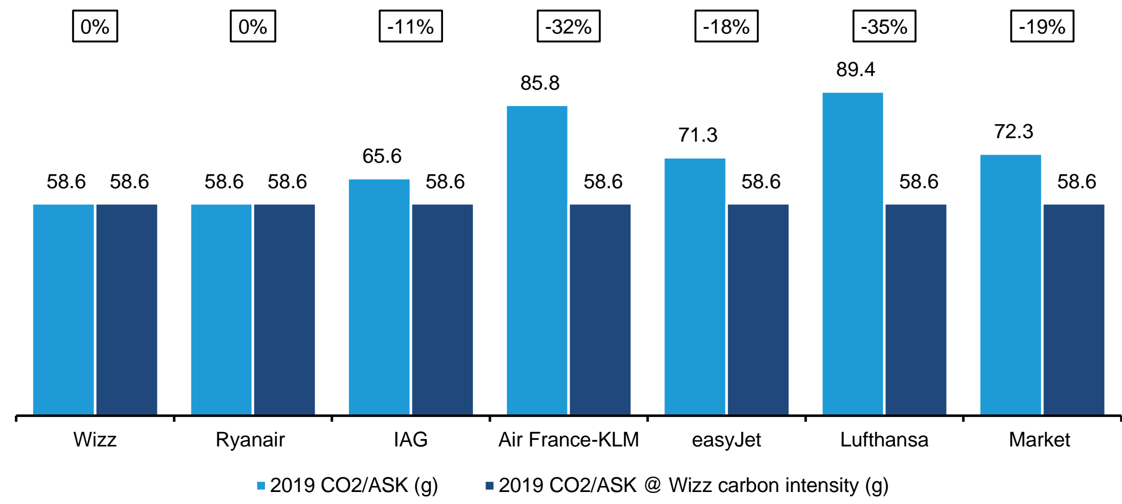
EXHIBIT 5: **Wizz Air is up to 35% more fuel efficient than peers on intra-European routes...**

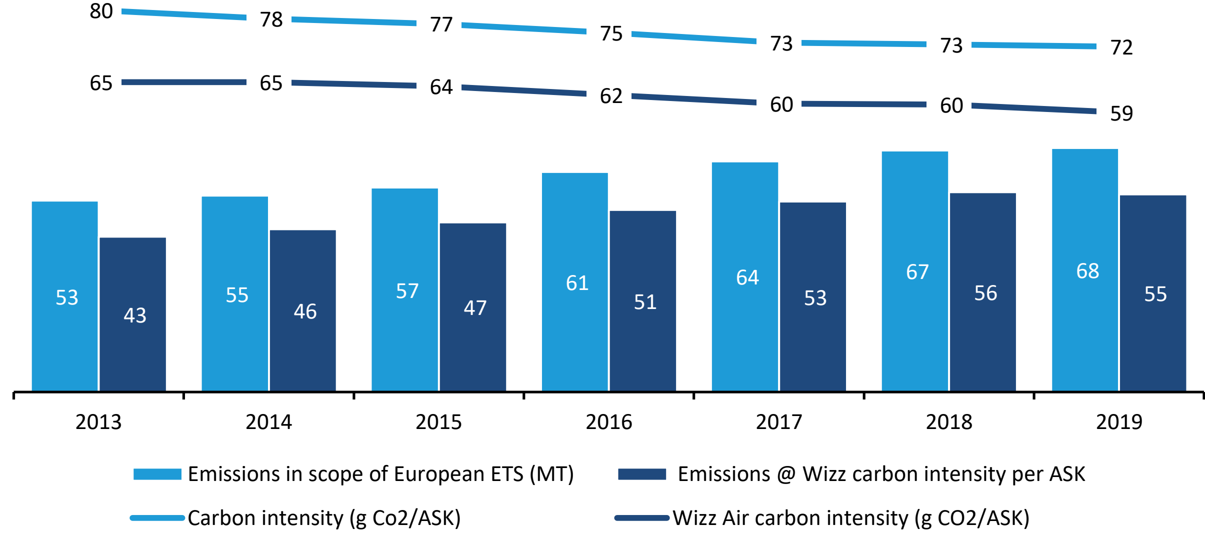
Carbon emissions per ASK: 2019 actual vs. Wizz Air intensity



Source: European Commission, SRS, and Bernstein estimates and analysis

EXHIBIT 6: **...and ~20% less carbon would have been emitted in Europe if other airlines were as carbon-efficient**

2019 carbon emissions in ETS scope and theoretical emissions at Wizz carbon efficiency per ASK



Source: European Commission, SRS, and Bernstein estimates and analysis

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CARBON BILL FOR EUROPEAN AIRLINES WILL LIKELY RISE FROM LESS THAN €1BN PRE-PANDEMIC TO €5.5BN BY 2027

In the last cycle, fuel costs were largely limited to the price of jet fuel itself — oil plus a refining spread, and any other expenses involved with getting it to the airport and into the plane. In the 2020s, costs of decarbonization will likely become increasingly important. Among these, the European ETS, under which airlines flying in the European Economic Area (EEA) and the UK must purchase certificates on the market for the carbon they emit, is the most significant in the near term. As free allowances get phased out by 2027 and the price of allowances rises, we see the bill for the sector rising from less than €1Bn to more than €5Bn, likely more than the entire profit of short-haul aviation in 2019.

- **In 2019, airlines had to purchase ETS certificates for 55% of their carbon emissions.** Under the ETS, airlines are required to buy certificates that give them the right to emit carbon on intra-European flights. All emissions on flights that start and end in the EEA or the UK are in scope, with the UK operating a separate scheme post-Brexit (but that does not change the economic reality faced by airlines). Each airline receives a fixed quantum of allowances for free, which are based on total emissions in the early 2010s. In 2019, 47% of the sector's total emissions were covered by free allowances — in our coverage this runs from 27% at Wizz Air to 46% at IAG and easyJet. At a whole-company level however, Lufthansa, IAG, and Air France-KLM have less overall exposure to ETS within their flying, as the majority of their emissions is produced on out-of-scope long-haul flights (see Exhibit 7).

- **Phaseout of free ETS allowances could increase the burden quickly.** The EU's Fit For 55 deal in 2021 will see free ETS allowances get phased out entirely. These will be reduced by 25% in 2024, 50% in 2025, 75% in 2026, with a full phaseout from 2027. We expect LCCs to welcome the leveling of the playing field: slower-growth carriers, largely the legacy airlines, have enjoyed the benefit of more of their intra-EU emissions being covered by free allowances in the 2010s, but that is soon set to change. However, those with more intra-European exposure (i.e., the LCCs) will have to deal with a greater overall change in per-passenger costs (see Exhibit 9).

- **Unit carbon costs have more than tripled since pre-pandemic, and will likely continue rising to incentivize decarbonization.** The ETS relies on market mechanisms to reduce carbon emissions — the government sets the cap, and the price adjusts until the marginal cost of CO_2 abatement is broadly equal to the price of an ETS certificate, at which point industries switch technology. As total permitted carbon emissions fall, more and more expensive abatement becomes individually rational for the firms in those industries. This suggests ongoing increases in ETS prices over the long run, until we reach plateaus where the aggregate carbon emissions of a certain technology are high. During 2019, certificates traded for ~€24 per ton of CO_2; these are now trading >€80 (see Exhibit 8). Higher carbon costs will present a further drag on margins for the European airline sector over the medium to long term, but this is still much cheaper than widespread use of sustainable aviation fuels for now.

- **In 2019, airlines spent ~€1 on carbon costs per seat; this rises to ~€6 without free allowances and, on current prices, wipes out sector profits.** In 2019, airlines emitted 68.1 billion tons of carbon in the scope of the European ETS and received free allowances covering 31 billion tons. For the remainder, they paid ~ €24 per MT (metric ton), for a total of €919Mn. Removing free allowances doubles the cost, and the

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increase in ETS prices since then more than triples it again. Efficiency gains will help offset higher emissions, likely of the order of 10%, but this still suggests a bill going to €5Bn+. Assuming sector-wide profit per short-haul seat of less than €5, the cost increase of €5 would wipe out aggregate profits. Fares are going to have to rise (see Exhibit 10 and Exhibit 11).

EXHIBIT 7: **ETS certificates principle**

Emissions Cap
Unused permits
Needed permits
Company A sells certificates
Company B buys certificates

Source: Bernstein analysis

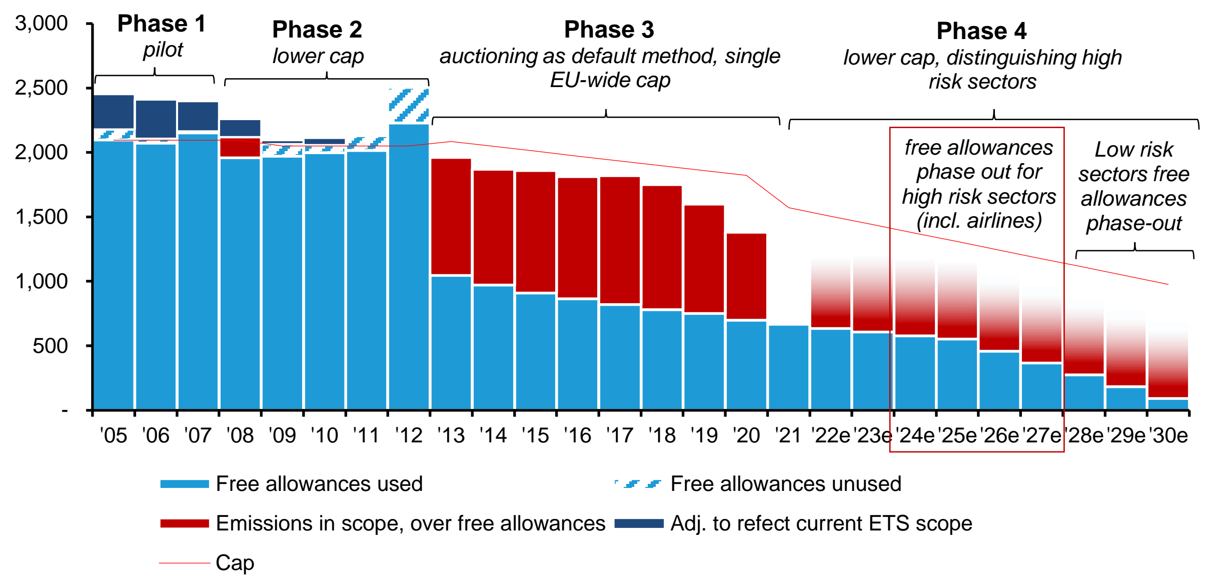
EXHIBIT 8: **Carbon price**

€/ MT

120
100
80
60
40
20
0
€ 93
€ 82
€ 27
€ 0
Jul-20
Oct-20
Jan-21
Apr-21
Jul-21
Oct-21
Jan-22
Apr-22
EU ETS
UK ETS

Source: Bloomberg and Bernstein analysis

EXHIBIT 9: **Total emissions in ETS scope and free allowances**



Note: Free allowances used estimates are from European Commission cap plan to 2030.

Source: European Commission, and Bernstein estimates and analysis

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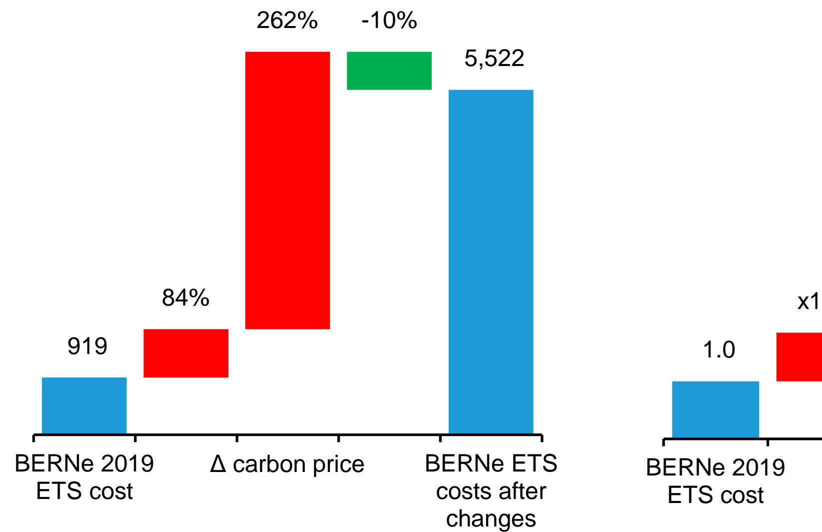
EXHIBIT 10: **European airlines paid ~€1Bn for ETS costs in 2019; absent free allowances and at €90/ton, this would be €5-€6Bn...**

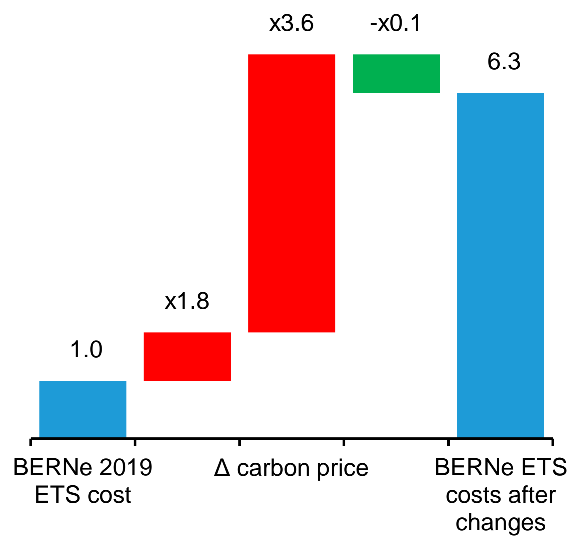
2019 ETS costs — €bn



Source: European Commission, SRS, and Bernstein estimates and analysis

EXHIBIT 11: **...or an ETS cost per seat rising from €1 to €6**

2019 ETS cost per seat — €



Source: European Commission, SRS, and Bernstein estimates and analysis

COSTS RISE FOR ALL, BUT WIZZ AIR IS A RELATIVE WINNER FROM A MOVE TO A LEVEL PLAYING FIELD

European point-to-point airlines face an inescapable cost increase over the next decade as they need to buy more carbon certificates per flight and the cost of each certificate rises. Within the group, not all are the most likely to be negatively affected are those that have grown more slowly since the early 2010s when free allowances were allocated (i.e., everyone except Ryanair and Wizz), as they are most reliant on free allowances today. Prices are going to have to rise to offset the higher cost, and this is likely to mean slower capacity growth and market exits, while legacy airlines' point-to-point operations would need to work hard to justify continued investment. On a relative basis, Wizz has the lowest carbon cost headwind, faces the smallest compression in unit economics, and should emerge as a relative winner as the playing field gets leveled in the next five years.

- **The relevant market is the low-cost airlines.** Simply looking at all airlines and their emissions is possible, but in our view incorrect. The short-haul operations of the main flag carriers lean heavily on connecting travel and business travel — the operations are inherently high cost as the profitability of the business is set up to maximize unit revenues and the vast majority of European traffic touches a connecting hub. In our assessment, a much more informative view on the competitive landscape is achieved through looking at the point-to-point airlines: Ryanair, Wizz Air, easyJet, Vueling (IAG), Eurowings, and Transavia (Air France-KLM). We have data on the profitability of the first five of these.

- **Carbon costs present a significant headwind to profitability; prices must rise.** Airlines are coming into an environment of rising carbon costs with radically different levels of profitability. In 2019, profitability per seat for European point-to-point airlines ranged from losses at Eurowings to €10.5 at Wizz Air. Our analysis earlier in this chapter

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suggests an increase in carbon costs per seat of ~€5, even building in a 10% efficiency improvement. With no other changes, this eliminates profits at easyJet, increases losses further at an unrestructured Eurowings, and compresses unit profitability by well over half at Wizz Air, Ryanair, and Vueling. Airlines would have to price up to pass this through, and that would require market exits as higher prices dampen demand.

- **easyJet's transformation efforts could only offset carbon costs.** With carbon efficiency close to legacy carriers, and slower growth than either Ryanair or Wizz Air since the 2010s, we expect easyJet's carbon cost per seat to rise from €0.9 in 2019 to €5.8 once free allowances are phased out. This increase almost exactly wipes out its entire operating profit per seat. Absent transformation efforts, easyJet is one of the most at risk to a rising carbon price, flipping to loss-making operations at ~€90/ton — a lower level than Ryanair and Vueling, let alone Wizz. However, two factors work in easyJet's favor. First, the transformation program that envisages higher ancillary sales and lower unit costs will likely offset this headwind. We see ancillary sales rising by ~£5 per passenger in perpetuity, and any cost gains come on top. Second, easyJet competes with legacy airlines much more than other point-to-point carriers do — a function of its network that is focused on key cities. The short-haul networks of legacy carriers are likely in an even worse position vis-a-vis carbon costs, so easyJet can maintain a competitive advantage as everyone raises prices on routes between congested hubs.

- **Ryanair is somewhat insulated from cost increases thanks to high growth in the 2010s.** Ryanair has much going for it: high per-passenger economics and a lower reliance on free ETS allowances than many airlines in Europe. However, even here, the increase in costs is steep. Adjusting out losses from Lauda, the airline generated ~€8 of EBIT per passenger in calendar 2019; remove free allowances and increase the price of carbon to €90 per ton, and this compresses to €2.20. Better fuel efficiency from the MAX-8200, as with re-fleeting at other airlines, will be able to offset some, though not all, of the downside; high unit revenues will need to take the strain elsewhere.

- **Legacy airlines' point-to-point networks will need to justify investment.** Most legacy carriers' emissions are from long-haul flights; however, they have large intra-European operations. Connecting travel will still exist, and the long-haul leg can absorb some of the ETS cost. However, the point-to-point network must secure its own future through acceptable returns after all costs. Vueling already does a good job here, and has been proactively reducing its carbon emissions, including incorporating sharklets — aerodynamic devices — into its aircraft, replacing all seats with lighter seats in 2019 (-0.8% CO_2 p.a.), removing paper in airplanes (-0.2% CO_2 p.a.), and optimizing its fuel consumption from the ground to the air. Eurowings has been going through a restructuring, and the final unit economics will determine whether it can continue to justify investment. Air France-KLM's Transavia, with currently high levels of profitability, looks set for a deterioration in unit economics unless the fleet is rejuvenated.

- **Wizz Air is a relative winner from a move to a level playing field.** Wizz Air already has the best unit economics in the sector, with €10-€11 EBIT per passenger in calendar 2019, ahead of Ryanair's ~€8. As free carbon emissions get phased out and prices of

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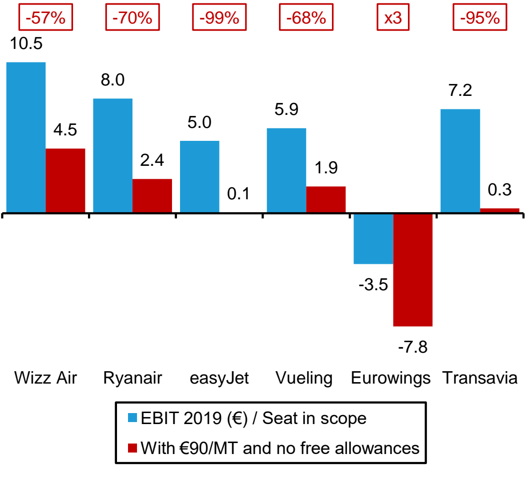
certificates rise, the like-for-like impact of this change will be to depress EBIT per passenger by 57%; a lower fall than any other airline. A competitive disadvantage for Wizz Air in the past thus gets neutralized. Notably, even if carbon pricing destroys demand for European air travel, Wizz Air has a real option to divert more of its traffic outside the EEA to operations in the Middle East, and possibly further afield; this is currently unavailable to other European point-to-point airlines (see Exhibit 12 to Exhibit 14).

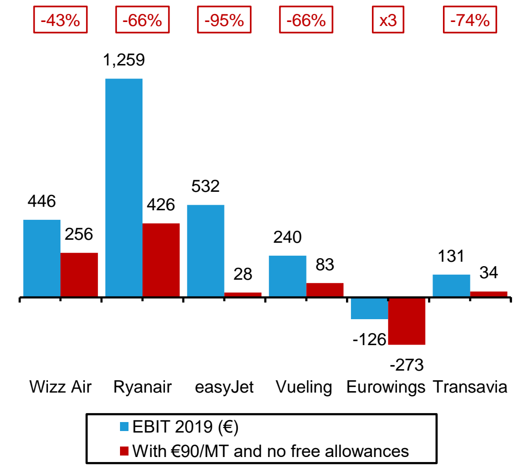
EXHIBIT 12: **Point-to-point airlines need to contend with significant unit carbon cost (low-cost carriers' 2019 EBIT/Seat in ETS scope, actual and with €90/MT and no free allowances (in €))**



Note: Excluding the Lauda acquisition impact for Ryanair

Source: European Commission, SRS, company reports, and Bernstein estimates and analysis

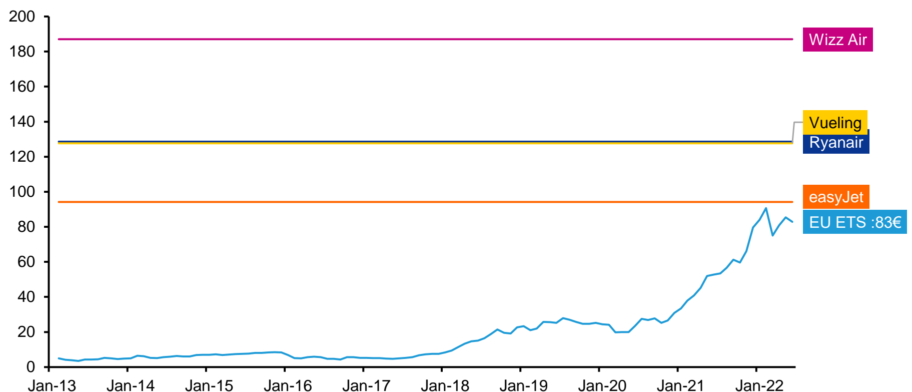
EXHIBIT 13: **Wizz Air is the most insulated point-to-point airline from the increase in ETS costs (low-cost carriers' 2019 EBIT actual and with €90/MT and no free allowances (in €))**



Note: Excluding the Lauda acquisition impact for Ryanair

Source: European Commission, SRS, company reports, and Bernstein estimates and analysis

EXHIBIT 14: **The carbon price is approaching easyJet's breakeven point on 2019 earnings if free allowances were eliminated; Wizz would still breakeven at €180 (LCCs breakeven carbon prices with no free allowances in 2019 (intra-European routes))**



Note: Excludes Lauda losses in Ryanair in 2019

Source: Bloomberg, and Bernstein estimates and analysis

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SETTING OUR TARGET PRICE

Wizz Air: Last great growth story in European aviation (Outperform, TP GBP 55.20)

Wizz Air is *the last great growth story in European aviation*. The network is uniquely well placed to structurally grow at double digit rates for the next decade, compounding capacity and passengers in at least the high teens, and pushing up towards 20% p.a. and a target of 500 planes by 2030. While penetration upside in its home markets of Central and Eastern Europe remains the primary source of growth, the company is also pushing both west and east into new markets where it perceives opportunities, allocating planes flexibly across the region. The airline has a ruthlessly efficient operating model, with the lowest unit cost in the sector and is able to go wing-to-wing against any other player in Europe. This advantage will only increase in the coming decade thanks to the A321neos entering the fleet, which have 22% more seats and ~15% lower fuel burn than an A320. Structurally high margins, a strong management team, limited net debt (almost all of it lease debt) and high FCF make this a quality play to boot.

- **A structural growth runway of more than a decade in its home markets**. The core of Wizz's operation is in Central and Eastern Europe. This region is a rich mine of structural growth: aviation is under-penetrated with c. 75% fewer narrowbody seats per capita vs Western Europe, and GDP per capita has grown at more than double the rate of Western Europe in the last few years. As consumers get more used to flying, and rising incomes lead to more trips, the region will need more planes. We conducted a detailed bottom-up analysis of the drivers of air travel in the region, and in aggregate we see the region as needing 414 more narrowbody jets on 2021 orders based there by 2030. We expect Ryanair to add another 100+, and network airlines and other groups to add another 50-100 once they have repaired wounds inflicted by the crisis – meaning a residual opportunity of c. 250 jets. This may even be conservative, as it does not account for any bankruptcies of existing carriers. The result of this is that Wizz can allocate a majority of its growth to the region without overwhelming demand – while capitalizing on market share opportunities in Western Europe and possibly elsewhere, such as Abu Dhabi.

- **The lowest cost LCC.** There is low-cost aviation, and then there is Wizz. The airline already has the lowest cost per ASK ex fuel (CASKx) in Europe (€2.2ct vs. €2.4ct at Ryanair) and has kept this down through a combination of operating efficiency, a simple business model, and cheaper staff. Wizz's biggest competition in its markets is Ryanair, which flies on almost 40% of its city pairs. As both companies go through fleet renewals over the next decade, it is Wizz that should emerge with a relative advantage. While both airlines' new dominant aircraft types are ~15% more fuel efficient than their predecessors, Wizz's 239-seat A321neo crams in 22% more passengers than Ryanair's 197-seat MAX-200, cutting unit staff costs (75% of which are pilots) and landing charges further and faster. In our assessment, Wizz Air can at least match Ryanair on unit cost, and likely has a slight advantage — meaning no route is untouchable for reasons of competition.

- **Solid management and capital allocation.** Wizz Air is one of the best-run airlines in Europe, ran since inception by founder-CEO József Váradi, but with increasing bench strength in recent years, as seasoned industry executives joined from airlines across Europe and the US. Margins have remained high and stable, and investment has been dependably value-creating with a ROIC around 20% over the last decade The group

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held back from paying a dividend prior to the pandemic despite high and rising cash reserves, allowing it to invest counter-cyclically and accelerate growth as competitors retreated. The group is also not too proud to reallocate capital (i.e., move planes to different markets) when there is a better alternative use for them — opening and closing bases (see closures in Prague and Norway) in a clear-headed way without placing weight on sunk costs.

Wizz Air is our top pick in European aviation. Its growth opportunity is unparalleled, with passenger numbers set to double from FY'20 to FY'25, and to continue expanding thereafter towards a 500-plane target by 2030. Unit costs are the lowest in Europe, and the pandemic has both proved the strength of the operation and seen the group accelerate growth. We see Wizz Air as a quality compounder for years to come, and current share price levels provide an entry point we thought we would never see. Our price target for Wizz Air is set around the historic average P/E of c. 12x, and calibrated with an EV/IC valuation in the terminal year of our model. We rate the company Outperform, with a target price of GBP55.20.

VALUATION METHODOLOGY

Within European airlines, we value earnings growth stocks (Ryanair and Wizz Air) on PE, with the rest of the sector largely on EV/EBITDA, given ongoing changes in the capital structure. We calibrate our valuations with a long-term EV/IC analysis. Airlines that create value should trade at >1x EV/IC; airlines that destroy value through below-WACC returns and excess capex should trade at < 1x EV/IC.

EXHIBIT 15: **Ratings and target prices**

Ticker	Rating	Currency	Closing Price	Target Price
Wizz.LN	O	GBp	2,254.00	5,520.00
AF.FP	U	EUR	1.50	0.85
LHA.GR	U	EUR	6.69	4.75
EZJ.LN	O	GBp	399.40	750.00
IAG.LN	O	GBp	119.80	180.00
RYAAY.US	O	USD	73.14	107.00
RYA.ID	O	EUR	12.48	16.80
MSDLE15			1,745.03	
SPX			4,120.39	

-Source: Bloomberg, and Bernstein estimates and analysis

RISKS

The main risks for European airlines are:

- Macroeconomic factors impacting demand, both leisure and corporate;
- Market capacity growth impacting the supply/demand balance and, therefore, pricing;
- Fuel prices, and carbon prices on intra-European travel; and
- Labor unrest either at the airline or elsewhere in the value chain (e.g., airports) hampering the ability to operate flights.

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LI AUTO: ROLE OF EREV TOWARD A GREENER CHINA

HIGHLIGHTS

- **The extended range electric vehicle (EREV) is a steppingstone to full electrification in China.** While a complete transition to battery electric vehicles (BEVs) with zero tailpipe emissions is widely seen as the end game, range anxiety and charging issues (in addition to affordability) still hinder mass BEV adoption. EREV brings benefits of: (1) low operating costs, (2) BEV-like driving experience, (3) access to green EV license plates and, most importantly, (4) the elimination of range anxiety. EREV attracts onlookers that are yet to fully commit to BEVs for fear of being stranded on the occasional road trip.

- **Li One's 188km-electric range covers 99%+ of driving scenarios.** The average commuting distance for private passenger vehicles in China is ~25km. 90% of the vehicles on the road are driven for less than ~60km on any given day, and 99% of them cover less than ~110km. Taken together with elevated gasoline costs, we believe most Li One users are highly incentivized to plug-in their vehicles to cover the bulk of their driving needs. In addition, Li One's full lifecycle CO_2 emissions per km of drive were 236.1g, lower than many EV SUVs.

- **Resilient growth and margin, backed by strong pricing power.** Li Auto has raised MSRP by RMB12k in April 2022, which more than fully offsets cost inflation on our estimates. Meanwhile, we have not observed a slowdown in demand. 2Q will likely see pressure on margin, which we expect to recover in 2H. Growth momentum will be supported by upcoming launches.

INVESTMENT IMPLICATIONS

We rate Li Auto Outperform with a target price of US$50.00/HK$195.00 based on 2x two-year forward EV/Sales. With a strong product cycle in the upcoming 12 months and the industry recovering from lockdown, we expect Li Auto to see valuation upside from here.

EREV: THE OVERLOOKED STEPPING STONE TO FULL ELECTRIFICATION IN CHINA

Electric vehicles (EVs) are an important pillar supporting China's decarbonization goals to reach peak carbon emissions by 2030 and achieve carbon neutrality before 2060. A full transition to pure BEVs with zero tailpipe emissions is seen as the ultimate goal. However, despite strong top-down push, range anxiety and charging issues (in addition to affordability) hinder mass BEV adoption in China. EREV plays an important role as a stepping stone to a greener China.

Take Li Auto's EREV as our example — Li One comes with a 40.5kWh battery that offers 188km of NEDC range, and also carries a 1.2L three-cylinder internal combustion engine that charges the battery and a 55-litre tank. The powertrain utilizes a gasoline engine to drive a generator, which powers electric motors that drive the wheels (see Exhibit 1).

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Because the EREV can be refueled with gasoline or electricity, it: (1) eliminates range anxiety for consumers. At the same time, the vehicle brings the benefits of (2) low operating costs (low fuel and power consumption), (3) a BEV-like driving experience (e.g., instant torque and acceleration of 0-100km in 6.5 seconds), and (4) access to green EV license plates. As such, it attracts onlookers who want to try out EVs but are not fully committed to BEVs for fear of being stranded when the electricity runs out, or having to spend hours at a charging station on the occasional long road trip.

Skeptics of EREVs dislike the technology mainly for two reasons: (1) EREV is merely a transitional technology as the world progresses toward 100% BEV adoption and, hence, it is not worth investing in; and (2) EREV (and PHEV) owners do not plug-in their vehicles, which diminishes the environmental benefits being claimed. We believe both criticisms display a misunderstanding of the reality in China.

We believe EREV is not transitory in China

On the first point, we think EREV technology will remain competitive in China for much longer, in and of itself and when compared to the US and Europe. As illustrated in our proprietary survey (Chinese Autos: Our proprietary survey of 1,600 Chinese consumers - reaching the inflection point for EV demand) and our previous research (Chinese Autos: Is (super) fast-charging or battery swapping the solution to China's EV charging constraints?), Chinese consumers consider range anxiety and lack of home charging or convenient charging as top concerns when purchasing an EV. Public EV chargers are poorly equipped and maintained. Many accounts have pointed out that the number of usable public EV chargers could be only 30-40% of what is on record and that the majority (~50-60%) of public chargers is fitted with slow AC charging. We consider the availability of residential charging an important determinant of whether a car buyer in China might consider buying an EV, as the availability of parking spaces and local power infrastructure limit residential charging.

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EXHIBIT 1: **EREV is the overlooked stepping stone to full electrification in China; it brings nearly all the benefits a BEV could provide while eliminating range anxiety**

	Powertrain	Battery capacity	Range anxiety	Charging issues	NEV license plate	Purchase tax exemption	Traffic restriction exemptions	CAFC/EV credits	Energy Replenishment
EREV	Battery, Electric Motor, Engine, Generator	40.5 kWh	No	No	Yes	Yes	Yes	Yes	Fast charging Slow charging Refueling
BEV	Battery, Electric Motor	40-100 kWh	Yes	Yes	Yes	Yes	Yes	Yes	Fast charging Slow charging
PHEV	Engine, Transmission, Battery, Electric Motor	10-40 kWh	No	No	Yes	Yes	Yes	Yes	Slow charging Refueling
HEV	Engine, Transmission, Battery, Electric Motor	0.5-5 kWh	No	No	No	No	No	Yes	Refueling
ICE	Engine, Transmission	n.a.	No	No	No	No	No	No	Refueling

Note: EREV owners are not entitled to NEV license plates in Beijing and post January 2023, in Shanghai.

Source: Company reports and Bernstein analysis

ESG CASE FOR LI AUTO

Li One's 188km-electric range covers the vast majority of driving scenarios in China

We think the vast majority of Li One's users recharge their EREVs regularly from electricity. According to the company, 70% of its users have installed home chargers and 90% of them have regular access to fixed charging infrastructure. Li One comes with a 40.5kWh battery, which offers 188km of NEDC range (or ~40-150km in reality), which is much longer than ranges offered by many PHEVs (~50-100km) and is sufficient to cover most trips in China.

According to a study undertaken by Ou, S. et al.,[1] the average commuting distance per private passenger vehicle in China is ~25km. 90% of vehicles on the road are driven for less than 52-63km (depending on geographical region), and 99% of them cover less than 88-112km on any given day. Consider Shanghai, the top-selling city for Li One in 2021 — most people live and work within an area of 40km by diameter and the entire city of Shanghai is only 40km in radius. Li One's full-electric driving range is more than sufficient to cover infra-city travels (see Exhibit 2 to Exhibit 4). With this setup, and together with ever-rising gasoline costs in China, we believe most Li One users are highly incentivized to plug-in their vehicles to cover the bulk of their driving needs.

[1] Ou, S., Yu, R., Lin, Z., Ren, H., He, X., Przesmitzki, S., Bouchard, J., 2019. Intensity and daily pattern of passenger vehicle use by region and class in China: estimation and implications for energy use and electrification. Mitig. Adapt. Strateg. Glob. Chang. https://doi.org/10.1007/s11027-019-09887-0

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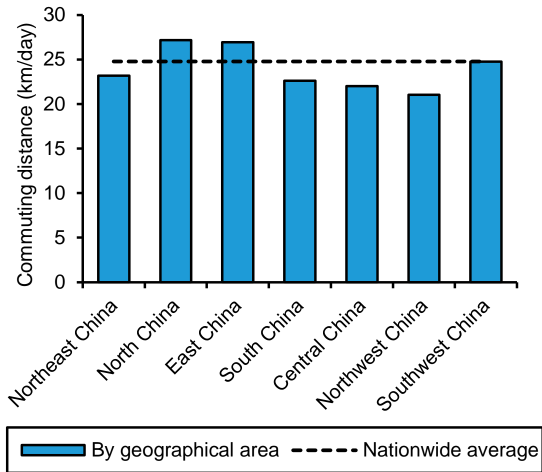
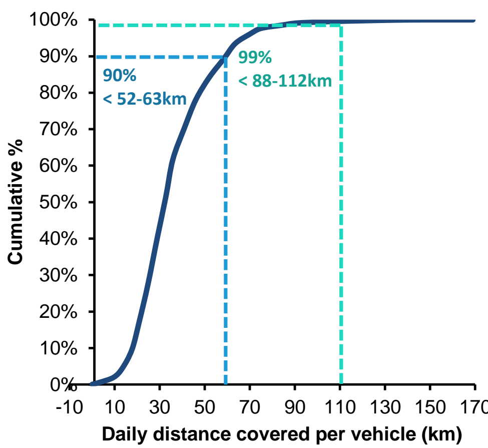
EXHIBIT 2: **Average daily commute in China is ~25km; most Li One owners would only need to charge their EREVs once or twice a week**



Source: Ou, Shiqi & Yu, Rujie & Lin, Zhenhong & Ren, Huanhuan & He, Xin & Przesmitzki, Steven & Bouchard, Jessey. (2020); Intensity and daily pattern of passenger vehicle use by region and class in China. Mitigation and Adaptation Strategies for Global Change; and Bernstein analysis

EXHIBIT 3: **Majority of private vehicles in China cover well under ~60km on any given day; less than 1% travel over ~110km**



Source: Ou, Shiqi & Yu, Rujie & Lin, Zhenhong & Ren, Huanhuan & He, Xin & Przesmitzki, Steven & Bouchard, Jessey. (2020); Intensity and daily pattern of passenger vehicle use by region and class in China. Mitigation and Adaptation Strategies for Global Change; and Bernstein analysis

EXHIBIT 4: **Take Shanghai, e.g., the urban area where most people live and work is only 40km in diameter and the entire city of Shanghai is only 40km in radius; Li One's electric driving range is 188km, and the upcoming new EREV L9 is set to have a range of 215km**

Source: Google Maps and Bernstein analysis

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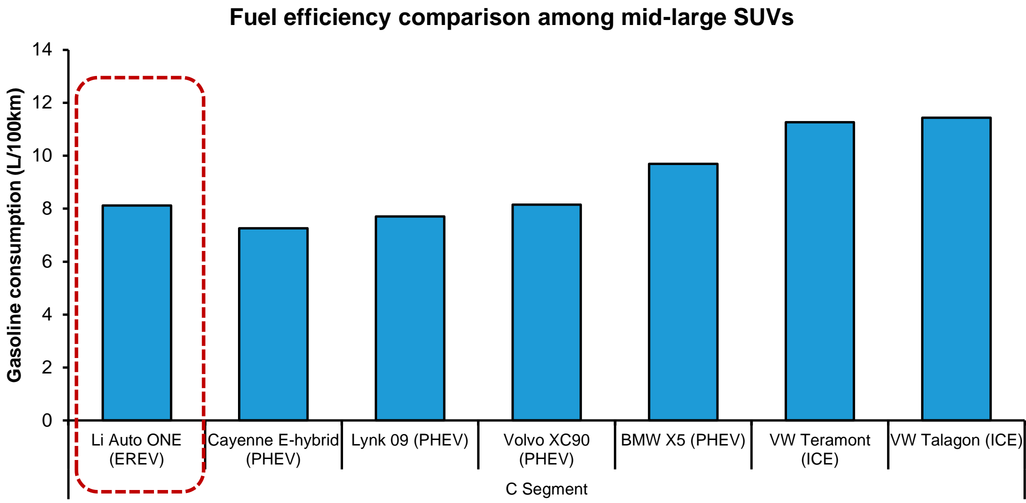
LI ONE EREV IS WELL-RANKED ON FUEL ECONOMY AND FULL LIFECYCLE CARBON EMISSIONS

Li One EREV achieves better fuel efficiency relative to traditional gasoline engine cars as the small displacement engine can be run at constant, optimal speed and torque. Under the gasoline-powered condition, the real-world fuel efficiency of Li One is reported at 8-9L/100km and power efficiency at 15-20kWh/100km, which are reasonably low for a large SUV (see Exhibit 5 and Exhibit 6). Therefore, we believe Li Auto's EREV technology definitely plays a role in reducing overall carbon emissions. In addition, Li One is one of the few hybrid power models equipped with fast charging. For example, entry versions of BYD's PHEVs including BYD Song Pro DM-i and Song Max DM-i are only fitted for slow AC charging, which invites more gasoline usage on the road. Song Pro DM-i, e.g., is equipped with an 8.3kWh battery and has a NEDC electric range of 51km (i.e., ~35-40km in real life). With slow AC charging at 7kWh, it will take over an hour for a full charge, which does not seem "time cost-efficient" at all. Hence, unless there is highly convenient and accessible charging infrastructure, we doubt many PHEV users will regularly plug-in their vehicles.

LI AUTO ALSO STANDS OUT FROM A FULL LIFECYCLE POINT OF VIEW

From a full lifecycle point of view, Li One's full lifecycle CO_2 emissions per kilometer of drive were 236.1g, which is lower than the majority of EV SUVs of similar class, according to the China Automotive Technology and Research Center (see Exhibit 7). Li Auto also contributes to carbon reduction even before its products hit the road. It promotes local procurement to reduce environmental impacts during logistics. By the end of 2021, all of its 191 Tier 1 suppliers were located in China. It also uses environmentally-friendly materials. For example, it has made low-carbon tires from Michelin the standard configuration in Li One and planned future models. Such tires are made from ultra-fine rubber powder recycled from industrial waste and old tires, which cuts CO_2 emissions by 67% during production.

EXHIBIT 5: **Li One has reasonably low fuel consumption...**



Source: Autohome and Bernstein analysis

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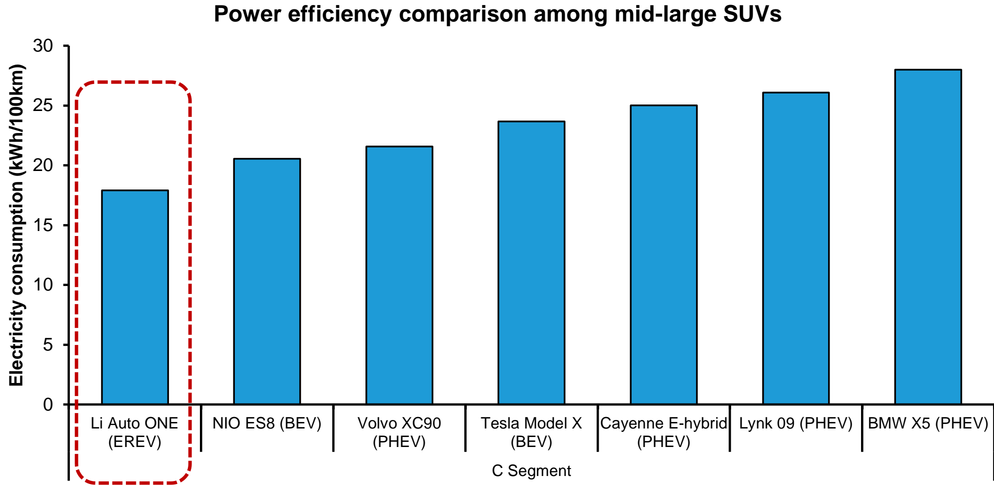
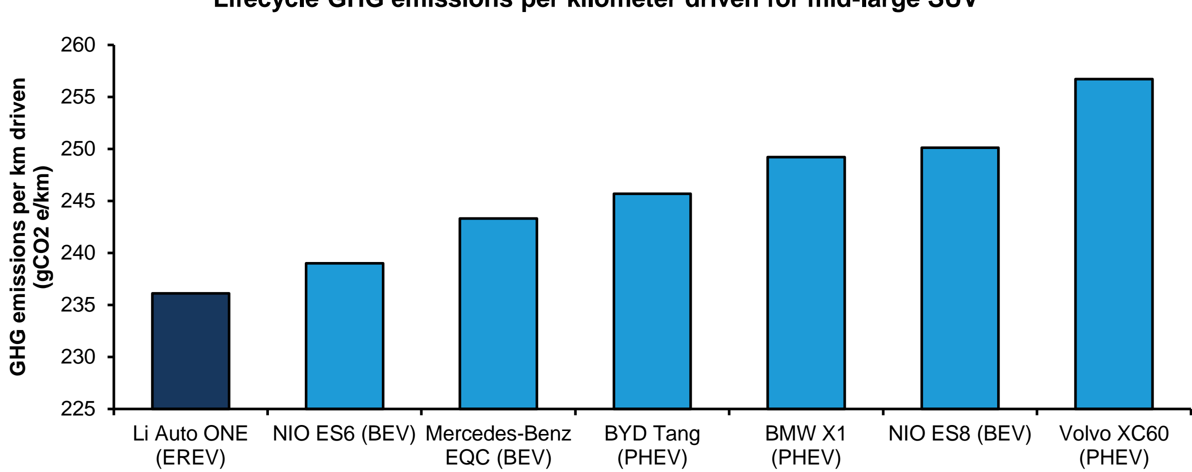
EXHIBIT 6: **...as well as power consumption vs. comparable mid-large SUV models**



Source: Autohome and Bernstein analysis

EXHIBIT 7: **Full lifecycle CO_2 emissions per km of Li One were 236.1g, lower than the majority of EV SUVs of similar class**



Source: China Automotive Technology and Research Center and Bernstein analysis

EREV PLAYS AN IMPORTANT ROLE DRIVING EV ADOPTION IN CHINA

By offering the upsides of a pure BEV (e.g., green license plates and smooth driving experience) and eliminating the downsides (e.g., range anxiety and charging issues for the occasional longer road trip), Li Auto's EREV has proved itself and helps drive EV adoption in China across city tiers. As a percentage of EV sales volume, EREV has grown from nil in 2019 to 4.1% in 2020, 5.1% in 2021, and 5.5% in 2022 (see Exhibit 8 and Exhibit 9).

We don't think EREV is a short-lived technology roadmap either. Given the current progress of EV infrastructure (Chinese Autos: Is (super) fast-charging or battery swapping the solution to China's EV charging constraints?), the favorable product position of EREV will likely remain popular for a long time. We've also seen an increasing number of players

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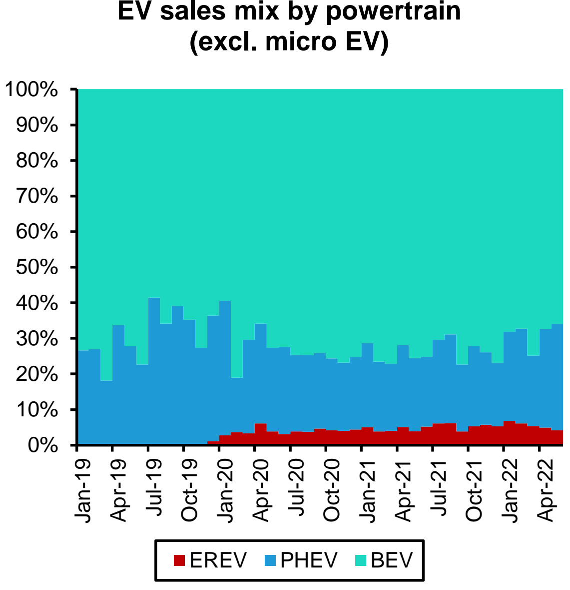
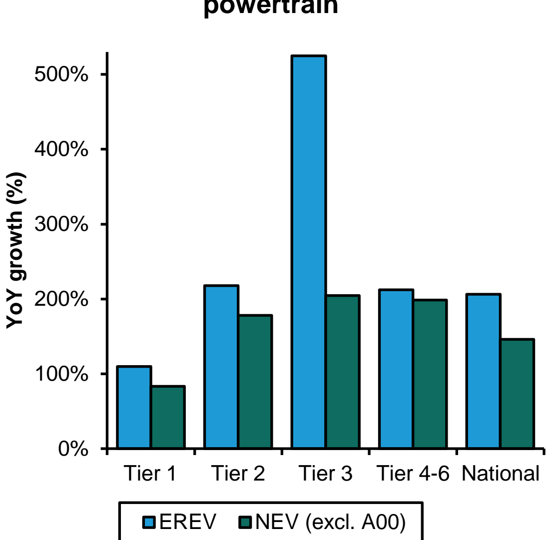
joining Li Auto in making EREVs. In 2021, five new EREV models from five different brands hit the market, including AITO M5 (backed by Huawei) and Sylphy e-power (backed by Nissan) (see Exhibit 10 and Exhibit 11). The product cycle of a car model is designed for up to seven to 15 years. We don't think players such as Nissan and Huawei would bother investing if the technology is transitory.

EXHIBIT 8: **EREV as a share of EV sales volume has grown from nil in 2019 to 5.1% in 2021 and 5.5% in 5M2022**



Source: C.A.D. and Bernstein analysis

EXHIBIT 9: **EREV drives EV adoption in China across city tiers**



Source: C.A.D. and Bernstein analysis

EXHIBIT 10: **We've seen an increasing number of players joining Li Auto in making EREVs; in 2021, five new EREV models from five different brands hit the market, including AITO M5 (backed by Huawei) and Sylphy e-power (backed by Nissan)**

			2019				2020				2021				2022E			
Brand & Nameplate	**Body type**	**Class**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
LI One	SUV	C			Launch													
Dongfeng Fengguang E3	SUV	A0				Launch												
Seres SF5	SUV	B				Launch												
Geely TX5	MPV	B							Launch									
Lexus LX	HB	B									Launch							
Lantu Free	SUV	C										Launch						
Tianji ME5	SUV	A										Launch						
Nissan Sylphy e-power	NB	A											Launch					
AITO M5	SUV	B												Launch				
Geely LEVC TX EV	MPV	B														Launch		
AITO M7	SUV	C															Launch	

Note: Light blue/light gray indicates product is in the market.

Source: Company reports and Bernstein analysis

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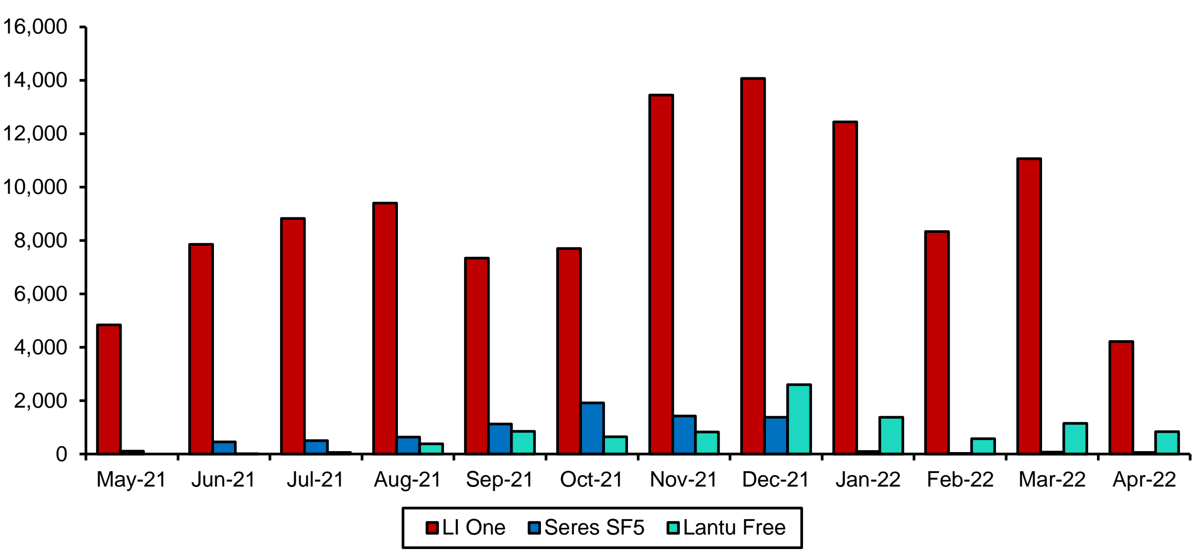
EXHIBIT 11: **Li One, Seres SF5, and Lantu Free are the best-selling EREV models in China; Li One consistently dwarfs its peers on monthly sales volume**



Source: C.A.D. and Bernstein analysis

STRONG PRICING POWER AND SOUND COST CONTROL LEAD TO RESILIENT MARGIN

In the uncharted territory of high cost inflation, we think Li Auto is better positioned than its peers thanks to strong pricing power. Since the beginning of 2022, the industry has experienced significant raw material cost inflation, primarily driven by battery, as well as semiconductor chips and metals, etc. With this backdrop, most OEMs have raised prices on their EVs to pass through higher costs to customers. Li Auto raised MSRP by RMB12k (or 3.5%) on Li One. We estimate the price hike more than fully offsets raw material cost inflation experienced so far this year (see Exhibit 12 to Exhibit 14).

Li Auto has consistently maintained better margin among its peers and tracked sequential improvement. By 1Q22, Li Auto hit GPM of 22% vs. NIO 15% and XPeng 12% (see Exhibit 15). 2Q22 will likely see margin pressure as the company worked through orders placed before the price hike, but we expect margin to recover in 2H. We also expect that momentum will keep up, driven by the new EREV model of L9 to begin delivery in Q3.

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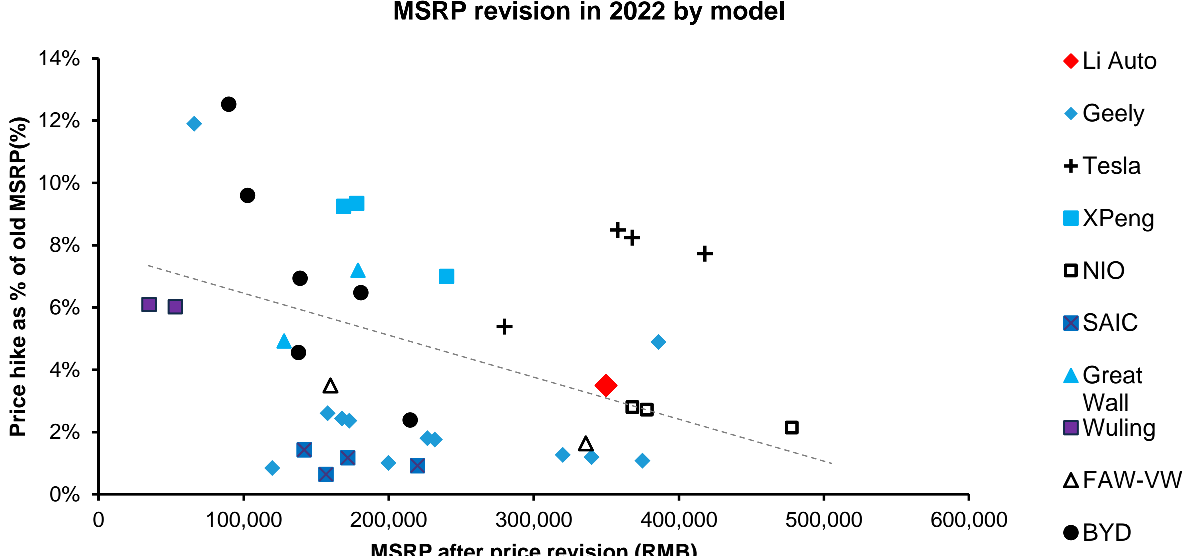
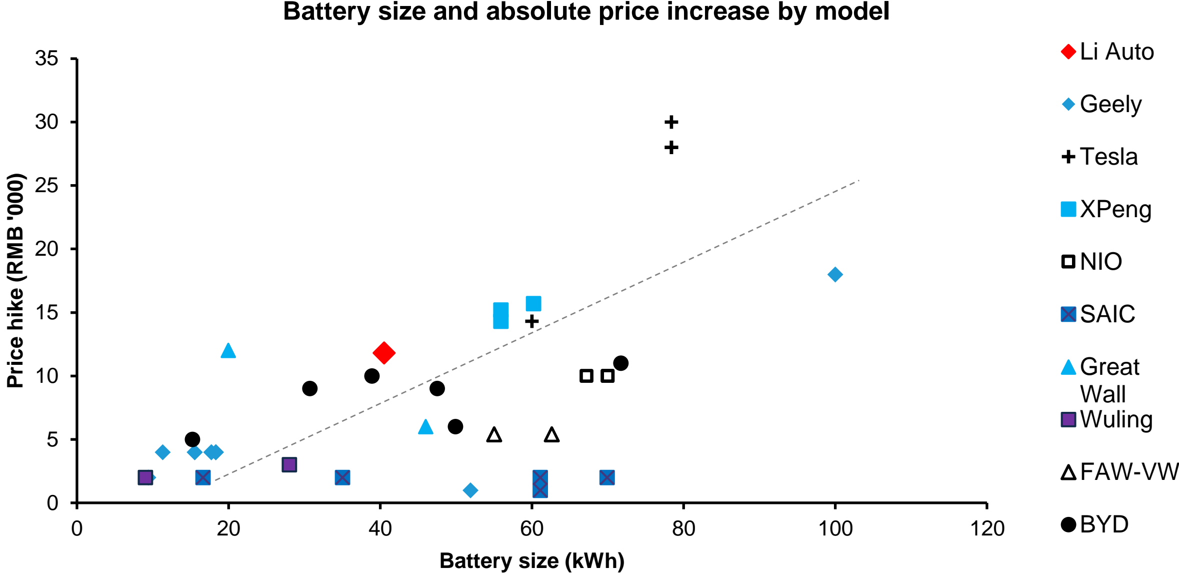
EXHIBIT 12: **Under industry-wide cost inflation (i.e., batteries, chips, and metals), Li Auto raised MSRP by above-average percentage points**



Source: Autohome, company websites, and Bernstein analysis

EXHIBIT 13: **Taking battery size into consideration, Li One has the highest price revision among models with battery size of 30-50kWh, speaking to its good ability to pass on cost pressure**



Source: Autohome, company websites, and Bernstein analysis

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EXHIBIT 14: **We estimate Li Auto's price hike can (more than) fully offset raw material cost inflation experienced so far this year**

2022: Price hike vs. Battery cost inflation

Price hike / battery cost inflation (in RMB)

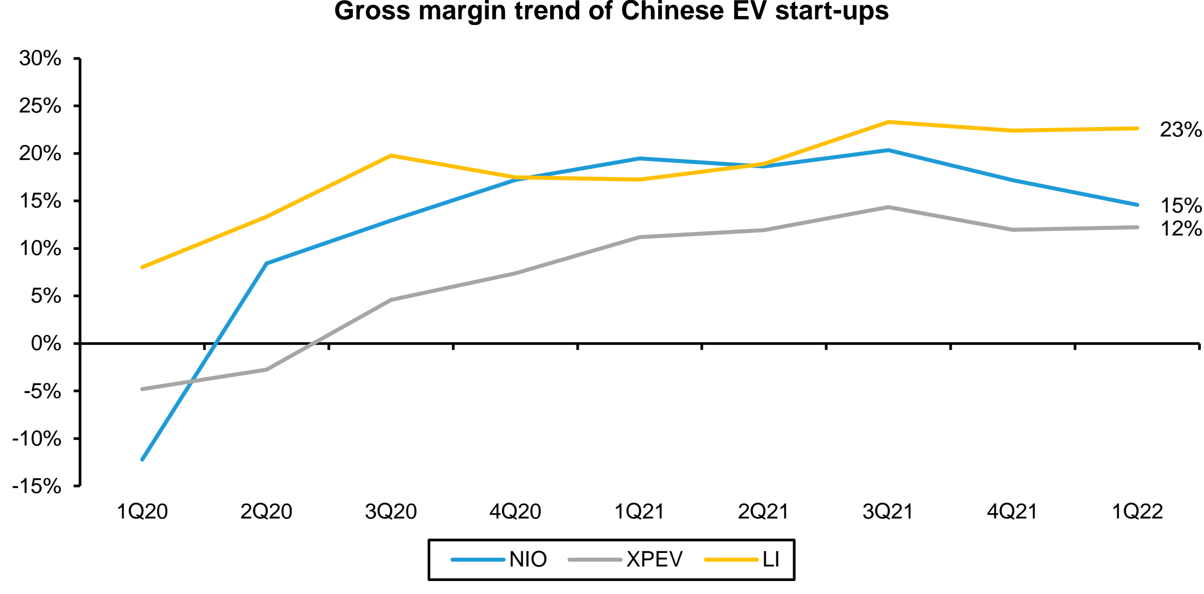
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0

Li Auto
NIO
XPeng

Price hike (excl. subsidy cut)
Battery cost inflation (estimate)

Source: Company websites, and Bernstein estimates and analysis

EXHIBIT 15: **Li Auto has largely consistently tracked better gross margin and sequential improvement among the Chinese EV start-ups; Q2 will likely see margin pressure as the company works through orders placed before the price hike, but we expect margin to recover in 2H**



Source: Company reports and Bernstein analysis

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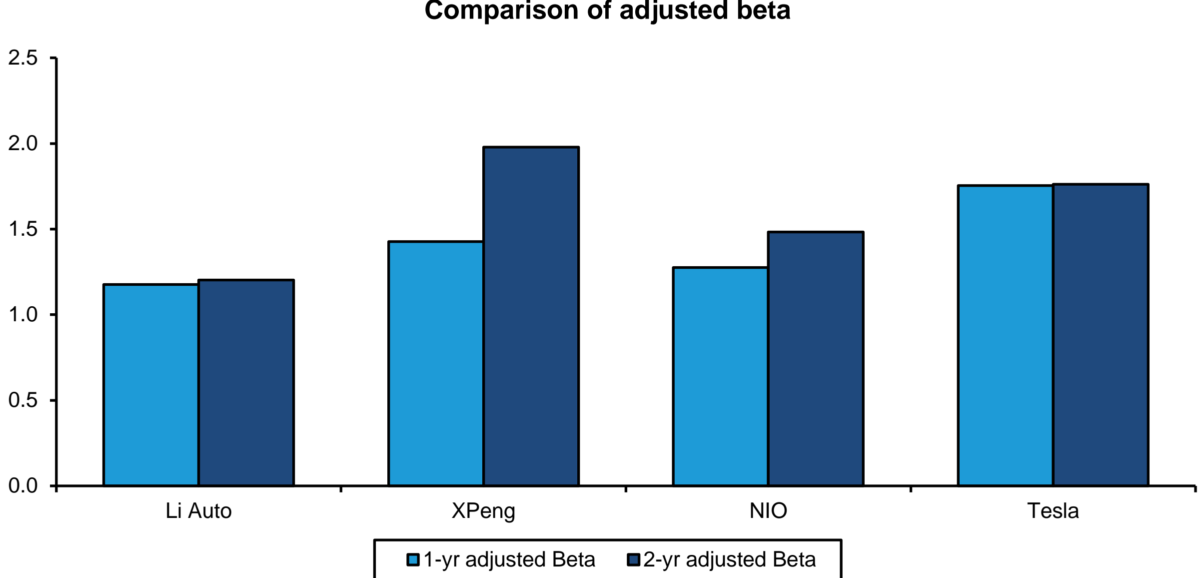
LOW VOLATILITY PLAY AMONG MACRO UNCERTAINTIES

Our strategy team identified low volatility stocks as the best suited among current macro uncertainties (Global ESG/Strategy Research: ESG in Action - What ESG stocks to own in an inflation-led slow down or recession?). Li Auto has shown consistently lower volatility in terms of stock price among its domestic peers (see Exhibit 16). Moreover, its operating cash flow has been positive for eight consecutive quarters since 2Q20 and it's well on track to turn around in 2023E, the earliest among its domestic peers.

EXHIBIT 16: **Li Auto has shown consistently lower volatility in terms of stock price among its domestic peers**



Source: Bloomberg and Bernstein analysis

VALUATION METHODOLOGY

We value Li Auto primarily using forward EV/sales multiples, given losses which we expect will endure for a number of years. We reference the valuations of EV peers such as Tesla. We also refer to estimates of the company's longer-term (e.g., 2025-30) profit potential, which we multiply by PE, then discount back to the present. We rate Li Auto (ticker: LI/2015.HK) Outperform with a target price of US$50.00/ HK$195.00 based on 2x two-year forward EV/sales multiple. It closed at US$33.20/HK$132.00 and is benchmarked against the SPX/MXAPJ that closed at 4,140.06/524.70. Closing prices as of August 8, 2022.

RISKS

The main risks around Li Auto relate to sales of the Li One and future vehicles, product quality and potential recalls, execution around the company's retail footprint expansion, and future product and technology development.

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ZTO: 2Q PREVIEW — MULTIPLE MEASURES TO ATTAIN SUSTAINABLE GROWTH

HIGHLIGHTS

- **Greener transportation and high-capacity trucks to fend off inflation.** 83% of ZTO trucks are high capacity (17 meters long). Diesel consumption per parcel went down 17% p.a. in FY19-FY21, helping it fight against increasing fuel costs that take up ~14% of its operating costs. ZTO orchestrated 7.2k NEVs (new energy vehicles) for its franchisees in their last-mile delivery for greener transportation.

- **Treating its franchisees well.** ZTO's Tri-layer Integrated System involves investing in its franchisees and assisting them to build mini-sorting capability at outlets, not only enhancing ZTO's network efficiency but also the profitability of franchisees. ZTO is also cautious of the financial stability of franchisees; it provides timely payment to its franchisees while the other Tongda owe an average of RMB0.6Mn per direct franchisee.

- **As industry parcels declined ~0.8% YoY in 2Q22, we expect ZTO volume to moderate to about +5% YoY.** Yet, ~90% of its earnings growth came from ASP increase in 1Q22 rather than volume. We believe a 5ppts decrease of volume (from 21% in FY22) will only lower ZTO profit growth by 5ppts from 21% (base case) to 16% in the same year.

INVESTMENT IMPLICATIONS

We rate ZTO Outperform. We expect ZTO to continue to gain share with its adjusted net income set to increase by 4% YoY in 2Q22.

PARCELS BOTTOMED OUT IN MAY

Clearly, the massive lockdown in some cities earlier this year has taken a toll on the growth of express delivery. Express delivery started strong at the beginning of the year, industry volume increased +20% YoY on a high basis in January and February, but the number of parcels dropped abruptly in March and 2Q22 since the start of the lockdown. Express delivery parcel volume will likely hit the worst quarter in 2Q22 in the last10 years, with a decline of ~1% YoY in our latest estimate.

In the last five years, volume growth and cost-saving both attributed to most Tongda players' (including ZTO, YTO, STO, and Yunda) gross profit growth and each contributed equally over 2017-21. But much of the incremental gross profit was offset by the lowering price, as leading mass express delivery companies compete intensively for the fast-expanding parcel base. Automation, high-capacity trucks, continual operation optimization, and fast volume expansion pushed down unit operating costs fast. However, in 2017-21, the Tongda's gross profits only grew at a 7% CAGR (or only an RMB3.8Bn increase for

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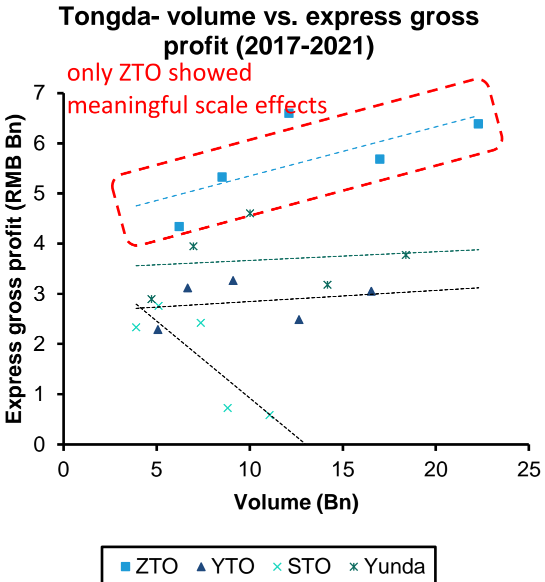
Tongda over 2017-21), significantly below the 35% five-year compound growth of volume during the same period.

As price competition among Tongda eased since the second half of last year, volume and cost reduction are no longer the profit growth drivers of Tongda companies. Tongda's ASP increased by 6.7% YoY in 1Q22 and we expect the upward trend to continue at least in 2022, and to likely extend to 2023. We estimate that 91% of ZTO gross profit increase came from its ASP increase in1Q22, as ASP increased 8.5% YoY in the quarter. On a full-year basis, ~90% of ZTO gross profit increase will come from price increase according to our latest estimate, under the assumption that ASP will increase at 5.9% YoY in FY22.

Apart from ZTO, other Tongda also benefited from the increase in pricing trend. Similar to ZTO, ASP change attributed to the majority of their 1Q22 profits increase. YTO and Yunda reported 131% and 51% YoY of earnings increase, respectively, in 1Q and we expect Yunda to achieve 29% YoY net income growth in FY22, while consensus forecasts YTO net income to increase at 45% YoY. Although parcel volume will not increase as fast as last year due to the setback in 2Q, rising ASP will likely support earnings growth for the Tongda this year.

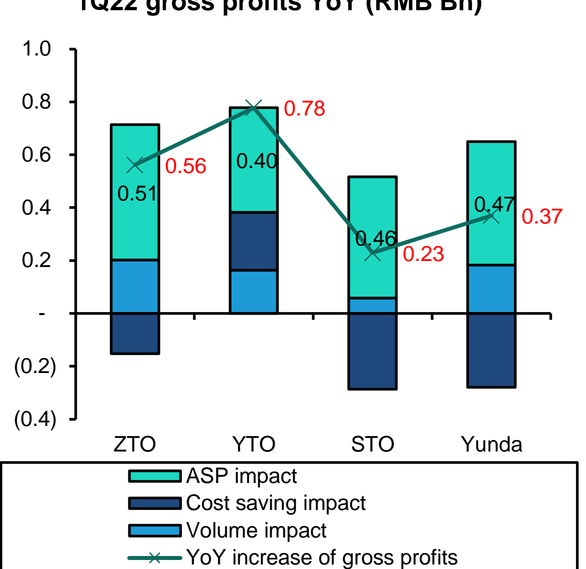
Express delivery companies are probably one of the few sectors that will see relatively strong profit growth this year. Carrying a strong balance sheet with abundant cash, ZTO has a very low debt ratio; hence, the company is shielded from rising interest rates should that happen (but China is lowering interest rates). Its investments in greener transportation and greater support to its franchisees will also enable the company to outperform competitors in an environment of high inflation and slowing growth (see Exhibit 1 to Exhibit 4).

EXHIBIT 1: **Only ZTO showed meaningful scale effects**



Source: Company reports and Bernstein analysis

EXHIBIT 2: **ASP is now becoming the key profit growth driver**



Source: Company reports and Bernstein analysis

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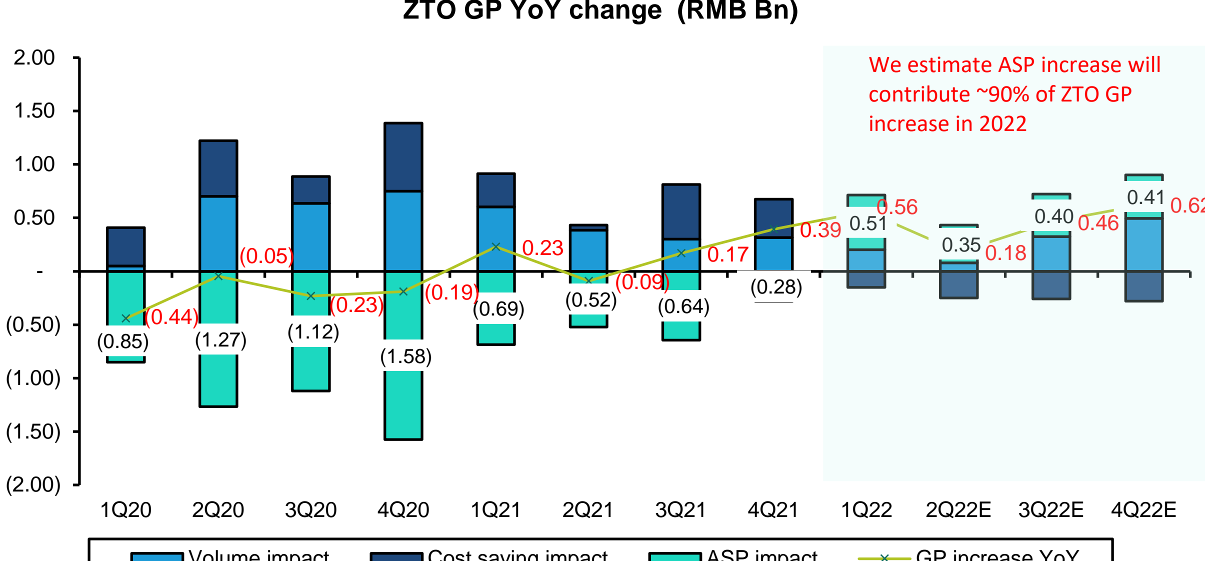
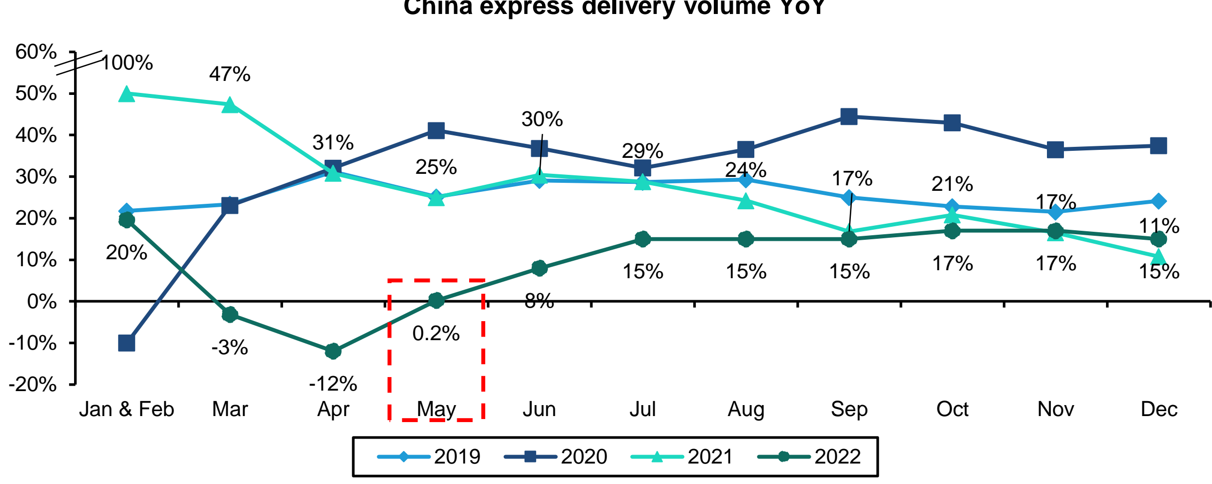
EXHIBIT 3: **Volume is no longer the major profit driver, and ASP increase will likely contribute ~90% to ZTO gross profit increase in 2022 by our estimates**



Source: Company reports, and Bernstein estimates and analysis

EXHIBIT 4: **Emerging data suggests market volume returned to growth path in June**



Source: State Post Bureau (SPB), and Bernstein estimates (June 2022+) and analysis

Increasing service standard while keeping its cost base low

ZTO consistently leads other Tongda in customer satisfaction. It is ranked only behind the premium players (SF, JD Logistics, and EMS of China Post). Beyond customer satisfaction, it continues to shorten its delivery time. Delivery time was measured on an end-to-end basis, from when parcels are picked up to when they are delivered to customers. The survey is conducted by SPB every year. In 2021, ZTO surpassed EMS for the first time, ranked No. 3, just after SF and JDL. ZTO's high-quality service allows it to charge a slight premium

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to other Tongda, e.g., ZTOs ASP in Yiwu was RMB2.2-RMB2.5 in April 2022, which was ~RMB0.2 higher than other Tongda. ZTO then pays out higher last-mile fees to outlets, at RMB1.3- RMB1.4 on average in 1Q22 (~RMB0.1 higher than peers).

The decade-long price war has triggered regulator attention. The government sees that continuous price cuts will take a toll on society; as express delivery incumbents earn less and less, they have to cut courier salaries and limit infrastructure investments, which will hamper service enhancement — undesirable from ESG perspectives. SPB has mandated price increases among the mass delivery companies since 2H21. Tongda's average ASP increased by 6.7% YoY as of 1Q22. The companies reported rising ASP in recent months as well, at an average increase of 19% YoY in May (net of the impact caused by Cainiao's accounting methodology change). SPB launched a price-dumping regulation in April 2021. As a result, price leader J&T, had to increase its price (to customers) in Yiwu by ~RMB1 from RMB2.3-RMB 2.35, although the Yiwu government softened scrutiny on price cuts later to avoid a massive outflow of merchants to other regions (as such ASP came down a bit in April 2022). J&T's pricing is now closer to YTO/Yunda and has doubled from its low point. Its daily parcel volume post-integration is said to be at 40 million in May (market share at ~13%), 16-20% below YTO/Yunda by volume, suggesting that it has lost around one-fifth of parcels after the required price increase and integration. J&T is hoping to achieve breakeven by the end of this year, through improved service rather than lower pricing

The competitive dynamics among e-commerce platforms is also changing, from Tmall/Taobao accounting for the majority of e-commerce parcels to a more even distribution of parcels coming from various platforms, including PDD and the up-and-rising live-streaming platforms. At the same time, as e-commerce penetration has increased to 36% in China, in categories such as electronics & appliances and toys & games, they will have limited growth upside, given their high online penetration. We expect the growth gap between e-commerce and physical retail will narrow in the future and, thus, competition among e-commerce platforms may intensify. In 2021, Alibaba's GMV growth slowed further while Kuaishou and Douyin expanded fast. E-commerce platforms are willing to pay a higher delivery fee to win consumers from competitors. For example, Douyin is subsidizing its merchants in parcel delivery, and the platform introduced a new opt-in service with ZTO, YTO, and Yunda that allows customers to receive parcels at their doorstep, rather than collecting them at the post office. In e-commerce parcel delivery, ZTO is well-positioned to benefit from the live-streaming boom. ZTO said that it is Douyin's largest delivery partner, delivering more than 25% of Douyin parcels. ZTO's better service matches well with Douyin's mid-high segment positioning (with a GMV of ~RMB100 per order). J&T's and Yunda's low-price strategy (in the past) made them attract more parcels from PDD's low-GMV merchants, while STO and YTO have higher reliance on Tmall/Taobao. Going forward, high-quality delivery companies such as ZTO stand to benefit, as the choice of delivery vendor is more merit-based. To prepare for a continual shift from price to quality, ZTO now offers a time-definite product at a reasonable price, which is only RMB1-RMB2 higher than its core mass service (see Exhibit 5 to Exhibit 9).

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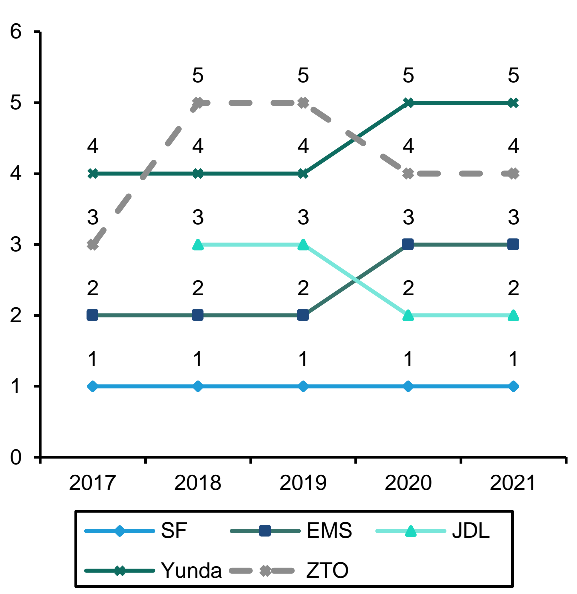
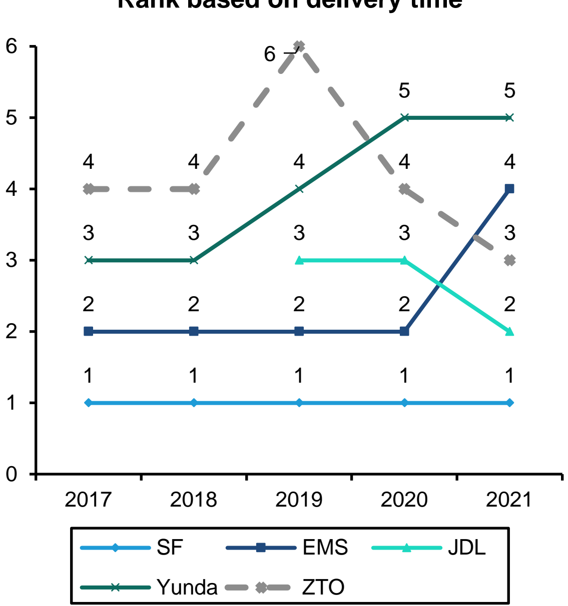
EXHIBIT 5: **ZTO service leads other Tongda players and is only behind the premium players**



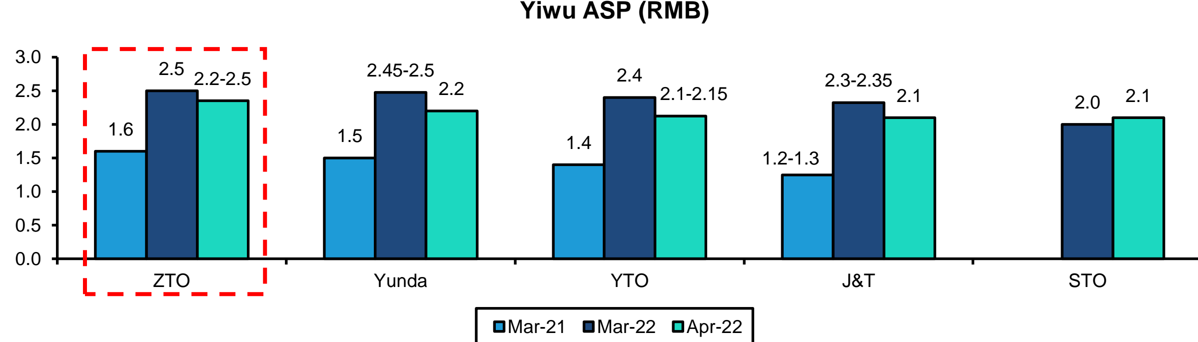
Source: SPB and Bernstein analysis

EXHIBIT 6: **ZTO delivery time surpassed EMS in 2021, ranked as Top 3 for the first time**



Source: SPB and Bernstein analysis

EXHIBIT 7: **ZTO's better service allows it to charge a slight premium against the other Tongda**



Source: Expert interviews and Bernstein analysis

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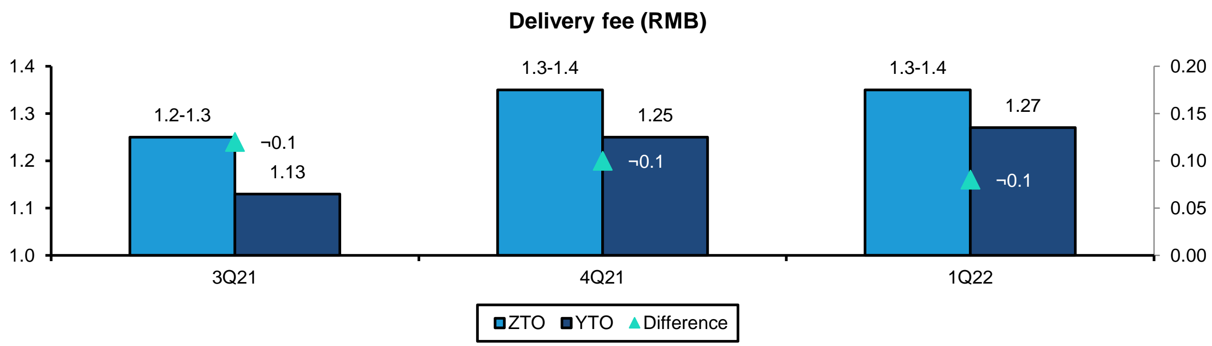
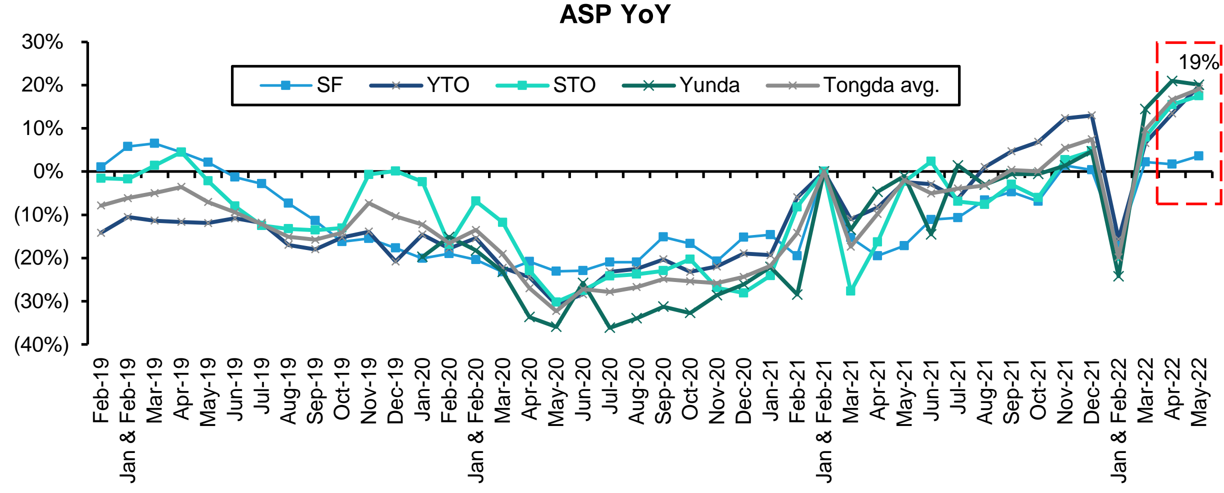
EXHIBIT8: **ZTO provides higher last-mile fees to outlets, ~RMB0.1 above peers**



Source: Management discussion, and Bernstein estimates and analysis

EXHIBIT 9: **Tongda ASP continued to trend upward in May, at an average increase of 19% YoY**



Source: Company reports and Bernstein analysis

Greener transportation with high-capacity trucks to fend off inflation

ZTO advocates green transportation; it has already converted 83% of its fleet to high-capacity trailer trucks that are 15-17 meters long instead of the traditional 9.6-meter trucks, with a carrying capacity of 35 tons compared to 16-18 tons for 9.6-meter trucks. The high-capacity trucks can lower fuel consumption and pollution by 55% and over 70%, respectively. ZTO uses NEVs in last-mile delivery, with 7.2k NEVs across its network (vs. SF's 21k NEVs). The adoption of NEVs would allow the company to reduce CO (carbon monoxide) and CO_2 (carbon dioxide) emissions by ~20% and over 95%, respectively. Diesel consumption per 1,000 parcels went down at a 17% CAGR over 2019-21, while CO_2 emission per parcel reduced by a 16% CAGR in the same period, as ZTO continues to grow its parcel base. ZTO's efforts in green transportation have allowed the company to fight against increasing fuel costs that take up ~14% of its operating costs in 3Q21. Fuel cost did not impact ZTO's line-haul cost much in the past due to productivity improvement.

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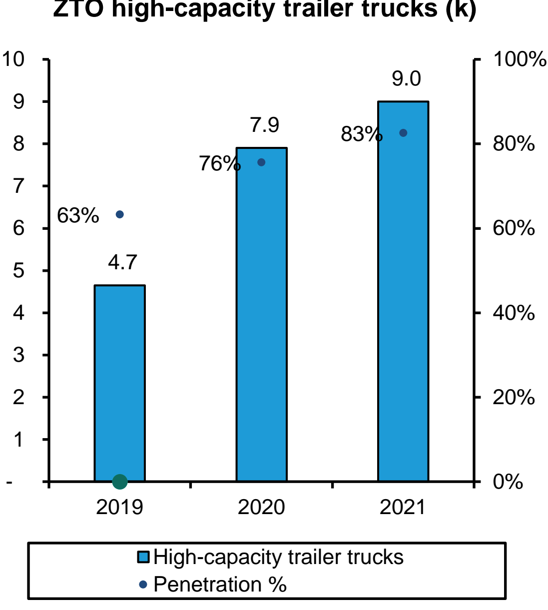
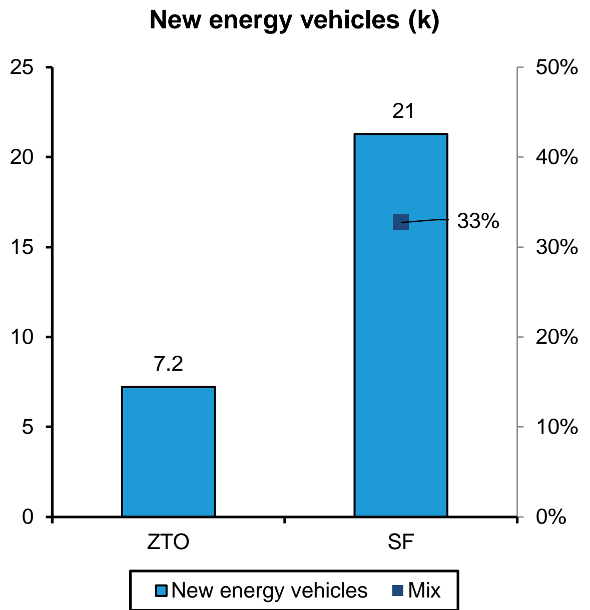
Other than transportation, the company has also endeavored to reduce packaging materials. ZTO increased its automated sorting equipment to 385 in 2021 (21% 2019-21 CAGR) and its automated equipment per parcel rate is high compared to YTO (whose scale is similar to ZTO). By using automated equipment, damages are reduced and hence repackaging needs will be lowered. By 2021, over 92% of ZTO's e-commerce parcels didn't require repackaging, from 70% the previous year. E-waybill utilization rate also reached 100% in 2021 (see Exhibit 10 to Exhibit 13).

EXHIBIT 10: **ZTO has already converted 83% of its trucks to high-capacity trailers**



Source: Company reports and Bernstein analysis

EXHIBIT 11: **ZTO uses NEVs in last-mile delivery**



Source: Company reports and Bernstein analysis

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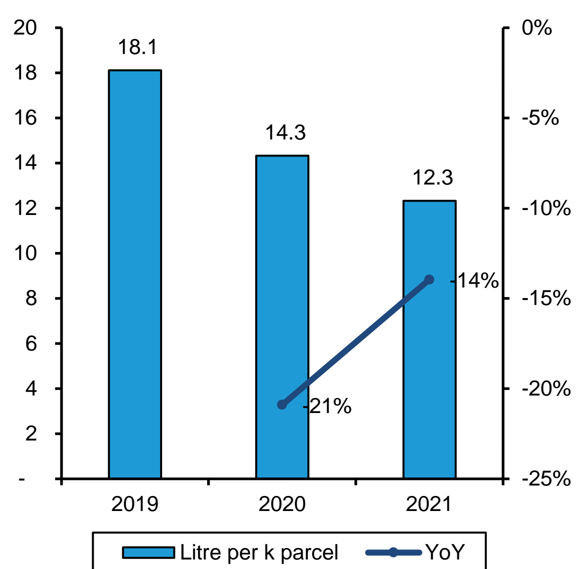
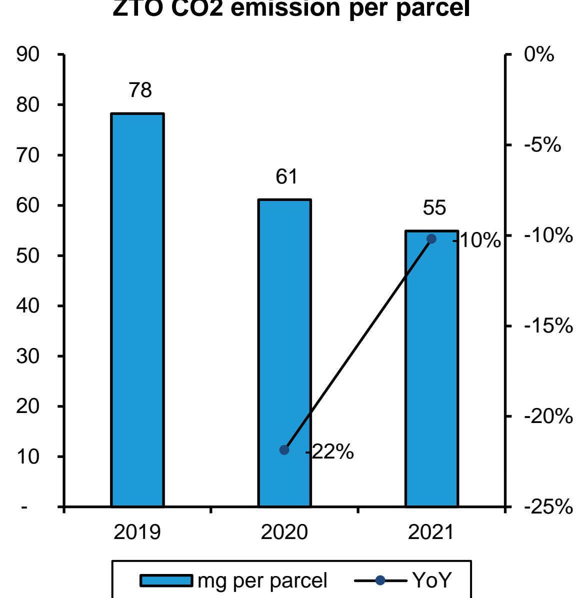
EXHIBIT 12: **Diesel consumption per t1,000 parcels went down in 2019-21...**



Source: Company reports and Bernstein analysis

EXHIBIT 13: **...while CO_2 emissions per parcel reduced by a 16% CAGR**



Source: Company reports and Bernstein analysis

ZTO takes care of its franchisees

ZTO does not only invest in capex ahead of competitors, its advanced investment in the Tri-layer Integrated System involves investing in its franchisees. Given ZTO has invested early in its infrastructure, vehicles, and automation, and that its volume has achieved a good scale, ZTO is stepping up to further enhance its operational efficiency, whereby some parcels can skip one or all of the sorting processes during line-haul transportation. ZTO plans that in the next three to five years, 15-20% of parcels will be sent either from origination outlets to destination sorting hubs (bypassing origination sorting centers), or directly from origination outlets to destination outlets. There will be ~100 super sorting centers operated by ZTO; on top of that, the company will empower network partners (franchisees) to take on more responsibility and assist franchisees to build up ~200-300 mini-sorting centers (that are jointly or solely owned by franchisees). This can further lift cost efficiency, and part of the savings will likely be distributed to franchisees.

ZTO offers better supports to franchisees and achieves better network stability. In 2021, ZTO provided RMB2.5Bn in loans to qualified selected network partners to enhance their cash flow and liquidity, and allow them to make long-term investments in the business to achieve sustainable growth in the sector. ZTO also pays heed to the liquidity of franchisees. The company keeps the payables to its franchisees low. Compared to Tongda, that reported an average of RMB600,000 payables per direct franchisees, ZTO held a net receivable balance or a very low payable amount, suggesting that ZTO makes timely payment to its franchisees. ZTO also said the company gives out higher last-mile fees to its delivery franchisees compared to other Tongda (see Exhibit 14 and Exhibit 15).

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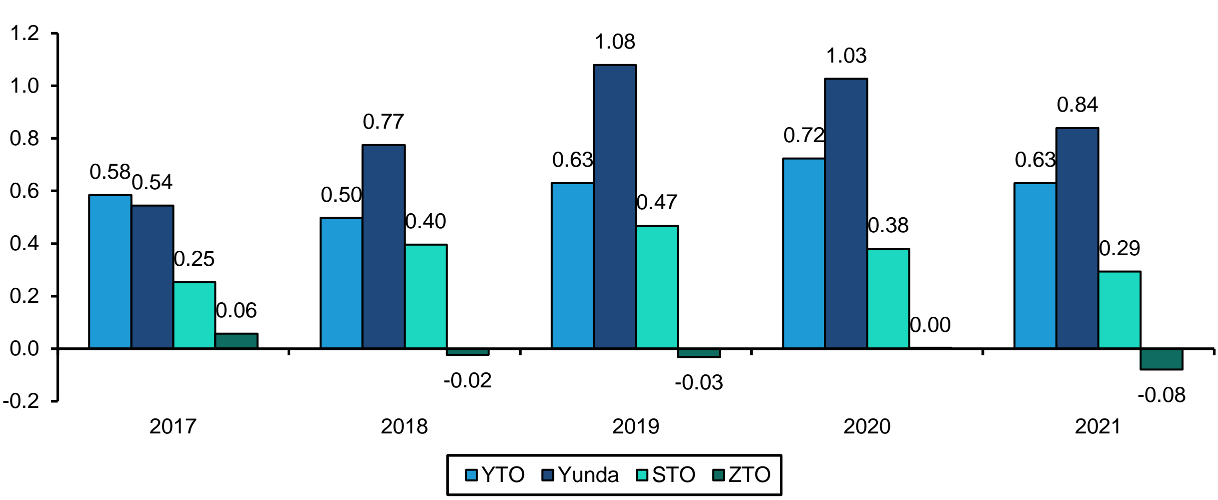
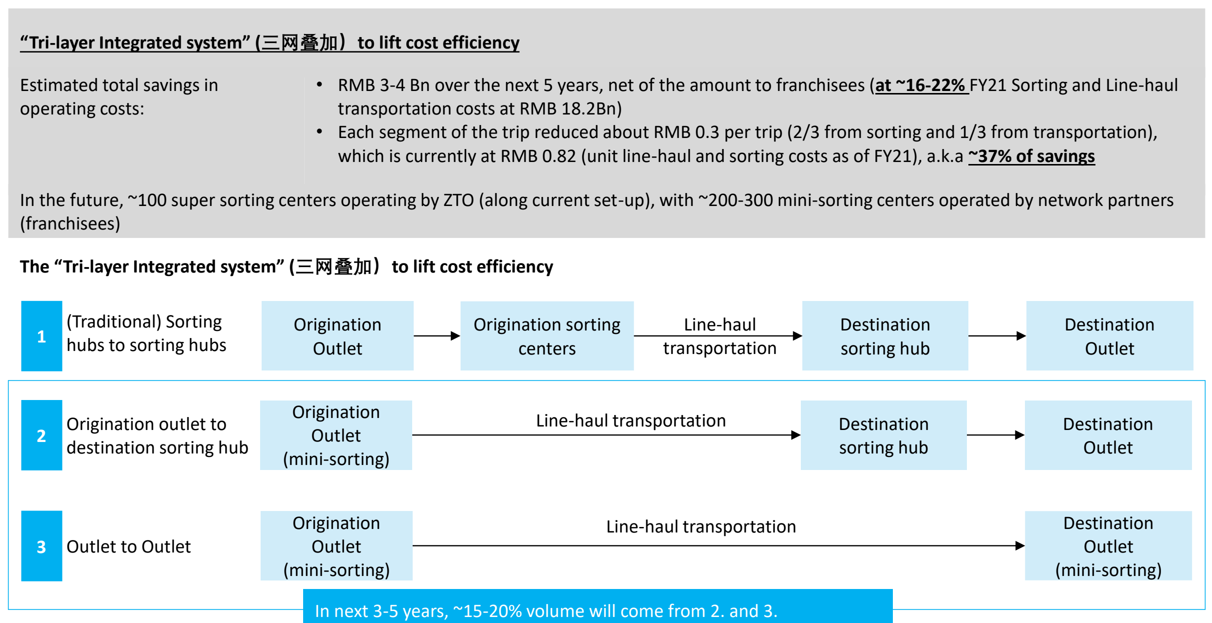
EXHIBIT 14: **ZTO held net receivable balance/very low payable**



Source: Company reports and Bernstein analysis

EXHIBIT 15: **ZTO's advanced investment in the Tri-layer Integrated System involved investing in its franchisees**



Source: Management discussion and Bernstein analysis

Slight earnings growth in 2Q22 under massive lockdown

2Q22 was tough for all logistics operators, but we expect macros to improve in the subsequent quarters, as China eases lockdown measures. Parcel volume is already back to the growth path in May, increasing at +0.2% YoY in May, reverting from a decrease of 11% YoY in April. As highway operations had largely resumed toward the end of April and more delivery outlets have returned to work, logistics operations in China were almost back to

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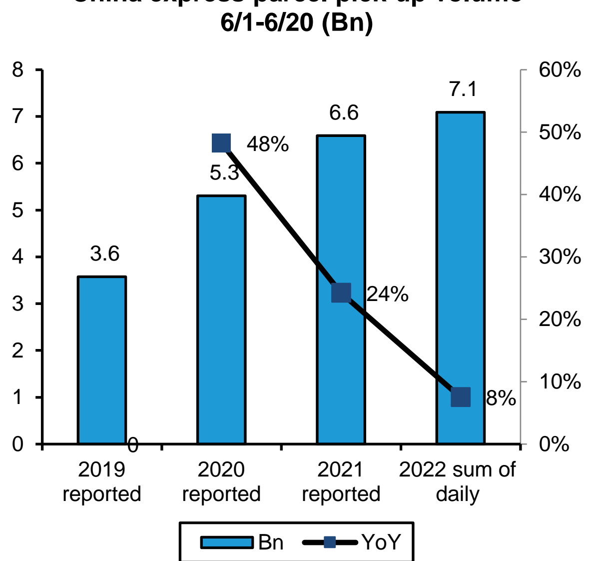
normal since the beginning of May, except for lockdown cities. Online physical sales were up 7.0% in May, improved from April's -5.2% YoY. Parcel volume lagged online physical sales in May as it takes time for delivery companies to clear parcels that were stuck at sorting centers or outlets in April. But, as logistics challenges have been resolved, we expect parcel growth to be largely in line with online parcel growth in the following months.

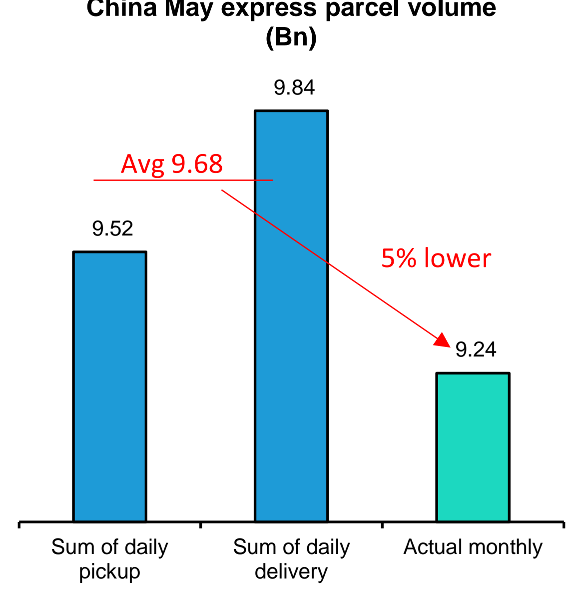
We expect parcel growth momentum to increase in June. JD.com says GMV increased 10% YoY during 618, in line with the increase of daily pickup parcels of +8% YoY in the period. This year, the major platforms offered two rounds of promotions during the 618 Shopping Festival, JD's promotion ran through May 22 to May 31, then the next round was from June 1 to June 17. Tmall/Taobao also ran a similar scheme, with the first round of promotion from May 26 to May 31 and the second round between June 1 and June 17, extending the 618 Shopping Festival to almost three weeks. As large piles of orders are saved in shopping carts during the pre-order period and executed on June 1 and June 18, express delivery parcels saw a spike around the two days. MOT's (Ministry of Transport's) daily parcel data showed that pick-up parcels increased 7.5% YoY during the 618 Shopping Festival. Although the MOT data could be higher than SPB's monthly reported data by ~5%, the trend is still noteworthy, as parcel volume should largely recoup in May and June, offsetting parcel decline in April. We estimate 2Q industry volume to just decrease slightly by 0.8% YoY. We tweaked our FY22 volume forecast slightly to +11% YoY. We expect ZTO to outgrow market volume by 5ppts in 2Q and forecast its profits (adjusted net income) to increase 4% YoY in the quarter (see Exhibit 16 and Exhibit 17).

EXHIBIT 16: **Daily MOT data is showing 7.5% YoY increase in parcel volume for 618 Shopping Festival...**



Source: MOT, SPB, and Bernstein analysis

EXHIBIT 17: **...MOT data may be slightly higher than SPB's**



Source: SPB, MOT, and Bernstein analysis

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VALUATION METHODOLOGY

Asia logistics and travel

We value Chinese express delivery companies using forward PE (or EV/EBITDA if the company does not have earnings in the forecast period), backed by conservative discounted cash flow (DCF) analysis. Valuation based on future earnings reflects our view that the value creation of this group is mainly driven by future growth potential, which cannot be adequately captured with near-term earnings, or is reflected in the P of the same industry companies from other regions.

We rate ZTO Outperform with a target price of US$30. It closed at US$26.1 and is benchmarked against the S&P 500 that closed at 4,140.06 as of August 8, 2022.

RISKS

Asia logistics and travel

The Asia logistics and travel companies we cover are subject to macroeconomic risks, including exposure to overall economic growth, trade volume, interest rates, and foreign exchange rates; as well as competitive landscape changes, brought by new entrants and new technology that may disrupt the market game.

ZTO Express Cayman Inc

Downside risks to our rating and price target: ZTO focused on the mass market, although it is also developing its freight business. However, the bulk of its revenue and earnings will be from mass express delivery going forward. If mass market growth slows down faster than expected, one of the reasons could be more (than expected) categories of goods going with third-party fulfilment even in the mass segment. This would reduce demand for traditional express delivery and ZTO.

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RENEW POWER: HELPING SOLVE INDIA'S POWER CRISIS WITH ROUND-THE-CLOCK RENEWABLE POWER

HIGHLIGHTS

- **Need for round-the-clock renewable power:** With an increasing mix of solar in the system there is surplus supply during the day hours and shortfall during the evening peak hours (exchange prices were INR6.2/kWh during the day and INR9.1/kWh during the evening for 1QFY22). Hence, there is a need for renewables to transition to a more balanced supply from vanilla solar contracts.

- **ReNew is driving this shift:** ReNew has won in all round-the-clock (RTC)/peak power contracts until now. ReNew will supply 400MW RTC by developing 900MW wind, 350-400MW solar, and 100-120MWh storage at a tariff of just INR3.6/kWh. On mapping we realize ~85% of the supply from solar and wind capacity will receive INR3.6/kWh tariff (which is much higher than vanilla contracts) and only ~15% of supply needs to be sold on the exchange. ReNew is offering such a hybrid profile to **corporate customers** as well (datacenters, cement plants, etc.), helping them achieve a much higher mix of green energy mix (as high as 50-80% direct renewables sourcing). ReNew is also expediting the energy transition with partnerships for **green hydrogen** with L&T and Indian Oil (consumes ~10% hydrogen in India today), where their balanced renewable offering can drive alkaline electrolyzers.

- **Impact of macro conditions and valuations:** Development of renewables has only accelerated due to the energy crisis. With the support of 7.5GW operating capacity (59% of portfolio) ReNew is relatively well-positioned vs. peers for inflation as well. On interest rates, we see valuation shift by US$1-US$1.5/share for 1% interest rate change, which doesn't change our rating guidance. Currently, ReNew trades at an **FY23 EV/EBITDA of ~7.2x**, much lower than peers and significantly below the multiple of 14x, which Tata Power got in a transaction.

INVESTMENT IMPLICATIONS

We see ReNew under-valued right now and see it gain from the requirement for complex renewable power supply contracts and shortages in peak power supply in India. There is a negative impact of an interest rate hike, but we see it already built into the stock price.

WHY DO WE NEED ROUND-THE-CLOCK RENEWABLE POWER?

The fundamental problem with renewables is the uncertainty of supply and the dependence on weather for the generation profile, whether it be with solar that comes during the day hours or wind that fluctuates depending on wind speeds. The challenge is that these generation profiles don't always match power demand profiles — i.e., renewable generators supply power at their convenience and not always when it is needed the most (they have a must-run status from a DISCOM/buyer perspective today). India usually has

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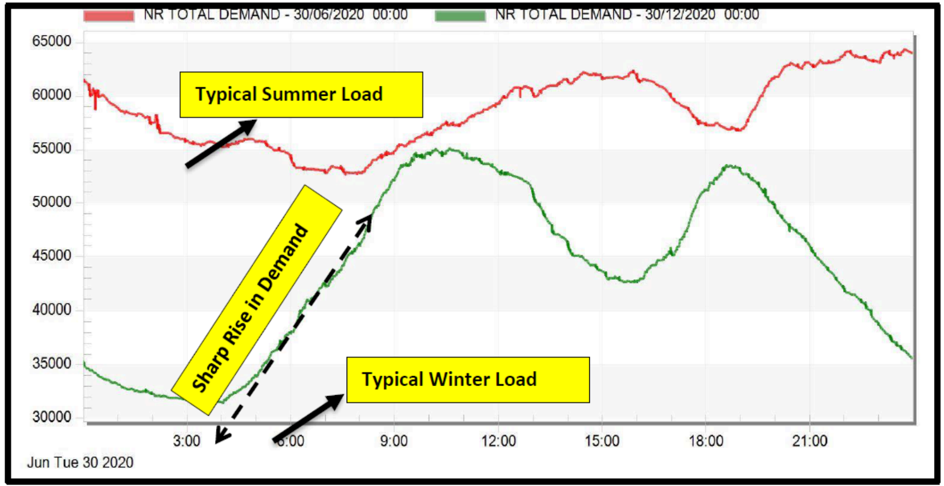
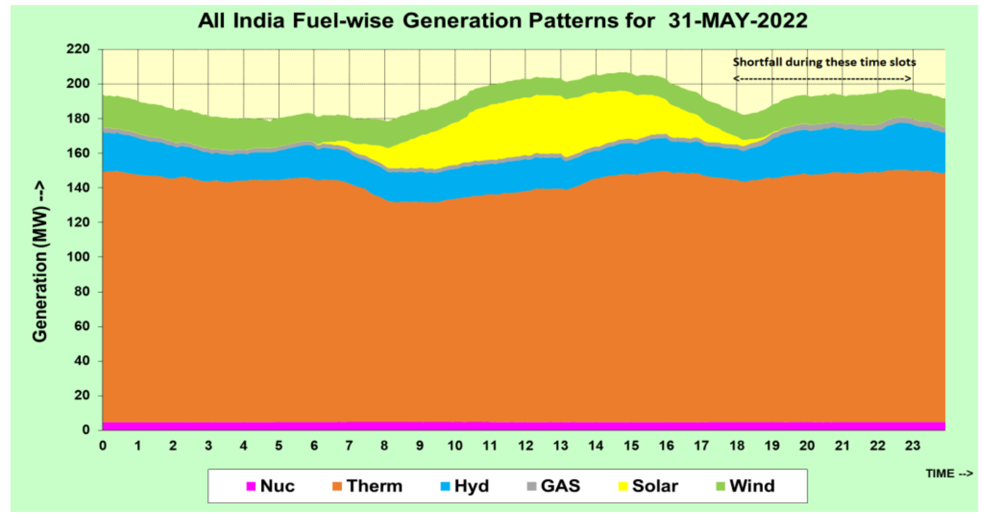
peak power demand at 7-9pm during summers (see Exhibit 1). Solar plants are not of any help to meet the power demand during the peak demand slots. In Exhibit 2, we highlight the generation profile during a reference day using different technologies — here we can see the solar contribution during day hours whereas wind has a more balanced profile. Such a generation profile is leading to a shortfall in power supply during the peak hours of 7-9pm.

EXHIBIT 1: **Power demand profile in India during different times of the day**



Source: National Load Dispatch Center and Bernstein analysis

EXHIBIT 2: **Power demand met by different generating sources on a reference day**



Source: POSOCO and Bernstein analysis

This gap in power demand-supply due to an increasing share of renewables is also reflected on the power exchange. Since the last few months, there are excess supply bids during day hours and under-supply during evening hours when demand is peaking, on the day-ahead-market, leading to high power prices during night hours (dotted line in Exhibit 3 and Exhibit 4).

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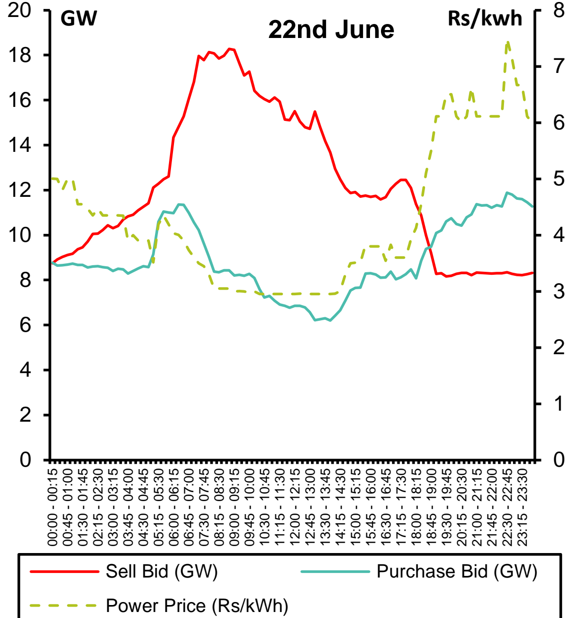
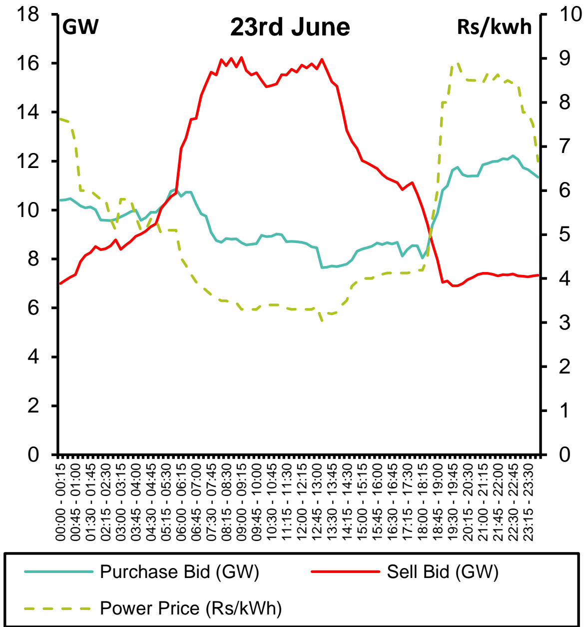
EXHIBIT 3: **Power demand-supply (in MW) and power prices (INR/kWh) in the day-ahead-market — June 22...**



Source: IEX (power exchange) and Bernstein analysis

EXHIBIT 4: **...and on June 23, 2022 at different times of the day**



Source: IEX and Bernstein analysis

This is with a 10% renewables power mix; imagine the impact with a mix of >30% renewables, which is largely expected to be solar (expected by 2030). Hence, there is a need for a more balanced renewables profile — ideally RTC renewables power and eventually dispatchable renewable power (supply power from the plant when it is needed). In Exhibit 5, we show the key shifts we expect to happen regarding renewables markets, given the challenges discussed earlier in this chapter: (a) higher deviation penalties, (b) gradual parity in burden of transmission charges, (c) market based models from PPAs, and (d) balanced supply profiles. This is already being reflected in the increased quantum of complex renewables tenders coming into the market (see Exhibit 6).

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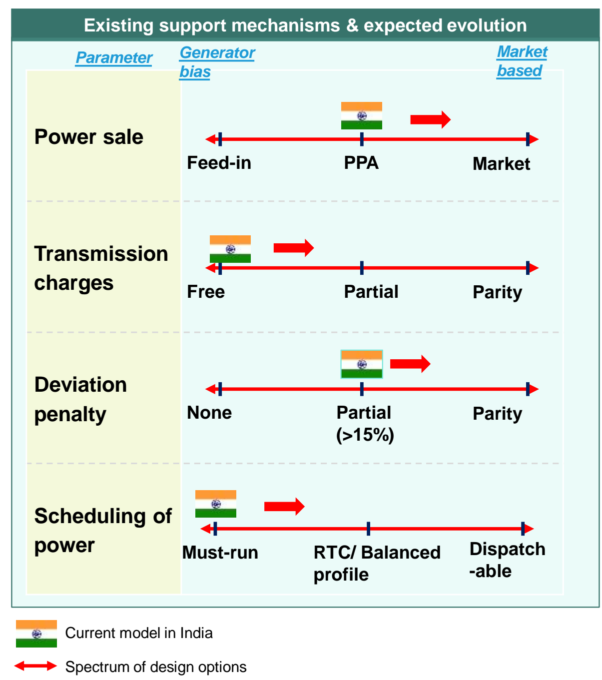
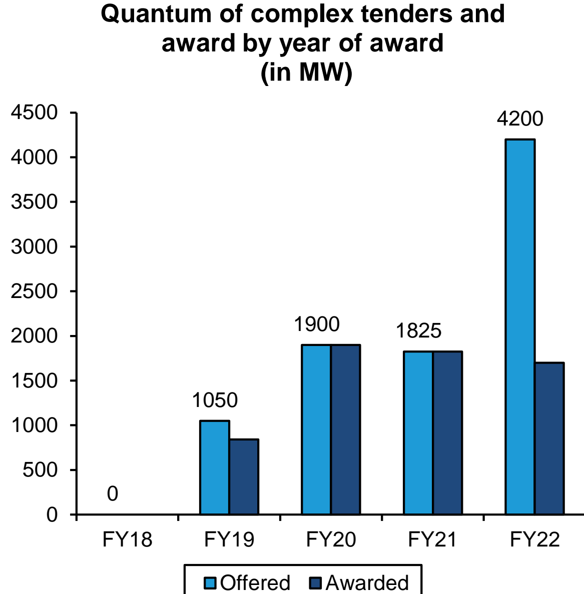
EXHIBIT 5: **Expected shifts in renewables related policies/power market framework**



Source: Bernstein analysis

EXHIBIT 6: **Quantum of power contracts in complex opportunities (such as round-the-clock and hybrid)**



Source: Bloomberg, Indian government data, and Bernstein analysis

HOW IS RENEW PROVIDING MORE BALANCED RENEWABLE POWER AND DRIVING ENERGY TRANSITION?

Among its competitors, ReNew and only a select few have an exposure to all the renewables technologies (wind, solar, and hydro). ReNew has won in all three of the most-complex tenders auctioned in the renewables sector in India until now:

- **(1) Round-the-clock (RTC-1 and RTC- 2):** In RTC-1, ReNew won the entire tendered quantum of 400MW. In RTC-2 as well ReNew was among the selected bidders, but this opportunity is getting retendered.

- **(2) Peak power tender:** In this tender, ReNew will get a tariff of INR6.85/kWh for supply during peak hours and INR2.88/kWh for supply during off-peak hours. ReNew and Greenko were the only two winners in this opportunity.

How does ReNew plan to generate RTC renewable power? The RTC-1 tender was a milestone for the sector and the completion of the project would make it the first of its kind in the Indian power sector. A question often asked by investors is how will ReNew generate this 24-hour profile without heavy dependence on storage? To generate the 400MW quantum for the RTC-1 tender, ReNew plans to overbuild capacity and combine all three mechanisms — wind (900MW), solar (350-400MW) and storage (100-120MWh). In energy terms, this fits (900 wind *35% utilization + 350-400 solar x 27% utilization = 400-425). The bigger question is whether it will fit in terms of generation profile?

In Exhibit 7 to Exhibit 9, we have tried to answer that question. Exhibit 7 shows the profile of an actual 110MW solar plant operated by ReNew in Rajasthan at present (we took the average of four different days across November, January, May, and June to make this

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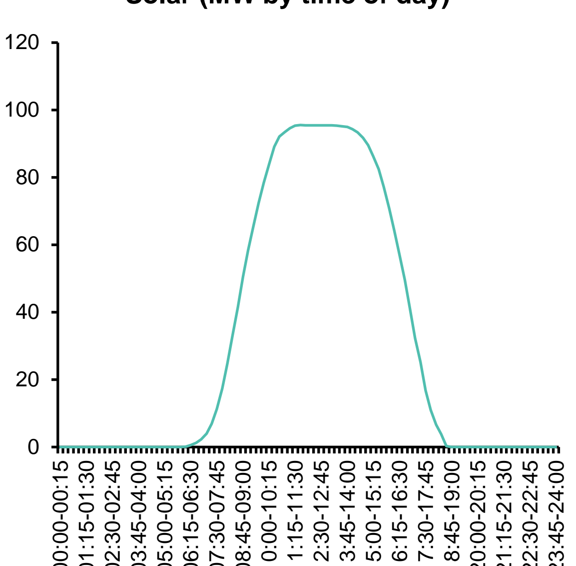
profile) and Exhibit 8 shows the profile of wind power during different times of the day (this is based on a 126MW plant operated by Tata Power in Rajasthan). As per the contract, ReNew can inject only a maximum of 400MW and has to supply at least 70% of the 400MW during each month and at least 80% during the year. In Exhibit 9, we combined both the solar and wind profiles in the ratio of planned capacity addition by ReNew to show what the combined output would look like.

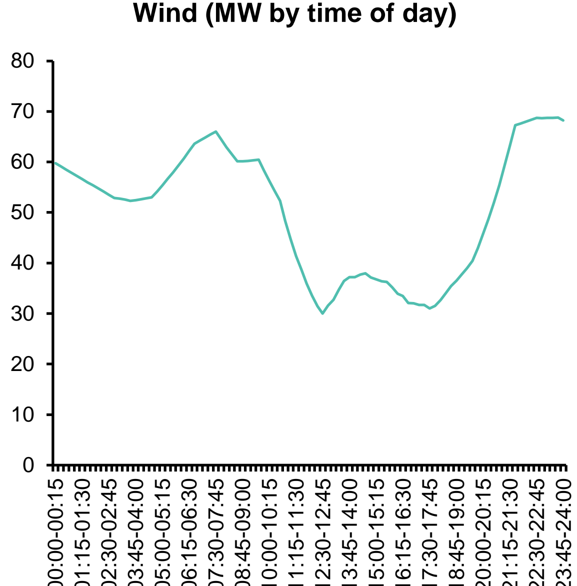
As we can see in Exhibit 9, in most hours, the generation profile is close to the requirement, except for two instances: (a) From 7am to 3pm when there is excess supply, and (b) the evening hours of 5pm to 8pm when there is under generation. Part of the solution to this profile is expected to come from having two different locations for the wind plants — Rajasthan and Karnataka (which will further flatten the curve; we haven't captured this upside here) — and part is expected to come with the help of the 100-120MWh storage planned. For example, the 120MWh storage would be enough to shift 120MW of excess supply from 9:30am-10:30am (which we see is when the exchange also gets the maximum supply) to peak demand hours of 7:30-8:30pm if required (this shift has been shown in red bars in Exhibit 9). Beyond what can be stored, the plan is to sell excess power on the exchange (as allowed by the contract to sell excess in the open market). With this profile alone, ReNew is likely to be able to supply >95% of the contracted 400MW.

EXHIBIT 7: **Solar plant profile (Rajasthan 110MW)**



Source: Rajasthan SLDC and Bernstein analysis

EXHIBIT 8: **Wind plant profile (Rajasthan 126MW)**



Source: Rajasthan SLDC and Bernstein analysis

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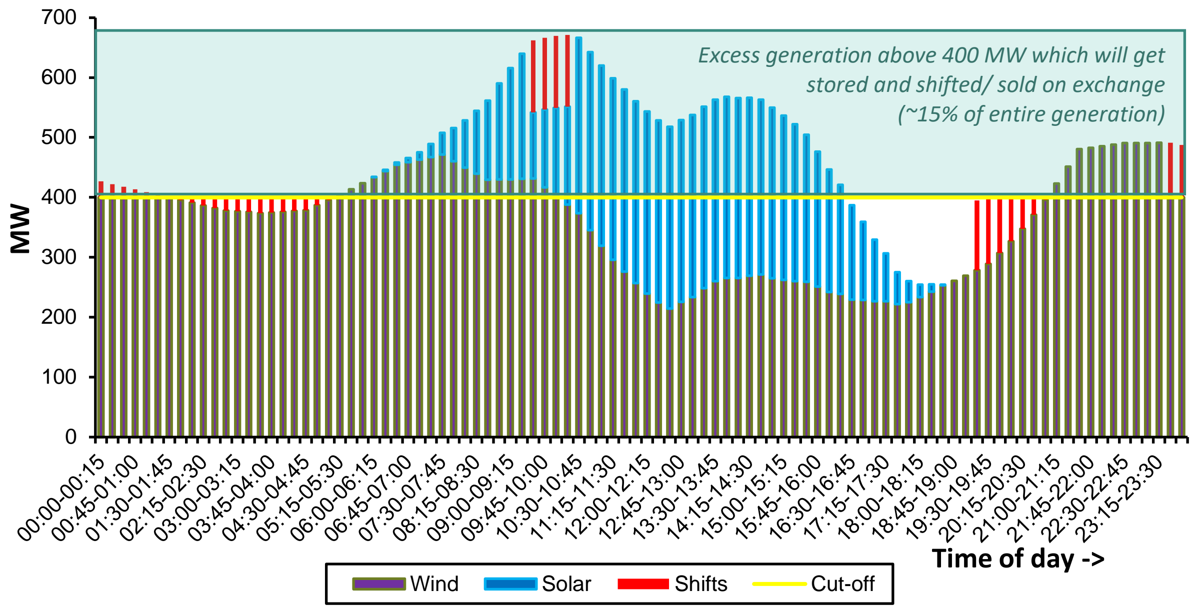
EXHIBIT 9: **Combined profile of 900MW wind, 350MW solar, and 120MWh storage to meet the 400MW RTC profile (excess generation beyond 400MW to be balanced using storage or sold on the exchange)**



Source: ReNew report, Rajasthan SLDC data, and Bernstein analysis

What differentiates ReNew is its ability to handle the multiple technologies and also forecast/balance the profiles to minimize deviations from schedule and sell excess power on the exchange economically (a challenge for renewables, given their fluctuating nature).

The project from ReNew is at a very competitive price of INR3.6/kWh RTC renewable power. In ReNew's project, effectively it is selling ~85% of the 900MW wind capacity and 350-400MW of the solar capacity at INR3.6/kWh, which is much higher than the solar bids of ~INR2-INR2.50/kWh seen in the market and wind bids of INR2.6-INR2.9/kWh. The only risk relates to the price realized on selling the quantum beyond 400MW, that it is unable to shift (which is ~15% of generation) and which it will have to sell on the power exchange.

ReNew's tariff for RTC at INR3.6/kWh vs. new coal plants that cost upward of INR4/kWh gives confidence in the ability to leverage renewables to solve India's power situation instead of reverting focus to thermal power (which had started gaining traction in the last few months).

Corporate customers: ReNew has gone a step ahead and is offering such hybrid-complex profiles to corporate customers as well. As shown in Exhibit 10, it has multiple offerings for corporate customers, including one taking green energy mix beyond 80% of their requirement (Green Pro). Its hybrid offering (Green Advance) has also found usage in cement companies, datacenters, etc. In Exhibit 11, we show two examples where ReNew is working with an FMCG company and a datacenter to increase their green sourcing to 100% — meeting a large share of the requirement through direct renewable power and 20-30% through renewables certificates.

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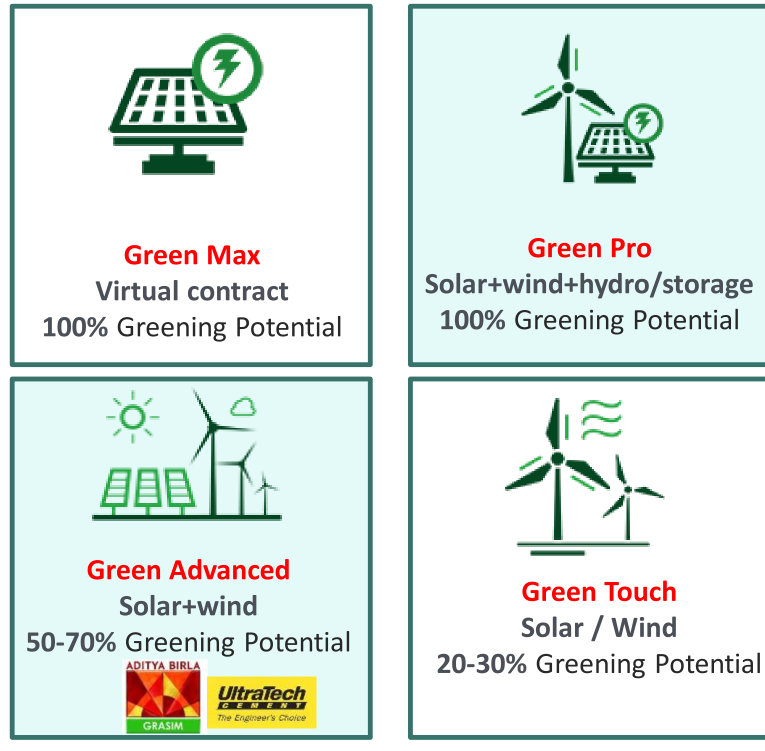
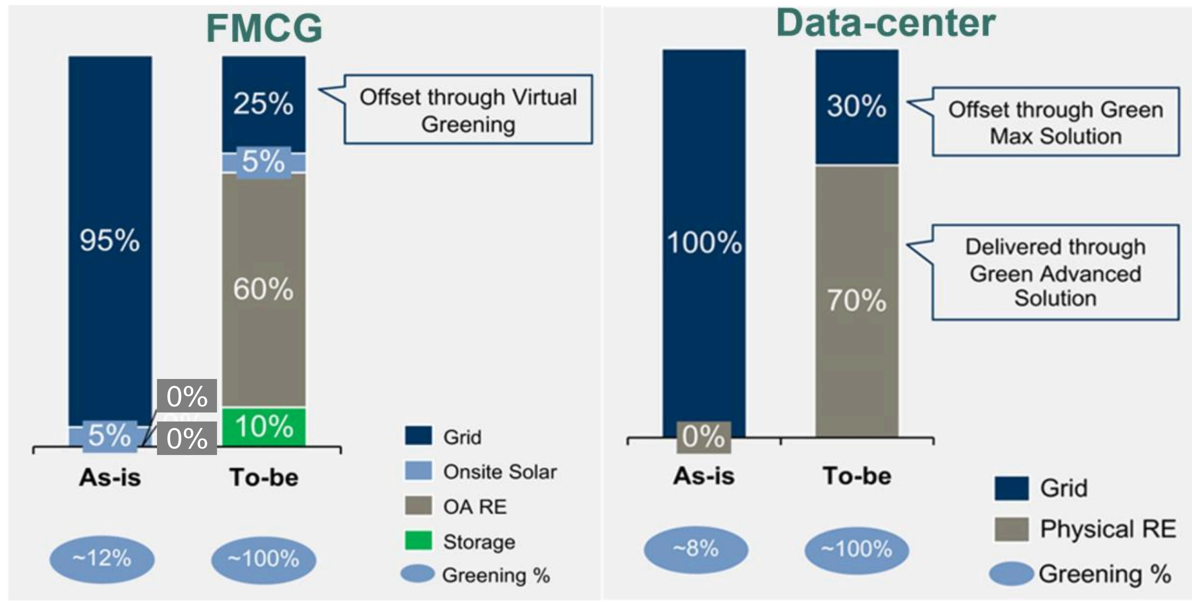
EXHIBIT 10: **ReNew power offerings for commercial and industrial customers**



Source: ReNew presentation and Bernstein analysis

EXHIBIT 11: **Illustration of two C&I executions being undertaken by ReNew**



Source: ReNew Power data and Bernstein analysis

Capabilities across the renewables value chain and driving the green hydrogen shift: ReNew has already entered into partnerships for storage with Fluence and for green

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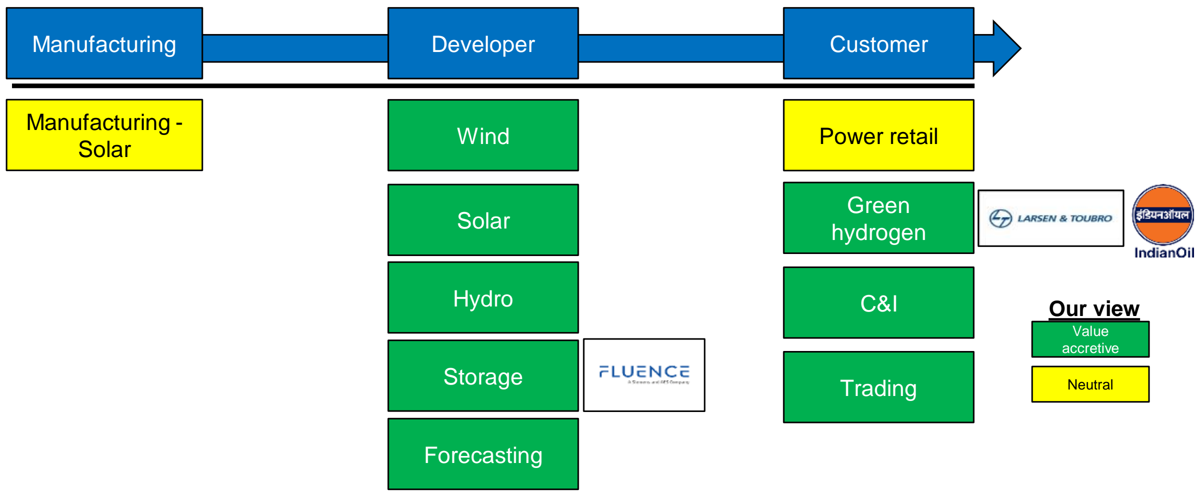
hydrogen with L&T and Indian Oil (see Exhibit 12). They are all sector leaders in their space and Indian Oil alone consumes ~10% of hydrogen volumes in the country. ReNew has even acquired a power trading license. We think these are the right moves to create a difference over time.

Further, with regard to green hydrogen, ReNew's capabilities in RTC renewables profile does give it an advantage in comparison to other smaller players, given the need for a more stable power profile for alkaline electrolysis for green hydrogen production.

EXHIBIT 12: **ReNew power's expansion in the renewables value chain in India (started with just being a solar-wind developer)**



Source: ReNew Power data and Bernstein analysis

SENSITIVITY OF TARGET PRICE TO INTEREST RATE AND INFLATION

The renewables developer business, while a strong ESG transition supporter for companies, does have susceptibility to interest rates and inflation (module and WTG prices). However, the extent of the impact is subject to the share of operational projects and fixed-rate borrowings. The 12.8GW portfolio of ReNew Power can be broken into:

- **Operating portfolio (~7.5 GW):** In the case of ReNew, the share of operating renewables capacity is very high. This removes the risk of inflation in module and WTG prices for this entire quantum. The only risk operating plants have is of higher interest cost.
- **Under-construction portfolio (2-3GW estimated):** Depending on the stage of construction, these projects often might have their solar module or WTG prices already locked in contracts with suppliers. Interest rate risk does remain open, often beyond the initial fixed period.
- **Contracted pipeline not yet under construction (2-3GW estimated):** This is the part of the portfolio most at risk, given that here tariffs for the development are locked, whereas the module/WTG prices and financing are not yet locked.

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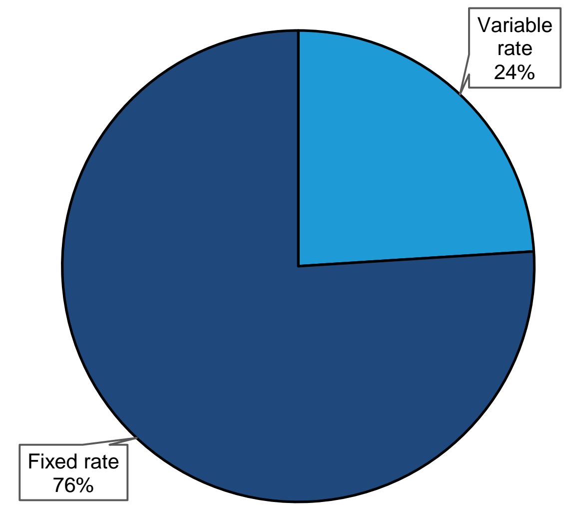
- **New wins/future pipeline:** These tenders are likely to face limited impact of current situations from a return perspective, as bids from developers will factor in higher input costs and higher financing costs in the tariffs they quote.

The risk of government taxes and duties (e.g., basic customs duty on Chinese modules and cells) in any of the operational or under-construction assets is limited due to a "Change in Law" clause in the contract that allows any commercial impact of such event to be passed through to the buyers of power (DISCOMs). Even on interest rate — a large part of the debt for ReNew is fixed rate (although as we understand for a few years only) — limiting its impact on the portfolio. In Exhibit 14, we show the sensitivity of ReNew's valuation (US$/share) to different scenarios of borrowing cost and solar plant capex. While high interest and high capex scenarios do reduce upside, they don't impact our rating on ReNew (see Exhibit 13 and Exhibit 14).

EXHIBIT 13: **Share of fixed-rate debt and variable-rate debt**



Source: ReNew Power data and Bernstein analysis

EXHIBIT 14: **ReNew's valuation sensitivity in different module cost and borrowing cost scenarios (US$/share)**

Valuation ($/share)	Cost of debt					
Solar capex (Mn $/MW)	8.5%	9.0%	9.7%	10.0%	10.5%	11.0%
0.50	14.7	13.9	12.9	12.5	11.8	11.1
0.55	14.3	13.5	12.5	12.1	11.4	10.7
0.58	14.1	13.4	12.35	11.9	11.2	10.5
0.60	13.9	13.2	12.2	11.7	11.0	10.4
0.65	13.6	12.8	11.8	11.3	10.6	10.0
0.70	13.2	12.4	11.4	10.9	10.2	9.6

Source: Bernstein analysis

On the demand front, the economics for renewables are extremely favorable in comparison to thermal power plants in India. Further, of late, the country has been facing historical highs in power demand. Hence, despite risks of slowing economic growth globally, we see demand for renewable power to continue to be strong in India.

VALUATIONS

We value ReNew Power using DCF methodology, factoring in operating assets, pipeline projects, and market share of future growth in the sector. We have considered ReNew having 15-16GW operating capacity by FY25 and ~7-10% of the renewables capacity addition in India post FY25. Our target price is US$12.35. It also implies an EV/EBITDA that is close to global peers by FY24. Currently, the stock is trading at a significant discount to

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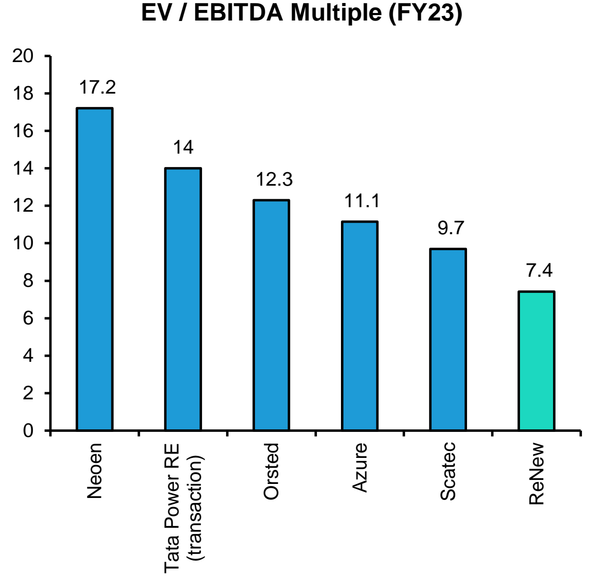
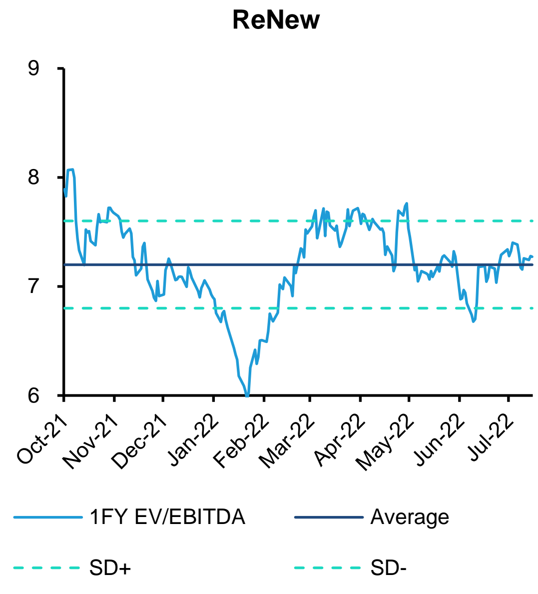
Indian and global peers, despite being the market leader in the Indian renewables sector (see Exhibit 15 and Exhibit 16).

EXHIBIT 15: **ReNew is trading at a significant discount to peers and to recent renewables transactions**



Source: Bloomberg and Bernstein analysis

EXHIBIT 16: **ReNew Power one FY forward valuation multiple history**



Source: Bloomberg and Bernstein Analysis

VALUATION METHODOLOGY

ReNew Power

We value ReNew Power using DCF methodology, factoring in existing projects, pipeline projects, and market share of future sector growth. We rate ReNew Power (ticker: RNW US) Outperform with target price US$12.35 (closing price: US$6.95). It is benchmarked against the MXAPJ (closing price: 524.7). Closing prices as of August 8, 2022.

RISKS

ReNew Power

Downside to our view on ReNew Power include: (1) further delay in collection of receivables, especially from Andhra Pradesh; (2) slower capacity addition organically or inorganically; and (3) solar module availability challenges in the near term due to supply chain issues and MNRE-approved list of suppliers, which excludes Chinese vendors.

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MERCEDES-BENZ: SPEEDING PAST A (POTENTIAL) RECESSION

HIGHLIGHTS

- Mercedes-Benz is accelerating its transition to a zero-carbon future. The company is launching new production platforms in 2024 and 2025. Battery electric vehicles (BEVs) will account for up to 100% of production by 2030.
- At the same time the company is doubling down on premium pricing power: it initiated a luxury strategy, setting higher ambitions for its brand and margins. Placing value ahead of volume growth, the company's pricing power will continue to improve in our view.
- Through continuous cost reductions the company has reduced fixed cost and investments both by -16% compared to the peak in 2019. In our recession scenario (-30% EPS), the company can achieve the CFO's 8-10% trough margin target. Mercedes is now trading -29% below its long-term average, closing the gap to our recession scenario. In our view, the stock has priced in much of the recession risk for 2023 but very little of the fundamental improvements the company has made.

INVESTMENT IMPLICATIONS

We rate Mercedes-Benz Outperform with a target price of €85. MBG is our top pick. Its electrification strategy is in full swing and gathering speed. The ambitions to further increase brand premium and margins, by focusing on larger, more lucrative cars will significantly lift its earnings potential. Current levels are starting to represent an attractive entry point despite potential consumer headwinds, given the stock is already priced for recession.

MBG STRATEGY IN ONE PAGE: THE ECONOMICS OF DESIRE

Mercedes-Benz Group is one of the world's largest premium OEMs, selling ~2.3 million vehicles worldwide. Formerly known as Daimler Group, in December 2021, the company spun-off Daimler Trucks; its former medium- and heavy-duty commercial vehicle division. As a result of this operation to unlock significant value for its LV business and to focus its resources on BEV rollout and software, management subsequently rebranded the company under the name "Mercedes-Benz." During the October 2020 strategy update, CEO Ola Källenius disclosed the group's new motto: "We will build the world's most desirable cars." This is what Mercedes-Benz will now strive for; elevating its brand equity to both increase pricing power and improve product mix.

Sell fewer small cars and more large cars. On May 19, 2022, Mercedes-Benz hosted markets for a detailed update on its premiumization strategy. Going forward, MBG's product portfolio will be divided into three categories: top-end luxury, core luxury, and entry luxury. The group guided on change of category share in 2026 vs. 2019; top-end vehicles (ASP>€100k) should increase their share in mix by 60%, core luxury is expected to be

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stable, and entry luxury should decrease by 25%. Källenius also highlighted that "the entrance point into the Mercedes-Benz brand in the future will be a different one than it is today," likely suggesting that the production of A-Class and B-Class cars will be stopped in the near future. Based on the guided numbers, we estimate the group average selling price (ASP) will increase from ~€70k to more than €85k by 2025. This mix shift toward the premium end of the market removes cars with low EBIT from the mix and adds cars with higher contribution.

Mercedes will go EV-only, not EV-first. Management stressed a number of times their ambitious EV target: 100% BEV sales penetration by 2030 (where market conditions allow). In 2024, Mercedes will launch its compact "electric first" platform MMA, and from then on will exclusively launch BEV-only platforms — MB.EA for medium- and large-size cars, AMG.EA for performance cars, and VAN.EA for all-electric vans and LCVs. To achieve its EV ambitions, the group plans to create eight gigafactories across the three main regions by 2030, thus benefiting from a total cell capacity of 200GWh. While we need more disclosure on ICE vs. EV margins, we believe MBG is well-positioned to reach ICE/BEV margin parity sooner than its peers, thanks to its potentially successful premiumization strategy.

What does it take for the market to start paying attention? The luxury strategy of Mercedes has been in place for almost two years now, yet the market doesn't seem to be attracted to the story. For an aspiring luxury brand, the stock currently trades on 6x earnings, a very low number compared to luxury car maker Ferrari (~32x) or luxury goods names (sector average of ~22x). Investors are worried the company will gravitate toward discounts and abandon its "value over volume" strategy in tough times. The trough margin guidance of 8% EBIT also looks ambitious, and investors are likely to adopt a show-me approach. Perhaps what the stock needs is a recession to see if the company can deliver on both promises.

Capital returns and cash. Mercedes-Benz has improved its cash returns and continues to apply its 40% payout policy. For FY21, MBG paid its holders a dividend of €4.30, and we expect this to continually increase in coming years to ~€5.00+ in 2025. While the company is spending ~€50Bn to €60Bn in PP&E and cash R&D (2022 to 2025 vs. €30Bn in D&A), it is still generating more cash and we forecast an additional headroom of ~€10Bn to €15Bn by 2025.

MBG is our top pick. In our view, its premiumization strategy comes exactly at the right time. Despite continued low visibility on semiconductors, the industry expects volumes to return next year. For most OEMs, this wouldn't bode well as pricing will normalize a bit as the mix skews to lower segments again. However, by early 2023, Mercedes will have worked 2+ years on its strategy and start building a higher share of higher-end vehicles. We believe this is key: by significantly improving its mix (and pricing), it will be able to weather raw material headwinds better than any other European OEM. Therefore, we strongly believe in its ability to absorb COGS increases, which will protect its gross margins. Long term, the shift to top-end vehicles reduces its competitive overlap with mass-to-premium manufacturers, and also sets the stage for not competing on BEV characteristics alone. Based on our estimates, we expect automotive gross margin to slightly suffer from the upcoming cost inflation (down 70bps vs. 2021 to 23.5% in 2023) and EBIT margins to remain flat. However, we see significant EPS increases in upcoming years, increasing our

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spread to consensus. We use a 7.5x 2023 EPS multiple (median of historical long-term average) to reflect the opportunities the group can grasp, while remaining cautious at the same time due to external events. For 2023, we are in line with consensus on EPS, rising rapidly thereafter as the premiumization strategy takes hold.

MERCEDES-BENZ: CARBON-NEUTRAL BY 2039

Mercedes-Benz has been one of the most outspoken "traditional" OEMs on the transition to an electric future. The group has set up a broad set of initiatives and targets to improve its ESG performance. Most meaningful is the shift from <5% sale of fully electric vehicles in 2022 to 100% by 2030 (where market conditions allow), and targeting carbon neutrality by 2039. This is a massive undertaking and MBG is putting the various elements in place. The product portfolio (see next section) will be radically transformed in the next five years, and production is planned to be CO_2-neutral by the end of 2022. A continued challenge are upstream activities both for manufacturing (suppliers) and the use phase (energy mix), and OEMs such as MBG will need to push for acceleration in these areas as well. Mercedes-Benz total carbon budget was 124 million tons of CO_2 in 2021, with >99% from the use phase. In 2021, Mercedes disclosed total lifecycle emissions across Scope 1, 2, and 3 of 124.4 million tons for its cars and vans business. More than 99% of the emissions budget stems from the use phase of the vehicles (see Exhibit 2). The company has been lowering its specific emissions per vehicle by -5% p.a. Since 2015, the company has been lowering its specific CO_2 emissions in Scope 1 and 2 per vehicle by ~-5% p.a. (see Exhibit 1 and Exhibit 2). This has mainly been due to a reduction in Scope 2 emissions, i.e., related to upstream activities. Going forward, the company will need to put more emphasis on its Scope 1 emissions (energy mix) and tackle supplier-based emissions in its Scope 3 envelope (see Exhibit 3 and Exhibit 4). The biggest lever, and biggest strategy for MBG, is the transition to more zero-emission vehicles. While MBG has started on its transition, total penetration of full BEVs is still low and will only start accelerating toward 2025, when new platforms become available (see next section) (see Exhibit 7).

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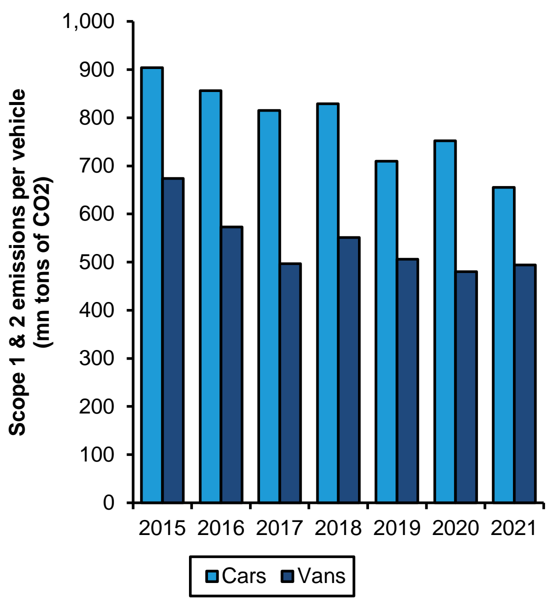
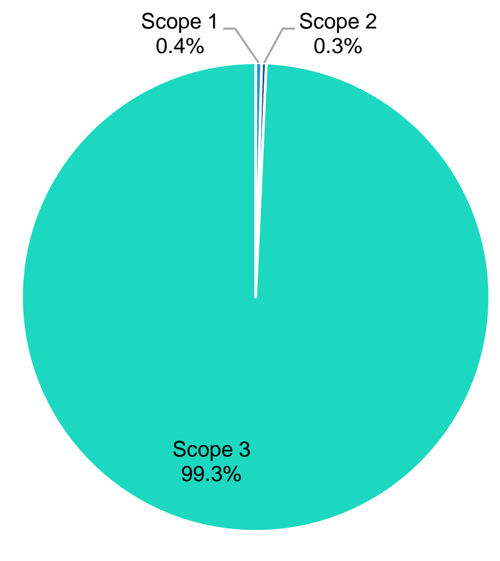
EXHIBIT 1: **Mercedes-Benz has been lowering specific emissions in producing its vehicles**



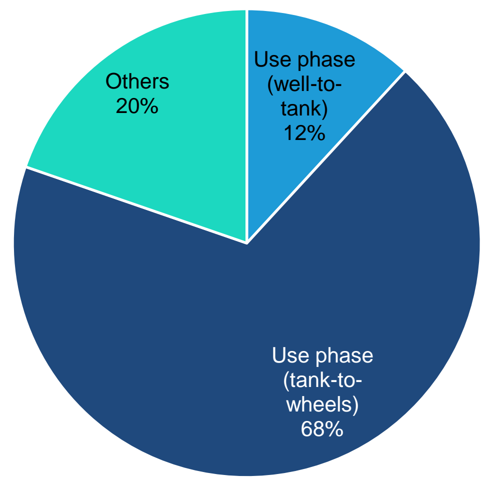
Source: Company reports and Bernstein analysis

EXHIBIT 2: **The vast majority of emissions remains connected to the use phase of vehicles**



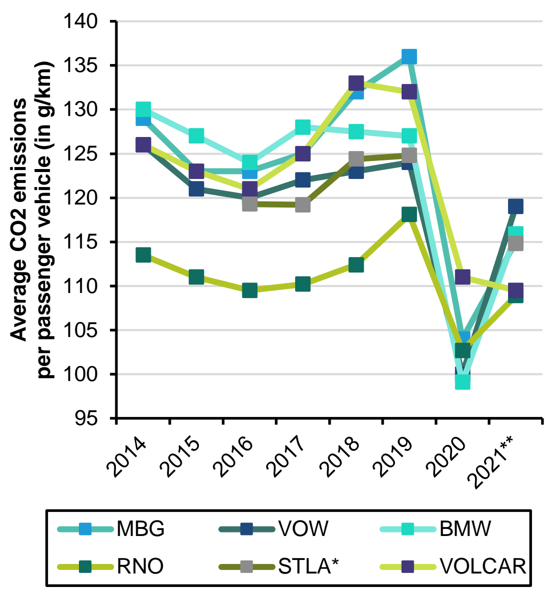
Source: Company reports and Bernstein analysis

EXHIBIT 3: **80% of Scope 3 emissions relate to fuel used to drive cars**



Source: Company reports and Bernstein analysis

EXHIBIT 4: **MBG's car fleet performance in GHG emissions is in line with sector average**



*STLA includes FCA until 2019. 114.8g/km in 2021. **Calculation from the European Commission switched from NEDC to WLTP in 2021.

Source: Company reports and Bernstein analysis

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MERCEDES WILL GO EV-ONLY, NOT EV-FIRST

MBG's electrification targets are in line with peers. While MBG has adopted a very outspoken approach to electrification, the company's targets come with an important disclaimer. Mercedes targets 100% BEV adoption by 2030, "where market conditions allow." Although MBG may be able to produce enough cars to get to this target, we don't believe they will be able to control customer preferences by offering electric drivetrains only.

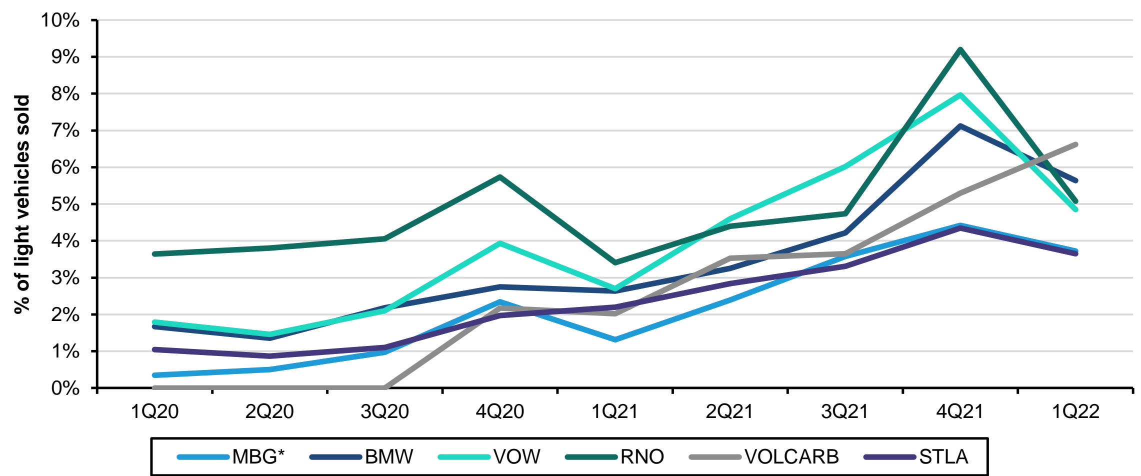
OEMs adopting similar battery strategies. MBG, just like other OEMs, has started to build a supply network for batteries consisting of multiple cell manufacturers, including AESC, Farasis, and CATL. In addition, it also invests along with partners to build gigafactories. Last year, the group joined European JV ACC (with Stellantis and TotalEnergies), which plans on reaching a total capacity of 120GWh by the end of the decade. On a global level, Mercedes-Benz targets >200GWh of capacity through eight gigafactories.

Two different partners for solid-state batteries. MBG has found two valued partners in Factorial Energy (November 2021) and ProLogium (February 2022) to start developing next-generation battery technology. The group plans to start developing solid-state batteries on a large scale in 2028.

The group will also go through changes in its battery strategy. Similarly to other OEMs, MBG is planning on changing its battery strategy throughout this decade. Mercedes currently uses NMC batteries with prismatic and pouch design in its electric vehicles. Going forward, the group wants to include cobalt-free cathodes (NMx batteries) and high-silicon anodes.

Is still early stages. Mercedes-Benz currently has one of the lowest BEV penetration rates in the industry; the group (ex-Smart) sold less than 70k all-electric vehicles in 2021. Although Mercedes's sales are relatively in line with its closest German peers, it has the longest way to go among European OEMs (see Exhibit 5 and Exhibit 6) considering its ambitious BEV-only target by the end of the decade.

EXHIBIT 5: **MBG is behind all its European peers in terms of BEV penetration, except for Stellantis**



*MBG penetration rate does not include sales of BEVs from the Smart brand

Source: SNE Research, IHS, and Bernstein estimates and analysis

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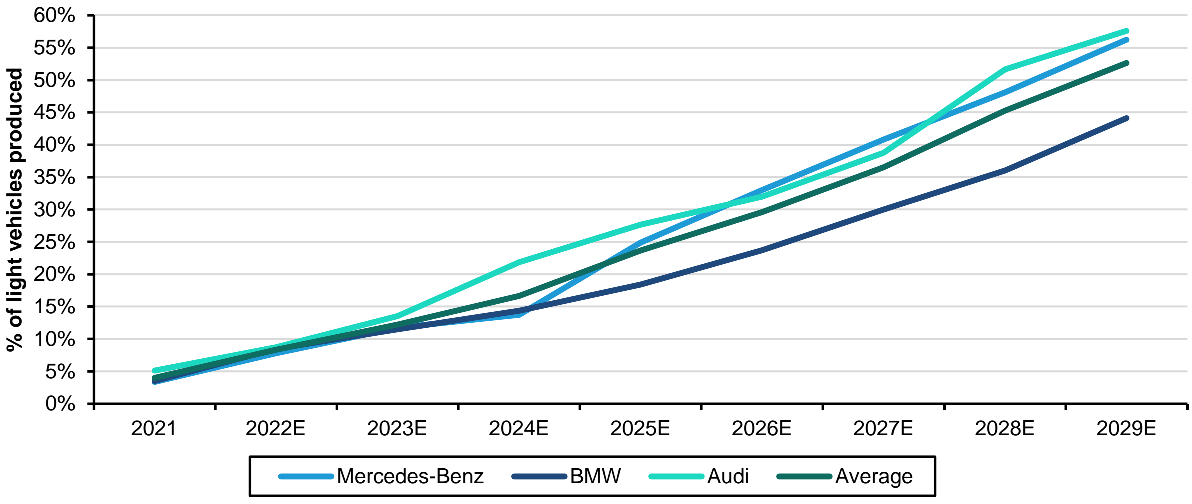
EXHIBIT 6: **Mercedes-Benz's EV-only strategy will allow it to accelerate penetration vs. peers in the second half of this decade**



Source: IHS, and Bernstein estimates and analysis

MERCEDES WILL OFFER CUSTOMERS A BEV ALTERNATIVE FOR EACH CURRENT ICE MODEL BY 2025

Mercedes-EQ is the electric (sub-)brand of Mercedes-Benz. Mercedes introduced the concept at the Paris Motor Show in 2016. The very first model, the compact SUV EQC, was presented in September 2018. The range of cars offered by Mercedes-EQ are all-electric vehicles only. The electric vehicles made by the brand come across as a separate family from the more traditional ICE and non-BEV models of Mercedes: an "electro-look" on the outside; a different interior design; a range of ~700km (for the EQS).

The Mercedes EQ range is shifting product mix upward

In a BEV world, there will be no equivalent for the A-Class or the B-Class. In accordance with the "sell fewer small cars, more big cars" strategy, cars offered by the brand will be on average larger in the EQ universe. We think the EV transition through the EQ brand will be a subtle and effective way to shift the mix upward for Mercedes.

In terms of product portfolio, Mercedes will have all-electric options in all segments it currently serves by the end of this year. By 2025, customers will be able to choose a BEV alternative for every model the brand currently makes. More than 10 BEVs and 25 PHEVs will be sold by the group by then. Toward the end of the decade, the EV mix in the portfolio will shift toward BEVs (>20 BEVs and <25 PHEVs).

THE COMPANY COMMANDS SUPERIOR PRICING POWER AND PLANS TO IMPROVE ITS MIX SUBSTANTIALLY

Distancing itself from German peers. Since the October 2020 strategy update, when management decided to adopt a luxury approach to selling cars, Mercedes-Benz has started being more aggressive on pricing, especially in terms of MSRP. The Mercedes-Benz brand has outperformed BMW and Audi since the end of the first lockdowns (see Exhibit 8 and Exhibit 9). Although a substantial part of this improvement can be attributed to the favorable environment (Covid-19 followed by chip shortage), the group has been quite successful at increasing MSRP and reducing discounts. Once volumes return, we expect

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Mercedes-Benz to continue down that path with its premiumization strategy and further stand out from the premium OEM "crowd."

Mercedes-Benz is best-in-class in terms of mix too. Over the past 18 months, OEMs (even in the mass-market segment) took advantage of the semiconductor situation by allocating their available chips to their most profitable models, thus pushing their mix upward. Mercedes and BMW have both achieved good results mix-wise (combination of E-segment share increase with C-segment share decrease). While BMW's results have been more than satisfying too, we believe that in the longer term, without volume constraints, MBG will be the winner in the mix game.

EXHIBIT 7: **Overview of European OEM platforms**

	Segment: A	B	C	D	E	F	Approx. SOP
BMW			UKL	CLAR			2015
			UKL2 & FAAR	CLAR			2018
			FAAR	NK	CLAR		2025
MBG			MFA	MRA			2013
			MFA2	MRA 2 & EQA			2021
			MMA	MB.EA			2025
VOW		MQB		MLB		MSB	2015
		MQB		MLB & MEB		J1	2019-2021
		MQB				J1	2022
	MQB & MEB					J1 & SSP	2026
STLA	CMP & eCMP						2019
	CMP & eCMP-2			STLA M.	STLA. L		2023
	CMP & eCMP-2			STLA M.	STLA. L	STLA. F	2024
RNO	CMF.A	CMF.B	CMF.C/D				2015
			CMF.EV				2021
VOLVO			P1	SPA			2015
			CMA	SPA			2017
			CMA & SEA	SPA2 & SEA			2023
			GPA, SPA2, & SEA				2025

Legend: ICE / PHEV | ICE / PHEV / BEV | ICE / PHEV & BEV-only | BEV-only

Source: Company filings, and Bernstein estimates (2022+) and analysis

THE ECONOMICS OF DESIRE

In May 2022, Mercedes-Benz invited investors and analysts to Monaco to discuss the premiumization strategy of the group. The team gave specific targets to detail the mix-shift it is planning within its business. The presentations largely confirmed the strategic direction we have outlined in our Mercedes case so far. Selling fewer small cars and more large cars will help the group to boost sustainable EBIT margins. Reading between the lines, we would expect volumes slightly down, mix to accelerate ASP from ~€42k to €50k (BERNe), and

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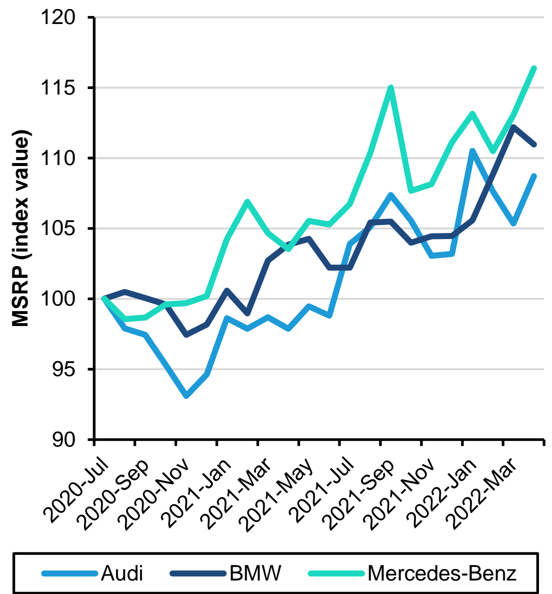
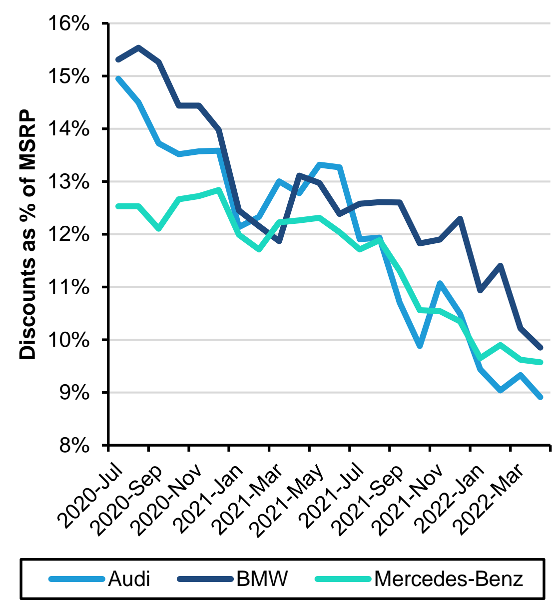
EBIT margins from ~5% to 9% (BERNe). Overall, the plan laid out by the management team seems to indicate a group EBIT above €20Bn by 2026.

EXHIBIT 8: **Mercedes has clearly outperformed its German peers in 2021**



Source: Jato, Autodata, and Bernstein estimates and analysis

EXHIBIT 9: **The brand has also managed to keep discounts below BMW yet in line with Audi**



Source: Jato, Autodata, and Bernstein estimates and analysis

Going forward, MBG's product portfolio will be divided into three categories: top-end luxury, core luxury, and entry luxury. The respective electric versions of the top-end vehicles are already in the books; with the EQG, Maybach EQS, Mercedes EQS, AMG-EA, and EQS SUV taking over the G-Class, Maybach S-Class, Mercedes S-Class, AMG GT, and GLS. The group guided to 60% growth in the sales share of the top-end vehicle range over 2019-26. Regarding the entry luxury category, Källenius officially stated that "the entrance point into the Mercedes-Benz brand in the future will be a different one than it is today."

The share of the top-end luxury category went from 10% in 2020 (236k units sold) to 16% in 2021 (305k), which bodes well for brand premiumization. The company has set itself a target of ~18% by 2026. Longer term, we believe the entry-level range of the Mercedes-Benz's brand will be the C-Class, thus assuming that it will stop selling lower-margin A- and B-Class cars. The company expects its pricing discipline to remain intact beyond the end of the semiconductor issue. The group insisted on not becoming volume-driven and on exiting lower-margin products as part of its strategic direction. The brand repositioning end-goal is to turn MBG into a structurally more profitable company.

The "premiumization" strategy has been in place for almost two years now. In October 2020, Mercedes-Benz (then Daimler Group) held a capital markets day to present its refined strategy and communicate its new ambition: "We will build the world's most desirable cars." Today, more than 18 months after the event, management has stayed consistent with that message and believes they took the right decision.

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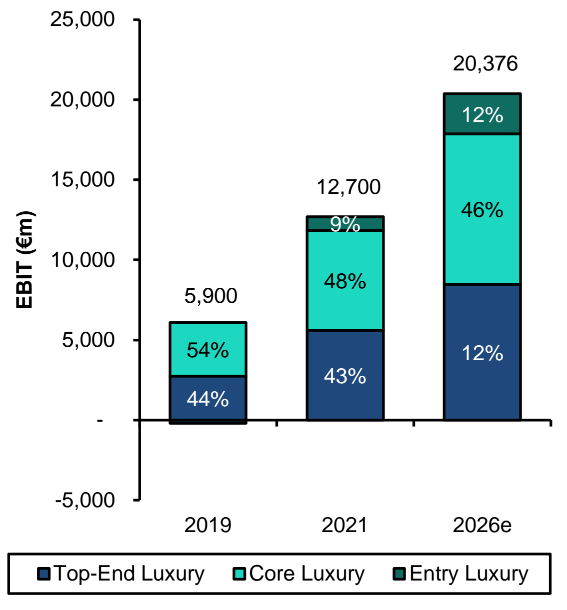
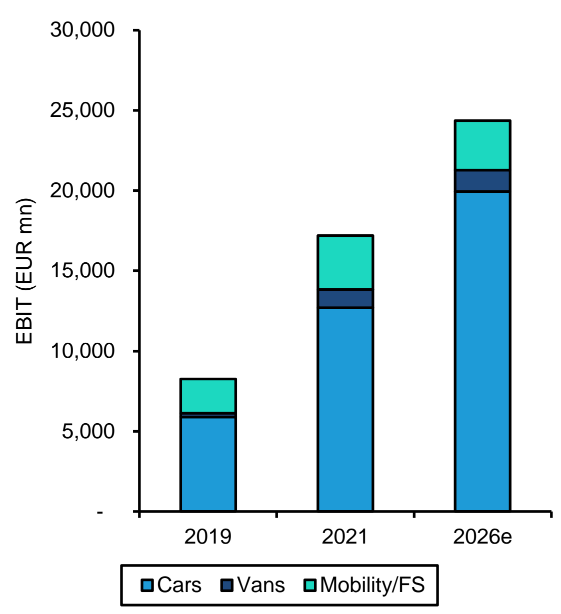
EXHIBIT 10: **The company's strategic targets indicate an EBIT range >€20Bn by 2026 for the cars business**



Source: Company reports, Bernstein estimates and analysis

EXHIBIT 11: **Group EBIT could reach €25Bn by 2026**



Source: Company reports, and Bernstein estimates and analysis

THE COMPANY HAS SIGNIFICANTLY IMPROVED ITS CRISIS RESILIENCE

In October 2020, when the group presented its new luxury strategy, a key highlight of the event was the announcement of the cost savings plan designed to lower its high-cost base and breakeven point. At the end of 2019, Daimler had reached a peak in its spending; ~€14Bn in fixed costs and ~€15Bn in investments in PPE and Cash R&D (~€12Bn ex-trucks and buses), the cost base was growing at a faster pace than sales. From a financial standpoint, the goal of the CMD was to share with the market the group's intention to significantly reduce this heavy cost base to make Daimler an "all-weather company." As a result, management guided to a decrease in fixed costs and in PPE + Cash R&D investments of more than 20% by 2025 (vs. 2019), stressing that this was an absolute euro budget reduction (not expressed in percent of sales). These targets apply whatever the market environment is. Key levers to reduce fixed costs include reducing headcount through mid-decade, adjusting production capacity, and structurally changing marketing and sales (moving to online and direct sales toward mid-decade). On the investment side, management is contemplating reducing excessive product complexity, spending on conventional powertrains and highly standardized EV architectures (-80% over 2019-25), and streamlining industrial footprint. In addition, the group is also planning on reducing variable costs (mostly materials and manufacturing) by 1% p.a. over the same period, so as to "fight the CO2 burden." All in all, these cost savings, combined with higher mix and pricing power (premiumization strategy), should lead MBG to deliver structurally higher EBIT margins in all market environments (see Exhibit 10). In May 2022, during the "Economics of Desire" event, management showed their progress on achieving those cost savings. So far, the group seems to be on the right track toward delivering on those targets. While the 2020 results were largely helped by Covid-19, MBG succeeded in implementing more sustainable measures to further reduce its fixed costs and investments in 2021 (-16% vs. 2019). Since the 2020 strategy update, management has reiterated their

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profitability and cost saving targets, planning on making Mercedes-Benz a "double-digit company," "even in a BEV world."

8% trough margins are well within the company's reach

One common pushback from investors in recent weeks on MBG has been the company's guidance of 8-10% trough margins in a downturn. Can the company deliver on this promise? Some even suggest the best thing that can happen to the company would be a recession, to see if it can deliver on the 8% worst-case scenario margin it communicated. We ran a simple recession scenario to get a sense of how bad the shares can get in a recession.

- Very basic set-up. We provide a high-level overview of our scenario calculations. We take individual assumptions for the Cars business revenue (volumes and ASP) and calculate EBIT based on an operating leverage assumption. For both the Vans and the Financial Services divisions, we reduce revenue and EBIT by a fixed percentage.

- Operating leverage is the key question. We assume volumes drop an additional -10% in a recession and ASP contracts -5%. We assume operating leverage (% of EBIT decline per revenue decline) at 20%. Keeping all other variables constant, a 1% increase in operating leverage will have a -17bps negative impact on Cars margin, and a -12.4bps negative impact on Group margin.

- A conservative set of assumptions. A 10% decrease in volumes implies that MBG would go back to below its 2015 level. This seems to us like a comfortable buffer as we don't see much downside risk following two years of volume constraints in the industry. We use ASP -5%, a significant number considering Mercedes-Benz's strategy to prioritize value over volume, but close to previous crises. Regarding operating leverage, the 20% level corresponds to where the group stood during the last crisis (2008-09). Considering MBG's recent efforts to lighten its fixed cost base, we can also view the 20% operating leverage as a conservative assumption.

- The 8% trough margin may not be that optimistic. Running the numbers on our recession scenario, we derived a 9.2% EBIT margin for the group, well above the 8% level it guided to. If MBG was to deliver on this target, we believe this would be a solid proof-point that management took the right steps to make the group an "all-weather-company." Operating leverage would have to "deteriorate" to 30% before the company — in this scenario — would drop to 8% on the group level (see Exhibit 11).

- Sensitivity to sales prices is also limited. From a pricing standpoint, it would take an 18%+ ASP decrease to get to below the 8% EBIT margin level, a scenario we think is quite unlikely to happen.

STOCK ALREADY PRICED FOR RECESSION

Mercedes's valuation has been sliding down since late 2020. It is now trading -29% below its 10-year average and -21% below its five-year average (including all of Covid-19). Our recession scenario would imply EPS forecast needs to decline by ~-30% in 2023, closing the valuation gap to MBG's long-term multiple. In our view, the stock has priced much of

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the recession risk for 2023, but very little of the fundamental improvements the company made in the past years.

- Mercedes trading -29% below long-term PE. Mercedes's valuation has declined steadily from a peak in late 2020. Currently, the shares are trading on 5.3x on 2023 consensus estimates. This is -29% below the company's 10-year average multiple.
- Recession scenario implies -31% downside from estimates. Bernstein and consensus estimates are very close for 2023. Our recession scenario still implies EPS could drop by up to -31% in 2023 from our estimated levels.
- Current valuation incorporates recession downside. We argue that Mercedes has done a lot to improve its fundamentals. Cost savings, truck sales, EV transformation, luxury strategy — to name a few. In our view, all these strengthen the underlying case for Mercedes. Yet, current valuations are already pricing in a 30% drop in EPS from historic MBG/Daimler levels.

VALUATION METHODOLOGY

European autos

We value European automotive companies based on one-/two-year forward multiples. Based on the point in the cycle, these can vary among PE, EV/sales, and EV/EBITDA. In some cases we also use sum-of-the-parts valuations. Our EV multiples are for the industrial (autos) operations and we value captive Financial Services operations separately with their book value. Super sport niche makers are valued with respect to their industrials and luxury goods peer groups.

Mercedes-Benz Group AG

We value MBG based on one-/two-year forward multiples. Based on the point in the cycle, these can vary between PE, EV/sales, and EV/EBITDA. Our EV multiples are for the industrial (autos) operations. We cross check against a company DCF and long term EV/IC.

We rate Mercedes-Benz Outperform with a target price of €85. It closed at €60.47 and is benchmarked against the MSDLE15 that closed at 1,745.03. Closing prices as of August 8, 2022.

RISKS

European autos

The risks to our views on our European auto stocks and our share price targets are straightforward and are mainly macroeconomic in nature. Earnings, liquidity, and equity value could be severely tested in the event of economic contractions in major end-markets like Europe, the US, China, and emerging markets. The individual companies are at risk of specific product and project failure, while the ability of financial services businesses to remain viable could also be tested if the global financial system deteriorates again, restricting capital market access. A strong move of Chinese OEMs onto the European or North American markets would likely affect our covered companies negatively. Our forecasts are also sensitive to moves in the euro vs. the US dollar and the UK sterling, as well as Latin American and Asian currencies

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Mercedes-Benz Group AG

In addition to the automotive sector risks, we see the greatest downside risks if MBG should fail to create a significantly more "premium" product offering, management needing to reverse strategy on electrification or software requiring additional investment, or rapid up-market expansion of EV-start-ups and Chinese OEMs.

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GAS MIDSTREAM: A DEFENSIVE, ESG-FRIENDLY WAY TO HIDE OUT IN A RECESSION

HIGHLIGHTS

- We recently wrote a deep dive on WMB noting why it should perform more defensively in a recession than it is getting credit for. In this chapter, we make several points around why gas midstream should outperform in a recession, both on valuation and on an ESG front.

- First, gas consumption in the US has historically only dipped slightly in the last two recessions (1-2% in the last two, compared with 4-12% for oil). Although it could be argued that both were "outliers" in that the shale revolution began in 2008-09 and lowered the cost of supply for gas prices, and that in 2020 people were forced to stay home, so obviously gas demand dipped less than oil demand, we believe the current potential recession would also lead to minimal US gas demand drops. In prior recessions, the actual dips were in industrial; this time around US industrial remains competitive vs. other countries paying much higher gas prices, and we don't think export demand will be below 100% LNG utilization with the ongoing Russia-Ukraine conflict.

- Second, even though gas pipelines do not get inflation protection instantly like liquids pipes, they should capture it over time with rate cases, and G&P is often mostly covered. In addition, most gas pipelines are 95%+ under contract and revenue has not historically dipped during recessions. Finally, while this is admittedly a point of contention, we feel strongly that gas growth should be seen as replacing global coal more so than limiting renewables, particularly in the medium term. Coal is still 27% of global primary energy and we believe cannot fully be replaced at this point by intermittent renewables. When compared on this basis, gas emits 52% less GHG than coal.

INVESTMENT IMPLICATIONS

We rate WMB, ET, LNG, EPD, OKE, and PAA Outperform and KMI Market-Perform. WMB is our top defensive pick and ET is our top pick for 2022 on increasing shareholder returns. We also like Cheniere on international spot price exposure. KMI has the largest renewables presence in our coverage.

US NATURAL GAS IN A RECESSION

We recently wrote a deep dive on WMB noting why it should perform more defensively in a recession than it is getting credit for. In this chapter, we make several points around why gas midstream should outperform in a recession, both on valuation and on an ESG front.

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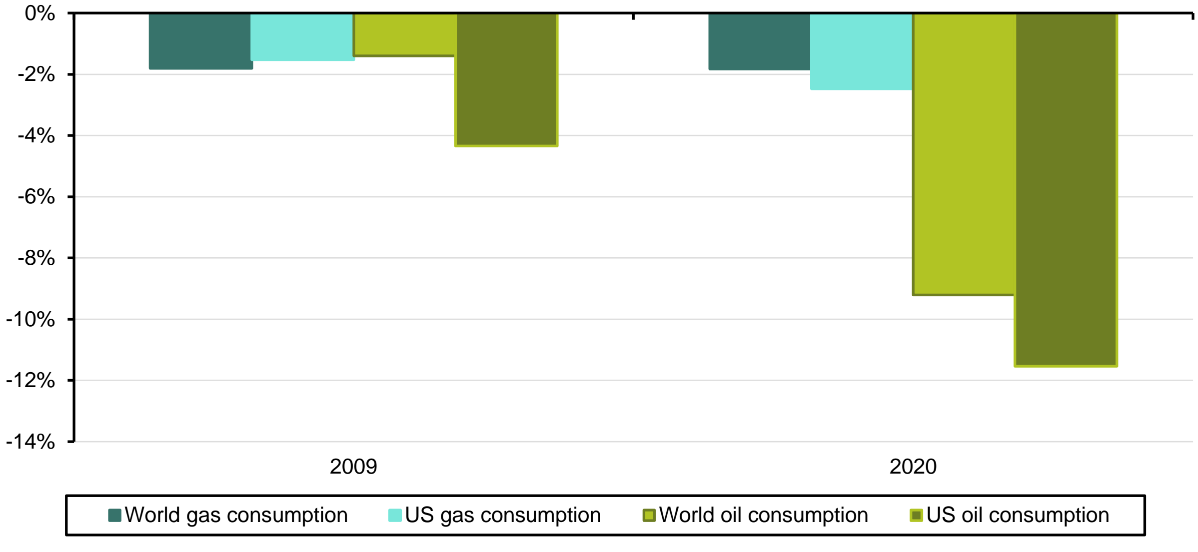
First, gas consumption in the US has historically only dipped slightly in the last two recessions (1-2% in the last two, compared with 4-12% for oil). Although it could be argued that both were "outliers" in that the shale revolution began in 2008-09 and lowered the cost of supply for gas prices, and that in 2020 people were forced to stay home, so obviously gas demand dipped less than oil demand, we believe the current potential recession would also lead to minimal US gas demand drops. In prior recessions, actual dips were in industrial; this time around US industrial remains competitive vs. other countries paying much higher gas prices, and we don't think that export demand will be below 100% LNG utilization with the ongoing Russia-Ukraine conflict.

EXHIBIT 1: **Gas consumption has been more resilient than oil consumption during recessions...**

	2008	2009	2010	2018	2019	2020	2021
World gas consumption (bcfd)	290	284	306	371	378	371	391
% change		*-1.8%*	*7.4%*			*-1.8%*	*5.3%*
US gas consumption (bcfd)	61	60	63	80	82	80	80
% change		*-1.5%*	*4.9%*			*-2.5%*	*-0.4%*
World oil consumption (mbd)	84,822	83,636	86,549	97,490	97,747	88,746	94,088
% change		*-1.4%*	*3.5%*			*-9.2%*	*6.0%*
US oil consumption (mbd)	18,848	18,030	18,322	19,417	19,424	17,183	18,684
% change		*-4.3%*	*1.6%*			*-11.5%*	*8.7%*

Source: BP Statistical Review and Bernstein analysis

EXHIBIT 2: **...while gas consumption dipped only 1-2%, oil consumption fell 4-12%**



Source: BP Statistical Review and Bernstein analysis

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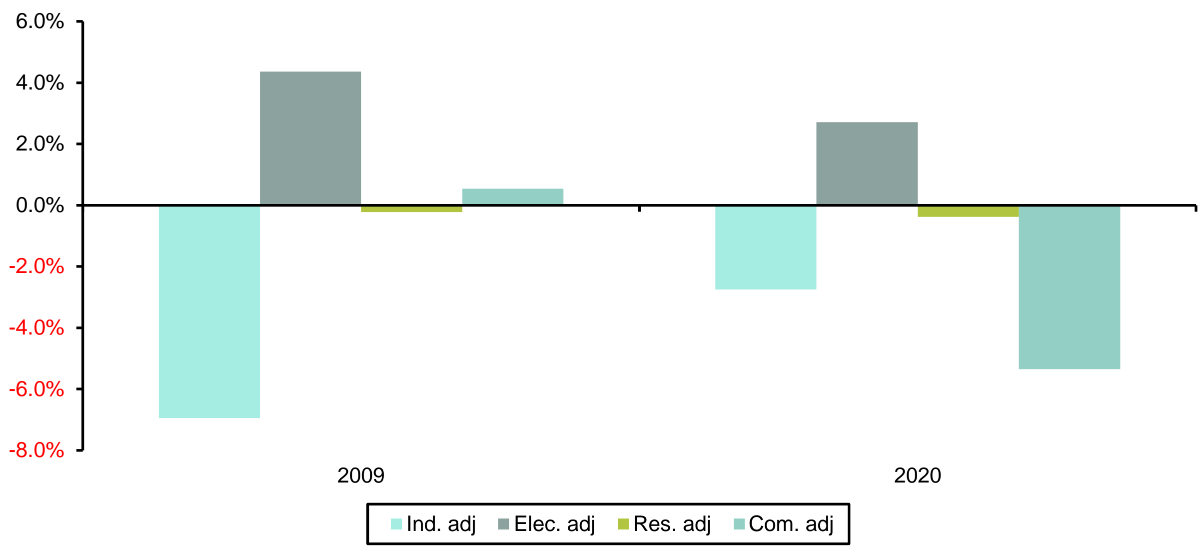
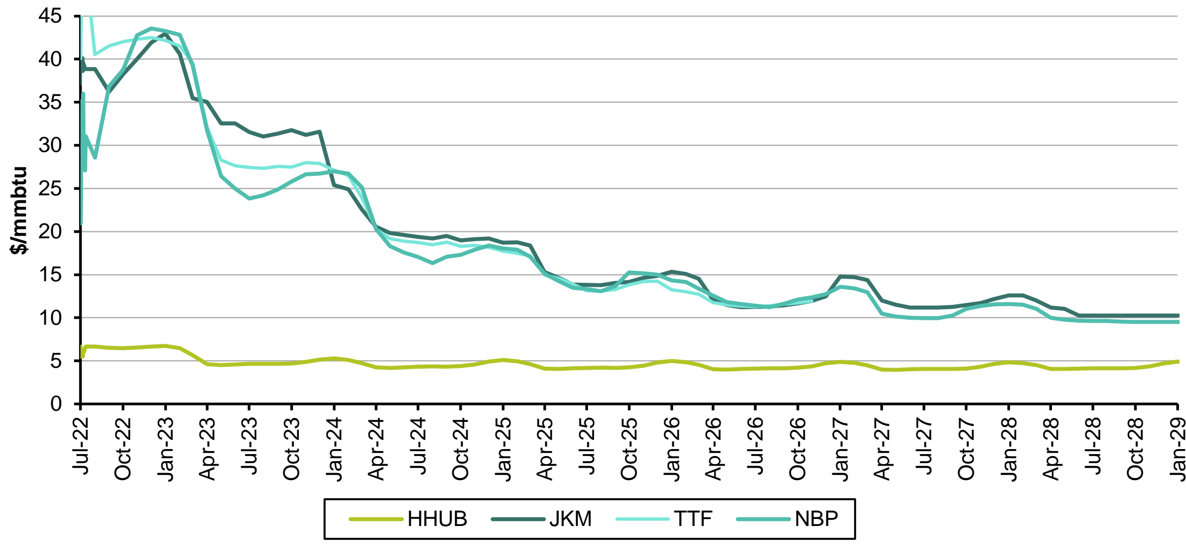
EXHIBIT 3: **Historically, recessions have seen a decline in industrial gas consumption offset by higher electric power gas consumption; in 2020, Covid-19 restrictions likely caused a decline in commercial gas consumption**



Source: EIA, and Bernstein estimates and analysis

EXHIBIT 4: **Given elevated world gas prices, US gas is relatively cheap and an industrial competitive advantage, so we see the recessionary threat of industrial gas decline as less likely than in the past; LNG export demand is also unlikely to decline**



Source: Bloomberg (futures) and Bernstein analysis

Second, even though gas pipelines do not get inflation protection instantly like liquids pipes, they should capture it over time with rate cases, and G&P is often mostly covered. In

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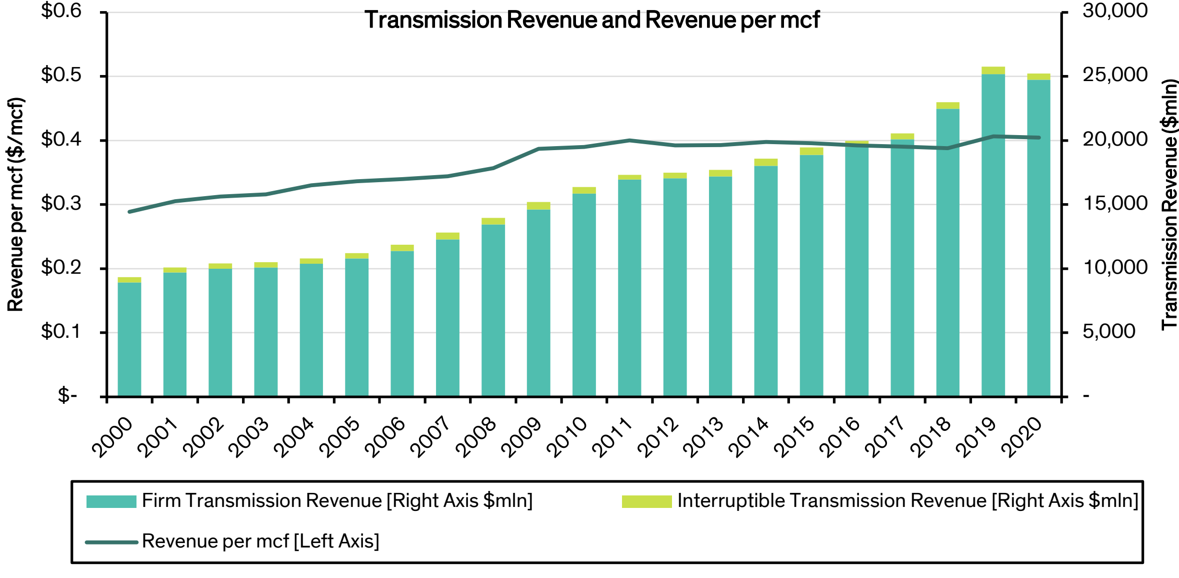
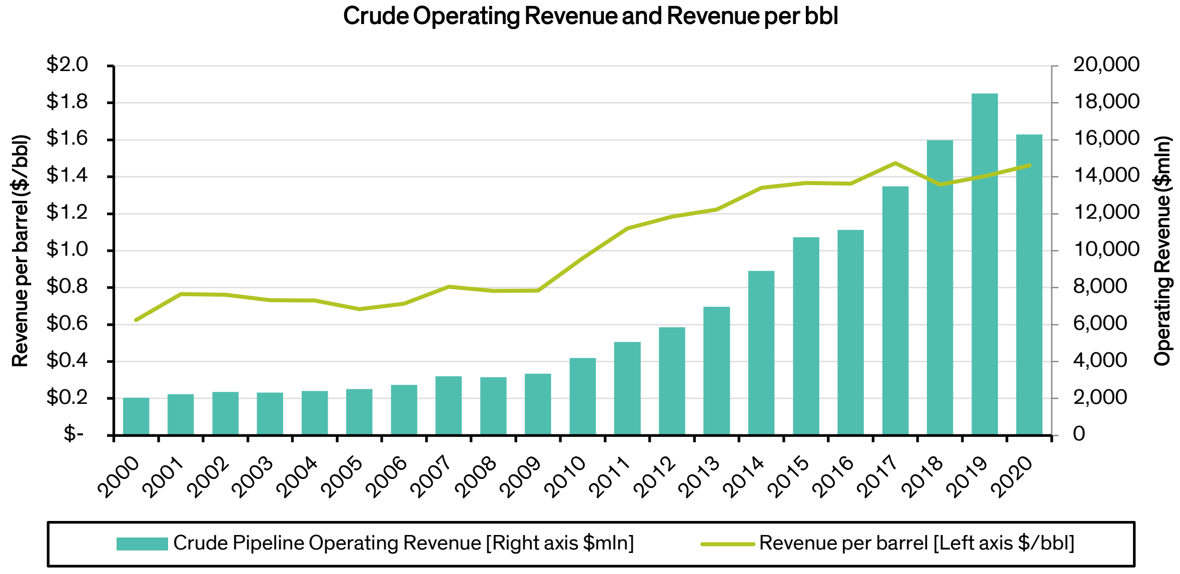
addition, most gas pipelines are 95%+ under contract and revenue has not historically dipped during recessions.

EXHIBIT 5: **Natural gas transmission revenues and revenue per mcf have shown resiliency in past recessions with growth in 2009 and stability in 2020**



Source: FERC Form 2 and Bernstein analysis

EXHIBIT 6: **Crude pipeline revenue and revenue per bbl have been less resilient in past recessions with plateau in 2009 and decline in 2020**



Source: FERC Form 6 and Bernstein analysis

Finally, while this is admittedly a point of contention, we feel strongly that gas growth should be seen as replacing global coal, more so than limiting renewables, particularly in

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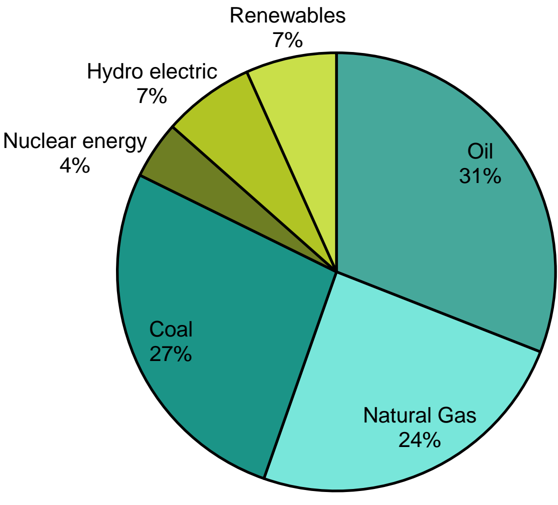
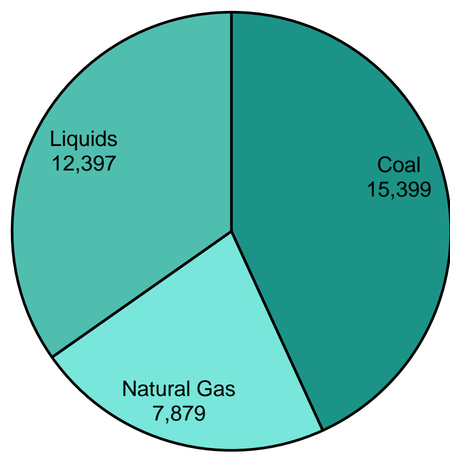
the medium term. Coal is still 27% of global primary energy and we believe cannot fully be replaced at this point by intermittent renewables. When compared on this basis, gas emits 52% less GHG than coal.

EXHIBIT 7: **Coal is still 27% of global primary energy consumption and cannot fully be replaced at this point by intermittent renewables**



Source: BP Statistical Review and Bernstein analysis

EXHIBIT 8: **Global CO2 emissions are dominated by coal, which takes a disproportionate share compared to energy supplied**



Source: EIA and Bernstein analysis

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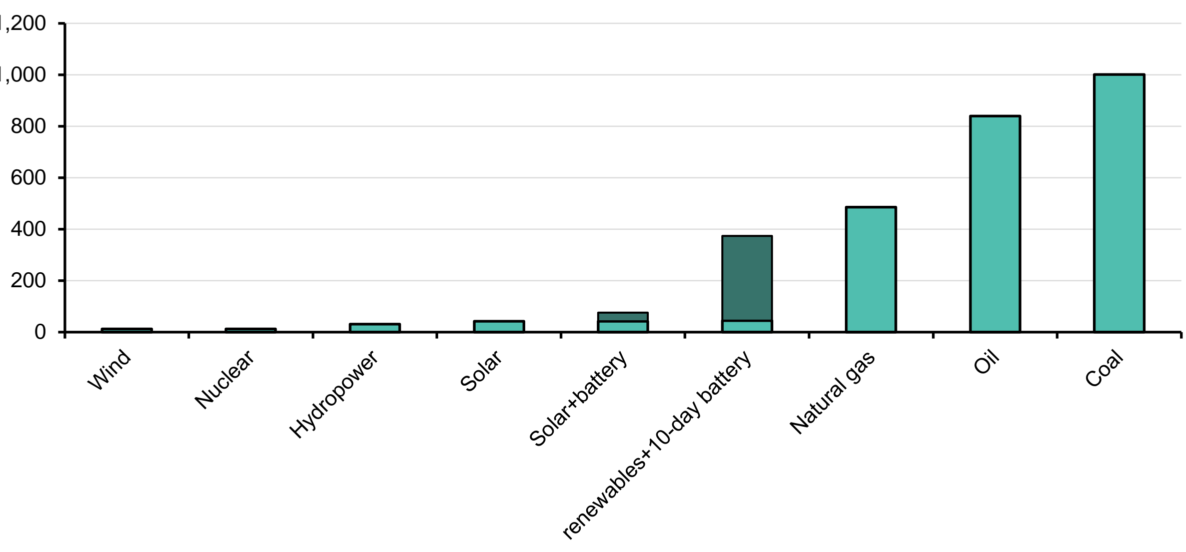
EXHIBIT 9: **Natural gas has 52% less life cycle emissions than coal and has comparable emissions to much more expensive intermittent renewables with sufficient battery supply**



Source: National Renewable Energy Laboratory (NREL), and Bernstein estimates and analysis

VALUATION METHODOLOGY

US natural gas and MLPs

Our valuation framework for midstream and MLP companies in our coverage is based on forecasting 40 years of EBITDA and distributable cash flow (DCF). From this, we allow debt growth in line with debt-to-EBITDA coverage required to keep current credit ratings. Any capex needs not funded through debt are therefore funded from DCF, with our valuation based on the remainder, which we consider to be cash flow available to investors. We value this cash stream at an 8-9% discount rate for our full coverage with the exception of LNG, for which we use a 10% discount rate for cash flows that do not originate from CQP. We adjust our target prices for expected changes to EBITDA, growth capex, interest rate, maintenance capital, and share count.

EXHIBIT 10: **Ratings and target prices**

Ticker	Rating	Currency	8-Aug-2022 Closing Price	Target Price
LNG	O	USD	147.71	167.00
CQP	M	USD	46.22	50.00
ET	O	USD	10.89	16.00
EPD	O	USD	25.95	32.00
KMI	M	USD	17.68	19.00
OKE	O	USD	59.21	69.00
PAA	O	USD	11.10	15.00
PAGP	O	USD	11.18	15.00
WMB	O	USD	32.45	37.00
SPX			4,140.06	

Source: Bloomberg, and Bernstein estimates and analysis

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RISKS

US natural gas and MLPs

The greatest risks to the natural gas and MLP sector are from: (1) Commodity prices. Lower commodity prices would directly impact segments tied with price exposure (e.g., percent of proceeds contracts in the natural gas processing segment). In the medium term, lower prices may lead to lower production (through lowered investment) or immediately (through bankruptcy). Higher-than-expected commodity prices may lead to greater production and would benefit pipeline volume throughput and processing plant utilization. (2) Commodity volumes. Reduced production or demand for these products hurts the midstream MLP companies that transport them, leaving pipelines empty and companies unable to earn back their investments. Higher-than-expected production benefits existing assets while providing companies with more growth opportunities. (3) Overcapacity. If midstream MLP players build more capacity than suppliers can fill or than demand-side customers are willing to receive, they are at risk of being unable to recoup their initial investment in the project. We believe this may play out in the near-to-medium term in several US producing regions. Upside risk may come if additional infrastructure is required and MLPs are able to construct it at good returns. (4) Regulatory bottlenecks. If state and federal regulators do not grant the necessary permits to construct and operate new midstream assets, the industry will not be able to grow in the medium-long term. On the other hand, if regulatory processes are streamlined significantly, the industry may see additional upside from lower compliance costs, faster approval processes, and/or greater certainty of approval.

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SSE: STRONG SECULAR GREEN GROWTH AND INFLATION

HIGHLIGHT

- **Strong ESG commitment:** SSE has committed to becoming Net Zero by 2050 and 80% carbon intensity reduction by 2030. Of its £12.5Bn capex plan to FY26, ~40% will go toward Renewables and another ~40% to Electricity Networks, both of which are green taxonomy aligned; the capex plan is expected to drive a 7-10% EPS CAGR to FY26.

- **Strong secular organic green growth:** SSE increased its capex target for Renewables from £1.8Bn to £5Bn at the November 2021 CMD and plans to grow its Renewables portfolio from ~4GW today to ~8GW by FY26 and >13GW by FY31. The electricity networks form the backbone of the green transition and will likely see gross RAV (Regulatory Asset Value) grow at a >10% CAGR. SSE's balance sheet can support this growth when coupled with dividend rebase and minority stake sale in networks.

- **Robust inflation protection:** With ~60% of SSE's EBITDA index-linked and negligible index-linked debt, inflation increases flow directly to the bottom line. SSE has lost £2.7Bn in market cap since noise around windfall taxes grew, although in a worse case such a move is value-neutral, as windfall taxes will be offset by higher earnings.

INVESTMENT IMPLICATIONS

SSE's valuation does not fully incorporate the underlying strength and defensiveness of the business. We believe the recent dip provides an attractive entry point to a quality stock and rate SSE Outperform with a target price of £2,150p and an upside of 20%.

QUALITY STOCK WITH STRONG SECULAR GREEN GROWTH AND INFLATION PROTECTION:

(1) SSE HAS A STRONG ESG COMMITMENT WITH ITS NET ZERO TRANSITION PLAN

SSE adopted a resolution in its 2021 AGM to become a Net Zero Business in its Scope 1, 2, and 3 GHG emissions by 2050 or earlier. In March 2022, SSE published its Net Zero Transition Plan (see Exhibit 1), which sets out the key actions SSE will take to meet its Net Zero ambitions and its interim science-based targets (SBTs) aligned to a 1.5° pathway. SSE plans to publish a Net Zero transition progress report annually, and has recently published the first report for FY22.

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EXHIBIT 1: **SSE's Net Zero transition plan and achievements as of 2022**

Source: SSE

Some key targets and progress at present are:

Short-term: SSE targets to engage with 50% of suppliers by spend to set SBTs by FY24. SSE has reported that in FY22, 48% of suppliers have set or committed to set SBTs, up from just 4% in FY20.

Medium-term: GHG reductions — Scope 1, 2, and 3:

- **Scope 1 carbon intensity:** SSE has a target of Scope 1 carbon intensity reduction of 80% by 2030 from FY18 levels (307g CO_2/kWh). By FY22, 20% of the intensity reduction has been achieved with a carbon intensity of 259g CO_2/kWh. Over time, the addition of renewable generation (discussed in the following point) from 4GW now to 8GW by FY26 and >13GW by FY31 will lead to the achievement of this target. In FY22, 2.4GW of renewables capacity was under construction. SSE hopes to grow renewables output 5x to 50TWh by FY31.

- **Scope 1 and 2 absolute targets:** SSE targets reducing absolute Scope 1 and 2 GHG emissions by 72.5% by 2030 from a FY18 base year (11.07MtCO_2) and has achieved 60% of this target by FY22 with emissions of 6.24MtCO_2.

- **Scope 3 absolute targets:** SSE targets reducing absolute GHG emissions from use of products sold by 50% by 2034 from FY18 base year; by FY22 19% of this target has been achieved, including the benefit of exiting the Scope 3-heavy UK domestic energy retail division and upstream operations.

Longer-term: SSE targets Net Zero for Scope 1 and 2 by 2040 and Net Zero for remaining Scope 3 emissions by 2050.

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SSE shared its updated strategic plan in November 2021, which is aligned with the Net Zero Transition Plan. Some aspects of this plan were recently upgraded (EPS and asset growth) with FY22 results:

- **Capex plan:** SSE increased its five-year capex plan by 65% to FY26 from £7.5Bn to £12.5Bn. Capex is split 40% for networks (65% earlier), 40% for renewables (25% earlier), and 20% for flexible generation (10% earlier). The biggest increase was the allocation to the renewables division, increasing from £1.8Bn to £5Bn.

- **Sources of funding:** These Include the sale of a 25% stake in its network business in early FY24 and a dividend per share (DPS) rebase to 60p in FY24 (~a 30% cut) and thereafter targeting at least a 5% DPS rise in FY25 and FY26.

- **EPS:** The capex plan is expected to drive a 7-10% group adjusted EPS CAGR to FY26, taking the implied FY26 EPS to 132p, after incorporating dilution from the stake sale (~11p/share gross dilution and ~6-7p/share net, considering savings on avoided interest costs).

- **Returns:** SSE is targeting >10% equity returns for project-financed offshore and WACC plus 100-400bps for unlevered onshore wind, WACC plus 300-500bps for H_2/CCS), and 7-9% return on equity for its networks business (including inflation and outperformance).

- **Growth targets:** From 4GW of renewables now, SSE targets 8GW by FY26 and >13GW of renewables by FY31, and increasing networks RAV from £7.4Bn at the end of FY21 to >£9Bn by FY26 (net of minority stake sale), with a >10% gross CAGR and >£14Bn RAV by FY31 (net).

(2) SSE OFFERS STRONG ORGANIC GREEN GROWTH INDEPENDENT OF ECONOMIC CYCLES

Renewables — rapid growth from offshore buildout

SSE Renewables is the growth engine of the company, comprising 48% of our EV with a total value of ~£15.1Bn, and has a very strong growth trajectory ahead. SSE has ~15GW of capacity between its existing (4GW) and secured pipeline capacity of 11GW (which will be bolstered by the acquisition of SGRE's Southern European developmental assets of ~5GW). Currently, SSE has multiple projects already under construction, as well as several projects in the pipeline, and aims to double capacity to 8GW by FY26 and increase to >13GW by FY31. In terms of achieving the 8GW target to FY26, ~1.4GW of projects still need to be identified — these could be a combination of offshore wind (Arklow Bank and Sea Green 1A) and onshore wind (including the Southern European portfolio which is expected to contribute 0.5GW by FY26); the precise makeup will depend on the results of auctions/PPA negotiations in the future.

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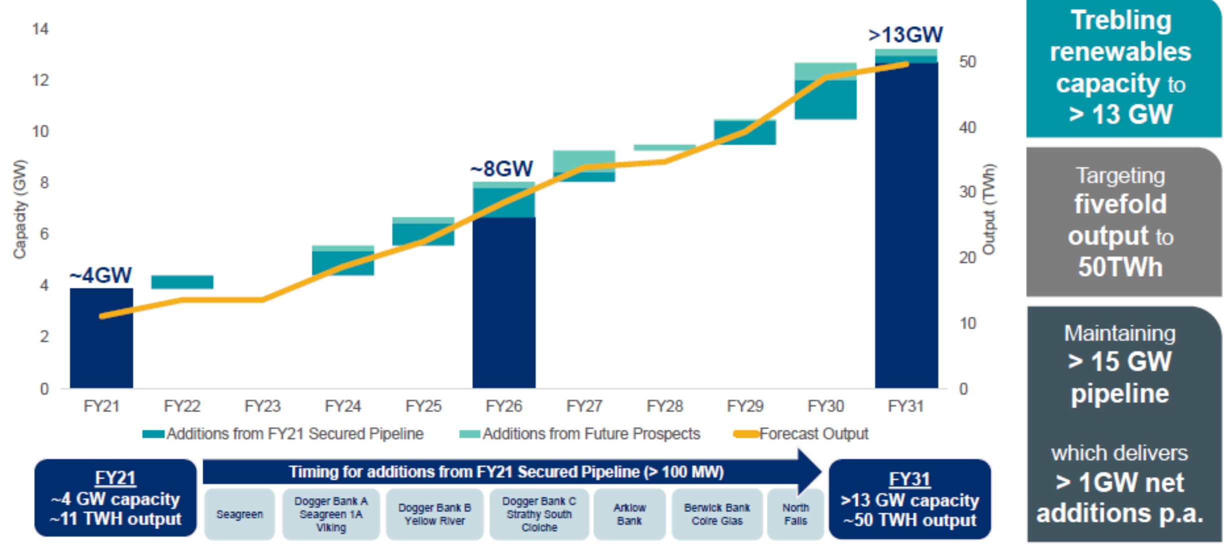
EXHIBIT 2: **SSE targets a 5x expansion of renewable energy in a decade**



Source: SSE

Offshore wind — significant opportunity in the world's largest and most ambitious offshore wind market

SSE is a leading player in offshore wind focused on the UK (at present) and Ireland (in the future), as well as ambitions to go global (Japan, Continental Europe, US, etc.). SSE owns a fair amount of the UK's offshore wind landbank, which is very precious, given the UK's ambitious 50GW offshore wind target for 2030 (recently upgraded from 40GW) and >100GW for 2050, to meet the UK's Net Zero targets. The aggressive bidding at the English Sea-bed lease auctions in early 2021, where bidders agreed to pay more to acquire the seabed leases on average compared to our valuation of SSE's remaining UK landbank makes SSE's landbank all the more valuable, given they were acquired for near negligible lease fees, including the latest addition of 1GW net at the recent ScotWind lease auction round.

Ireland has a 5GW offshore wind target by 2030 and an interim target of 1GW by 2025 — these are ambitious in the context of Ireland's installed base of only 25MW. SSE has 520MW of consented offshore wind capacity in Ireland (Arklow Bank), with an additional 1.6GW of potential offshore wind projects (Braymore and Celtic Seas).

Last year, SSE announced intentions to pursue opportunities in Japan, and bought into an early-stage pipeline of 8GW in Japan from developer Pacifico Energy. More recently, SSE has moved to position itself further internationally — e.g., bidding with Brookfield for the 1.4GW Hollandse Kust (West) project in the Netherlands and applying for rights in the Baltic Sea in Poland with Acciona.

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EXHIBIT 3: **SSE has the largest share of UK seabed leases**

Developer	Hornsea 3&4 (GW)	Dogger Bank (GW)	SG (GW)	East Anglia/ Norfolk (GW)	Moray Firth (GW)	Rampion (GW)	Berwick Bank (GW)	English seabed lease (GW)	Scottish seabed lease (GW)	Others (GW)	Total capacity awarded (GW)	Total remaining landbank (GW)	Total land bank (GW)	% of total landbank
SSE		1.4	0.8				4.1		1.0	0.3	**2.2**	**5.4**	**7.6**	**13%**
Iberdrola				3.1					3.7		**0.0**	**6.8**	**6.8**	**11%**
RWE		1.4				0.4		3.0		0.7	**1.4**	**4.1**	**5.5**	**9%**
Ørsted	4.8								0.3		**0.0**	**5.1**	**5.1**	**9%**
Vattenfall				3.6					0.4	0.3	**0.0**	**4.3**	**4.3**	**7%**
EnBW								1.5	1.5		**0.0**	**3.0**	**3.0**	**5%**
BP								1.5	1.5		**0.0**	**3.0**	**3.0**	**5%**
EDPR/Engie					0.9				1.0		**0.0**	**1.9**	**1.9**	**3%**
Total			0.5					0.8	0.5		**0.2**	**1.6**	**1.8**	**3%**
Equinor		1.4								0.3	**1.4**	**0.3**	**1.7**	**3%**
Others		0.7				0.8		1.2	15.0	1.0	**0.7**	**18.0**	**18.7**	**32%**
Total	**4.8**	**5.0**	**1.3**	**6.7**	**0.9**	**1.2**	**4.1**	**8.0**	**24.8**	**2.5**	**6.0**	**53.3**	**59.3**	**100%**

Source: Crown Estate, company reports, and Bernstein estimates and analysis

Onshore wind — now bolstered with Southern European expansion

SSE has been a proficient developer of UK onshore wind farms, with a 12% market share and #2 position in UK onshore wind. Due to a change in government policy in 2015, which pulled support away from onshore wind and put in planning restrictions, onshore wind has taken a back seat. However, at the beginning of March 2020, the UK government lifted the moratorium on new onshore wind projects being eligible for Contracts for Difference (CfDs) auctions. SSE has an opportunity to monetize its onshore wind landbank beyond the ~2GW currently operational and has already started construction of the 443MW Viking project, which can also participate in the upcoming UK CfD auction. In addition to Viking, SSE is also sitting on ~1.3GW of onshore wind projects in the pipeline, with 15MW under construction, 369MW consented, and a further 357MW requiring consent, as well as 550MW of future prospects. Additionally, not reflected in these numbers, is the recent announcement to acquire SGRE's Southern European renewable development assets and team for €580Mn — the transaction will likely close in September 2022 and will add 0.5GW of capacity by FY26 (and a further 0.5GW in construction then) with up to 3GW by FY31.

Pumped Hydro: SSE has a consented a 1.5GW pumped hydro site called Coire Glas, which would offer 30GWh of storage potential and will likely be the UK's largest storage project. It is estimated to cost £1.2–£1.5Bn and will be a major civil engineering construction project with an estimated construction time of five to six years. A project of this scale has a high initial upfront construction cost but low operational costs, and a very long operational life (50 years +). Given the UK's recently announced plans to go to Net Zero in the power system by 2035, which includes high reliance on offshore wind capacity, a pumped storage asset such as Coire Glas will likely help reduce wind curtailment and contribute to grid stability. Given the lack of visibility of future revenue streams, SSE will not take a FID on this project, unless there is policy reform.

Networks — backbone of the green revolution

Networks division is the stable backbone of the company, providing transparency and growth in the medium term and constitutes 44% of our EV. Investments and inflation will grow electricity networks underlying RAV to >£9Bn net of assumed 25% minority stake sales (>4% CAGR net of divestment and >10% gross) by FY26 with investments of £5Bn

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(distribution capex of £2Bn and transmission capex of >£3Bn). The gross annual RAV growth rates to FY26 are 8% in distribution and 13.5% in transmission.

SSE sees significant opportunities from **electricity transmission** due to its footprint in Northern Scotland leading to a RAV growth of 13.5% (pre-divestments) (see Exhibit 5). SSE expects RAV to reach £6.5-£7Bn by FY26 from £4.2Bn now (see Exhibit 7). Further growth beyond FY26 will likely come from developments such as expansion of offshore wind in Scotland, taking RAV to >£12Bn by FY31.

There is also further upside in electricity distribution, which has a two-year lag on the regulatory timetable from transmission, from additional capex required to accommodate more heat pumps and EVs (see Exhibit 6), given the UK's proposed ban on internal combustion engines from 2030. SSE submitted its electricity distribution business plan to the regulator for approval in December 2021, with a draft determination published on June 29, 2022, and a final determination in mid-December. The business plan sees ~£4Bn in baseline investment over the five-year RIIO-ED2 period, which represents an increase of around a third on the equivalent period in RIIO-ED1. The baseline investment could see the RAV of the distribution division grow to over £6.0Bn by 2028. In addition, over £1Bn of regulatory uncertainty mechanisms provides opportunity for further RAV growth.

Minority stake sale can unlock value too: SSE plans to raise £3.3Bn from divestments, including the sale of non-core businesses of telecom (part of the Enterprise segment) and its under development Slough multi-fuel assets and a 25% stake sale in the network division. Assuming historical transaction prices for telecoms and multi-fuel netting ~£0.7Bn, the implied expectation for the network sale is £2.6Bn, which is a 70% premium on FY24 year ending RAV (and 62.5% gearing). In our modeling we assume a ~60% premium for the sale, in line with the price paid by National Grid for WPD. Should SSE realize a richer premium, it would certainly unlock value for shareholders.

EXHIBIT 4: **Key drivers of SSE's transmission capex**

5-year Transmission capex to FY26
Net capex of >£3bn[1]
Includes ~£1bn (net) investment in:
- Skye reinforcement project
- Eastern HVDC project
- North Argyll project

Avg. Transmission capex p.a.
>10%
£m
Prev. plan to FY25
New plan to FY26

Key projects to FY26
Key
Existing infrastructure
The Certain View
Likely RIIO-T2 Uncertainty Mechanism
Shetland HVDC
Skye reinforcement
North East reinforcement
Argyll reinforcement
East Coast reinforcement
Inveraray - Crossaig
East Coast HVDC
+New connections +Rail electrification

Exceptional RAV growth to FY26
Expected CAGR (gross) of c.12%
- Potential for 14GW+ capacity connected by 2026[2]
- Gross RAV expected to reach £6bn by FY26[3]
- Represents 30% increase in net RAV[3]

SSEN Transmission RAV Forecast[3]
c.12% gross CAGR
FY21
FY26
SSE Ownership
Minority Interest

Source: SSE

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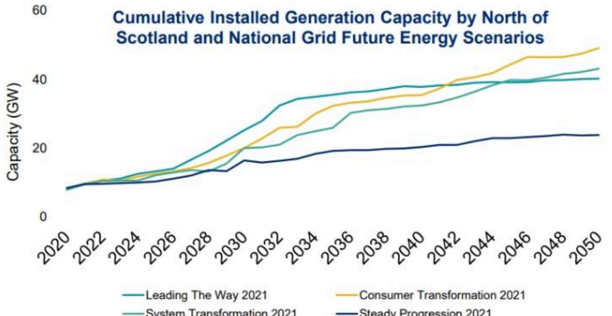
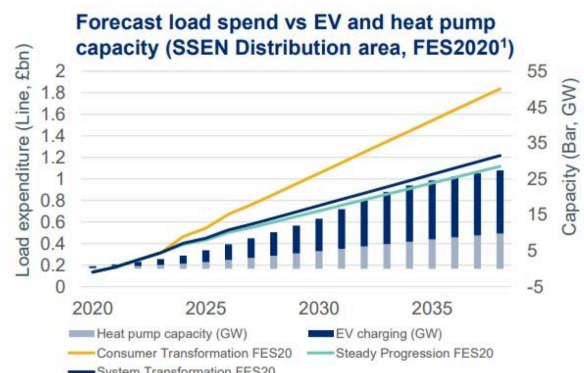
EXHIBIT 5: **Transmission growth is driven by new renewables in north of Scotland...**



Source: SSE

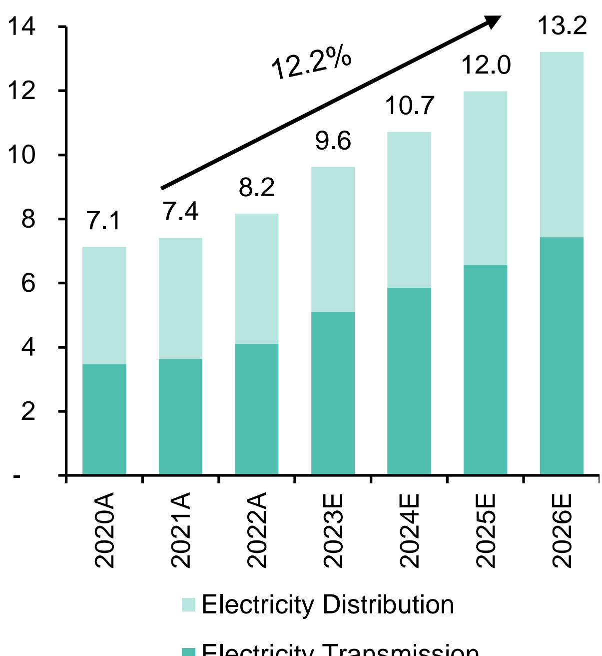
EXHIBIT 6: **...while distribution will likely be bolstered by EVs and heat pump deployment**



[1] Based on National Grid Future Energy Scenarios 2020 (aligned with DNO business plans under RIIO-ED2 process); includes extrapolated cost estimates beyond 2028.

Source: SSE

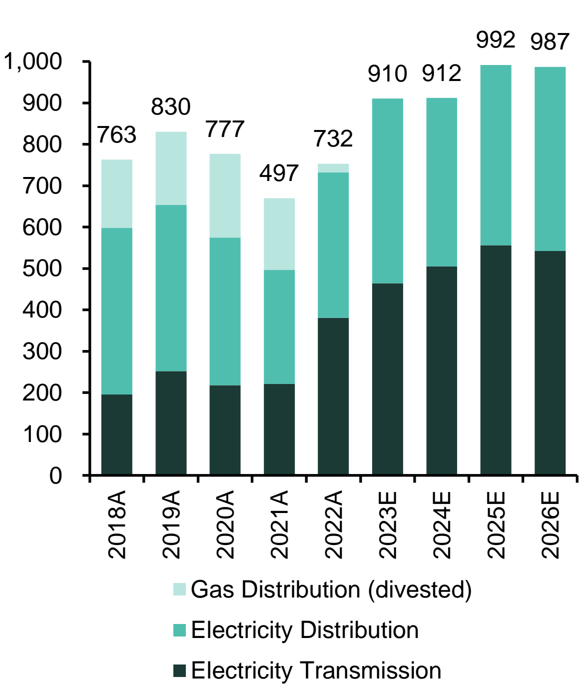
EXHIBIT 7: **SSE Networks RAV growth (gross), £Mn**



Note: SSE FY ends on March 31

Source: Company reports, and Bernstein estimates and analysis

EXHIBIT 8: **SSE Networks EBIT evolution, £Mn**



Note: SSE FY ends on March 31

Source: Company reports, and Bernstein estimates and analysis

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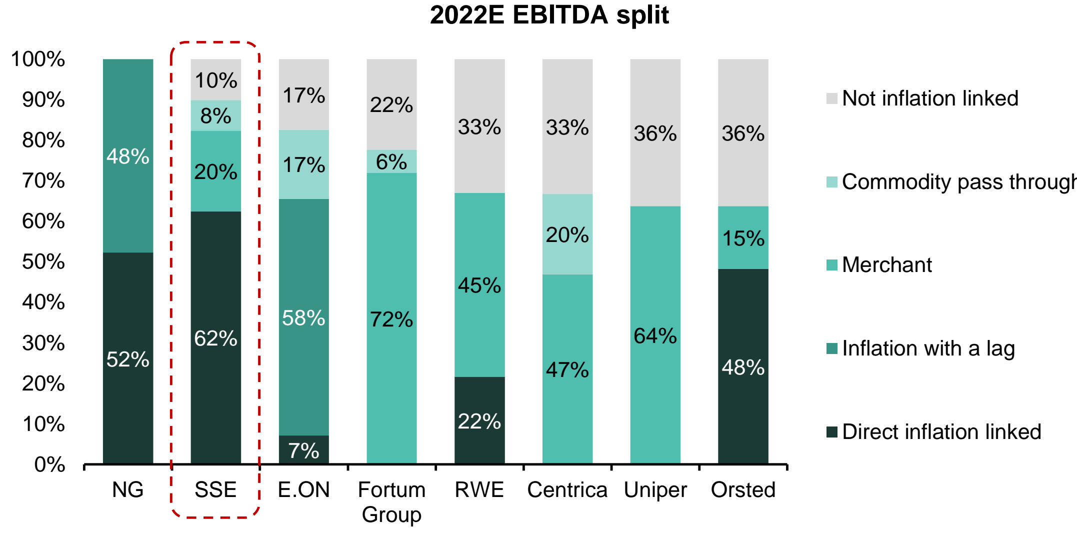
(3) SSE OFFERS STRONG INFLATION PROTECTION IN THE SHORT TERM, IN SPITE OF WINDFALL TAX NOISE

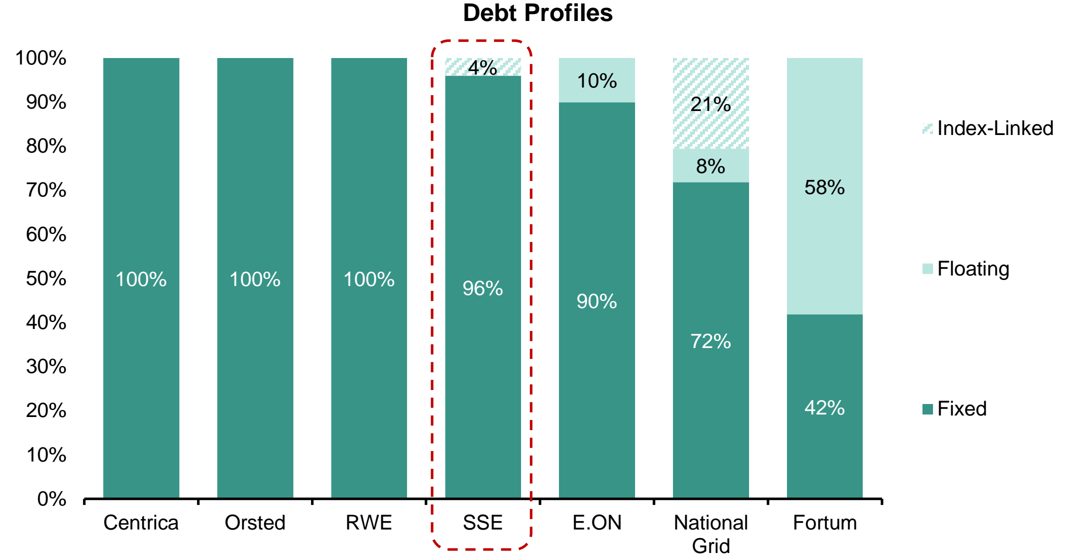
SSE, which is best-in-class in the sector (see Exhibit 9), offers investors strong protection against inflation, as we explain next. SSE has highlighted that ~60% of EBITDA is underpinned by index-linked revenue streams and the company has negligible index-linked debt, implying inflation increases flow directly to the bottom line. While for some of SSE's peers, upside from inflation-linked revenues could be offset by inflation-linked debt, SSE has negligible inflation-linked debt (see Exhibit 10), enabling it to retain the upside of inflation linkage.

EXHIBIT 9: **SSE has one of the lowest shares of not inflation-linked EBITDA in our coverage**



Source: Bernstein estimates and analysis

EXHIBIT 10: **96% of SSE's debt in fixed and the rest index-linked**



Source: Company reports, and Bernstein estimates and analysis

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What about windfall taxes?

A significant source of investor worry is the recent discussions in the UK on windfall taxes on renewable generators. We believe this topic is a red herring for two reasons:

(1) In the near-term, SSE does not benefit from windfall profits due to hedging at reasonably moderate power prices; therefore, we don't believe there is a case for immediate windfall taxes.

(2) For future years, assuming wholesale power prices stay elevated, SSE could benefit from higher power prices. However, we highlight that at worst such a tax is value neutral, as the temporary upsides from higher power prices don't materialize and are eaten away by regulation. In our modeling we assume conservative pricing for unhedged output — should actual prices turn out to be higher and windfall taxes are implemented, our EBITDA forecasts would rise and so could windfall tax payments, largely offsetting each other.

Moreover, as SSE will be investing £24Bn in the UK's Net Zero transition in the next 10 years, any exclusions from windfall taxes due to higher green investments could also protect it.

We illustrate in Exhibit 11, how windfall taxes are value neutral in the worst case by showing that should windfall taxes be imposed, targeting any upside above normal level of power prices of £60/MWh, by and large, windfall taxes would be offset by EBITDA upgrades, leaving our valuation unchanged.

EXHIBIT 11: **Impact of potential windfall tax**

	FY23	FY24	FY25	FY26
Merchant volumes (TWh)	**8.8**	**10.5**	**12.2**	**12.5**
UK Wind ROC + merchant	*5.3*	*6.8*	*8.4*	*8.7*
UK Merchant hydro	*3.5*	*3.7*	*3.8*	*3.8*
Overall Hedging profile	**89%**	**75%**	**37%**	**1%**
UK Wind	*91%*	*78%*	*37%*	*1%*
UK Hydro	*85%*	*70%*	*38%*	*1%*
Overall Hedge price (£/MWh)	**57**	**71**	**107**	**108**
UK Wind	54	69	105	108
UK Hydro	63	74	110	108
Achieved power prices (£/MWh) - Current fwd prices for unhedged	79	99	121	130
Modelled power prices (£/MWh) in BERN EBITDA forecast	58	68	74	56
UK blended year ahead prices (£/MWh)	250	184	130	130
Summer forwards	211	176	139	139
Winter forwards	289	191	121	121
UK Windfall price	190	124	70	70
Normal price above which windfall tax applied (assumption, £/MWh)	60	60	60	60
Windfall profits (£'mn)	**170**	**406**	**748**	**874**
Upgrade to EBITDA (£'mn) - from higher power prices	**185**	**322**	**575**	**930**

Source: Company reports, and Bernstein estimates and analysis

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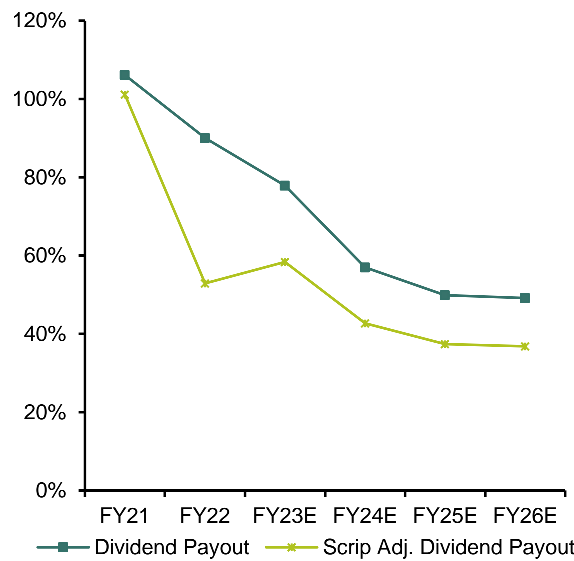
(4) SSE BALANCE SHEET CAN SUPPORT GROWTH WHEN COUPLED WITH DIVIDEND REBASE AND MINORTY STAKE SALE

SSE increased its five-year capex plan by 65% to FY26 from £7.5Bn to £12.5Bn, split 40% for networks (65% earlier), 40% for renewables (25% earlier), and 20% for flexible generation (10% earlier). The biggest increase was higher capex allocation to the renewables division increasing from £1.8Bn over five years to £5Bn now. This assumes a 25% divestment in the networks division and, therefore, only includes 75% of network capex over FY24-FY26; around >60% of the plan is now committed.

The dividend reset post FY24 when the DPS rebases to 60p in FY24 (~ a 30% cut) puts to bed previous investor questions on whether the company's dividend policy is still fit for purpose in an environment of accelerated growth opportunities in both renewables and networks, making the growth plans more credible. Scrips will continue to be part of the mix and dilution will be capped at 25% (from 20% pre-Covid-19). The payout ratios become more sustainable post FY24, after the reset (see Exhibit 12).

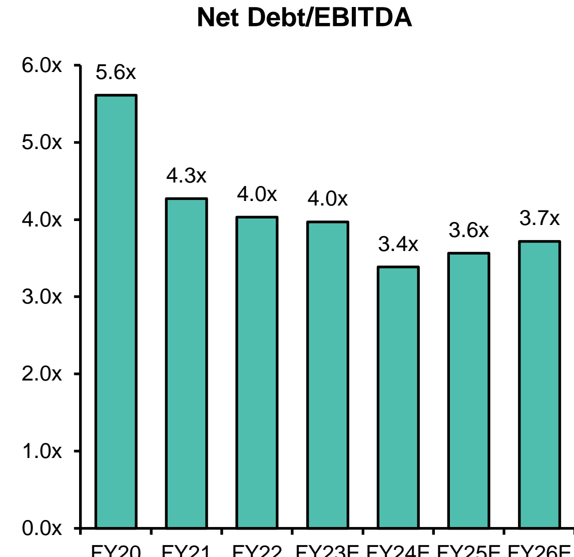
SSE's planned divestments (£3.3Bn comprised mainly of minority stake sale in networks of ~£2.6Bn, and multi-fuel and telecoms of ~£0.7Bn) and dividend cut (savings of £0.7Bn vs. old policy) mean the balance sheet is on a firm footing despite a massive expansion in capex (£5Bn). Both Moody's and S&P have reaffirmed their ratings and Moody's changed the outlook from negative to stable, primarily due to these mitigating measures. We expect SSE to stay within the target of 4.5x Net Debt/EBITDA (see Exhibit 13), currently it is at 4x Net Debt/EBITDA.

EXHIBIT 12: **SSE dividend payout**



Source: SSE, and Bernstein estimates and analysis

EXHIBIT 13: **SSE's Net Debt to EBITDA forecasts**



Source: SSE, and Bernstein estimates and analysis

(5) RECENT DERATING OFFERS A GOOD ENTRY POINT

Since reports of a UK windfall electricity tax first appeared in the news on May 24, 2022, stocks exposed to UK merchant generation, including SSE were impacted (A UK windfall electricity tax ? Impact decoded for our coverage). While no specific details were reported, news articles suggested the Treasury was mulling targeting renewable electricity generators in addition to the oil & gas sector. While the chancellor has moved ahead with

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windfall taxes on oil & gas players, the Treasury did not proceed with windfall taxes on renewables, and is still assessing the scale of windfalls in the renewables sector. As highlighted earlier, the prevalence of hedging means that larger renewable generators have typically not benefited from windfall profits.

Additionally, newspaper articles published on June 13, 2022 about potential electricity market reform, have further spooked investors (UK Utilities: Far reaching Electricity Market Reforms - What we know so far...).We believe these reforms will take years to implement and will be subject to a rigorous consultation process. A consultation on longer-term electricity market design is due in the middle of July and could in the longer-term provide more certainty to economics of existing renewables (post subsidy expiration).

We believe SSE continues to trade at a discount to peers such as National Grid despite having superior growth prospects and better inflation protection.

The valuation does not fully incorporate the underlying strength and defensiveness of the business. Our target price of £2,150p represents a 20% potential upside (see Exhibit 14). Nearly half (~48%) of the EV comes from the renewables division (see Exhibit 14), which is the growth engine of the business, and another ~44% comes from the networks, which is the stable backbone of the company.

EXHIBIT 14: **SSE valuation**

DCF SOTP Valuation		Implied Multiples	% EV
Networks (£m)	13,816	= 144% of 2023E RAV	44%
Retail (£m)	1,034	= 9.9x of 2023E EBITDA	3%
Renewables (£m)	15,093	= 16.1x of 2023E EBITDA	48%
O/w Onshore Wind (£m)	*5,538*	= 15.5x of 2023E EBITDA	*18%*
O/w Offshore Wind (£m)	*5,840*	= 20.3x of 2023E EBITDA	*19%*
O/w Hydro (£m)	*3,715*	= 12.9x of 2023E EBITDA	*12%*
Thermal, EPM & Gas Storage (£m)	1,988	= 4.9x of 2023E EBITDA	6%
Other (£m)	(647)		-2%
Total EV (£m)	**31,284**	= 11.6x of 2023E EBITDA	100%
Net debt 2022A (incl. pension surplus) (£m)	(8,013)		
Equity value (£m)	**23,271**		
NOSH (basic, mn) - 2023E	1,079		
Target price (£p)	**2,150**		
Premium (discount) to current price 08/08/2022	**20%**		
Implied P/E multiple (FY 23E - Bernstein defn.)	21.6x		
Implied P/E mutliple (FY 23E - SSE defn.)	17.8x		
Implied scrip adjusted dividend yield 23E	3.3%		
Actual scrip adjusted dividend yield 23E	4.0%		

Source: SSE, and Bernstein estimates and analysis

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EXHIBIT 15: **SSE Renewables division valuation**

Division	EV (£m)	%	Capacity (MW)	Implied £/MW	Implied 2023E EV/EBITDA
Onshore Wind	5,538	37%	8,608	0.64	15.5x
o/w EU landbank	*685*	*5%*	*4,900*	*0.14*	
o/w UK-RoI landbank	*846*	*6%*	*1,291*	*0.66*	-
o/w Viking	*595*	*4%*	*443*	*1.34*	-
o/w existing capacity	*3,412*	*23%*	*1,974*	*1.73*	-
Offshore Wind	5,840	39%	11,091	0.53	20.3x
o/w Beatrice	*759*	*5%*	*235*	*3.23*	-
o/w Dogger Bank/Seagreen	*1,219*	*8%*	*1,967*	*0.62*	-
o/w landbank	*3,120*	*21%*	*8,637*	*0.36*	-
o/w Gabbard	*742*	*26%*	*252*	*2.94*	-
Hydro	3,715	25%	1,459	2.55	12.9x
Total	**15,093**	**100%**	**21,158**	**0.71**	**16.1**

Source: SSE, and Bernstein estimates and analysis

VALUATION METHODOLOGY

The £2,150p target for SSE, rated Outperform, is based on the sum-of-the-parts DCF methodology. The closing prices for SSE and the MSDLE15 on August 8, 2022, were £1,788p and 1,745, respectively.

RISKS

Key downside risks to our price targets include further losses in the EPM division; execution risk in the renewables division; lower-than-expected NBP gas and UK power price; and adverse political/regulatory interference.

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AIR LIQUIDE: INFLATION-PROOF WITH ENERGY TRANSITION LEADERSHIP

HIGHLIGHTS

- **Air Liquide maintains earnings, even in times of recession.** In the last two years when sales fell (2009 and 2020), Air Liquide maintained earnings growth by increasing margins. This is because of its pricing power and contract structure. It passes on the vast majority of input costs (e.g., the gas itself) and has regular adjustments in its contracts so increased variable costs such as logistics can also be priced. This allows earnings to be maintained even if volumes decline.

- **Air Liquide is both an ESG improver and enabler.** The recent Advance strategy placed sustainability targets front and center in its efforts. This means both curbing its own emissions and, in real terms from 2025, to be in line with EU targets, and also building its carbon capture and renewable hydrogen businesses, among other energy transition revenue streams.

- **We estimate that sales opportunities could be up to €9.5Bn from carbon capture and €3.3Bn from renewable hydrogen by 2030.** CCS opportunity is based on our forecasts that coal-fired generation has 20% CCS by 2035 and 25% by 2040 vs. 20% of being equipped with CCS by 2040 in an earlier note. For renewable hydrogen, market applications will likely grow. We see the opportunity for this to be disrupted further and more hydrogen production to be outsourced to industrial gas companies

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INVESTMENT IMPLICATIONS

We rate Air Liquide Outperform with a target price of €157. Air Liquide is an excellent defensive stock, with a proven ability to support margins in times of recession and promptly pass on input and additional costs.

WHY AIR LIQUIDE IS RECESSION PROOF

Air Liquide proved to be a resilient earnings grower and margin improver, even in a time of recession. Exhibit 1 shows that during economic slowdowns Air Liquide is capable of increasing prices even in periods of lower volumes. In 2009, Air Liquide's earnings were unaffected by negative OSG (organic sales growth) as strong pricing strategies helped the company expand its margin despite negative OSG of -5% (see Exhibit 2). Since then, the oligopolistic industry has consolidated even further. In 2020, there was a similar impact, as solid earnings growth was delivered on lower organic sales. Air Liquide averaged 4% OSG in the last five years, despite the Covid-19-related dip in 2020.

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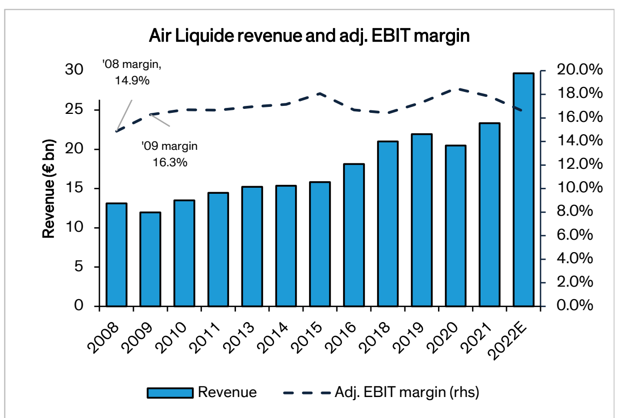
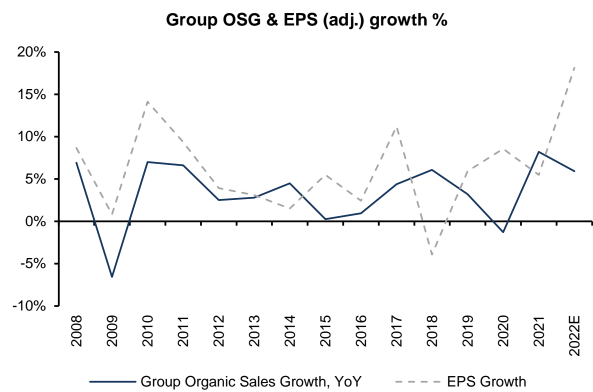
EXHIBIT 1: **In periods of economic downturn, shrinking revenue is offset by higher margins with no impact on company earnings**



Source: Air Liquide, and Bernstein estimates and analysis

EXHIBIT 2: **Very consistent earnings and sales growth**

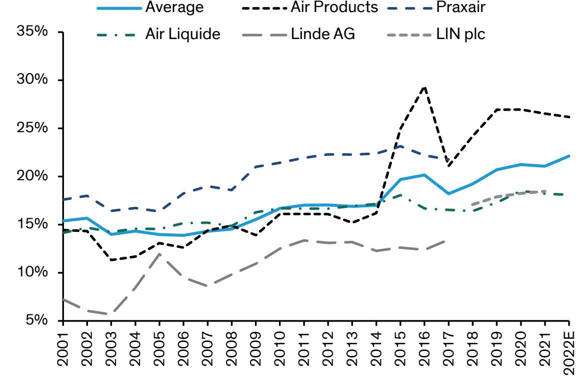


Source: Air Liquide, and Bernstein analysis and estimates

ROOM FOR COST EFFICIENCIES STILL EXISTS

Costs savings bring the opportunity for further margin expansion in the industry. Industry margins for the Big 3 gas companies have been stable and improving over time, even in downturns (see Exhibit 3). This resilience is driven by long-term customer contracts and a disciplined and consolidated industry. In addition to the pass-through of input costs, fixed costs are high, given capital intensity and a large workforce. This is a key consideration, and all companies have announced cost savings programs, generally to offset fixed cost inflation. We have previously examined industrial gas players' cost structures and think that Air Liquide have potential to lift (Air Liquide: Marginal Gains for the Capital Markets Day) earnings through savings in SG&A and fixed cost networks, alongside some further pricing actions.

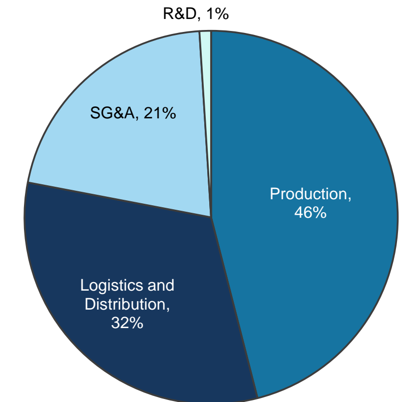
EXHIBIT 3: **Margins are resilient and improve slowly...**



Note: In 2018, Praxair, Inc. and Linde AG completed US$80Bn merger of equals.

Source: Company reports (Air Liquide, Air Products, Linde, and Praxair), BBG consensus (2022E for Air Products and Linde), and Bernstein estimates (Air Liquid) and analysis

EXHIBIT 4: **...but are restrained by variable costs**



Source: McKinsey, and Bernstein estimates and analysis

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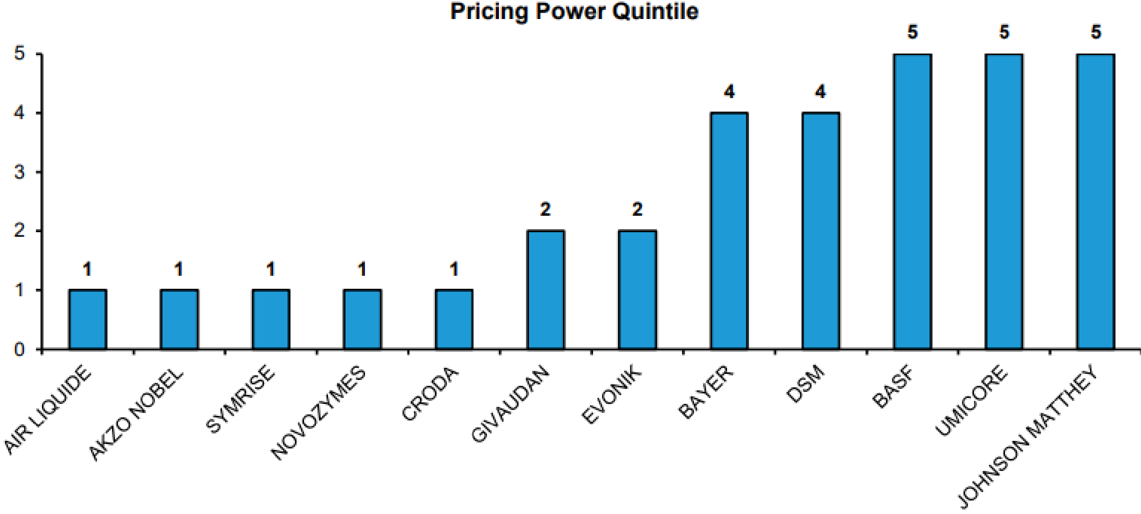
Operating leverage is relatively low but depends strongly on product mix of incremental volumes. An incremental dollar of revenue from the onsite business has much greater operating leverage than does the bulk or cylinder business, because the variable logistics and SG&A incurred in delivering incremental volume to the customer that generates the incremental dollar of revenue is much lower for onsite. For the bulk and cylinder business, the extra sales could require another truck, driver, and container, which leads to logistics and distribution making up a significant percentage of variable cost (see Exhibit 4).

PRICING IS STRONG AND UNAFFECTED BY INFLATION

Industrial gas as a sector has strong pricing. Broadly speaking, industrial gas companies operate in an oligopolistic market structure. Helped by the concentrated nature of the market, industrial gas companies can exert pricing power.

EXHIBIT 5: **Air Liquide has coverage-leading pricing power**



Note: Pricing power determined by growth and stability of gross margins.

Source: Company reports, Bernstein European quantitative survey 2022, and Bernstein analysis

Pricing is rational, even in a downturn. Customer contracts are long term, ranging from spot sales and annual contracts in the cylinder business to 15-year take-or-pay contracts in the onsite business, which lend gases companies a high degree of resilience (see Exhibit 6). However, these contracts have regular adjustment mechanisms, so are more agile than it might first seem. Furthermore, some products are sold on spot, such as excess volume requirements from cylinder customers above the contracted amounts, supporting solid pricing over the past 10 years (see Exhibit 7), except over 2010-16 when input costs fell more than the price decline, leading to a positive margin spread.

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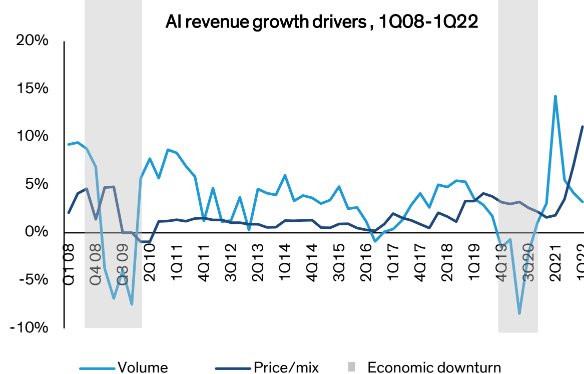
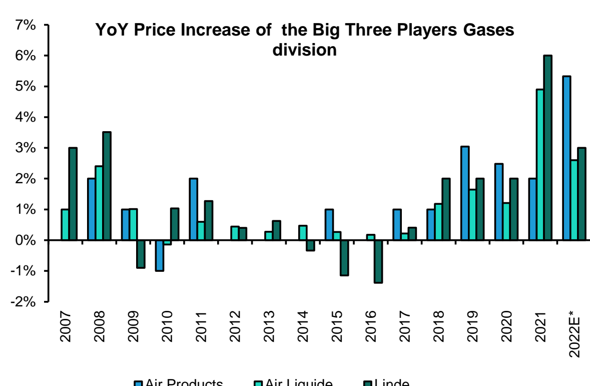
EXHIBIT 6: **Air Liquide pricing prevails in periods of economic downturn**



Source: Air Liquide and Bernstein analysis

EXHIBIT 7: **Industrial gas pricing only falls if margins would improve anyway**



Source: Bloomberg (consensus estimates for Air Products and Linde), company reports, and Bernstein estimates and analysis

PRICING APPROACHES VARY DEPENDING ON DELIVERY METHOD

Onsite pricing is negotiated and agreed upfront in order to achieve a target level of return. Pricing adjustments occur throughout the life of the contract to pass-through changes in natural gas and energy prices. Companies, therefore, split out these contributions when calculating comparable growth, given the fact that this only affects sales with no impact on absolute operating profit. These pricing adjustments also enable Air Liquide to pass through its own additional costs in the adjustment phase, such as recent logistics cost increases. Shorter-term contracts in parts of bulk and in cylinder are less flexible and may bake-in periodic resets, leading to a lag on price inflation/deflation, while cylinders sold on spot will provide immediate pass through. Gas supply for more specialized areas, such as healthcare, will have prices set through contractual agreement with local governments and are generally deflationary. Overall, margins compress as energy and gas prices inflate and expand when they fall, and so a more relevant margin is calculated on sales ex-gas impact.

WITH LONG-TERM TAKE-OR-PAY CONTRACTS IN ONSITE BUSINESS, REVENUES ARE WELL PROTECTED THROUGHOUT THE ECONOMIC CYCLE, ESPECIALLY IN DOWNTURNS

In 2009, organic growth of industrial gases contracted by 4.5%, whereas industrial chemicals (ex-industrial gases) contracted by 7.8% (see Exhibit 8). Growth assumptions for the industry are anchored in Industrial Production (IP). This accounts for two-thirds of end-market exposures with chemical, refining, mining, and general industrial end-markets all contributing to IP. As growth in IP comes from a mix of existing capacities producing more (i.e., volume growth) and building new capacities to meet demand (i.e., new projects) and ignores end-market capacity dynamics, the relationship to pure volume growth isn't perfect, but improves considerably when including new projects growth (see Exhibit 9). Where we see overcapacities in end-markets, capex projects continue to add to growth, but the pricing environment is less favorable and plants can remain underutilized, while in tight environments the reverse is true. **We don't expect global IP to decline in 2022 and 2023, and so expect Air Liquide to continue to deliver sales growth.**

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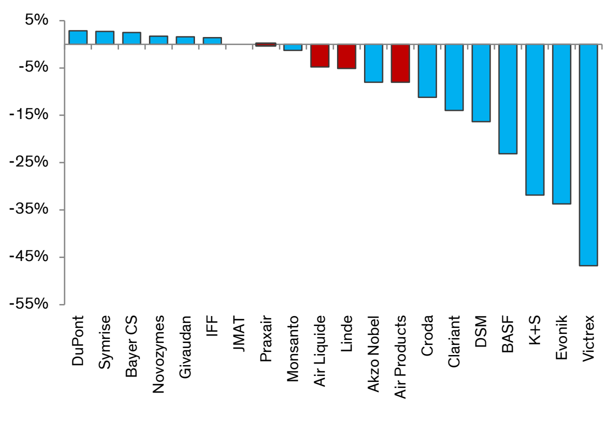
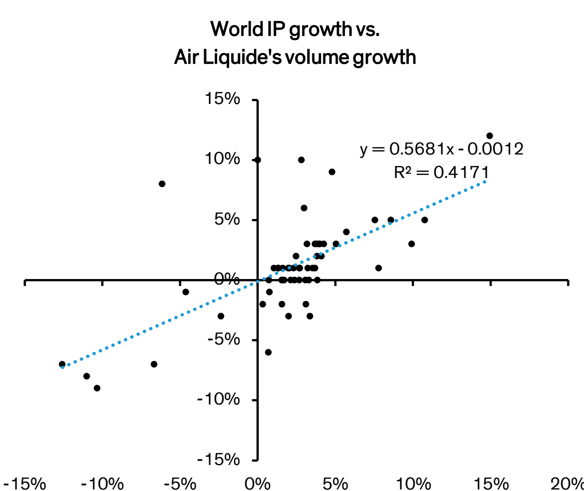
EXHIBIT 8: **2009 organic growth for global chemical companies**



Source: Company reports and Bernstein analysis

EXHIBIT 9: **IP vs. Air Liquide volume growth**

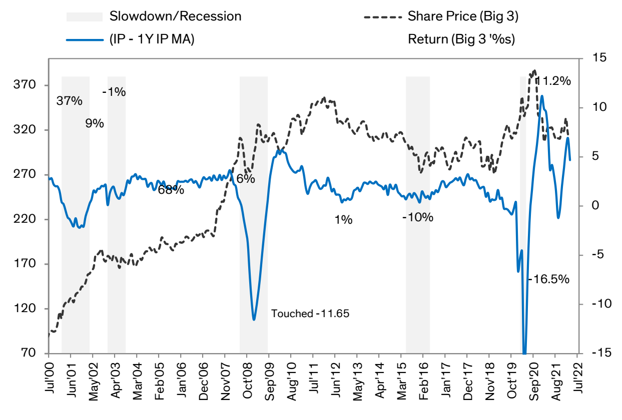


Source: Air Liquide, Haver, and Bernstein analysis

EARNINGS RISK IS SMALL, AND MULTIPLE DOWNSIDE IS A COMPOUNDING OPPORTUNITY

Industrial gas stocks outperform late in the cycle and in downturns vs. the chemicals sector. Since 2007, in each period where we have seen multiples contract for global chemicals, gases have been more resilient. There are exceptions, but generally industrial gases are significantly more stable in earnings expectations and marginally more stable in valuation multiples in times of market corrections and reduced expectations for global growth compared to other chemicals companies. This translates to lower share price volatility (see Exhibit 10).

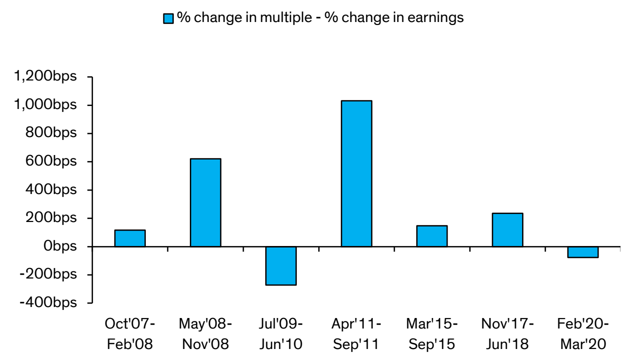
EXHIBIT 10: **Industrial gas stocks thrive late in the cycle**



Note: Share prices indexed to January 1, 2000 and relative to SXXP

Source: Bloomberg and FactSet (share price), Haver (industrial production), and Bernstein analysis

EXHIBIT 11: **Multiple changes are the greater major risk factor in the industrial gas sector**



Source: Bloomberg and Bernstein analysis

STABLE EARNINGS CREATE A COMPOUNDING MACHINE

The Big 3 industrial gas companies (Air Liquide, Air Products and Linde (neither covered)) have dramatically outperformed local market indices since 2007 (see Exhibit 12). As defensive stocks, they have low stock price volatility and an attractive risk-reward profile

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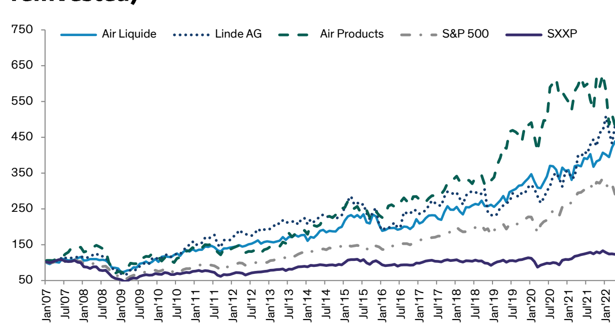
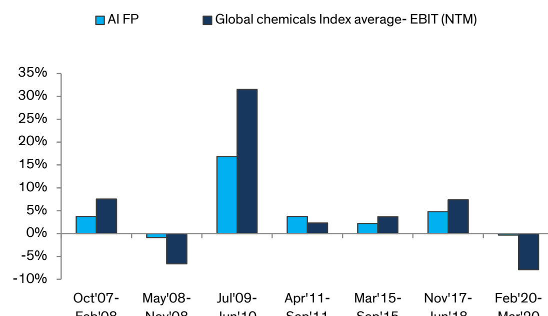
vs. other chemicals stocks. Due to their high top-line growth rates and stable earnings (see Exhibit 13), gas companies trade at a premium to the market. In the last decade, Air Liquide and Linde have outperformed the SXXP on average by 151%.

EXHIBIT 12: **Total shareholder returns (dividend reinvested)**



Source: Bloomberg, FactSet, and Bernstein analysis

EXHIBIT 13: **Air Liquide earnings protected from downside**

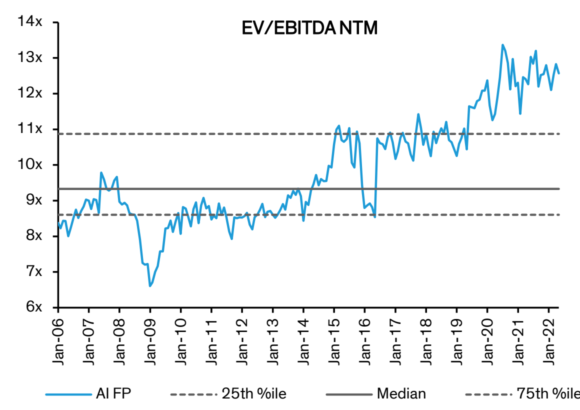


Source: Company reports and Bernstein analysis

ALTHOUGH MULTIPLES DECREASED RAPIDLY, THEY NORMALIZED FOLLOWING THE POST-GFC PERIOD

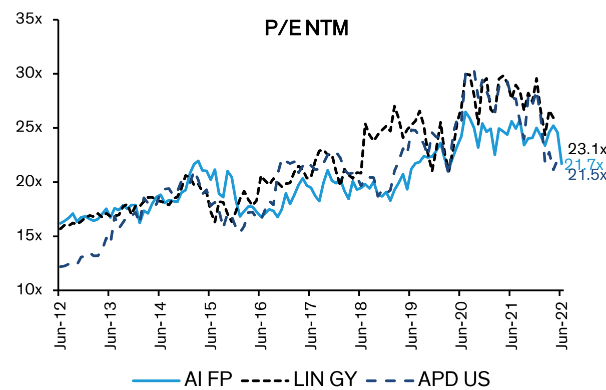
In 2009, Air Liquide's NTM EV/EBITDA multiple traded on just 7x. Despite this, it quickly recovered to 8.8x in one year, rising almost 25% YoY (see Exhibit 14). This 8.8x multiple was in line with 2007 levels and was also applied to higher earnings; despite a falling multiple, Air Liquide earnings did not decrease, effectively creating a compounding machine. Air Liquide's valuation gap discount makes it the most attractive stock in the group (see Exhibit 15).

EXHIBIT 14: **Air Liquide's absolute EV/EBITDA tends to pick up quickly after the sharp drop**



Source: Bloomberg and Bernstein analysis

EXHIBIT 15: **Air Liquide trades at a 16% EV/EBITDA discount to an unweighted average of two peers**



Source: Bloomberg and Bernstein analysis

AIR LIQUIDE IS AN ESG IMPROVER

Currently, Air Liquide's production is the most GHG (greenhouse gas) intense of our coverage (see Exhibit 16). Air Liquide has increased GHG intensity recently mainly due to its acquisition history (see Exhibit 17). The company acquired AirGas in 2017 and Sasol's 16 air separation units in 2020, with the latter particularly increasing emissions. However, the company pledged to reduce its CO_2 emissions by 2030 in line with the 2030 European

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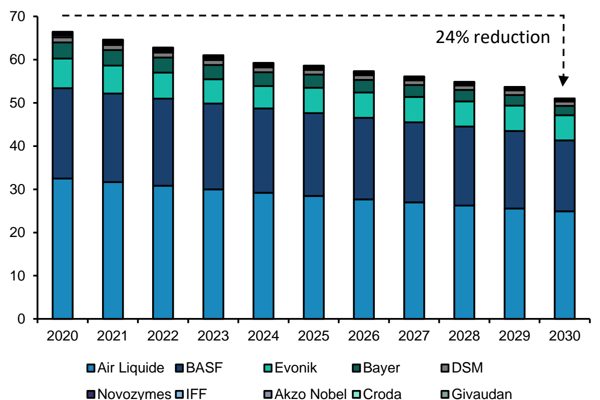
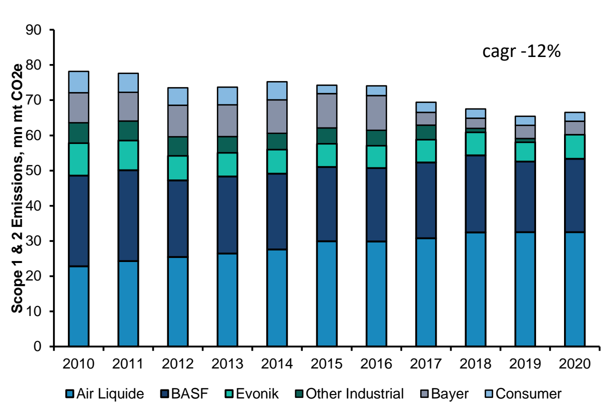
Climate Strategy. As per Air Liquide's Advance strategy, emissions will peak in 2025 and the company sees a gradual decrease in Scope 1 and Scope 2 emissions going forward. It also has less emissions-intense production than the other members of the Big 3, and will likely maintain this advantage over time (see Exhibit 18).

EXHIBIT 16: **Our coverage companies target a 24% CO_2 emissions reduction by 2030**



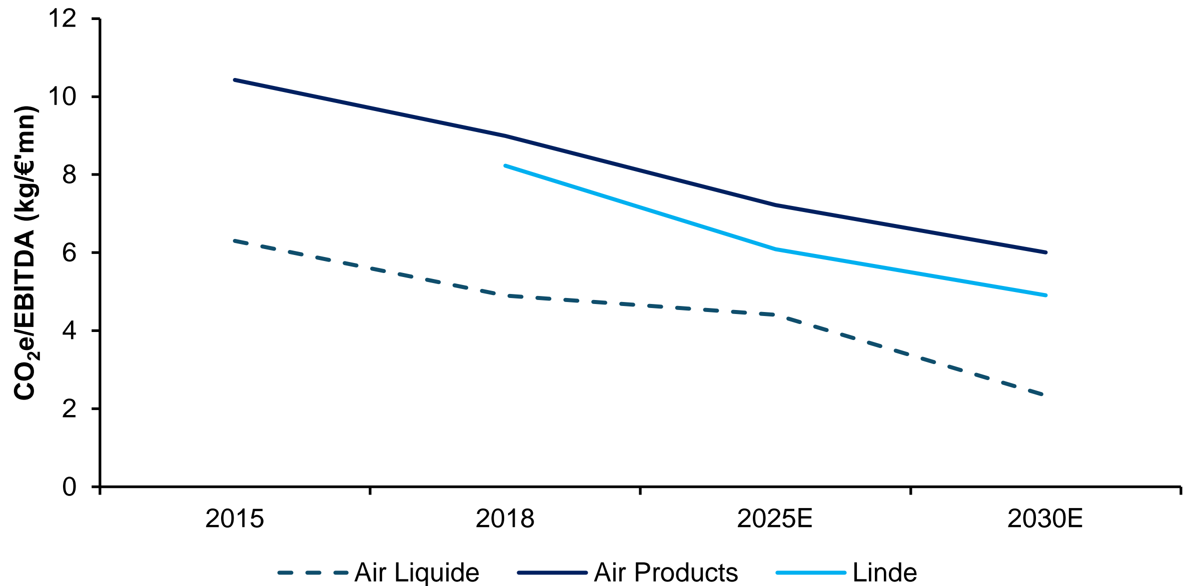
Source: CDP Worldwide (CDP), company reports, and Bernstein analysis

EXHIBIT 17: **Air Liquide's emissions have been increasing**



Source: CDP and Bernstein analysis

EXHIBIT 18: **Based on emissions targets, we estimate Air Liquide will have a 2-2.5x lower emissions intensity footprint by 2030; hydrogen plays a critical role**



Note: Assumes 1% pricing p.a. for Air Products to convert volume intensity target to an EBITDA target. For years after Linde's 2028 target, emissions intensity is extrapolated on a linear basis. Linde data not comparable pre-Praxair acquisition. Location-based accounting used across all three companies.

Source: Company reports (historical information), and Bernstein estimates and analysis

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ADVANCE STRATEGY WILL LIKELY PLAY AN IMPORTANT PART IN THE IMPROVEMENT

Although Air Liquide's GHG intensity has been increasing, the company strives to reduce CO_2 through carbon capture technology. In its new Advance strategy, Air Liquide aims to reduce absolute CO_2 emissions from about 2025 and reduce emissions by one-third by 2035 before reaching carbon neutrality by 2050 (see Exhibit 19).

EXHIBIT 19: **Selected absolute CO_2 target emissions reductions**

Absolute CO_2 emission target reduction (Scope 1 & 2)					
Company	Actual 2018 CO2 emission (Kt)	2025	2030	2035	Net zero emission target year
BASF	21,887	-	25% reduction (2018 baseline)		2050
Air Liquide	27,812	Start absolute CO_2 target reduction		33% reduction (2020 baseline)	2050
Akzo Nobel	290		50% reduction (2018 baseline)		2050
Evonik	8,645	50% reduction (2008 baseline)			
Johnson Matthey	496		30% reduction (2020 baseline)		2040
Umicore	784	25% reduction (2019 baseline)	50% reduction (2019 baseline)		2035
Linde	36,361*			35% reduction (2021 baseline)	2050
Dow	34,774		15% reduction (2020 baseline)		2050
LyondellBasell	23,379		30% reduction (2020 baseline)		2050
INEOS	14,352*		33% reduction (2019 baseline)		2050

Note: Linde and INEOS numbers as of 2019

Source: CDP, company reports, and Bernstein analysis

AIR LIQUIDE IS A CRITICAL ESG ENERGY TRANSITION ENABLER

Air Liquide is showing clear progress on the energy transition. The company increased its related sales to €650Mn in 2021 from €440Mn in 2018, including hydrogen for new applications as well as biomethane, O_2 for blast furnaces, and O_2 for glass floats, but excluding any gray hydrogen for current applications. Further, the share of investment opportunities to energy transition projects increased from 29% in 2019 to 44% in 2020. We take a deeper dive into two of the key revenue opportunities for revenues through supporting the energy transition: carbon capture and renewable hydrogen.

AIR LIQUIDE IS A EUROPEAN LEADER IN CARBON CAPTURE AND STORAGE (CCS)

CCS has long been considered a solution to removing CO_2 from coal-fired generation. This is particularly relevant for the growing and young coal fleets of emerging economies, which are a long way away from retirement or phaseout of these facilities, unlike the developed economies. For more on the processes, the opportunity for Air Liquide, and a potential CCS market size in see our reports:

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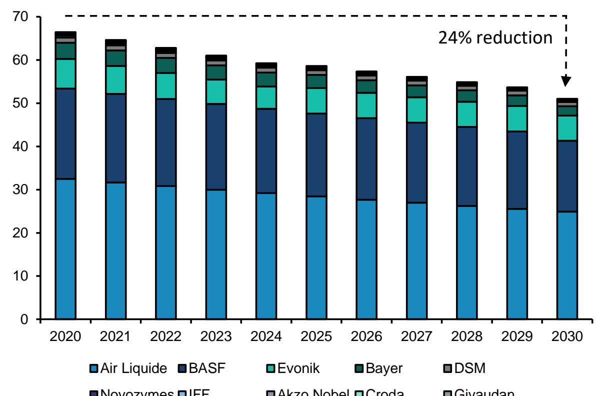
- March 15, 2022: The Long View: Breathing life into Decarbonization: Life-or-death technology race to reduce CCS costs, Carbon prices support CCS
- May 27, 2021: The Long View: Breathing life into Decarbonisation....carbon prices support CCS

CCS COULD CREATE A ~US$16-US$33BN OXYGEN MARKET BY 2030, DEPENDING ON POLICY PATH

Most energy market participants agree that CCS must form part of the energy shift in achieving Paris climate goals. The IEA forecast that retrofitting some coal-fired power plants with CCS or biomass cofiring, and repurposing others to focus on system adequacy and flexibility, could avoid around 15Gt CO_2 of cumulative emission reductions between 2019 and 2030 to help achieve Paris climate goals. Based on the IEA's updated forecast for coal generation, increased carbon prices, and guidance from management we estimate the value of the potential oxygen market for our companies. Air Liquide management guided that 1 ton of oxygen is required in CCS technology for 1MWh of coal-fired generation. Based on an assumed sales price of US$40/t of oxygen (based on 95% purity) **we estimate an oxygen market of ~US$5-$US7Bn by 2025, dependent on the future policy scenario** and, therefore, the evolution of coal generation.

To estimate Air Liquide's revenue potential, we assumed it could gain 30% of the addressable market, thereby **achieving ~US$2Bn by 2025 and US$5-US$10Bn by 2030 depending on the policy scenario** (see Exhibit 20 and Exhibit 21). Assuming the same EBIT margin and FCF conversion as for its industrial gases businesses, we estimate Air Liquide would have a ~US$13Bn NPV of cash flows (or 15% of current EV) based on current policies. This is based on our estimation that coal-fired generation has 20% CCS by 2035 and 25% by 2040 vs. 20% of being equipped with CCS by 2040 in an earlier note. In the Sustainable Development Scenario, the value declines to US$4Bn (or 5% of EV).

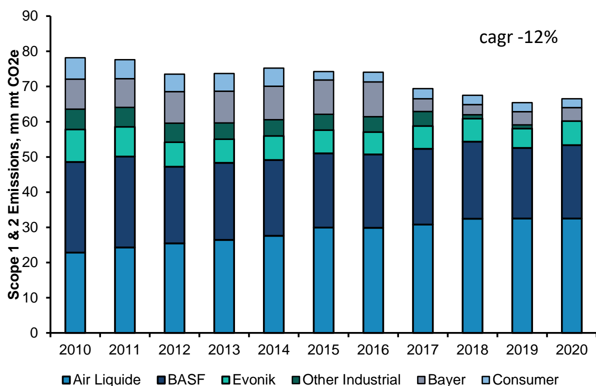
EXHIBIT 20: **CCS could provide ~US$2Bn revenue by 2025 and US$10Bn by 2030 for Air Liquide**



Note: We assume 1 ton of oxygen for every 1MWh of ICGG CSS and US$40/ton of oxygen as guided by the company.

Source: International Energy Agency (IEA), company reports, and Bernstein estimates and analysis

EXHIBIT 21: **This decreases to US$1Bn by 2025 and US$5Bn by 2030 in the Sustainable Development Scenario**



Note: We assume 1 ton of oxygen for every 1MWh of ICGG CSS and US$40/ton of oxygen as guided by the company.

Source: IEA, company reports, and Bernstein estimates and analysis

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AIR LIQUIDE HAS A CRITICAL ROLE TO PLAY IN RENEWABLE HYDROGEN MANUFACTURE AND DISTRIBUTION

Air Liquide is a hydrogen merchant with 50 years of experience. Industrial gas companies are established producers and distributors of hydrogen, with Air Liquide, Linde, and Air Products each generating ~€2Bn in sales of hydrogen. They have a long history and deep expertise in producing and handling this highly flammable gas in large volumes. Furthermore, they own a distribution network of dedicated hydrogen pipelines (~3,800km between them) and specialized liquid hydrogen tankers. These currently transport gray hydrogen (hydrogen produced from natural gas), but in future will be used to transport green hydrogen produced from electrolyzers. From the distribution aspect, gas companies are therefore agnostic to the color of their hydrogen.

AIR LIQUIDE HAS A MAJOR ROLE TO PLAY IN RENEWABLE HYDROGEN DISTRIBUTION

Green and blue hydrogen production will likely initially take place onsite close to where it is used, e.g., at a refueling station and/or where there are existing hydrogen pipeline connections (e.g., at refineries currently using steam methane reforming). The structure of the supply chain will therefore be influenced by geographic distribution of demand and existing infrastructure. Where no infrastructure exists, beyond a certain consumption level (0.5-1.5tonnes/day) delivery by dedicated pipelines will likely be the only viable mode of supply. In a mature market therefore, pipelines could be the main source of delivery to all types of applications, although other styles of distribution may be more economical at lower volumes.

DISTRIBUTION WILL NEED TO EVOLVE OVER TIME: INDUSTRIAL GAS PLAYERS WILL LIKELY BE NEEDED TO SOLVE PIPELINE REQUIREMENTS

To accommodate the vast increase in hydrogen volumes being transported, either existing natural gas pipelines will have to be converted or new dedicated hydrogen pipelines will have to be built. A paper by a consortium of European gas infrastructure companies suggests that a "European Hydrogen Backbone" could be built connecting Europe with North Africa. They see a gradual rollout of pipeline infrastructure (both conversion and new) starting mid-2020s, such that by 2030 there will be 6,800km of pipeline, increasing to 23,000km by 2040. Given their distribution expertise, industrial gas companies will likely be required to assist in these efforts.

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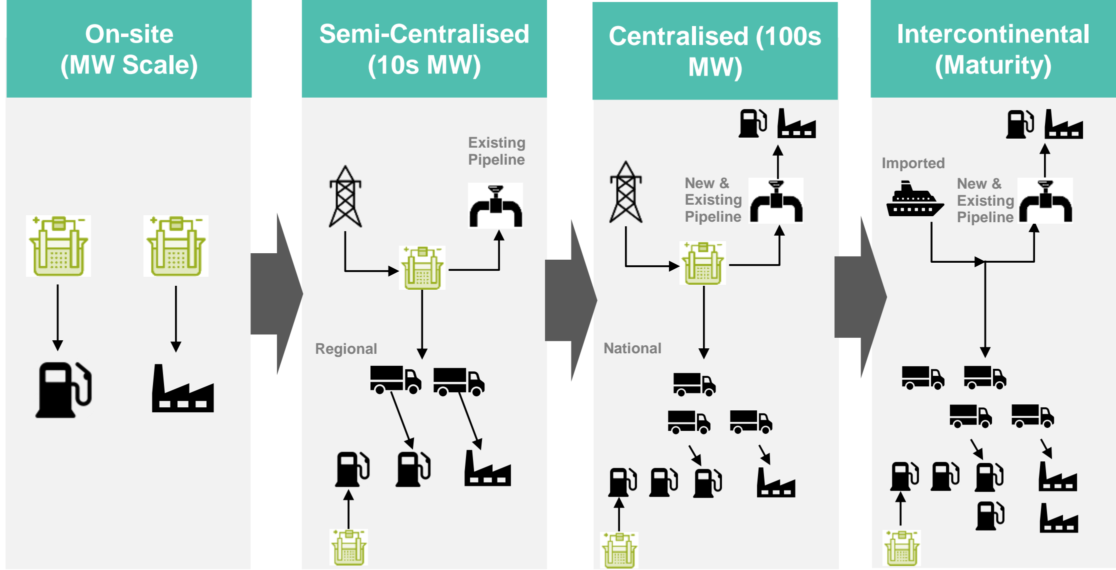
EXHIBIT 22: **Evolution of hydrogen distribution network**

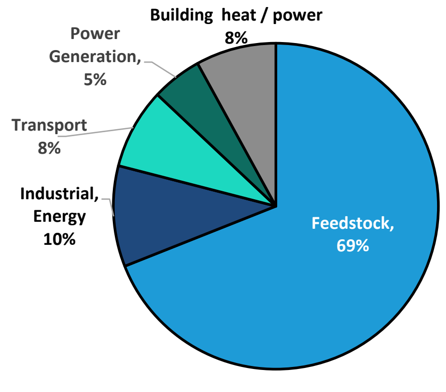


Source: The International Renewable Energy Agency (IRENA) and Bernstein analysis

AIR LIQUIDE PLANS FOR 3X GROWTH IN HYDROGEN REVENUE FROM RENEWABLE SOURCES

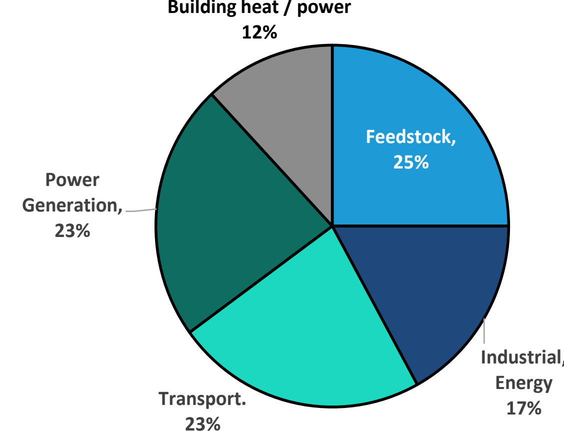
Air Liquide targets >€6Bn in revenue before 2035 from renewable hydrogen (across new and existing applications), equivalent to 3x growth. We examine its targets in Hydrogen Highway: Air Liquide - A 3G plan in a 5G world?. This is in line with our expectations of market growth during the time frame. Current applications of hydrogen are mainly captive (~85%), with only ~11% being merchant. As the market grows to more hydrogen applications, we see the opportunity for this to be disrupted further and more hydrogen production to be outsourced to industrial gas companies (see Exhibit 23 and Exhibit 24), particularly in mobility.

EXHIBIT 23: **2035 demand for hydrogen (MT) will likely focus on feedstock**



Source: Bernstein estimates and analysis

EXHIBIT 24: **2050 demand for hydrogen (MT) likely much more rounded**



Source: Bernstein estimates and analysis

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VALUATION METHODOLOGY

The €157 target price for Air Liquide (ticker: AI.FP), rated Outperform, is based on the following valuation assumptions. The closing prices for Air Liquide and the MSDLE15 Index on August 8, 2022 were €134.54 and 1,745, respectively.

European industrial & consumer chemicals

We value our companies using a mix of relative PE, EV/EBIT, and DCF methodologies. We calculate an arithmetic average of these methodologies for each company and then increase this by 4.5% (long-run market return of 7% minus a dividend yield of 2.5%) to calculate our 12-month target prices. For companies in a potential M&A deal, we also use probability weighted valuation to calculate the target price.

Air Liquide SA

We value Air Liquide shares as the arithmetic average of three metrics: (1) Relative PE, to reflect short-term earnings trends. We use 12-month forward earnings forecasts relative to the stock's underlying index. (2) Absolute EV/EBIT, to reflect medium-term earnings trends. We use two-year forward earnings forecasts compared to the stock's own history. (3) DCF to reflect the long-term value and cash-generative nature of companies. We increase the arithmetic average from the three methodologies for each company by 4.5% (long-run market return of 7% minus a dividend yield of 2.5%) to calculate our 12-month target prices.

RISKS

European industrial & consumer chemicals

Our financial forecasts are based on our forecasts for economic growth and assume prevailing exchange rates remain unchanged into the future. The performance of chemicals companies can be significantly influenced by changes in demand, in turn driven by changes in industrial growth and consumer spending.

Air Liquide SA

For Air Liquide, specifically, risks to our rating, target price, and forecasts would come from lower-than-expected comparable growth, particularly in the Gas & Services division. Delay in project start- and ramp-ups and slowdown in key end-markets would hurt growth. A lower-than-expected realization rate of cost savings and synergies would also represent a risk to our earnings forecast. Stronger-than-expected growth in certain business lines such as hydrogen production would dilute margins, but not returns on capital. Forex also represents a translational risk to reported financials, as a large proportion of revenues derive from outside the euro-area, particularly the US (41% of Gas & Services sales).

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Consumer & Retail

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COMPASS: A TRULY ALL-WEATHER STOCK

HIGHLIGHTS

- **Historically, contract catering performs well in downturns and periods of inflation.** Contract caterers serve a broad range of clients, and many of them (schools and hospitals) still eat lunch in a recession. In 2009, Compass' quarterly organic growth troughed at -3% and turned positive within 12 months of the downturn. It also expanded margins throughout, meaning positive EPS growth. Contractual ability to pass through cost inflation means long-term impact from inflation is neutral to slightly positive — and can even drive more outsourcing to the large players, which are better set to adapt, as we have seen in recent months.

- **Is Compass even better placed than normal to perform?** In 2009, almost half of Compass revenues came in the most cyclical B&I segment vs. 24% for Education & Healthcare combined. To 2019, this had already started moving the other way, and post-Covid-19 it now skews 32% B&I vs. 46% Education & Healthcare, making the portfolio much better placed to weather an economic downturn. In addition, Compass's equity raise in 2020 means it still has substantial excess cash on the balance sheet (now <1x net debt to recovered EBITDA vs. 1.0-1.5x target), making it less exposed to further interest rate rises.

- **ESG in catering: already hitting underlying financials, will ultimately create not destroy value.** Caterers are already winning contracts to enable clients to achieve ESG goals, meaning performance on food waste and sustainability criteria is already driving financials. Compass's scale and track record is driving wins in this regard and, as we noted in its recent win at the University of Florida, it is also benefiting from its segmented brand approach that avoids the reputational harm of working with private prisons as well as universities.

INVESTMENT IMPLICATIONS

Elevator pitch: why you have to own Compass. Compass is a structural growth entity promising mid to high single-digit organic growth with relatively little risk: 4% new business won each year net of losses (guidance has been increased by 1% p.a. post-Covid-19) and base volume recovery plus pricing means double-digit growth in the medium term. It sees the list of reasons for outsourcing growing and is also expanding into new verticals (vending, micromarkets, and delivery from central kitchens) that have strong growth and good economics. It is the best-in-class player with the largest scale, good management team, and long track record as a capital allocator. This is not priced in — there are still misperceptions in the market on revenue (consensus beyond 2022 is at least 10% too low) and on the company's ability to deal with inflation and downturns in the economy.

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CONTRACT CATERING: MORE ADEPT THAN MOST AT WEATHERING MACRO STORMS – NAMELY, DOWNTURNS AND INFLATION

While not wholly immune from the economic cycle, contract catering is a relatively uncyclical consumer-facing industry. This is driven both by food's position as a necessity for human survival and the industry's diverse base of clients containing many uncyclical pockets of demand such as schools, universities, and healthcare that still very much eat lunch in a recession.

The post-GFC experience for Compass largely bears this out:

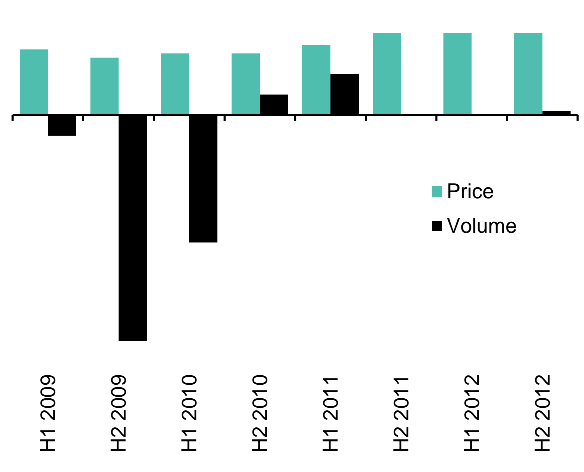
- LFL volumes on a quarterly basis troughed at -6% in fiscal 4Q09, and were negative for five quarters (see Exhibit 1).
- Offsetting some of the volume weakness was very stable pricing growth, remaining positive throughout (see Exhibit 2).
- Retention rates dropped by ~1%pt, while new business wins were largely unaffected and then accelerated in the recovery period (see Exhibit 3). This meant organic growth overall was flat for FY09 and was positive again within 12 months of the crisis hitting.
- Compass was also able to expand margins as growth fell (see Exhibit 4), driven by overhead and cost savings along with a material currency boost from the rising US dollar, which more than offset falling volumes.

For a full analysis of catering performance through a "typical" recession, see Global Catering: Do we still eat lunch in a recession? A cautionary view of performance in the next downturn.

EXHIBIT 1: **Compass saw LFL volumes trough at -6% in the GFC period, with growth negative for five quarters**

Source: Company reports and Bernstein analysis

EXHIBIT 2: **Price was positive throughout, showing the resilience of contractual price passthrough**



Source: Company reports and Bernstein analysis

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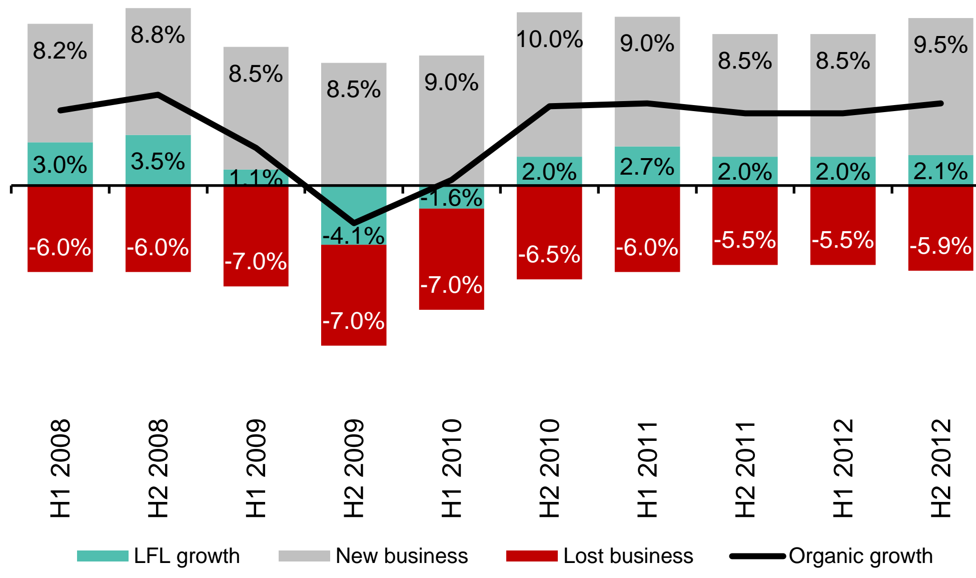
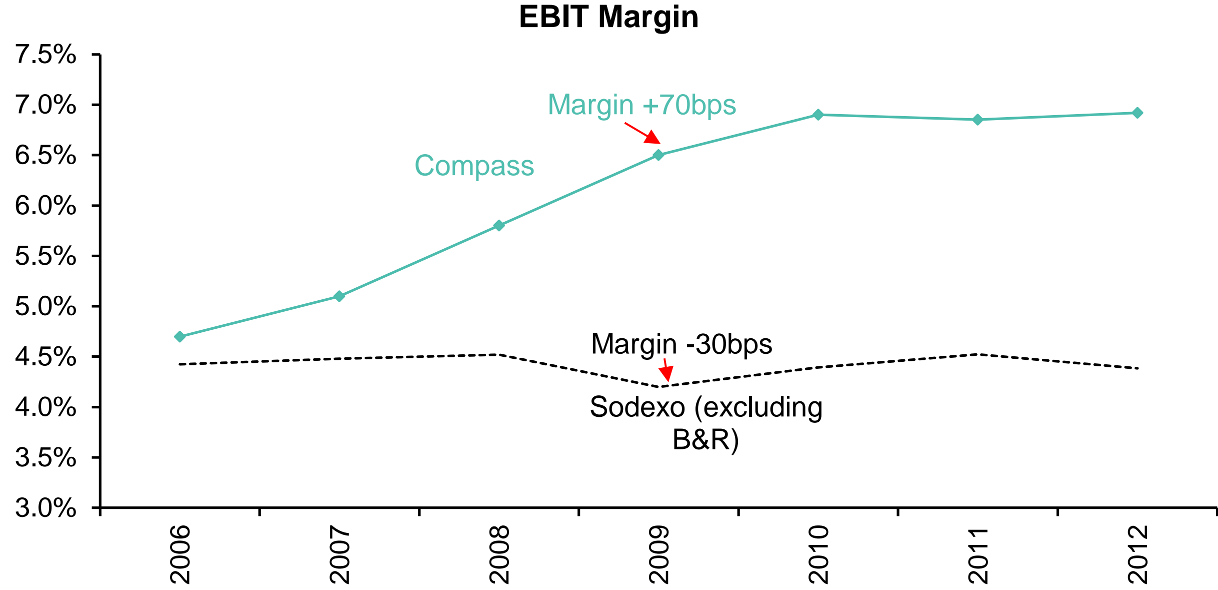
EXHIBIT 3: **Retention rates dropped by ~1%pt, while new business wins were largely unaffected and then accelerated in the recovery period**



Source: Company reports and Bernstein analysis

EXHIBIT 4: **Compass was able to expand margins in 2009 and 2010**



Source: Company reports and Bernstein analysis

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INFLATION

All the macro data points toward any downturn being primarily recession driven, squeezing real consumer wallets and lowering corporate profit margins, rather than a huge shock to unemployment.

Catering businesses are largely immune to cost inflation in the long term, with contractual ability to pass on price increases to clients written into contracts. Compass has a long-term track record of growing revenues in line with labor cost inflation and faster than food cost inflation (see Exhibit 5), driven by the scale of its Foodbuy GPO business.

EXHIBIT 5: **Over time, Compass's revenue growth has effectively matched labor cost inflation; EBIT grew ahead of revenue growth as food costs declined vs. revenue, and there was some leverage of fixed overheads**

Note: Indexed to 100 in FY06, not adjusted for forex impacts.

Source: Company reports and Bernstein analysis

INFLATION IS A MIXED BLESSING, AS IT DOES DRIVE MORE OUTSOURCING

One of the primary growth drivers for the whole sector is smaller in-house operations choosing to outsource their food service. Periods of high inflation can trigger more outsourcing decisions as these in-house operations lack the scale to keep procurement costs down and lacks technology to offset labor cost inflation, both making outsourcing to a large player more valuable. In this sense, inflation today means accelerated outsourcing growth in the future, and is a reason to pay a higher multiple in these periods.

In our recent contract tracker (Global Catering: Bernstein 'New Wins' Contract Tracker (Q2 CY22)), we saw supply chain inflation as a key reason institutions made outsourcing decisions. As Aramark's CEO John Zillmer suggested at our New York conference in June 2022 (Aramark: CEO Fireside — Key takeaways from our conversation at the SDC), there are clients now signing contracts with the large caterers as a direct response to supply chain inflation and issues in sourcing products. Miami University is seeing similar issues on staffing, and chose to partner with Aramark, "*citing staff attrition as the biggest threat to Miami's dining operations and the main reason for the Aramark contract*" according to the university paper. Elior's smaller scale is potentially showing signs of competitive disadvantage in this regard, having to switch away from its local supplier to source products

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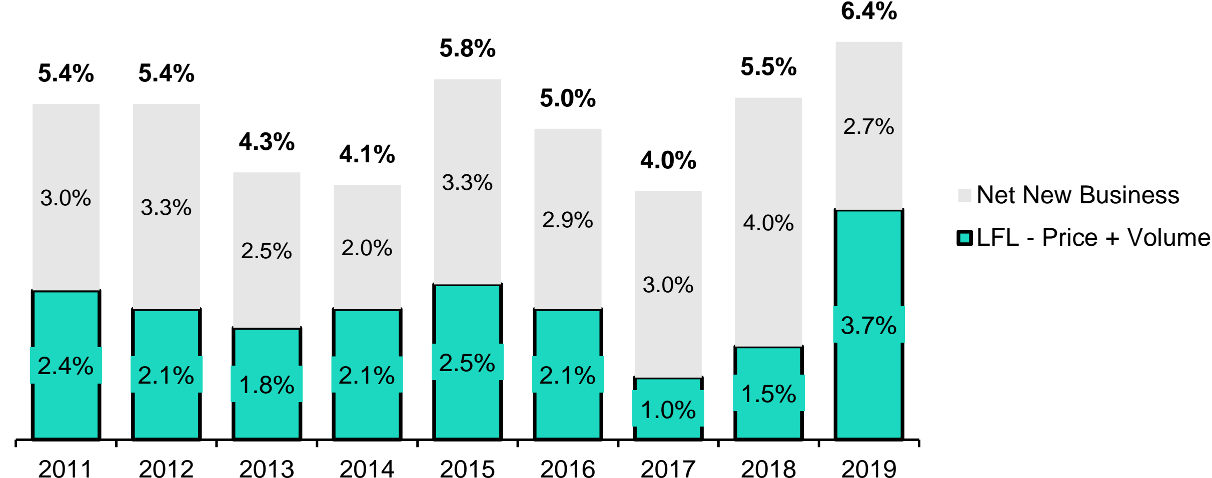
from Sysco at 10% higher cost at its Ward County prison contract, when the local supplier exited the market.

Inflation (absent a financial crisis) can also boost revenues and valuations. As we wrote in Compass Group: ESG "MAQ": Measuring the Unmeasured. Can labour cost inflation actually be good for a caterer?, 2019 was Compass's fastest organic growth year in a decade (see Exhibit 6), and this coincided with its highest PE ratio in the market (see Exhibit 7). This was despite the fact that the majority of the 6.4% growth was from pricing not net new business wins — which were actually at the lowest level since 2014, showing the market seems to be willing to drive a rerating for organic growth regardless of its source.

EXHIBIT 6: **2019 was a decade-high organic growth year for Compass, but this was substantially driven by pricing not net new business wins**



Source: Company reports and Bernstein analysis

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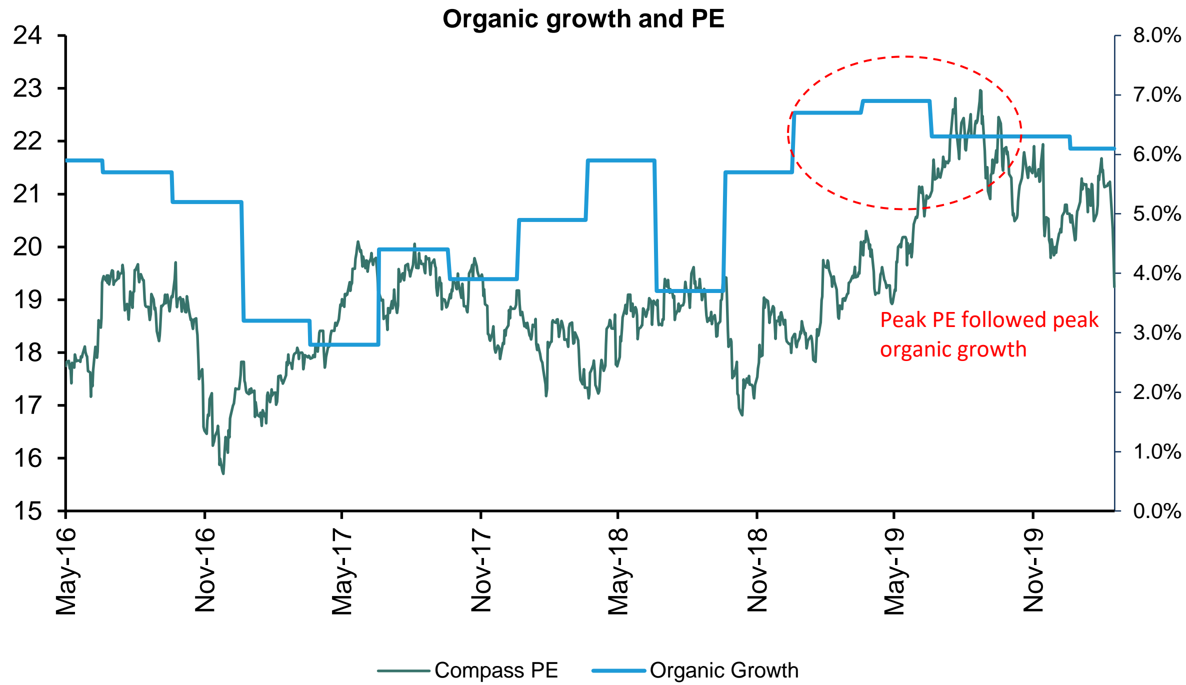
EXHIBIT 7: **Compass PE ratio tends to follow organic growth — and hit peak levels in 2019**



Note: Organic growth YoY

Source: Bloomberg, company reports, and Bernstein analysis

COMPASS BETTER POSITIONED TODAY THAN EVER BEFORE – PART BY DESIGN, PART BY CIRCUMSTANCE

We identify two key reasons Compass is better positioned today than it was in 2009 or likely ever before this.

(1) Revenue mix. Revenue mix is important in an economic downturn. In 2009, for Sodexo (which reported more detailed quarterly data then), organic growth in Healthcare and in Education remained positive for the entire year while B&I was much more cyclical (see Exhibit 8). This was a much bigger determinant of group performance than regional mix — where performance largely matches the cadence of GDP decline (see Exhibit 9).

In 2009, almost half of Compass revenues came in the most cyclical B&I segment vs. 24% for Education & Healthcare combined. To 2019, this had already started moving the other way, and post-Covid-19 it now skews 32% B&I vs. 46% Education & Healthcare as volume recovery from the pandemic is still behind 2019 levels in B&I, as workers return to offices (see Exhibit 10).

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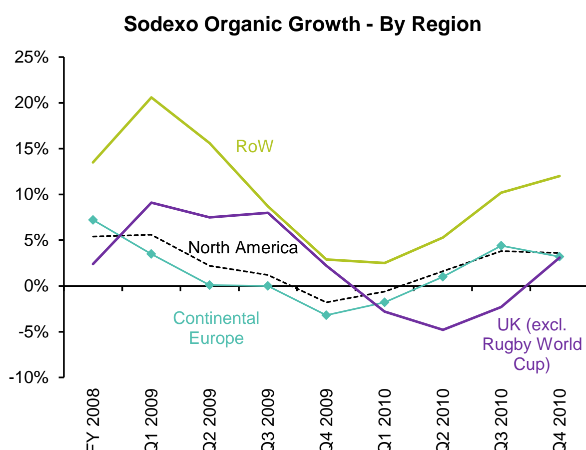
EXHIBIT 8: **In the GFC recession, Healthcare and Education sales remained positive through the entire crisis; Business & Industry (B&I) is more cyclical and tied to economic strength**

Sodexo Organic Growth - By Segment

12%
10%
8%
6%
4%
2%
0%
-2%
-4%
-6%
Healthcare
Education
B&I
FY 2008
Q1 2009
Q2 2009
Q3 2009
Q4 2009
Q1 2010
Q2 2010
Q3 2010
Q4 2010

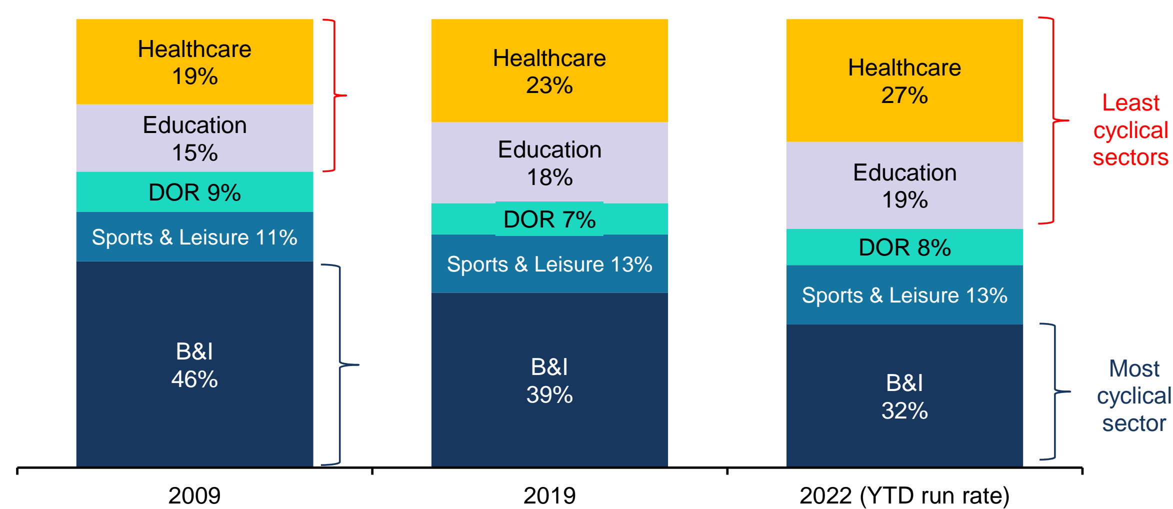
Source: Company reports and Bernstein analysis

EXHIBIT 9: **Regional performance is mostly a function of business mix in a recession: with the GDP hit to North America first before Europe**



Source: Company reports, and Bernstein estimates and analysis

EXHIBIT 10: **The least cyclical Healthcare and Education sites now make up almost 50% of Compass revenues; while the Corporate B&I segment has dropped from 46% to 32% today partly driven by the pandemic**



Note: DOR is Defence, Offshore & Remote sites

Source: Company reports and Bernstein analysis

(2) Balance sheet strength giving more protection from higher interest rates. In addition to revenue mix, Compass's equity raise in 2020 means it still has substantial excess cash on the balance sheet (now <1x net debt to recovered EBITDA vs. 1.0-1.5x target), making it less exposed to further interest rate rises. As we explored (Global Catering: Life (and lunch) after Covid), Compass sitting below its leverage range today (see Exhibit 11) means it can

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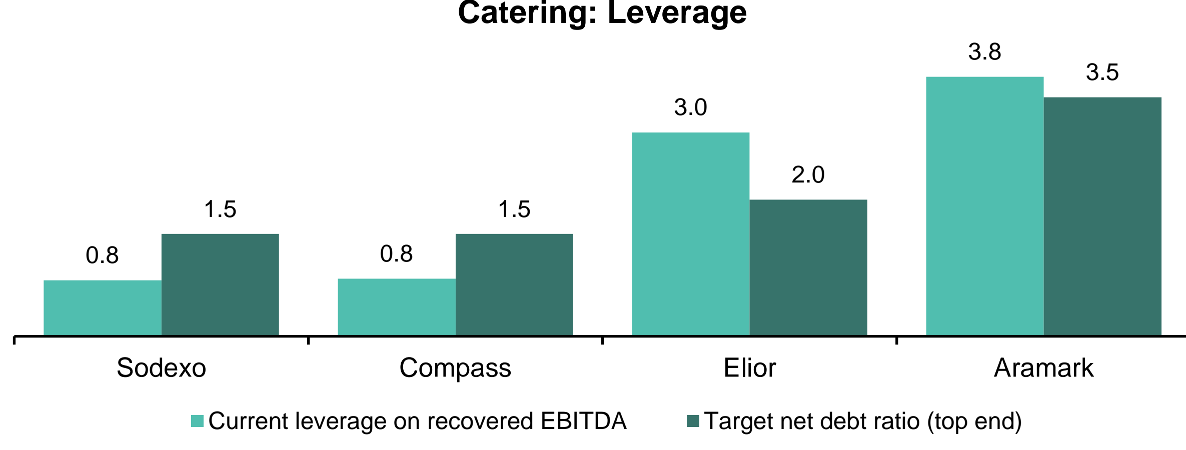
release cash through relevering the balance sheet, and combining this with its FCF generation it can release >25% of today's market cap in cash for shareholders by 2025 (see Exhibit 12).

This is also a relative game: Many of the smaller competitors, which had started to gain market share from the larger players in 2019, have been hit much harder by the pandemic and were largely more leveraged and less well capitalized. This has caused market share to go back to the largest players — and we expect this will continue, especially in the context of further rising interest rates.

EXHIBIT 11: **Compass is sitting well below its target leverage ratio today — a result of the conservative equity raise to protect cash outflows which ended up not materializing**



Source: Company reports, and Bernstein estimates and analysis

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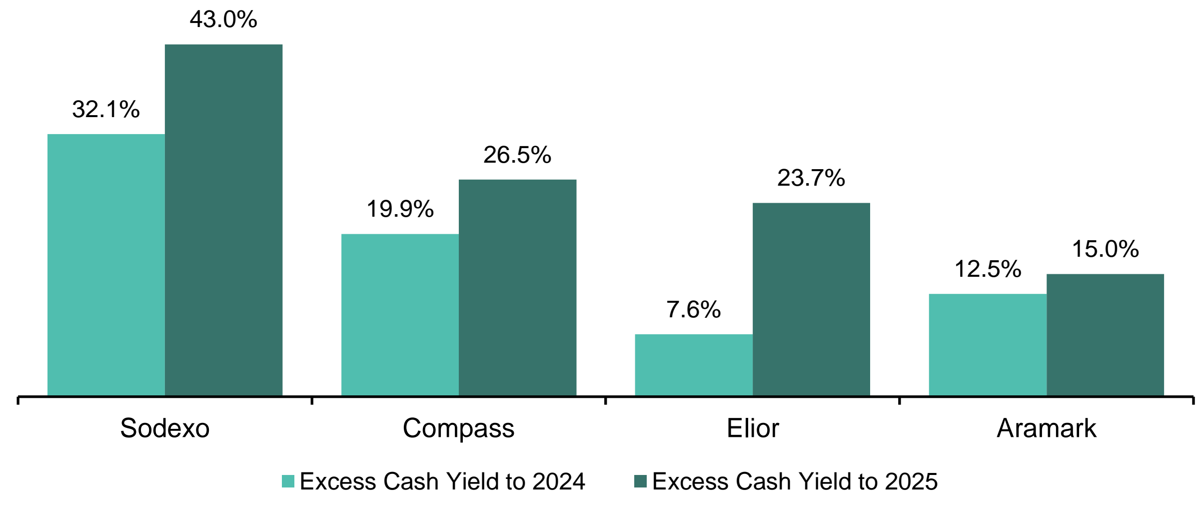
EXHIBIT 12: **On our numbers, Compass can release >25% of today's market cap in excess cash by 2025 (FCF + leverage to target range)**



Source: Bernstein estimates and analysis

ESG: ALREADY DRIVING FINANCIAL DECISIONS AND PERFORMANCE; LONG TERM, WILL CREATE NOT DESTROY SHAREHOLDER VALUE

Whereas in many sectors, investing in ESG might be about long-term sustainability/responsibility rather than present day profits, in catering ESG is already impacting financial performance. Sodexo's recent big win at the Danone HQ is based on being able to provide locally sourced food, plastic-free packaging, and healthy options for employees. Aramark's win at Sacramento State College similarly was led by its predecessor's inability to keep on top of food trends toward veganism, gluten-free options, etc. It is little wonder that catering executives are getting ever-increasing shares of their bonuses tied to ESG criteria.

What exactly do the caterers enable? There is much a contract caterer can offer to an ESG-focused client — healthy food is proven to reduce sick days and make for a more motivated, productive workforce. Outsourcing catering also gives more leverage, via the caterers' total buying scale, over the supply chain, and means better practices over food waste and packaging. The structural changes post-pandemic are largely seen as a negative to caterers, but they also increase the complexity of providing healthy, well-sourced food to remote employees, something caterers are investing in and assisting with.

When we spoke to Palmer Brown, Compass's relatively new CFO (Compass: Highlights from our fireside chat with (new) CFO Palmer Brown), this was one of the topics that came up:

- **Increased client demand for ESG and digital innovation, which are less capital intensive.** One of the trends pre-Covid-19 was the industry getting more capital intensive. There is now a mix shift happening — while higher education and sports tend to require more capex, sectors such as healthcare, senior living, and lower education are less capital intensive than average, with first time outsourcing (FTO) wins in

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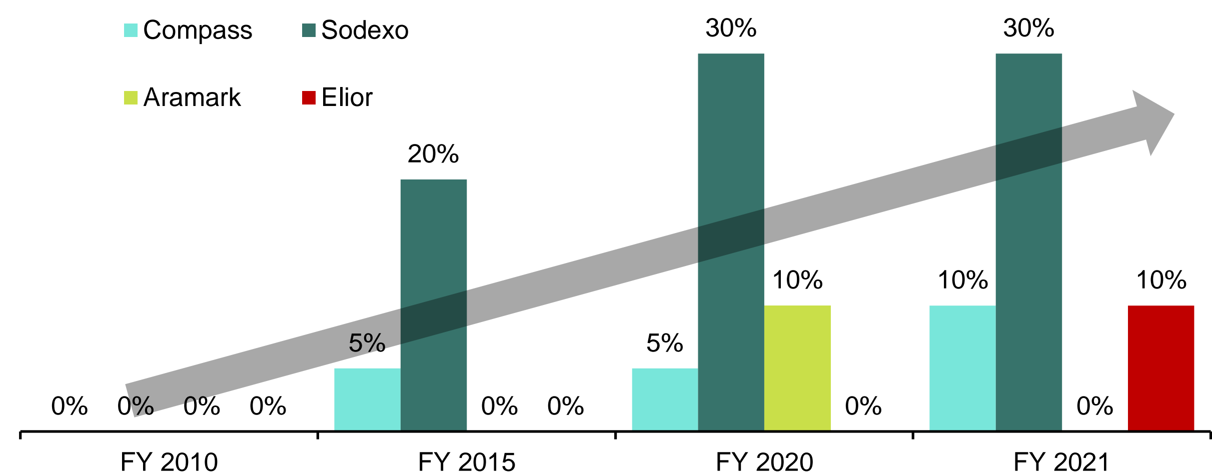
healthcare skewing mix shift into less capex. Interestingly, there has also been a shift in client preference for ESG, digital innovation, and the quality of the offer, and less on capital improvements/renovations.

Aramark's CEO also implied something similar at our SDC (Aramark: CEO Fireside — Key takeaways from our conversation at the SDC) on industry margin structure:

"I think that's [focus moving from price to quality] one of the factors that's led to the margin expansion that's taken place in the industry over the last, maybe the last decade or a little bit longer. The margins have gradually increased in the industry, and I think it's because of the implicit recognition that this business is a value-added business. And if you sell it on the basis of a relationship, you sell it on the basis of quality and capability and you don't discount your price. And so that's the approach that we have taken. And I think the competitors are fairly rational in this segment. And I think that's a very good thing."

EXHIBIT 13: **As ESG becomes a more important driver of outsourcing decisions by clients, it naturally should become a larger share of executive compensation**



Source: Company reports and Bernstein analysis

WHAT MATTERS MOST?

As we set out in Global Catering: Beyond Boilerplate - Why ESG really matters, the financially material ESG factors are split into two: tail risks and ongoing value drivers. Food Safety ranks as our number 1 topic (see Exhibit 14), fitting in both groups, and also materially impacting all four business value drivers. Demonstrating a strong track record of food safety is necessary to win new business and retain clients, and any safety breaches would have large reputational impact, impairing future growth. Sustainable sourcing of food is becoming increasingly important, and we have tracked many contracts in the past that have been won primarily for this reason. Finally, on labor, the caterers have a high reliance on hourly low-paid, unionized labor, where employee turnover is high: failure to manage workforces properly will be particularly impactful as structural margins are low (sub-10%, even for Compass) and labor makes up ~50% of total cost.

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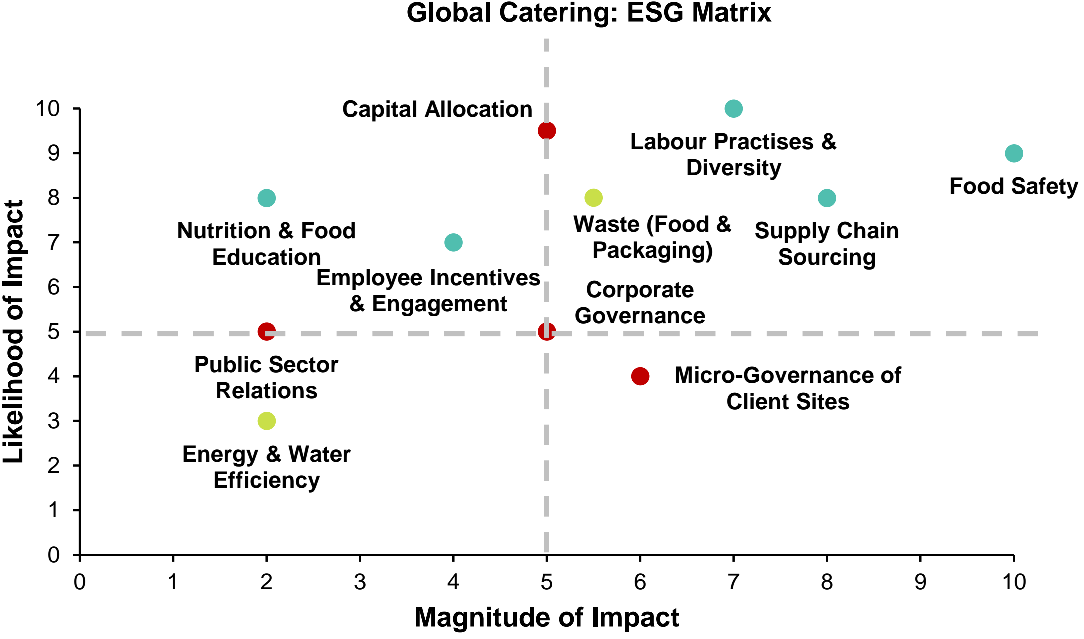
EXHIBIT 14: **What matters? Our ESG materiality matrix**



Source: Bernstein estimates and analysis

COMPASS QUIETLY LEADING PERFORMANCE

Branded approach paying off. In our latest contract tracker (Global Catering: Bernstein 'New Wins' Contract Tracker (Q2 CY22)), we identified Compass' win at the University of Florida, which not only caught our eye for its substantial size, but that one of the explicit reasons Aramark lost the contract to Compass was its relationship to the prison service industry. In the RFP document (unusually fully available online), "*Relationship to prison service industry*" was the #1 criteria under Company Philosophy for applicants to address. This is clearly top of the ESG agenda at prospective university clients and is an area where Compass' branded approach gives a unique advantage. While Chartwells — Compass' largest education brand — has no links to prisons, some of its other brands (e.g., Canteen) do; even in the same quarter its Eurest brand won multiple prison contracts in the Netherlands. The prison service industry is one of the highest-margin for caterers, making this a classic short-/long-term ESG trade off that all the companies will likely need to address.

Winning most business

In terms of priorities, we argue that ESG is certainly further up Sodexo's priority list than peers including Compass — its seven-point STEP agenda is a near carbon copy of Compass's five-point MAP program, but with "People" and "Social Impact" included. However, more focus doesn't necessary mean better execution. Here we argue that, if ESG matters, win rates are likely the best indicator — although admitting that a myriad of other factors (scale, range of offer, etc.) are at play here.

- Overall, Compass has historically had the greatest number of new contract wins (see Exhibit 15).

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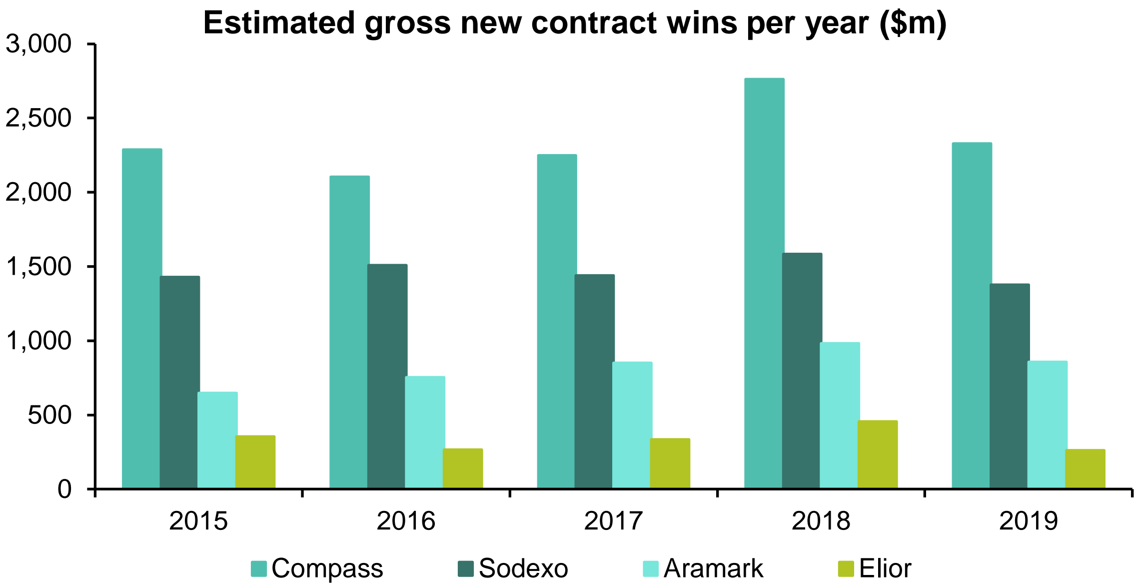
- In Education, where we see ESG being currently the most important, we look at our contract tracker, which shows that Compass and Sodexo have won the most new contracts in the space.

EXHIBIT 15: **We argue that if ESG matters, win rates are likely the best indicator — and here Compass is clearly leading; we do admit that a myriad of other factors (scale, range of offer, etc.) are at play here too**



Source: Company reports, and Bernstein estimates and analysis

VALUATION METHODOLOGY

For Compass, we derive a justified EV/EBITDA multiple based on relative ROIC, margin, scale, and forecast growth rates. We benchmark this against our DCF. We rate Compass (ticker: CPG.LN) Outperform with a £25 target price. It closed at £19.14 and is benchmarked against the MSDLE15 that closed at 1745. Closing prices as of August 8, 2022.

RISKS

Downside risks to our rating and target price:

- Major competitors close the gap on scale, impairing Compass' advantage;
- Inflation increases and Compass cannot pass it onto clients affecting margin; and
- Capital intensity of the catering industry continues to increase.

Richard J. Clarke, FCA richard.clarke@bernstein.com +44 207 170 0536

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GLOBAL TOBACCO & NICOTINE: THE NGP S-CURVE

HIGHLIGHTS

- **We continue to believe resolutely in Next Generation Products (NGPs) — a better and safer way to access nicotine.** In the words of RJ Reynolds, nicotine is the "sine qua non of tobacco products," but the same cannot be said of tobacco and cigarettes to nicotine. We expect switching to NGPs to accelerate as consumers are increasingly offered viable alternative nicotine delivery systems without the devastating health consequences of smoking cigarettes.

- **History teaches us** that transitions to superior technologies can be fast. Forget televisions, mobile phones, and the internet. Look no further than the history of the cigarette. At the turn of the 20th century, cigarettes had a 2% share of tobacco. Technological innovation (flue-curing and automated manufacturing) along with a change in consumer perception during the WWI meant that by 1919, cigarettes were the leading form of tobacco consumption.

- **Heated tobacco products** (IQOS, Glo, Lil, etc.) have, so far, led the way in the NGP revolution, driven by PMI and its IQOS product. PMI has embraced the innovator's dilemma and its IQOS platform has yielded extraordinary results, growing to over 25% penetration in multiple markets, in under 10 years. PMI's IQOS platform is now over 30% of sales. No other cigarette company comes close: most have NGPs at 1-2% of sales. Within **Vaping** (Juul, Vuse, NJOY, RELX, etc.), we continue to see hurdles to near-term mainstream adoption by cigarette smokers, due to unsatisfactory nicotine delivery in most markets. Over the long term, we expect technologies to continue to improve, and we see vaping as the most likely dominant NGP over the longer term. BAT (not covered) now leads the way in vaping, but after a slow start we see positive recent signs of progress from PMI in vaping, with its new Veev product. **"Modern Oral" or "nicotine pouches"** have emerged as a viable third category within NGPs, driven by the runaway success of Zyn in the US. The proposed acquisition of SWMA (not covered) by PMI should catapult PMI to being the biggest player in modern oral, and solidify its status as the undisputed leader in NGPs.

INVESTMENT IMPLICATIONS

We rate Philip Morris International Market-Perform, with a target price of US$110. We rate Altria Market-Perform, with a target price of US$53.

THE NGP S-CURVE

Cigarettes have been the preeminent form of tobacco consumption for the past 100 years, but it was not always thus. Prior to the Industrial Revolution, cigarettes were hand-rolled, expensive, and considered a luxury. It was only the advent of automated machines that led to cigarettes supplanting chewing tobacco and pipe tobacco in the early 1900s.

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Today, we see a similar transformation underway in the tobacco space, as consumers rapidly switch to novel forms of nicotine consumption. Retail spend on NGPs reached almost 10% of total tobacco spend in 2021, up from less than 1% just 10 years ago. What's more, growth is only accelerating and, after a slight hiccup in 2020 through the pandemic, we now appear to be approaching the steeper part of the NGP S-curve.

Tobacco kills an estimated 7 million people globally every year — more preventable deaths than any other product. So, tobacco and ESG investment are clearly not natural bedfellows. Quite the opposite. In fact, tobacco companies sit regularly on ESG exclusion lists and even investors operating integrated ESG policies may find it difficult to justify holding shares in companies whose primary products kill their customers.

However, in our view, the tobacco/nicotine industry stands at a fork in the road today. Behind lies a disturbing history of obfuscating the health dangers of cigarette smoking, and the tremendous legacy of harm that this caused. Ahead lies the potential for huge societal and financial benefit, if next-generation nicotine delivery mechanisms can be used to reduce the burden of harm from cigarette smoking (see Exhibit 1).

So far, tobacco companies — and in particular Philip Morris International — have led this transition to NGPs themselves. In our view, this NGP transition is the most important issue facing tobacco companies today, from both a long-term fundamental perspective and an ESG perspective. Companies that fail to embrace this transition are likely to find their businesses rapidly disrupted.

History shows us that transitions to superior technologies can happen quickly (see Exhibit 2), and — despite a brief blip during the pandemic — the data for NGPs appears to show that we are rapidly approaching the steeper part of the S-curve for NGPs (see Exhibit 3 and Exhibit 4). In particular, heated tobacco has driven most of the NGP growth over the past five years, driven by PMI's IQOS product, which still retains nearly 80% of the heated tobacco category globally (see Exhibit 10).

Not only has growth accelerated, but as more consumers use the products — over 20 million now use IQOS — the body of real-world evidence supporting the health benefits of cigarette smokers switching to these products continues to grow. Notably, in Japan, we now have over six years of evidence of widespread adoption by cigarettes smokers (see Exhibit 5). This now appears to be having positive population-level impacts on health outcomes. As this body of evidence grows, we think it will become increasingly difficult for regulators to ignore the potential for embracing harm-reduction policies, especially as other regulatory policies continue to be ineffectual in the battle against cigarette smoking (see Exhibit 8).

With supportive regulatory policies, we don't think it is crazy to suggest that within 10 years, NGPs could potentially approach a 50% penetration of the tobacco space in developed markets collectively. Already, EU penetration of IQOS as a standalone product is approaching 10% in little more than five years (see Exhibit 7). In the medium term, we expect the majority of this NGP growth to continue to be driven by heated tobacco. Over the longer term, we expect vaping technologies to continue to improve. In particular, we think it will be important that nicotine satisfaction improves even at the lower nicotine

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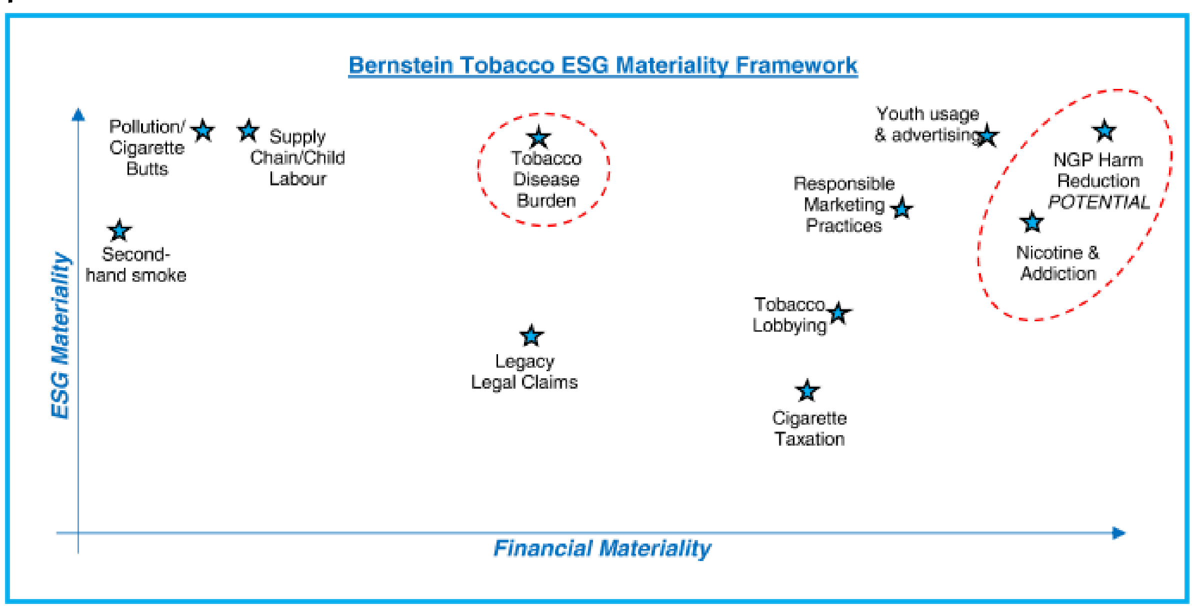
concentration levels imposed by regulators in most markets. If nicotine satisfaction can be adequately improved — and we expect it will — then over the long term (likely 5+ years), we expect vaping will prove a formidable competitor to heated tobacco and, ultimately, we expect that on a 20+ year view, vaping is likely to dominate.

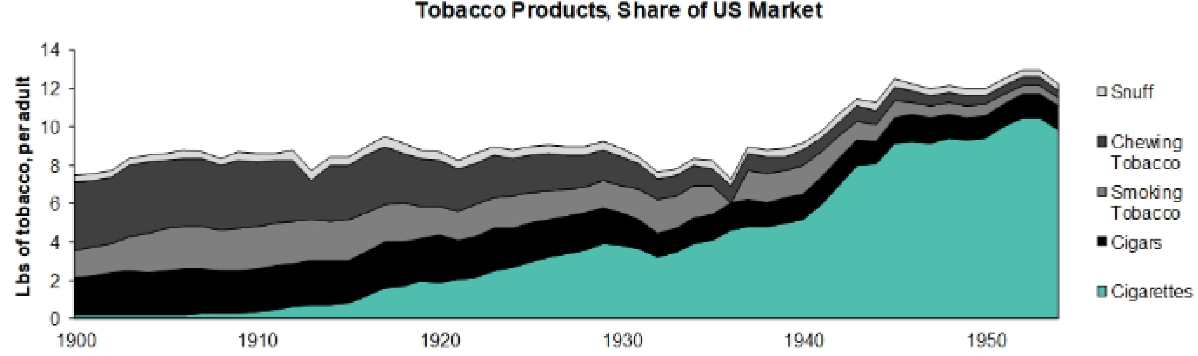
EXHIBIT 1: **We believe the tobacco disease burden and NGP harm reduction potential are among the most important ESG issues for tobacco**



Note: We don't think there's an objectively "right" answer for where any of these stars should sit on this materiality map. But if you think we've got any of them hugely wrong, we'd be delighted to discuss and potentially debate.

Source: Bernstein analysis

EXHIBIT 2: **History shows us that transitions to superior technologies can be rapid, even within tobacco itself**



Source: US Department of Agriculture and Bernstein analysis

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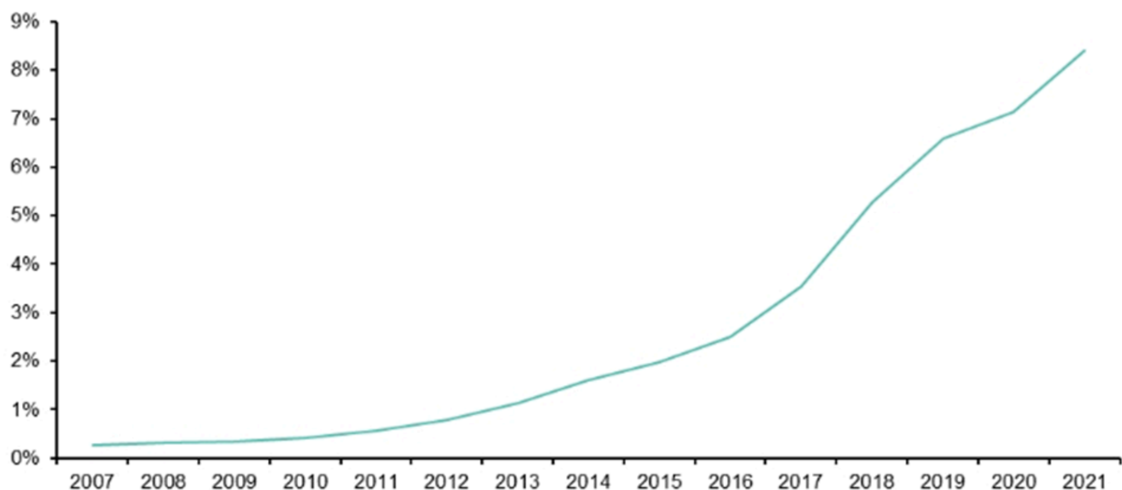
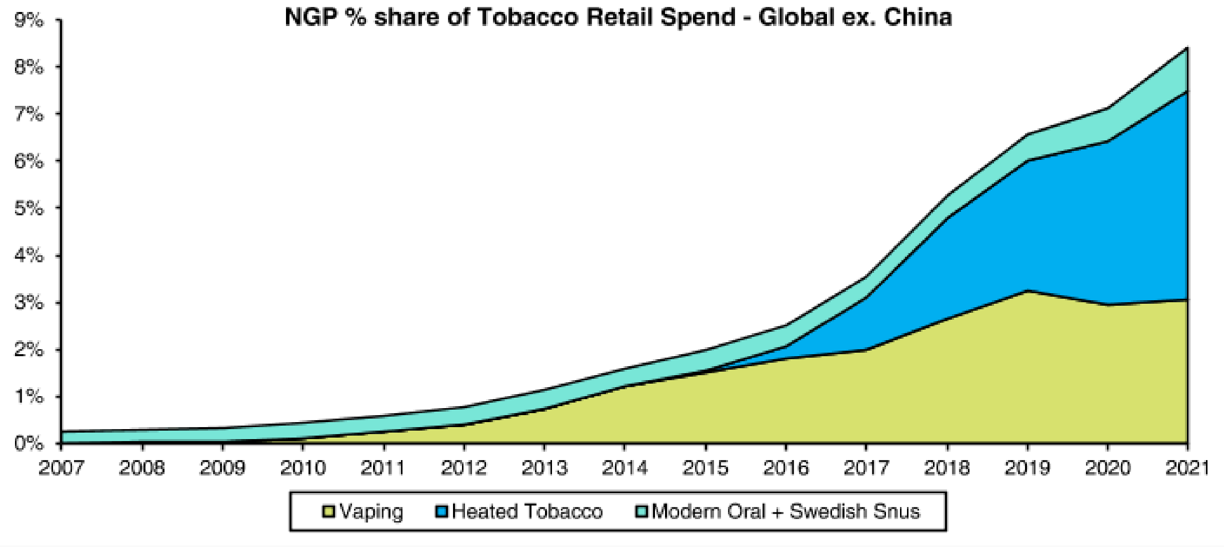
EXHIBIT 3: **Globally, NGPs reached 9% of global nicotine spending in 2021**



Source: Euromonitor and Bernstein analysis

EXHIBIT 4: **The dramatic acceleration of NGP adoption over the past six years has been driven entirely by heated tobacco**



Source: Euromonitor and Bernstein analysis

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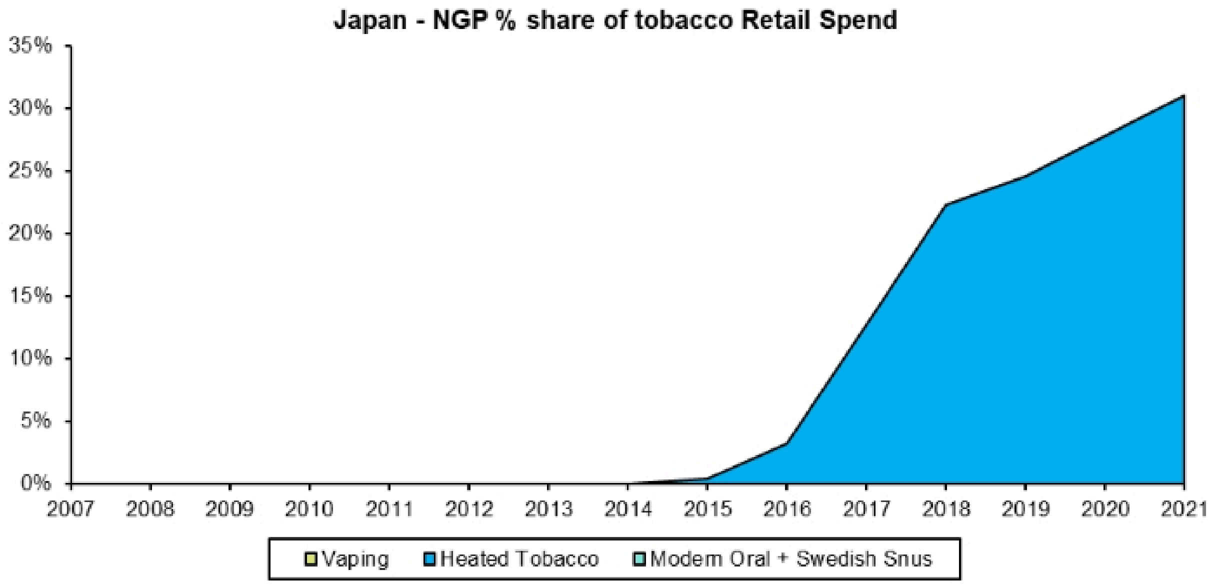
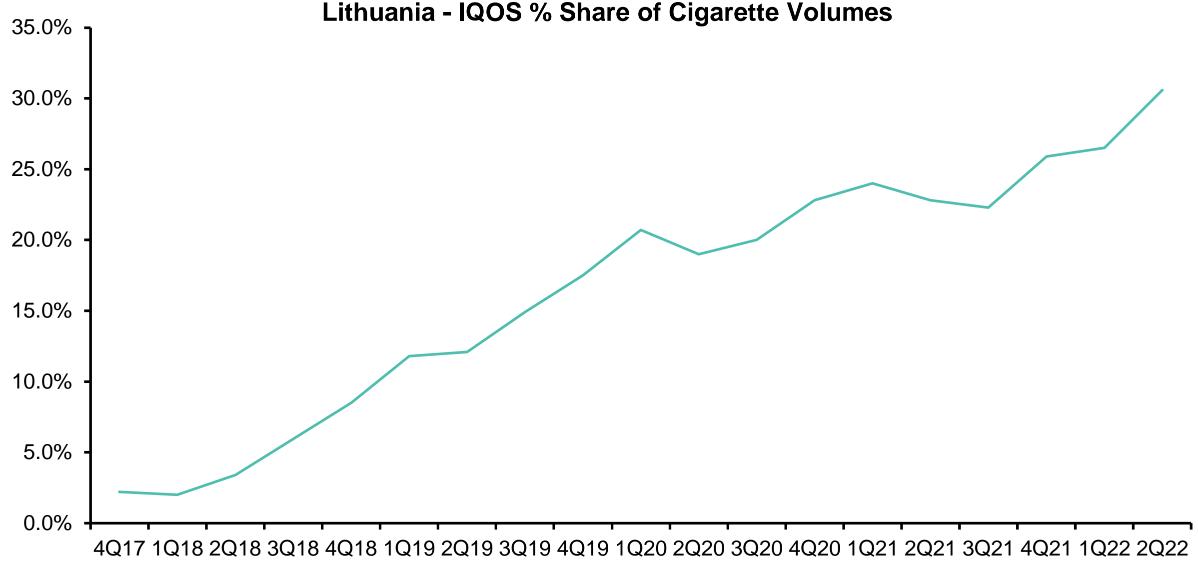
EXHIBIT 5: **Japan has been the poster child for NGP adoption, with heated tobacco now at an over 30% share of tobacco**



Source: Euromonitor and Bernstein analysis

EXHIBIT 6: **A number of Eastern European markets have rapidly caught up with Japan**



Source: Company reports and Bernstein analysis

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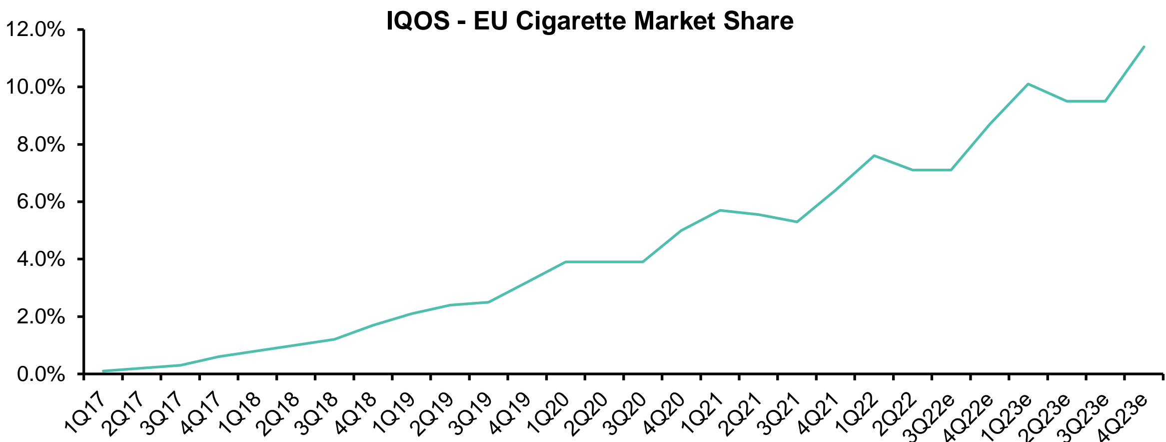
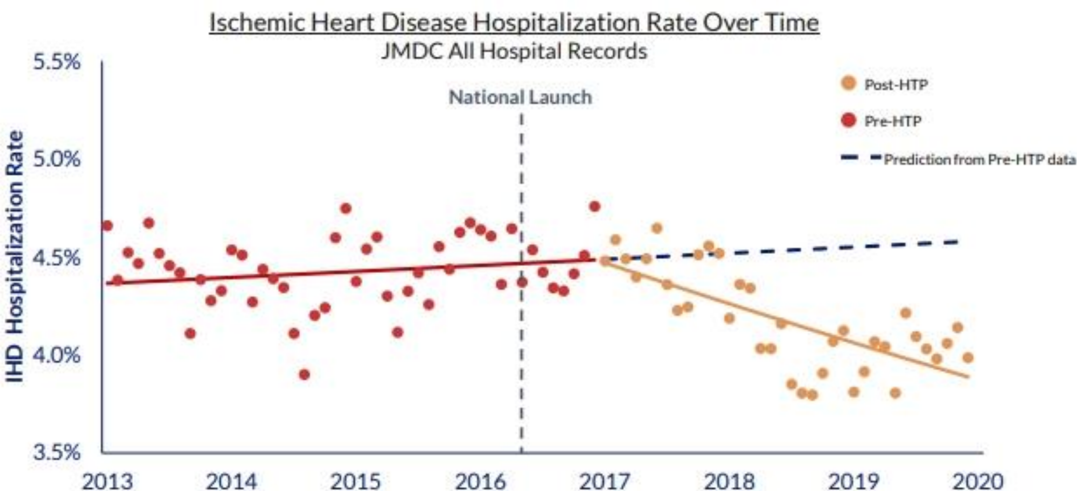
EXHIBIT 7: **We expect IQOS to hit 10% market share in the EU in 1Q23**



Source: Company reports, and Bernstein estimates and analysis

EXHIBIT 8: **There is increasing evidence that the transition to heated tobacco in Japan is having a significant positive health impact**



Source: PMI May 2022 Investor presentation, slide 58

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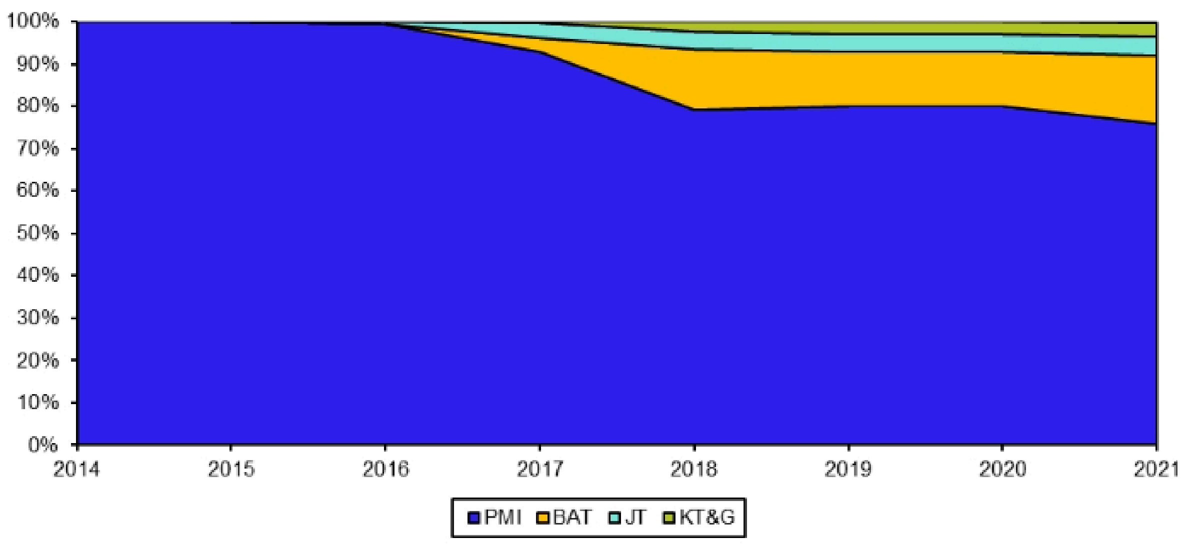
EXHIBIT 9: **This rapid growth of heated tobacco has been driven mostly by PMI, which retains an over 75% share of the category globally, despite increasing competition from BAT**



Source: Euromonitor and Bernstein analysis

EXHIBIT 10: **PMI continues to dominate the heated tobacco space, despite increasing competition**

Note: (1) PMI still sells other, older iterations of its IQOS technology. (2) The LIL brand is owned by KT&G and sold by KT&G in South Korea. The brand is licensed to PMI in countries outside of South Korea. (3) Glo Hyper X2 was launched in Japan just this July (2022) and we haven't yet seen it in-person.

Source: Company reports, company website, and Bernstein analysis

The vaping space remains much more fragmented than heated tobacco (see Exhibit 9), with limited barriers to entry. Despite their significant distribution scale, big tobacco companies have failed to resolutely dominate the vaping space as they do in heated tobacco. That said, we have seen that over the past few years, BAT, in particular, has done a good job in growing to become a market leader in the vaping space globally, now approaching 20% global market share (see Exhibit 11).

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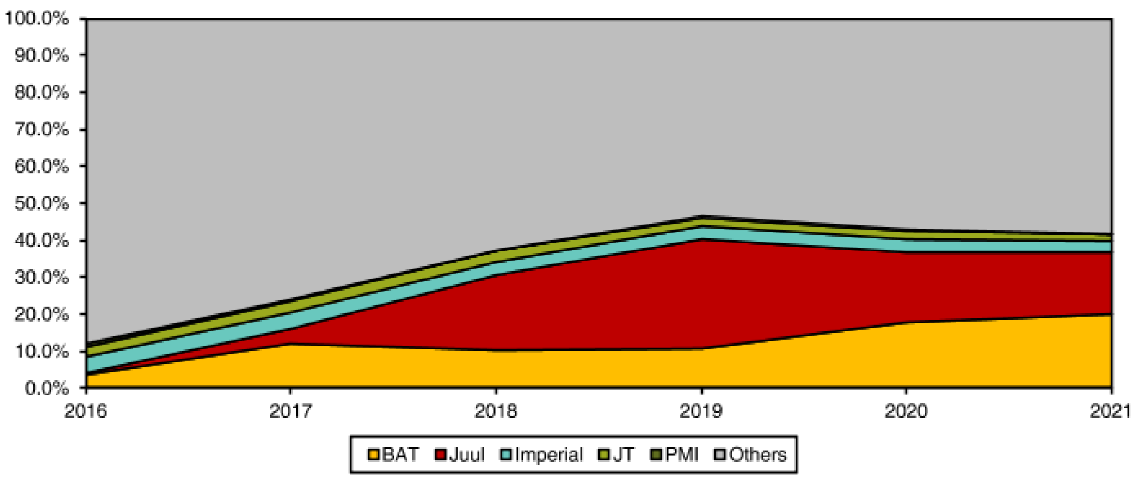
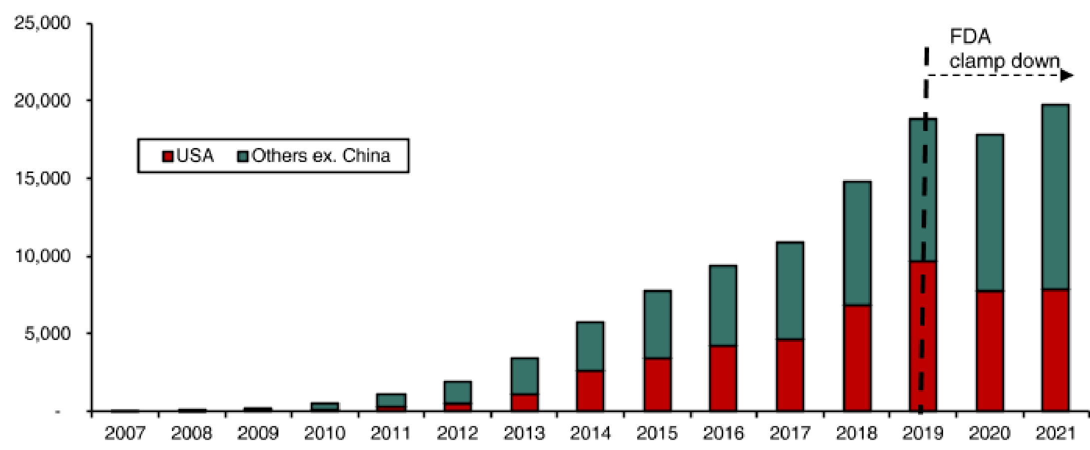
Growth in vaping has largely dried up globally, due to a significant slowdown in the important US market, which is almost half of sales globally (excluding China) (see Exhibit 12). As the US market absorbs the shakeout from the Premarket Tobacco Product Applications (PMTA) process (which may take a few years, given the legal processes), we expect the market to return to growth in the medium term.

EXHIBIT 11: **BAT is now the biggest player in vaping globally**



Source: Euromonitor and Bernstein analysis

EXHIBIT 12: **Global vaping has been largely ex-growth for the past couple of years, following the regulatory disruption in the US**



Source: Euromonitor and Bernstein analysis

PMI has been slow to enter the vaping space, after taking some time to develop a product it felt was good enough to drive repeat purchase. Lack of repeat purchase and brand loyalty has been a significant problem in vaping, driving brand fragmentation and, ultimately, poor profitability.

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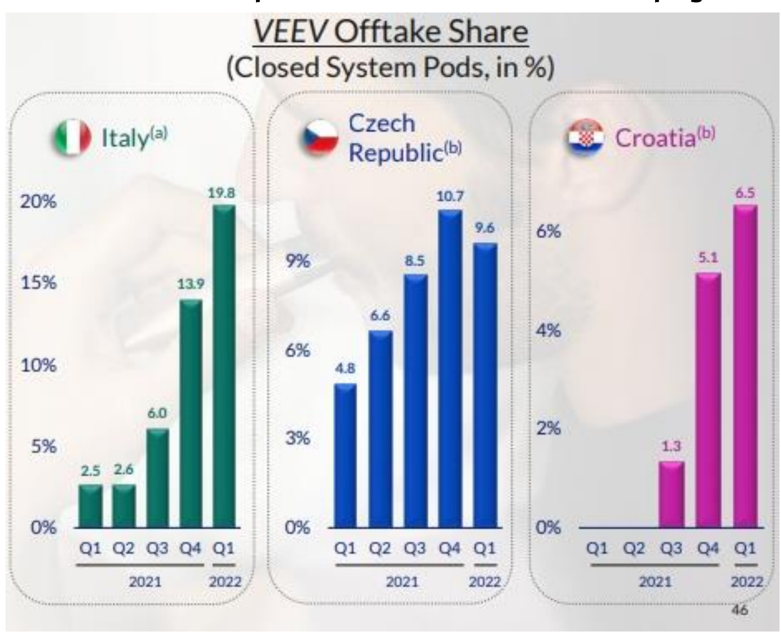
However, PMI launched its Veev product (see Exhibit 13) in a number of European markets over the past couple of years and early results have been very encouraging, capturing significant share of market in those countries in a very short time (see Exhibit 14). Veev is now being rolled out to more markets, and over time we expect PM to become a more meaningful challenger in the vaping space, leveraging its R&D expertise, brand building capabilities, and best-in-class distribution.

EXHIBIT 13: **Veev was finally launched during the pandemic**

Source: Company website

EXHIBIT 14: **Veev has captured almost 20% of the Italian vaping market**



Source: PMI May 2022 investor deck, slide 46

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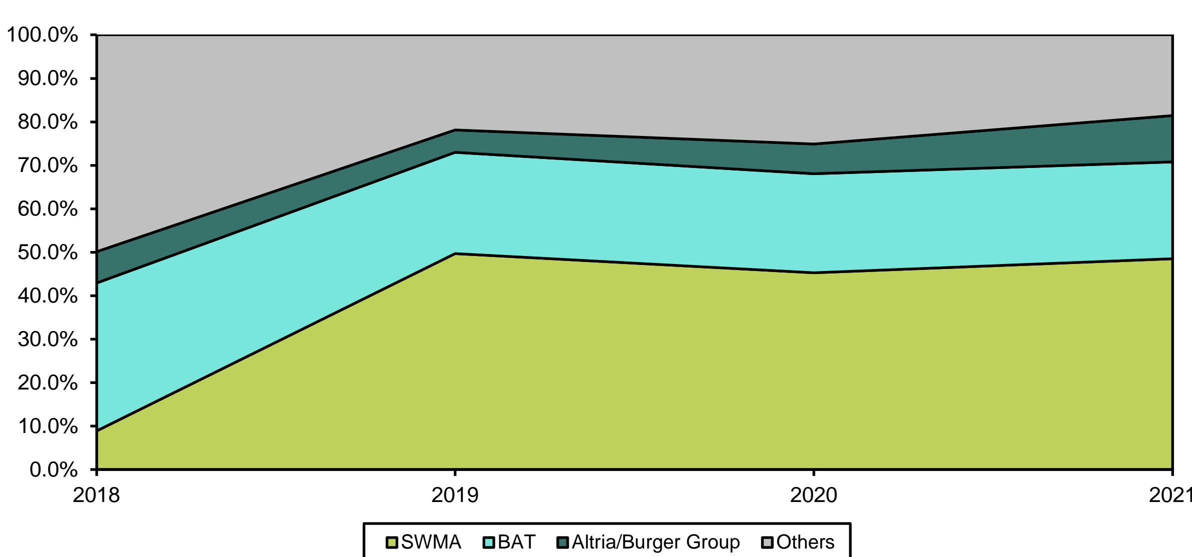
Swedish Match is the clear market leader globally in Nicotine pouches (see Exhibit 15). PMI is currently in the process of acquiring Swedish Match with the tender period set to end on September 30, 2022. We have written extensively about the deal, which we believe will be transformational for PMI, both in opening the US market and in terms of the dominance of the nicotine pouch category. With Swedish Match's Zyn brand and PMI's international distribution capabilities, we think PMI is well-placed to dominate the nicotine pouch category over the long term.

We see a positive long-term future for nicotine pouches and potentially other forms of future innovation in oral nicotine (e.g., the companies have experimented with lozenges). However, in the near term we expect most of the growth to continue to be driven by Scandinavia and the US (see Exhibit 16). In most other developed markets, there is limited oral tobacco culture and we expect it will take some time to educate the consumer as to the benefits of nicotine pouches (see Exhibit 17). Interestingly, in some emerging markets (e.g., South Asia) there is a very significant oral tobacco culture, which raises the prospect of nicotine pouches perhaps having an interesting future in EMs.

EXHIBIT 15: **Swedish Match is the clear leader in nicotine pouches, globally, with almost 50% market share**



Source: Euromonitor and Bernstein analysis

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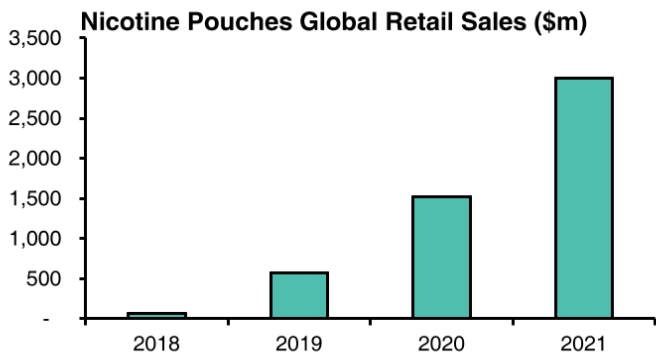
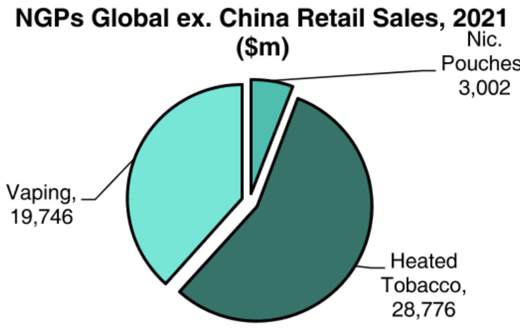
EXHIBIT 16: **Nicotine pouches have been growing at over 100% annually**



Source: Euromonitor and Bernstein analysis

EXHIBIT 17: **In the context of wider NGPs, nicotine pouches are only 6% of the market**



Source: Euromonitor and Bernstein analysis

VALUATION METHODOLOGY

US Tobacco: We value our US tobacco coverage based on a three-stage discounted cash flow (DCF) analysis, which we triangulate with analysis of relative PE and EV/EBIT multiples. Within the group, we believe the stocks with higher long-term secular growth rates and higher ROIC should carry the highest multiples. Slower growers long term, with lower ROIC should carry lower multiples.

EXHIBIT 18: **Ratings and target prices**

Ticker	Rating	Currency	8-Aug-2022 Closing Price	Target Price
PM	M	USD	97.64	110.00
MO	M	USD	44.22	53.00

Note: The stocks are benchmarked against the SPX that closed at 4140.06.

Source: Bloomberg, and Bernstein estimates and analysis

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RISKS

US Tobacco: Overall, we have a slightly cautious sector view. We expect cigarette volume declines to accelerate, driven by a shift to next-generation nicotine-delivery products. Against this backdrop, we also expect cigarette pricing to increasingly come under pressure. As a result, industry profit pool growth is likely to slow and sector valuations may derate. Within our global tobacco & nicotine coverage, the following macroeconomic and company-/industry-specific factors represent risks to our price targets: regulatory decisions around the sale of nicotine products online; potential privatization of the Chinese state-owned cigarette monopoly; regulatory decisions around the capping of nicotine levels in combustible cigarettes; the success, or otherwise, of the Juul vaping business; the pace of adoption of heated tobacco products, such as IQOS; the pace of adoption of vaping products; the entry into the vaping market/success of new players; the enforceability of patents surrounding heated tobacco and vaping technologies; legal challenges to the tobacco Industry, on health or other grounds; foreign exchange and commodity cost fluctuations; and regulatory decisions around the introduction of new vaping/heated tobacco products.

Callum Elliott, CFA, ACA callum.elliott@bernstein.com +44 207 170 0502

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SIMPLY GOOD FOR YOUR PORTFOLIO: RECESSION RESISTANT AND SUSTAINABLE

HIGHLIGHTS

- **Simply Good Foods (SMPL) is likely to hold up well in a recessionary environment.** Food overall tends to be fairly recession-proof as everyone has to eat, and Quest's core consumer reportedly enjoys an average annual income above US$75k, while exhibiting minimal private label exposure. Moreover, Quest tends to be more tied to on-the-go snacking and its portfolio is not likely to be affected by a trade-in from people eating food in restaurants to eating more food at home.

- **Simply Good Foods also has some persuasive sustainability credentials despite having poor ratings in many formal ESG league tables.** The company is well aligned with the weight-management side of health and wellness. And with rates of obesity and diabetes continuing to climb, this can be no bad thing. The company is also playing a pioneering role in the realm of alternative sweeteners and sustainable packaging.

- **We recommend buying the recent dip on Simply Good Foods.** The stock sold off last quarter on news that retailer inventory reductions will likely reduce organic sales growth to 1%. And this came hot on the heels of an apparent slowdown in YoY sales growth in measured channels. But the two-year CAGR on retail takeaway is holding up well at ~15% and the three-year CAGR is holding steady at 11%. The company could become a take-out candidate following Mondelez's recent announcement of plans to acquire Clif Bars.

INVESTMENT IMPLICATIONS

We rate SMPL Outperform with a target price of US$49, which is based on 19.0x our 12- to 24-month EBITDA estimate.

SIMPLY GOOD FOODS IS BENEFITING FROM STRONG GROWTH FROM QUEST

The Quest brand now makes up almost half of SMPL sales in measured channels (see Exhibit 1), with both bars and treats driving strong sales growth in recent years (see Exhibit 2). In this chapter, we examine why Simply Good Foods looks set to be fairly resilient in the face of a recessionary environment, examine the company's ESG credentials, and look at why now might be a good time to jump in based on the recent pullback in the stock price.

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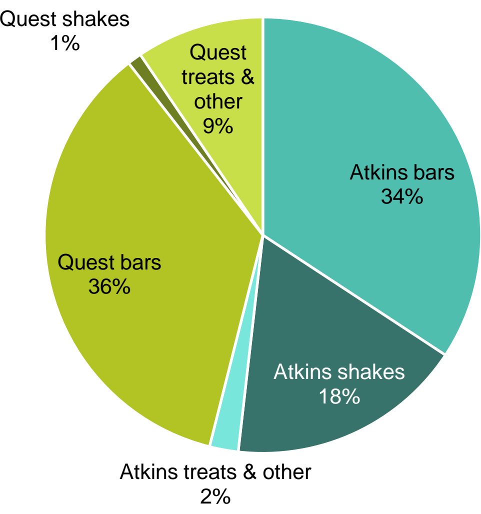
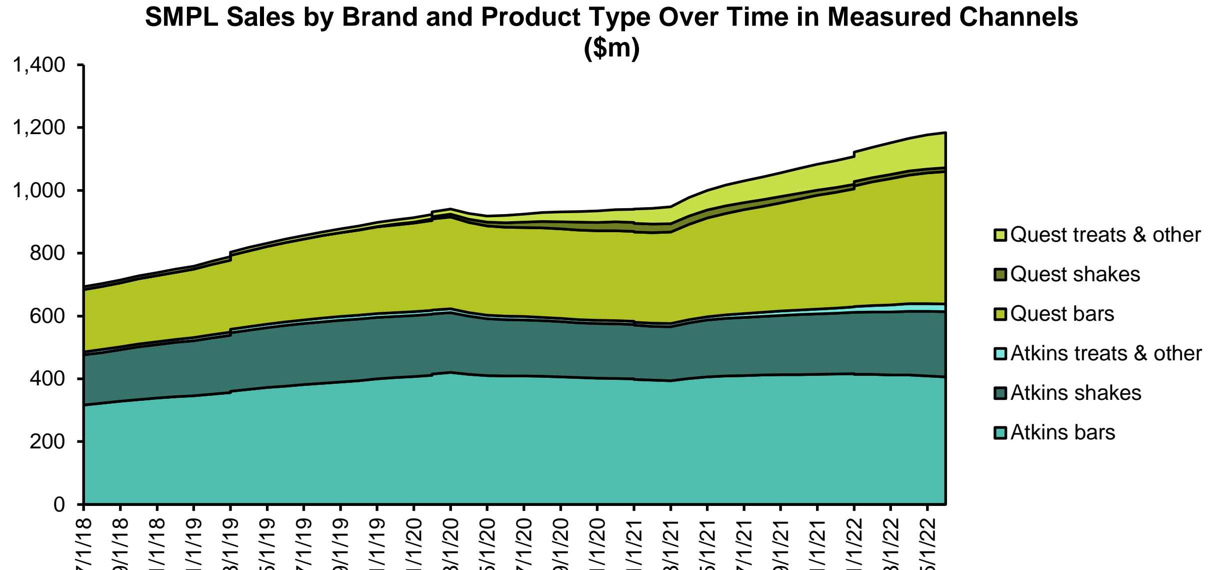
EXHIBIT 1: **Quest brand now makes up almost half of Simply Good Foods sales in measured channels...**



Source: NielsenIQ and Bernstein analysis

EXHIBIT 2: **...with both bars and treats driving strong sales growth**



Source: NielsenIQ and Bernstein analysis

SIMPLY GOOD FOODS IS LIKELY TO HOLD UP WELL IN A RECESSIONARY ENVIRONMENT

Food overall tends to be fairly recession-proof as everyone has to eat (see Exhibit 3 and Exhibit 4). Quest's core consumers reportedly enjoyed average annual incomes above US$75k when the brand was bought in 2019 (see Exhibit 5). And of course the company's exposure to private label products in nutritional bars and shakes is very low (see Exhibit 6). Moreover, while Quest tends to be more tied to on-the-go snacking, which dropped off in

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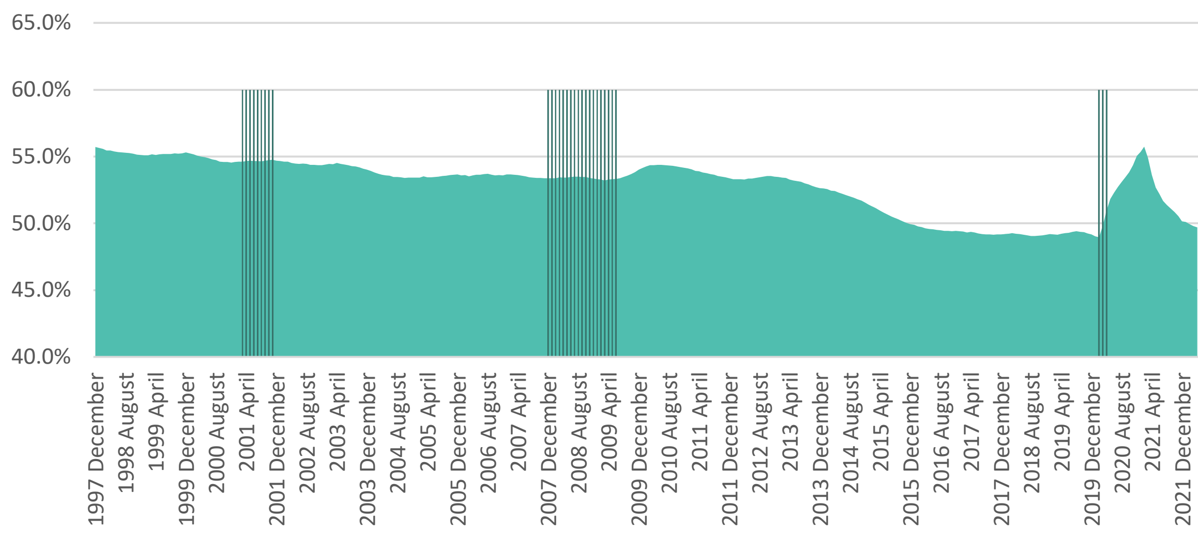
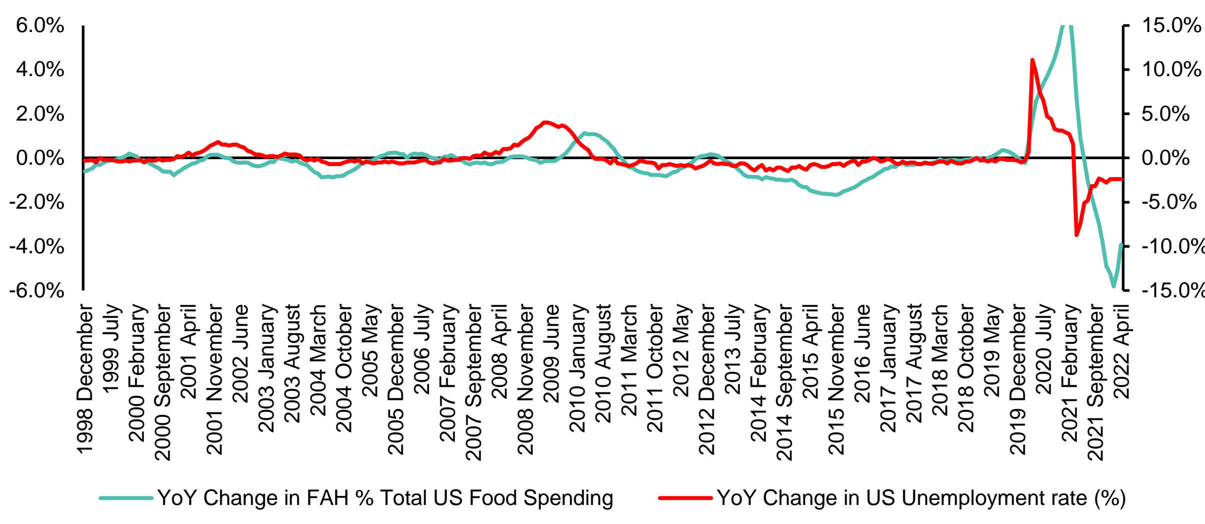
the early stages of the pandemic, the portfolio is not likely to be much affected by a trade-in from people eating food in restaurants to eating more food at home.

EXHIBIT 3: **As a percentage of total food spend, food at home (FAH) stopped its shift toward food away from home (FAFH) during the economic slowdowns of 2001 and 2008-09**



Source: Economic Research Service (ERS), Bloomberg, and Bernstein analysis

EXHIBIT 4: **Spending on FAH seems closely linked to increases in unemployment rates in the US**



Source: ERS, BLS, Bloomberg, and Bernstein analysis

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EXHIBIT 5: **Quest skews toward younger consumers with favorable demographics**

...and Favorable Demographics

Working Professionals

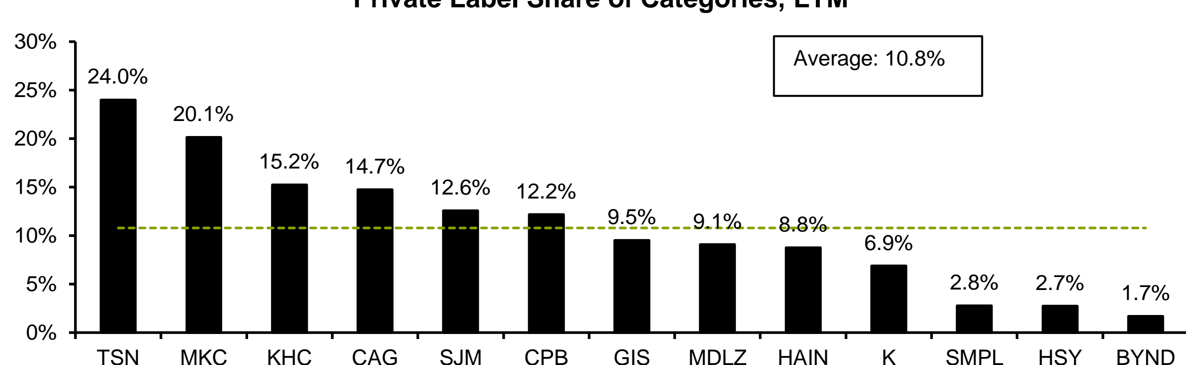
College Graduates

Household Income $75k+

Urban Residents

Source: Simply Good Foods company presentation on day of Quest deal announcement

EXHIBIT 6: **Simply Good Foods has very low exposure to private label within our coverage**



Note: Private label market share weighted by company sales in each category

Source: NielsenIQ, and Bernstein estimates and analysis

SIMPLY GOOD FOODS ALSO HAS SOME PERSUASIVE SUSTAINABILITY CREDENTIALS DESPITE HAVING POOR RATINGS IN MANY FORMAL ESG LEAGUE TABLES

Simply Good Foods is clearly behind the curve on sustainability disclosures and, thus, doesn't generally screen at the top of the pile (or indeed at all) on various common ranking reports (see Exhibit 7 to Exhibit 12). However, we suspect this may simply be a matter of management bandwidth, resources, and focus than a reflection of underlying ESG-related issues. This is a pattern we believe is common among smaller packaged food companies that have fewer resources to dedicate to conduct the necessary ESG measurements than the larger established players.

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To illustrate this point further, Simply Good Foods had sales of ~US$1.0Bn and EBITDA of US$130.5Mn in FY21 and an employee count of 263 as of August 2021. Compare that with General Mills with revenues of US$19.0Bn and EBITDA of US$3,784Mn in FY22, and an employee count of 32,500 as of the end of May 2022 and the problem becomes more readily apparent. Of course, General Mills makes most of its products in-house, while Simply Good Foods follows an asset-light approach and outsources production to third party co-manufacturers. But even when you strip out the 12,500 General Mills' employees who are dedicated to production, leaving 20,000 people vs. the 263 at Simply Good Foods, the bandwidth problem becomes very clear.

We believe Simply Good Foods needs to take steps to remediate this lack of Environmental and Social disclosures. However, there is also the consideration that we expect this company to become a take-out candidate within the next couple of years, especially in light of Mondelez's recent announcement of its intention to purchase Clif bar. As such, it may be a rather low-return investment to configure the necessary people and infrastructure to close this gap.

Setting aside the weak disclosure situation (which may possibly be preventing many funds from investing in this company), the company is well aligned with the weight-management side of health and wellness, as all its products are low carb. As a result, its nutrition profile is markedly different from a standard cookie of similar size (see Exhibit 13). One of the more interesting angles here is the concept of net carbs, which are calculated as total carbohydrates, less fiber, and sugar alcohols, which are not generally absorbed into the body and, therefore, do not contribute to calories actually adding to our waistlines, although this can vary between the various types of sugar alcohol.

And with rates of obesity and diabetes continuing to climb, this can be no bad thing (see Exhibit 14 and Exhibit 15).

The company is also playing a pioneering role in the realm of alternative sweeteners, most notably the rare sugar allulose, of which the Quest Hero bar was an early adopter.

The company is also making progress in sustainable packaging, specifically as one of the first brands to switch to a more renewable and largely plant-based version of a tetrapak carton for its Atkins shakes.

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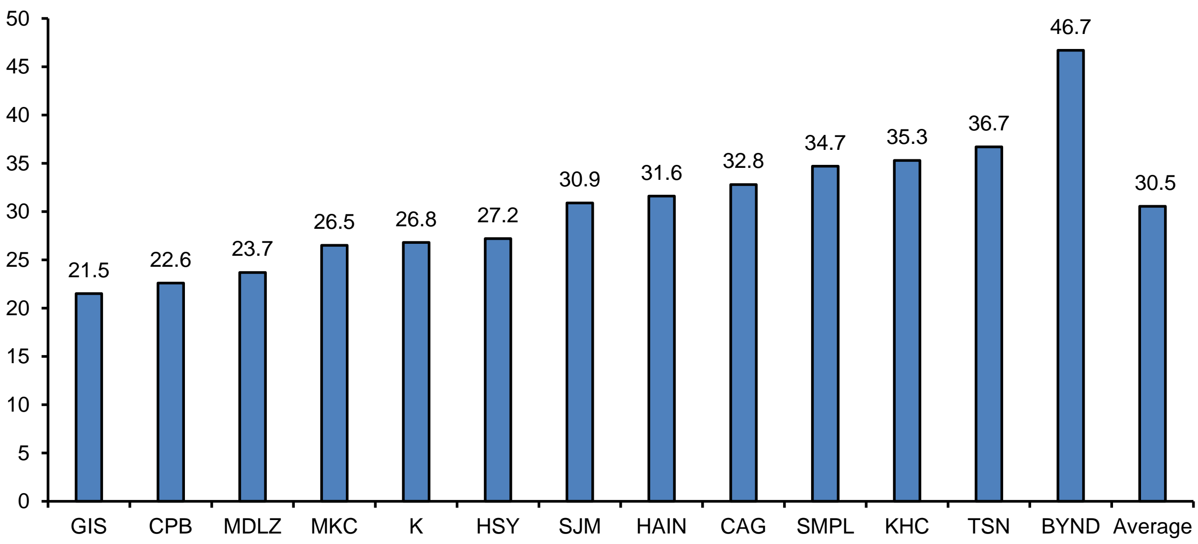
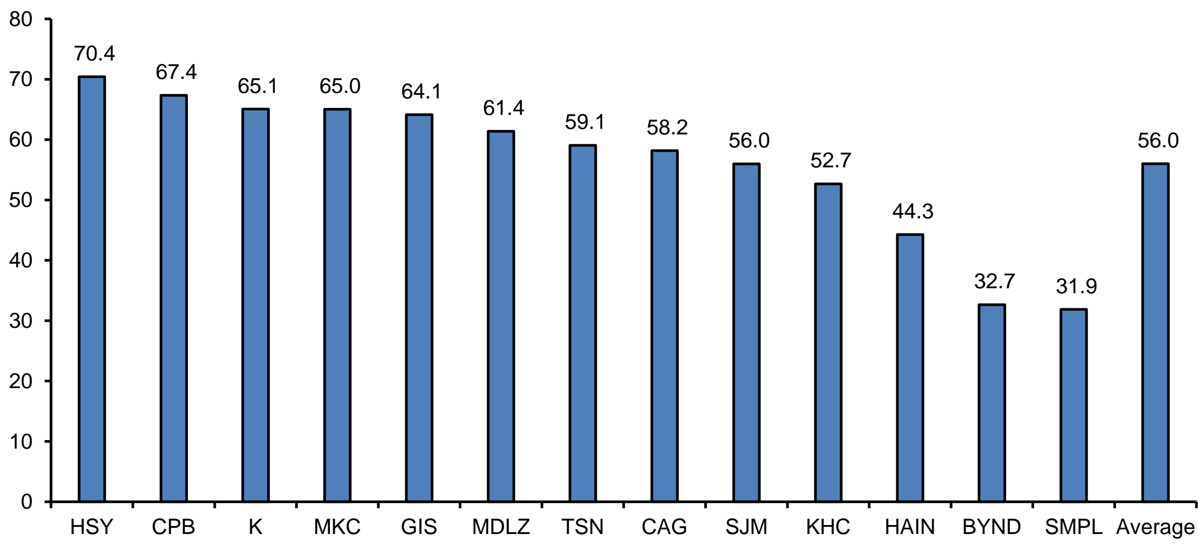
EXHIBIT 7: **Simply Good Foods is rated "high ESG risk" by Sustainalytics with a score above 30**



Source: Sustainalytics and Bernstein analysis

EXHIBIT 8: **Simply Good Foods also rates poorly on ESG disclosure by Bloomberg...**



Source: Bloomberg and Bernstein analysis

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EXHIBIT 9: **...nor is it scored on MSCI's overall ESG Ratings system...**

	MSCI ESG
K	AAA
GIS	AAA
CPB	AA
MKC	AA
CAG	AA
HSY	A
SJM	A
KHC	A
MDLZ	BBB
TSN	BBB
HAIN	N/A
SMPL	N/A
BYND	N/A

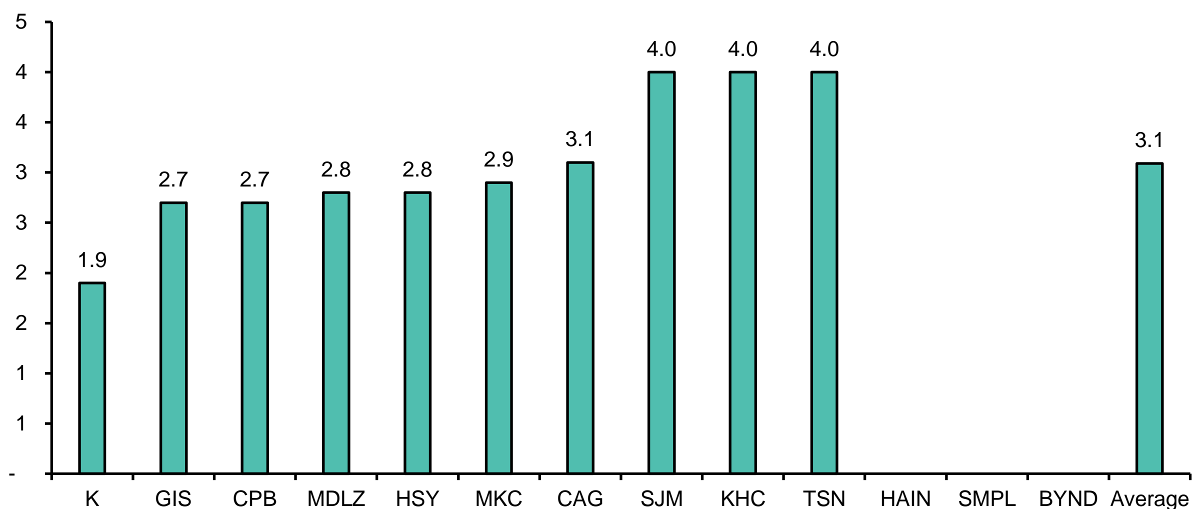
Source: Bloomberg and Bernstein analysis

EXHIBIT 10: **...but this poor rating seems largely due to a lack of disclosures around Environmental and Social impact factors**

	Bloomberg Disclosure Ratings			
	Environment	Social	Governance	Overall
HSY	79.6	37.7	93.7	70.4
CPB	59.8	48.4	93.7	67.4
K	56.2	38.8	100.0	65.1
MKC	60.7	40.6	93.7	65.0
GIS	49.4	49.2	93.7	64.1
MDLZ	52.9	37.3	93.7	61.4
TSN	54.2	29.0	93.7	59.1
CAG	52.3	28.3	93.7	58.2
SJM	49.4	27.2	91.2	56.0
KHC	32.4	34.2	91.2	52.7
HAIN	25.8	21.8	85.0	44.3
BYND	0.7	12.1	85.0	32.7
SMPL	-	7.9	87.5	31.9
Average	44.1	31.7	92.0	56.0

Source: Bloomberg and Bernstein analysis

EXHIBIT 11: **Similarly, the company is not currently scored by MSCI on its Environmental credentials**



Source: MSCI and Bernstein analysis

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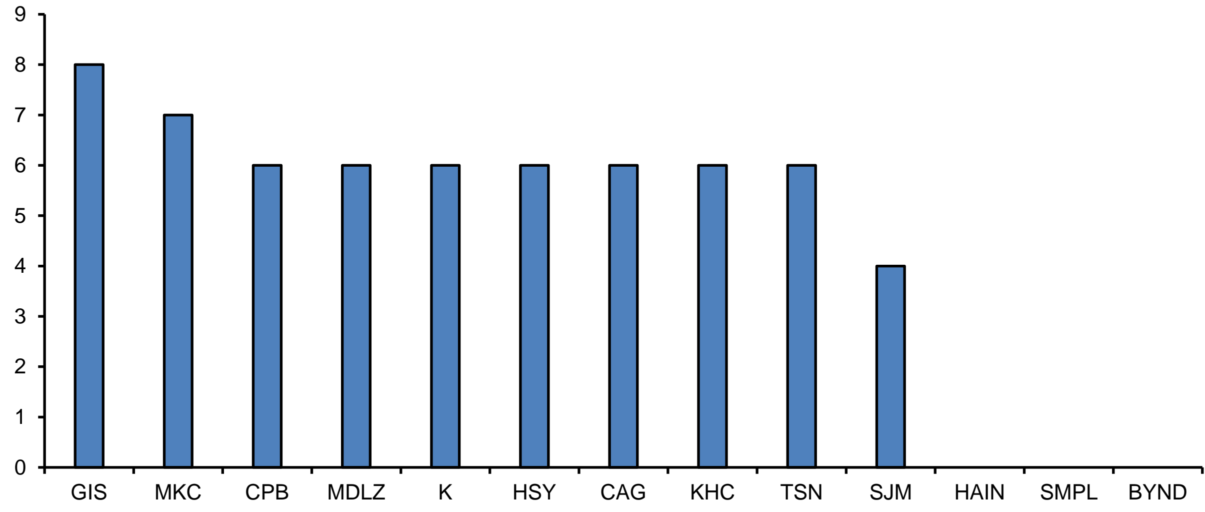
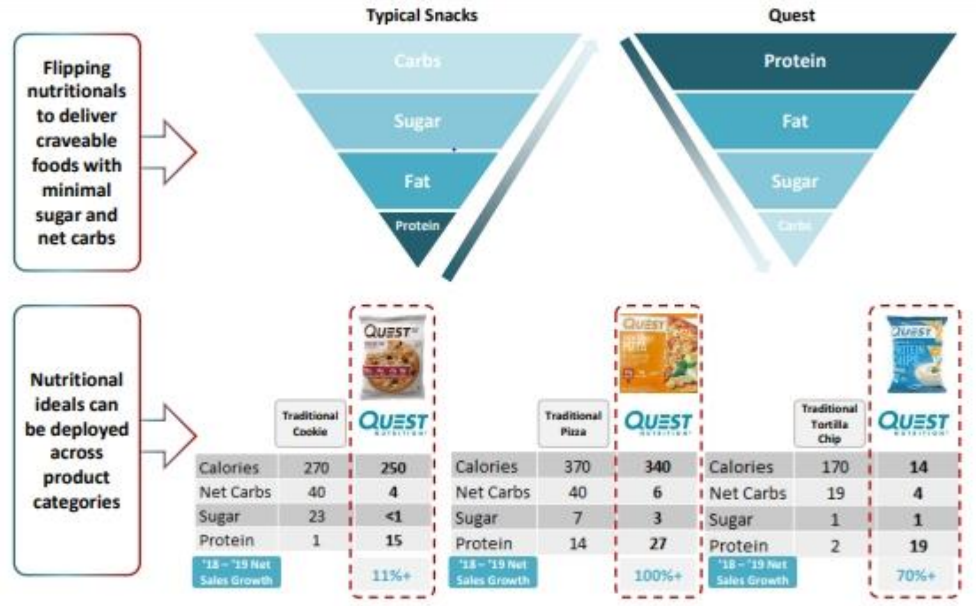
EXHIBIT 12: **Simply Good Foods is also not scored on the Carbon Disclosure Project's rating system for carbon disclosures**



Source: CDP, Bloomberg, and Bernstein analysis

EXHIBIT 13: **Quest cookies have a markedly different nutrition profile to regular cookies when matched for portion sizes**



Source: Company report

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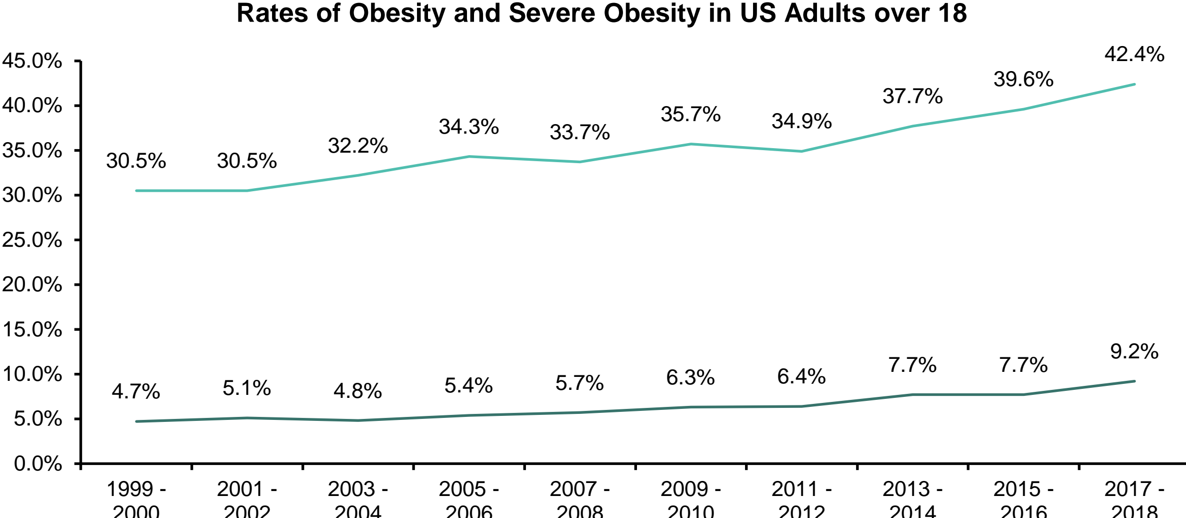
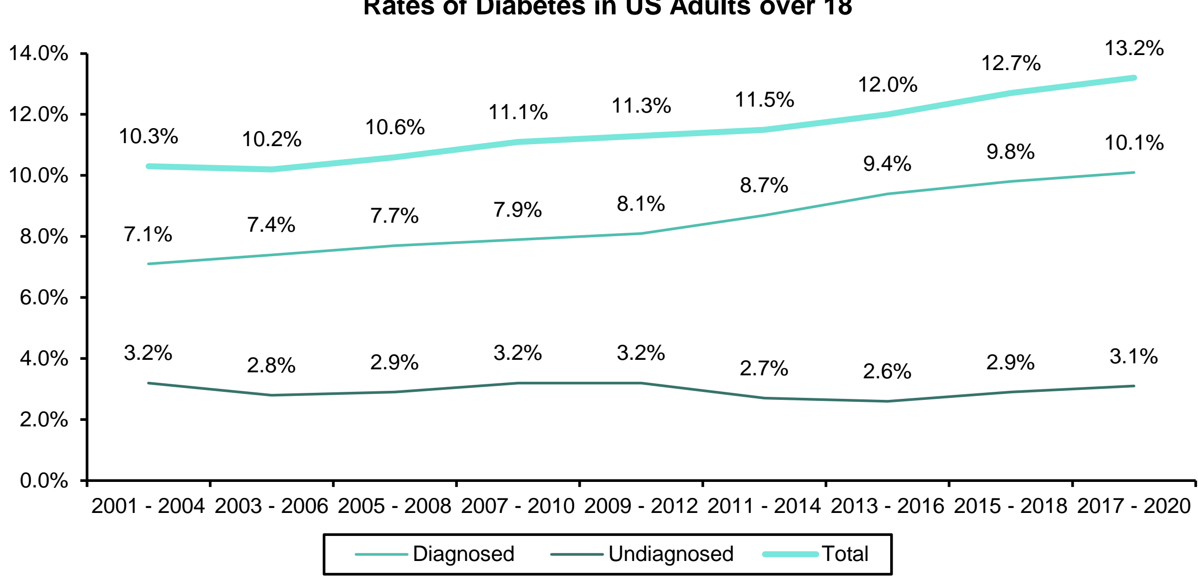
EXHIBIT 14: **Rates of obesity among US adults have been on the rise — never mind the pounds we packed on during the pandemic**



Source: CDC and Bernstein analysis

EXHIBIT 15: **Similarly, the incidence of diabetes among US adults has also been on the rise**



Source: CDC and Bernstein analysis

WE RECOMMEND BUYING THE RECENT DIP ON SIMPLY GOOD FOODS

The stock traded off last quarter (and the stock price remains lackluster at below US$35 vs. above US$41 before the company reported at the end of June, 2022 on news that retailer inventory reductions will likely reduce sales growth by ~7% next quarter, leading to ~1% organic sales growth from a recent double-digit trajectory. This seems to be a case of

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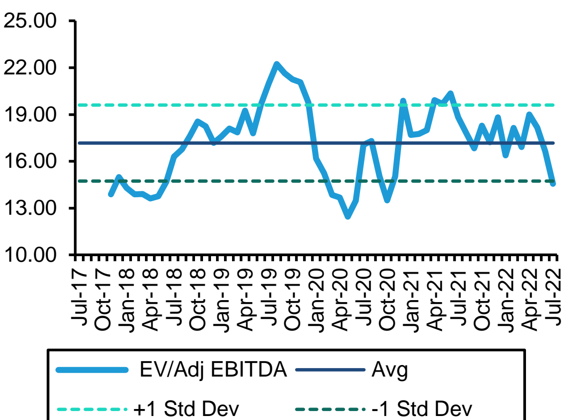
"no good deed goes unpunished" as retailers are now reducing safety stock being held on products that have kept service levels high during the recent bout of supply chain disruption. As a result, the company's valuation looks fairly attractive at present (see Exhibit 16 and Exhibit 17).

This came hot on the heels of an apparent slowdown in YoY sales growth in measured channels. But the two-year CAGR on retail takeaway is holding up well at ~15% and the three-year CAGR is steady at 11% (see Exhibit 18), so we see little to be concerned about in the data.

We also note that management has historically been fairly conservative on sales guidance. For example, in FY21 the company did not provide full-year sales guidance until midway through the fiscal year, when it guided to US$930-US$940Mn in sales. This was subsequently revised upward and it ended the year with a little over a billion dollars in sales. Similarly, in FY22 the company started the year with a fairly standard guidance of 8-10% sales growth; this has since been revised upward twice and the range has been tightened to 14-15%, including an additional headwind from the pizza licensing agreement.

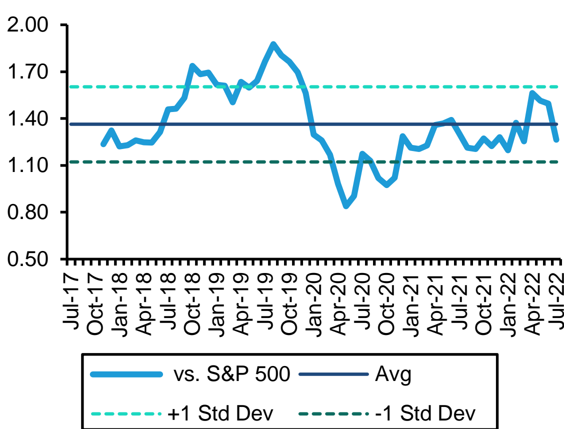
Also, the company could become a take-out candidate following Mondelez's recent announcement of plans to acquire Clif Bars. We believe that a number of larger trade buyers might be interested, including Hershey's, Kellogg, Campbell's, General Mills, Conagra, and even Mondelez depending on antitrust considerations. As Simply Good Foods has an asset-light model whereby all production is outsourced, the cost synergies could be particularly high for companies able to bring manufacturing in-house.

EXHIBIT 16: **SMPL is trading almost one standard deviation below its average absolute EV/EBITDA level**



Source: Bloomberg and Bernstein analysis

EXHIBIT 17: **Simply Good Foods is also looking in line with its historical average EV/NTM EBITDA multiple vs. the market**



Source: Bloomberg and Bernstein analysis

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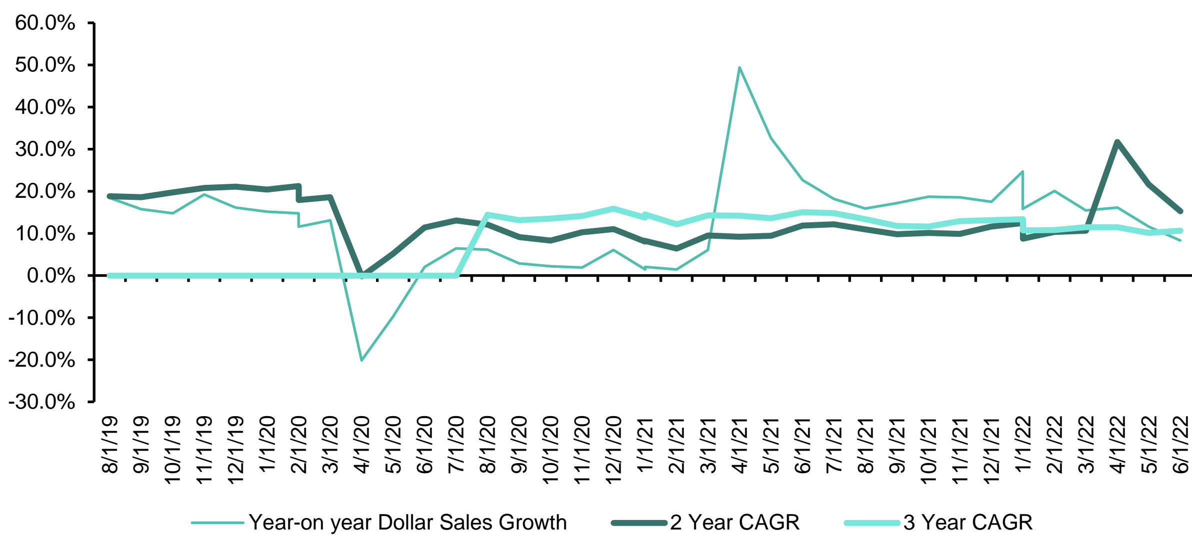
EXHIBIT 18: **Although there has been an apparent slowdown in the YoY data, the two-year and three-year CAGRs are holding in double-digit territory**



Source: NielsenIQ and Bernstein analysis

VALUATION METHODOLOGY

Our primary valuation mechanism is derived from market multiples. To set our target prices, we begin with the current forward EV/EBITDA ratio for the S&P 500 based on consensus estimates. We then establish a premium or discount for the US food sector relative to the S&P based on forward EV/EBITDA ratios. For individual food companies, we apply a deserved premium/discount relative to the forward EV/Adjusted EBITDA for the food sector. Our deserved premium or discount is based on near-term and longer-term EBIT growth relative to the US packaged food group as a whole. We apply this forward EV/Adjusted EBITDA ratio to our forward adjusted EBITDA estimates beginning a year from now. This generates the enterprise value (EV) for each company, from which we subsequently derive equity value and ultimately a 12-month target price based on our 12- to 24-month adjusted EBITDA estimate.

We rate Simply Good (ticker: SMPL) Outperform with a target price of US$49. It closed at US$33.40 and is benchmarked against the SPX that closed at 4140.06. Closing prices as of August 8, 2022.

RISKS

Risks to our industry forecast include: (1) changes in the degree of competitive activity within any key market; (2) changes in the nature of our coverage companies' relationships with their key customers and/or suppliers; (3) fluctuations in foreign exchange rates; (4) fluctuations in commodity costs; (5) changes in the companies' ability to deliver on anticipated growth and/or margin improvement opportunities due to internal and/or external causes; (6) changes in the companies' stances toward M&A; (7) changes in the government's stance toward regulation of nutritional content; (8) changes in consumer preferences; and (9) better-than-expected pass-through of pricing.

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Simply Good Foods Co/The

Changes on consumer perception about low-carb diets could affect Simply Good Foods' top-line growth potential, which would pose a risk to our target price. Disruptions in Simply Good Foods' co-manufacturing network could affect its ability to fulfill orders and to meet consumer demand. Potential management or board turnover could lower our conviction level in the management quality and weigh on investor sentiment. Simply Good could face execution risks while integrating Quest. After the Quest deal, if the M&A environment remains highly competitive such that the company cannot identify fast-growing nutritional snack brands at reasonable valuations to acquire down the road, this could pose a risk to our long-term outlook.

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SHISEIDO: AN ESG IMPROVER

HIGHLIGHTS

- In this chapter, we assess Shiseido's ESG performance through quantitative measures and highlight key areas that are less known to the market. With a diverse set of measurements and standards, we believe no single framework can fully capture Shiseido's ESG progress. Exhibit 4 demonstrates where we differ.

- Shiseido has actively improved its environmental and social scores, yet this is not widely recognized by rating agencies. In recent years, Shiseido has made progress in: (1) reducing carbon footprint, water, and waste; (2) addressing environmental concerns — Shiseido launched new brands and products that are sustainable and environmentally friendly; and (3) responsible sourcing through selecting and managing suppliers through sustainability metrics. Yet both MSCI ESG Ratings and Sustainalytics do not reflect these improvements. We believe MSCI ESG Ratings are outdated and have not changed for five years.

- Governance is more controversial. Shiseido has a strong traditional Japanese corporate culture, but the company also made efforts to adopt a more Western approach, e.g., decentralization and empowerment of local management teams. However, frequent management changes in recent years — particularly among non-Japanese executives and leadership — have raised investor concerns regarding management quality. We think these concerns are valid. But, given the changes coincided with shifts in company strategy, and it has been a key topic among investors, it is likely priced in. We provide our perspective on the potential drivers of these management changes in this chapter.

INVESTMENT IMPLICATIONS

Our updated Shiseido model reflects our expectation of a weak 2Q22 due to Shanghai lockdown supply chain disruptions. KOL Austin Li's abrupt livestreaming shutdown should also have a meaningful impact in June. We think 3Q could remain challenging, as demand may have been put forward to 6.18 shopping festival. However, we expect an inflection point from 2023 onward in profit margins. On 35x PE, our target price at JPY7,500 implies 37% upside to current price JPY5,492.

SHISHIDO ESG PERFORMANCE SEEMS MIXED AT FIRST GLANCE

Shiseido seems to be a mediocre ESG performer at first glance. It ranked below most of its peers on common ESG scores:

- **MSCI ESG Ratings:** It is rated BBB (see Exhibit 1), behind most of its peers. L'Oreal ranks highest with AAA; other peers such as Estee Lauder, Amore Pacific, LGHH, LVMH, and P&G are all ranked A.

- **Sustainalytics risk score:** It is below peers (see Exhibit 2).

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- **Bloomberg's ESG scoring system:** Shiseido ranks as the most well-rounded ESG performer among peers (see Exhibit 3).

We understand that ESG scoring systems can be convoluted and sometimes subjective. The diverse data collection processes, and different estimation models for unreported or inconsistent data can result in further divergence in ESG ratings and rankings. But in the case of Shiseido, these different rating systems seem to offer completely different conclusions on Shiseido's ESG performance compared to peers. We look into the underlying reasons for the variation in scores and believe the following attributes cause the divergence in ESG scores:

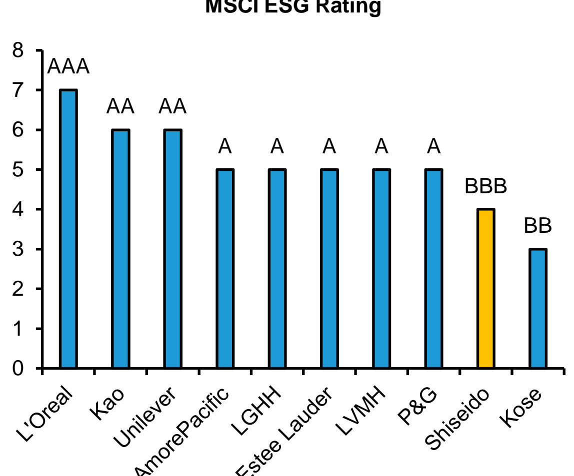
- **Scope divergence (what is measured):** The three systems have slightly different E, S, and G metrics. For example, Bloomberg lists "marketing & labeling" as a critical metric under Social scores, yet MSCI ESG does not specify "labeling" as a key metric.

- **Measurement divergence (how data is measured):** MSCI ESG Ratings not only looks at company disclosures but also at industry news and other third-party reviews; whereas Bloomberg ESG scores are only based on company-reported data, as it believes this is the most consistent.

- **Weight divergence (how important is each metric):** The weight of different metrics would also make ESG scores and ratings different, although the impact from weight would be small.

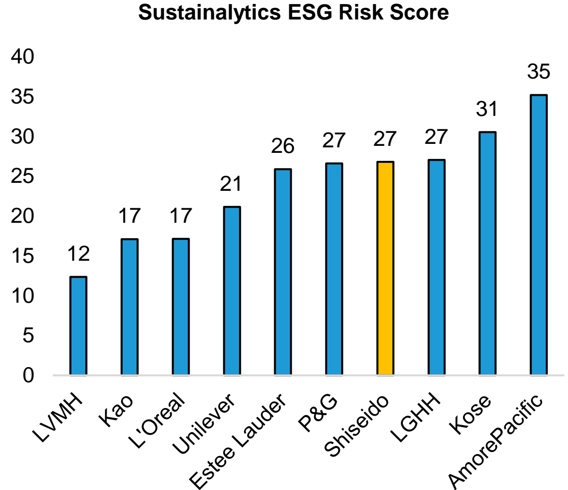
According to Florian Berg, Julian F. Kölbel, and Roberto Rigobon, measurement divergence is the main driver of rating divergence, contributing 56% of the divergence. Scope divergence is also important, contributing 38%.

EXHIBIT 1: **Shiseido ranked BBB under MSCI ESG Ratings, behind most of its peers**



Source: MSCI, Bloomberg, and Bernstein analysis

EXHIBIT 2: **Its Sustainalytics score also fell below peers**



Source: Sustainalytics, Bloomberg, and Bernstein analysis

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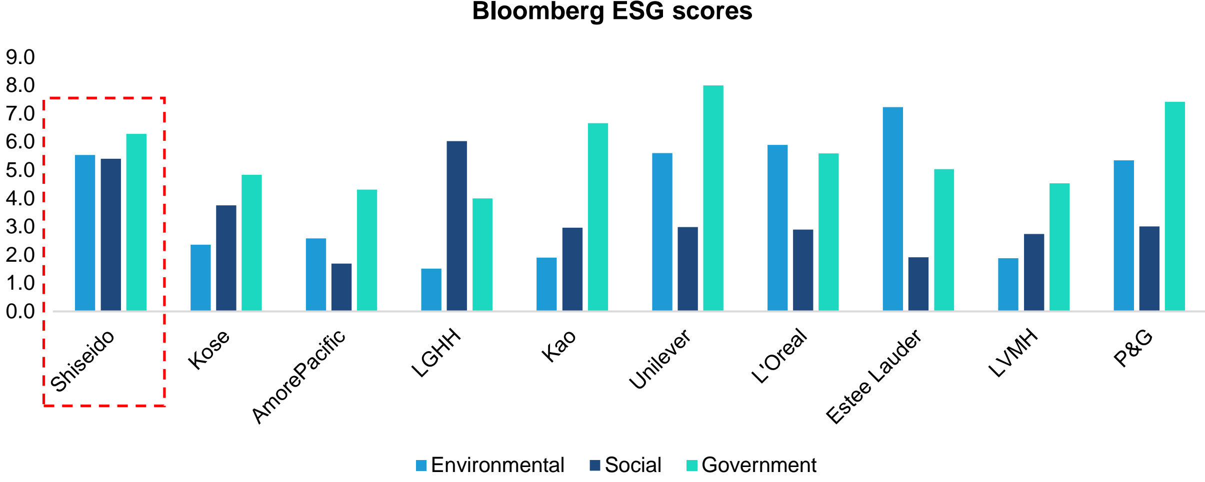
EXHIBIT 3: **Yet, Shiseido ranks as the most well-rounded ESG performer among peers on Bloomberg's ESG scoring system**



Source: Bloomberg and Bernstein analysis

AREAS OF DIVERGENT VIEWS AMONG RATING SYSTEMS

The three rating systems agree on:

- **Sourcing — a universal issue for the cosmetics industry:** Bloomberg gives Shiseido a 3 (out of 10) on "social supply chain management." Sustainalytics calls out its risks on "resource use," and MSCI ESG Ratings views Shiseido's "raw material sourcing" to be an ESG laggard. But sourcing seems to be a universal issue for the cosmetics industry. MSCI ESG rates raw material sourcing as "average" for both Estee Lauder and L'Oreal. We believe this is because:
  - **Cosmetics ingredients sourcing bears ESG risks:** Cosmetics often use ingredients derived from mining or agricultural commodities. Mined ingredients are often associated with forced labor issues. Some cosmetics supply chains also have a significant environmental footprint, as consumers desire natural ingredients, but the extraction of these natural ingredients could harm nature, e.g., deforestation and water pollution.
  - **An extensive and complex supply chain makes unknown risks high and supervision difficult:** Cosmetics companies do not do everything from scratch. They buy formulas and ingredients from ingredient labs and sometimes rely on OEM production. The long and complex supply chain makes it hard to find hidden ESG risks. Consumers continuously demand new products and formulations, and the challenge for cosmetics companies is to balance the necessary ESG with the speed of new product launches.
- **Shiseido performs well on carbon management:** Bloomberg rates Shiseido 6.6 on "energy management." MSCI ESG Ratings rates Shiseido "Average" on product carbon footprint and Sustainalytics does not flag carbon management as a key risk at Shiseido. We agree with this evaluation. In 2021, Shiseido committed to achieving carbon-neutral by 2026, and joined RE100, the global initiative that brings businesses to commit to shifting to 100% renewable electricity.

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The three rating systems have divergent views on the following attributes:

Product management: Bloomberg rewarded Shiseido's performance on production management and improved its scores of "product quality management" from 1.5 in 2017 to 6.5 (out of 10) in 2020. However, Sustainalytics calls out "product governance" as a key risk at Shiseido. This metric at Sustainalytics looks at how companies manage product quality and/or safety, including quality management systems, marketing practices, and post-sales responsibility.

We tend to agree more with Bloomberg; Shiseido is leading on product management. The company is actively rolling out new brands and ingredients that are sustainable. Shiseido also focuses on R&D, and product quality and safety.

- **Governance:** Sustainalytics calls out "corporate governance" as a key risk at Shiseido, Bloomberg lowers Shiseido's governance score marginally over 2017-20, yet MSCI ESG points to Shiseido's "corporate governance" and "corporate behaviour" as an ESG Leader. We tend to agree with Sustainalytics on this front. Mechanically, Shiseido appears to have good corporate governance; however, the frequent executive changes in recent years have brought about concerns regarding management quality and its impact on company performance.

In addition, we note that MSCI ESG Ratings has been rating Shiseido as BBB since 2017. Given the improvements the company has conducted on "Environmental" and "Social," we believe MSCI ESG Ratings is outdated. We have summarized Shiseido's ESG scores and our views in Exhibit 4.

EXHIBIT 4: **We view Shiseido as leading and improving at E and S, yet have some concerns on its governance**

		MSCI ESG Rating	Bloomberg	Sustainalytics	Our view	Comments
Environmental	Carbon management	Average	Leading	Not Key risks	Leading and improving	In 2021, Shiseido commits achieve carbon neutral by 2026, and joined RE100, the global initiative that brings businesses to committed to shifting to 100% renewable electricity in their business activities
	Water management	N.A	Leading	Not Key risks		In 2021, Shiseido commits to reduce water consumption by 40% by 2026
	Waste management	Laggard	Leading	Not Key risks		In 2021, Shiseido will send zero water to landfills by 2022
	Packaging & materials	Average	Leading	Key risks		Shiseido commits to achieve 100% sustainable packing by 2025
Social	Responsible sourcing	Laggard	Above Median	Key risks	Sourcing is a general ESG risk among all cosmetics companies, yet Shiseido is actively making improvements	In 2021, Shiseido assessed suppliers in Japan and Europe, considering the magnitude of risk and the importance of the supplier, and see supplier management an ongoing effort.
	Product quality management	Average	Leading	Key risks	Leading and improving	Rolling out new brands and ingredients that are sustainable; Shiseido also focuses on R&D and product quality and safety. Chinese consumers have the perception that Shiseido, or J-beauty is associated with high technology
Governance	Board structure	Leader	Above Median	Key risks	Raises concerns	See later sections
	Pay management		Lagging			

Source: Bloomberg, MSCI ESG Ratings, Sustainalytics, and Bernstein analysis

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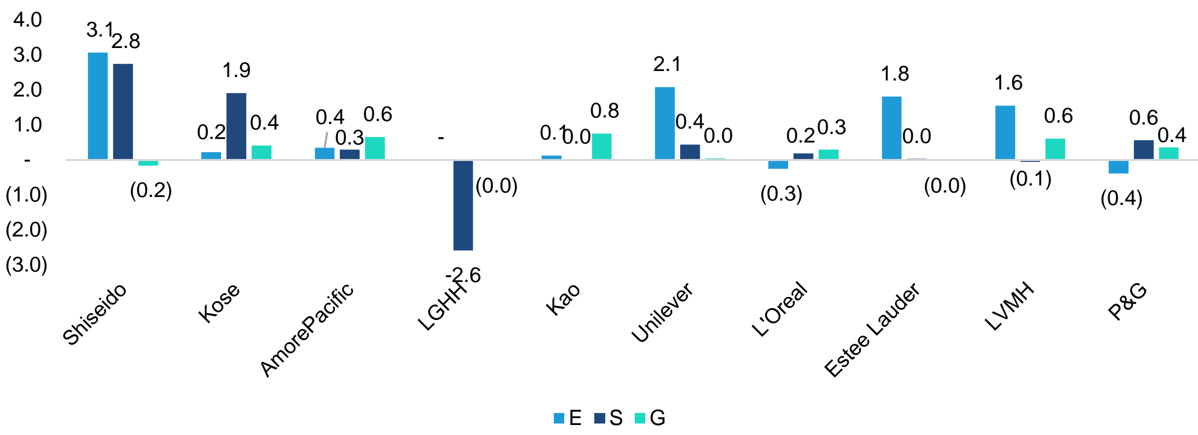
EXHIBIT 5: **Shiseido's Bloomberg ESG score improved significantly over the past few years...**



Source: Bloomberg and Bernstein analysis

EXHIBIT 6: **...mainly driven by supply chain management, resource management, and production management**

Bloomberg ESG Score composition	FY2017	FY2020
Environmental	**2.5**	**5.5**
Sustainable product	2.0	2.0
Environmental supply chain management	0.3	9.1
Water management	7.5	8.7
Energy management	3.1	6.6
Social	**2.7**	**5.4**
Product quality management	1.5	6.5
Social supply chain management	3.0	3.0
Labor & employment practices	6.6	6.6
Marketing & labeling	-	10.0
Governance	**6.5**	**6.3**
Board composition	5.4	5.6
Director roles	8.4	8.1
Diversity	3.6	5.2
Independence	2.0	1.7
Refreshment	9.1	8.7
Executive compensation	6.2	5.1
Incentive structure	7.9	5.1
Pay for Performance	4.8	4.6
Pay governance	6.0	6.4
Shareholder rights	9.3	8.7
Director voting	9.0	9.8
Shareholder policies	7.7	7.7

Source: Bloomberg and Bernstein analysis

EXHIBIT 7: **Risks that were flagged at Sustainalytics include governance, resource use, sourcing, and product management; we agree on governance, but not other aspects**

Top Material ESG Issues for Shiseido Co., Ltd.

Understand how exposed companies are to specific material ESG issues and how well companies are managing these issues.

Corporate Governance

Corporate Governance comprises six pillars: Board/Management Quality and Integrity; Board Structure; Ownership and Shareholder Rights; Remuneration; Audit...

Learn more

E&S Impact of Products and Services

E&S Impact of Products and Services refers to the management of environmental or social impacts of products or services, including: inherent characteristics of input...

Learn more

Resource Use

Resource Use focuses on how efficiently and effectively a company uses its raw material inputs (excluding energy and petroleum-based products) in production...

Learn more

Product Governance

Product Governance focuses on how companies manage their responsibilities vis-à-vis clients (quality and/or safety of their products and services). Emphasis is...

Learn more

Source: Sustainalytics

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BERNSTEIN'S VIEW

An active improver on E and S

As we dig deeper into the building blocks of each ESG qualifier, we see that regardless of its static status, Shiseido is making improvements on E and S (Environmental and Social). The improvements are also reflected in its Bloomberg ESG score changes (see Exhibit 5).

Sustainable products: In 2022, Shiseido announced the launch of a new prestige skincare brand "Ulé," which is developed on the "Conscious Beauty" philosophy, aimed at realizing a healthy beauty through inner and outer beauty approaches with nature-origin ingredients. The brand is responding to consumer trends and demands for products that are not only good for skin and wellness but also good for the environment. Besides efficacy and safety, consumers want information such as sources of the ingredients and packages, or the environmental impact before choosing products.

Packaging player Silgan Dispensing has worked with Shiseido on this new product line. Its mist sprayer incorporates a high percentage of post-consumer recycled (PCR) resin (63% for 100ml bottle pump, 72% for 20ml bottle) to support Shiseido's commitment to sustainable packaging and environmentally friendly materials.

Environmental supply chain management: Shiseido introduced sustainable sourcing policies in 2020, which helped improve its environmental supply chain management score. Shiseido revealed the medium-term aim for raw material procurement (palm oil and paper) in 2020, taking into account both the environment (such as forest protection) and human rights.

- **Paper:** In 2020, Shiseido encouraged the transition to environmentally friendly paper by producing a new base paper, which resulted in a 64% (weight) shift to sustainable paper. **Shiseido has set the goal to utilize 100% sustainable paper by 2023 for both secondary packaging (such as boxes) and product packaging.**

- **Palm oil:** Palm oil, while a widely used raw material in the cosmetics industry, is regarded as one of the primary drivers of rainforest degradation in Asia and is related to human rights concerns (e.g., labor abuses) in its producing regions, in addition to being linked to environmental issues such as forest protection and biodiversity. In 2020, Shiseido made notable progress by announcing the medium-term goal of producing 100% sustainable palm oil by 2026.

- **Supply assessment:** Shiseido expanded its supplier assessment program internationally and worked to remedy existing difficulties. Geographically, Shiseido expanded beyond Japan and EMEA to include the rest of the world in 2020; category-wise, it was also enlarged to encompass manufacturing materials, sales tools, and marketing materials. In addition, Shiseido engages with suppliers identified as high-risk and discusses improvement plans with them. Key performance indicators (KPIs) and targets are also reviewed as the number of suppliers grows.

Product quality: Shiseido is committed to developing products and services that are safe and meet high quality standards. The company's Global Innovation Center (Yokohama, Japan), which manages all regional centers, compiled a list of all ingredients used in its products to provide clarity from a sustainability perspective.

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Take sunscreen as an example; some components in UV protective products may have an adverse effect on marine ecosystems such as coral. In response to this, Shiseido has been developing sunscreen that protects skin without negatively impacting the environment. In 2020, Shiseido released a new sun care product in the US — Ultimate Sun Protector Lotion — which is **free from ingredients that pose a risk of coral bleaching**.

Energy management: Shiseido improved its energy management score from 3.11 in 2019 to 6.6 in 2020 (see Exhibit 7), and it continues to improve. In 2020, Shiseido announced plans to join RE100, the global initiative committed to enabling businesses to shift to 100% renewable electricity. Shiseido is committed to achieving carbon neutrality by 2026.

But G brings some concern

Shiseido has a strong traditional Japanese corporate culture, but the company also made efforts to adopt a more Western approach, e.g., decentralization and empowerment of local management teams. However, frequent management changes in recent years — particularly among non-Japanese executives and leadership — have raised investors' concerns regarding management quality. We think these concerns are valid. But given the changes coincided with shifts in company strategy, and it has been a key topic among investors, it is likely priced in. Both Bloomberg and Sustainalytics flagged these risks.

Key executive shifts in recent years include:

- **America:** Marc Rey, who joined Shiseido in 2015 as president and CEO of the Americas, resigned in August 2020. Rey led the Americas regional organization and managed global brands based in the US, including bareMinerals, NARS, and Laura Mercier. He was appointed chief growth officer in January 2019. Rey led the M&A efforts for Drunk Elephant and Laura Mercier (which was subsequently sold in 2021), the worldwide beauty license for Tory Burch, as well as technology companies MATCHCo and Giaran. In 2Q20, sales dropped by 62% in the Americas, **the biggest fall of all Shiseido markets**, largely due to Covid-19 social distancing measures, and the forced closure and bankruptcy filings of offline stores. Rey's departure coincided with Covid-19, and with the company's 2023 strategy discussed in our launch report (Shiseido: The China makeover... Initiating with Outperform). We believe it is partly driven by the company's long-term goal to focus on Asian markets and reduce its presence and importance in its loss-making Western markets. It is somewhat in line with company strategy. We believe the company questioned the M&A choices made during Rey's reign, given it sold Laura Mercier only five years after acquiring it.

- **Asia:** Jean-Phillippe Charrier, Shiseido's President and CEO Asia Pacific, left the company in December 2019. Charrier is a 29-year cosmetics veteran who has spent more than 12 years each at L'Oreal and Shiseido. In 2015, he was appointed President of Shiseido Asia-Pacific. **Shiseido moved its Asia-Pacific headquarters from Tokyo to Singapore in 2015.** In an interview, Charrier said he wanted to globalize the company and get closer to customers. He believed the company was very Japan-centric and managed everything from Japan. He believed there was a strong need to decentralize the organization and diversify human resources. He convinced the Japan headquarters and CEO that to expand in Asia the company needed to relocate to change. He proceeded to expand teams and recruited thousands of employees from multiple

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nationalities. It was a dramatic change. Although we believe the company recognizes the need to globalize its culture, we believe the shift was too quick for the 150-year company. Shiseido may not have been ready for such a drastic change at this hasty pace. Our understanding is that the company reverted to the way it operated before Charrier joined.

We believe CEO Masahiko Uotani hired non-Japanese executives to bring new energy and ideas into the organization and to inspire transformation and globalization. However, he did not anticipate the cultural differences and the impact these foreign leaders would have on the organization. Covid-19 did not help either; in a sense it made the company more domestically focused. We believe Uotani's realization was also reflected when formulating the company's 2023 strategy.

- **Japan:** Michael Coombs, who was the CFO at Coca-Cola Japan and Türkiye, joined Shiseido as the Group CFO in 2019, and retired soon after in December 2020. He was replaced by Takayuki Yokota (the Vice President of financial accounting back then), who joined Shiseido in November 2019. In Coombs' messages to investors in Shiseido's 2018 and 2019 annual reports, he emphasized value-adding growth (including M&A), leveraging the latest technology and industry thinking to optimize business structure and systems, and standardizing practices across Shiseido's global business. In 2019, Shiseido was able to realize record-highs in net sales, operating profit, and net profit. In 2020, Shiseido had a difficult year due to Covid-19 and pivoted its business priorities from growth to profitability. We believe Coombs' departure to be partly driven by the company's long-term goal to shift focus from growth to profitability. His successor, Takayuki Yokota, describes his mission as to "drive the execution of Win 2023 and enhance the company's profitability and cash generation." During Coombs's term, one key initiative by Shiseido was the Business Transformation team, which is driving the design and gradual implementation of a globally shared IT platform (FOCUS). This initiative was carried over as part of the company's Win 2023 strategy.

- **China:** Shiseido appointed a new management team in China in 2018 (Shiseido Reinforces China Region Headquarters System). Two of five personnel under Kentaro Fujiwara (President of Shiseido China) left the company in 2019-20. We do not see particular red flags, given the turnover rate at this level could be more frequent. Shiseido's China team has become more localized. Now in China, except for Kentaro Fujiwara, all key management positions are Chinese, and we believe the localized team is more suitable for the fast-changing China cosmetic market.

Gender equality: Shiseido's female workforce participation rate is high, yet the percentage of women in power is relatively lower when compared with L'Oreal. Shiseido is actively working to improve the ratio.

- **Shiseido:** More than 80% of the Shiseido Group workforce is female. The percentage of women in leadership positions across Shiseido's global organization is 58.3% and is 37.3% in Japan. As of April 2022, 46% of Shiseido directors and auditors are women. This rate is low compared to L'Oreal, but Shiseido aims to increase this to 50% by 2030 to fairly represent gender equality.

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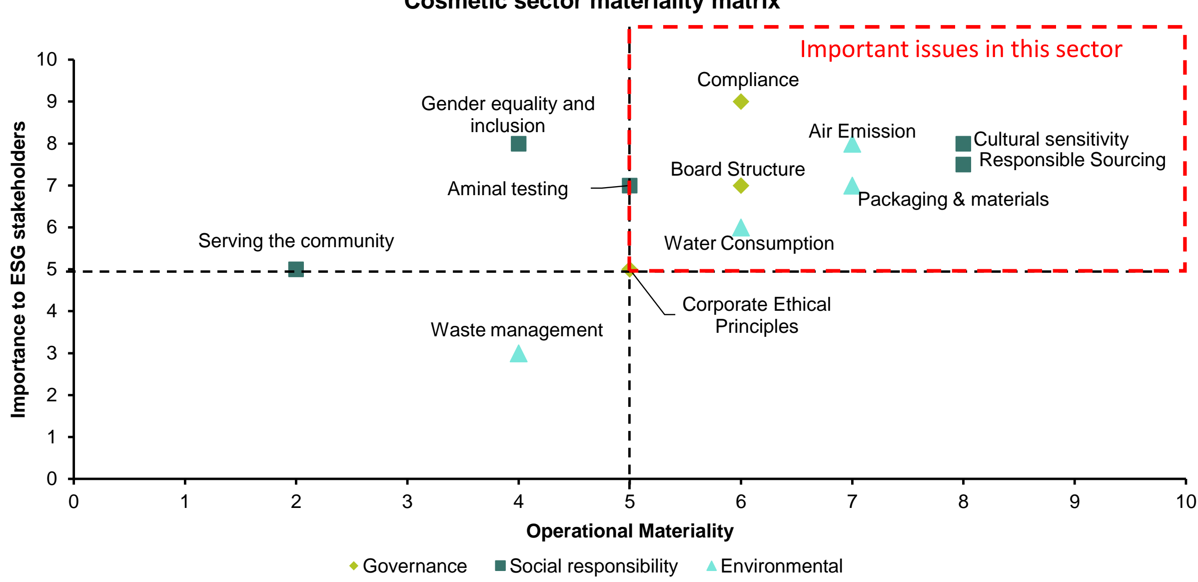
- **L'Oreal:** As of end-2020, 69% of total L'Oreal workforce is women. 58% of the members of the board of directors are women. 54% of positions of greater responsibility within the Group are women, and 59% of international brand directors are women.

RARELY DISCUSSED ISSUES

Bernstein Materiality Matrix: We have created a materiality map to highlight the degree of importance of ESG issues among cosmetics companies and isolated the few that are most important in this sector (see Exhibit 8).

EXHIBIT 8: **Cosmetic sector materiality matrix**



Source: Bernstein analysis

Two things that are important under Bernstein's ESG materiality are rarely addressed by third-party ESG rating agencies: **(1) Animal testing and (2) Cultural sensitivity**.

Animal testing: When selecting raw materials and ingredients, Shiseido strives to prioritize human safety, reduce environmental footprint, and carefully consider ethics. For example, in 2020, Shiseido released a new sun care product in the US — Ultimate Sun Protector Lotion — free from ingredients that pose a risk of coral bleaching. **Shiseido does not test its cosmetic products or ingredients on animals, but will do so when required by law.** Like most Western cosmetic companies, selling in mainland China requires mandatory animal testing for most imported cosmetics. Since June 2014, China has exempted the mandatory animal testing for domestic-made cosmetic products and starting from May 1, 2021, China also exempts imported cosmetics from animal testing for regular cosmetic products.

Cultural sensitivity: It can be detrimental for Western brands to operate in China without understanding local consumer sentiment toward nationalism and cultural identity. Not respecting cultural nuances of the Chinese view of political matters will make the brand a

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target for attacks. Shiseido is aware of this, after operating in China for 40+ years. Specifically, it has demonstrated its awareness by taking the following steps:

- **Resilient portfolio toward rising national pride:** "Buy-Chinese" (Guohuo) has been an undeniable trend in China's cosmetics sector. Millennials and Generation Z are C-beauty's biggest advocates because they identify with the brand's core values. These consumers want to connect with their own cultural heritage and are willing to view local brands as high quality, trendy, and desirable. We find this poses greater threat to competitor brands in the mass segment rather than the premium segment. While C-beauty has been taking share in the mass segment, the premium segment is still very much dominated by foreign brands.

- **Shiseido management's attitude toward the China market has been humble and respectful:** Uotani-san has always addressed the importance of the China market. In one of his interviews, he said that he could be a descendant of Japanese missions to Tang China (a mission that Japan sent to China to learn from Chinese culture and civilization in the 7th, 8th, and 9th centuries). Second, Shiseido's China market CEO Fujiwara Kentaro has worked in China since 2016. When he first came to China, he visited many distributors across the country to better understand the market. In 2020, he was awarded the Magnolia Memory Medal by the Shanghai government. This is an annual award given to foreigners who have made outstanding contributions to Shanghai's economic and social development. Third, all of China's management below Kentaro are local Chinese hires.

- **China and Japan are adjacent, and their long shared history helps the company to understand Chinese culture:** Shiseido's Chinese name "资生堂" originates from "I Ching," an ancient Chinese philosophy classic. In addition, Chinese consumers and Japanese consumers share similar aesthetic tastes when it comes to skincare and color cosmetics — Westerners tend to prefer a fierce and confident look, yet Asians prefer a fresh and more natural look. More specifically, Westerners would love to experiment with a new eye-catching style — dramatic smokey eyes, colorful eyeliners, etc. Eyes in Asian makeup looks are kept almost bare, with just a touch of natural eyeshadow along the upper lash line and the lower waterline. As a Japanese company, Shiseido understands beauty trends in China and its popular products in Japan translate well in the China market.

VALUATION METHODOLOGY

China consumer

We value our companies in China household appliances and China cosmetics, including Shiseido (ticker: 4911.JP and SSDOY), based on target next-12-month (NTM) PE multiples. We select the target NTM PE based on company profit growth and return on invested capital (ROIC). We believe that stocks with higher long-term growth rates and higher ROIC deserve higher multiples and so we apply incremental company premiums or discounts to individual stocks to reflect their outlook for growth and returns. We use a blended forward EPS estimates of FY22 and FY23 to set our one-year target prices.

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Shiseido Co Ltd

We value Shiseido on target NTM PE multiples. We select the target NTM PE based on company profit growth and return on invested capital (ROIC). We believe that stocks with higher long-term growth rates and higher ROIC deserve higher multiples and so we apply incremental company premiums or discounts to individual stocks to reflect their outlook for growth and returns.

We rate Shiseido (ticker: 4911.JP and SSDOY) Outperform with a target price of JPY7,500 and US$54.75, respectively. They closed at JPY5,492 and US$40.59 and are benchmarked against the MXJP (closed at 1,198.46) and SPX (closed at 4,140.06), respectively. Closing prices as of August 8, 2022.

RISKS

China consumer

China cosmetics

The China cosmetics sector is a consumer sector with one of the highest levels of opening-up to foreign brands. The competition between domestic and foreign players could become increasingly intense if more international brands enter China. The fast development of cosmetics e-commerce gives Chinese brands opportunities to grow revenue significantly, but also pushes up the cost of online marketing, platform capex, and consumer subsidies, thereby possibly reducing overall sector profitability. China's overall cosmetics market growth also depends on disposable income growth and per capita spending on cosmetics, both of which are sensitive to changes in macroeconomic conditions.

Shiseido Co Ltd

Downside risks to our rating and target price include: Japan market recovery being slower than expected; Shiseido's organic growth in China and Travel Retail market falling short of expectations; political and other macro factors that could negatively impact Shiseido's growth forecast in the China market; and the company not executing toward margin improvement and falling short of the market's low expectations.

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MOUTAI: IMPROVING GOVERNANCE, STRATEGY, EXECUTION GROWING SUSTAINED, SUPERIOR EARNINGS

HIGHLIGHTS

- Moutai's core Fetien brand is the most intrinsically differentiated CPG brand in China, and it dominates the Prestige Baijiu segment with a 93% share. The brand's strong equity, combined with perennial excess demand, drives best-in-class pricing power and earnings resilience. Management is improving company governance, commercial strategy, and execution capability, and this underpins the superior growth outlook (21% CAGR over 2021-24).

- We view Moutai's consistent enhancement of its commercial strategy via Direct Sales, SKU mix, and iMoutai as evidence of a significant increase in alignment with minority shareholder interests. This builds upon the company's termination of corrupt distributors in 2018-19, tightening BOD approval limits for donations and related party transactions in 2021, improved reporting in 2022, and, in July 2022, the Moutai Group's divestment of other Baijiu interests, removing a potential conflict of interests. While Moutai's Direct Sales strategy is relatively well understood by investors, its SKU mix strategy and the potential for the new iMoutai DTC platform to drive mix are not currently priced into the stock.

- Our FY23 EPS estimates are 6% above consensus, and we expect to see positive earnings revisions following Moutai's 1H FY22 results. Given the company's Quality credentials (78% EBIT margin, 30% ROIC, and estimated 21% three-year EPS CAGR), and improving governance, valuation is fair at 36x NTM PE average and compares favorably vs. international spirits companies.

INVESTMENT IMPLICATIONS

We have rolled forward our EPS for valuation purposes. We rate Moutai Outperform with a ¥2,500 target price and ~31% estimated upside (model link: 600519.CH).

IMPROVING GOVERNANCE, STRATEGY AND EXECUTION

Moutai's core Fetien brand is the most intrinsically differentiated CPG brand in China (+80% vs. category average; see Exhibit 1) and dominates the Prestige Baijiu segment with a 93% share (see Exhibit 2). The brand's strong equity, combined with perennial excess demand, drives best-in-class pricing power; management is consistently improving company governance, commercial strategy, and execution capability. These factors

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underpin both a superior value growth outlook and a high degree of earnings resilience in the face of Covid-19 restrictions and China macro headwinds.

Moutai management has been accelerating commercial capability development in 2021-22, with its channel mix strategies (Direct Sales and iMoutai) and SKU mix strategies driving both margins and a significant increase in alignment with minority shareholder interests. However, its improving governance trend predates this. In 2018, the company terminated 654 Fetien distributors with potentially vested interests; management has been progressively limiting the scope of transactions with Moutai Group (parent company), it tightened approval limits for donations and related party transactions in 2021 and in July 2022, the Moutai Group divested its other Baijiu interests removing potential conflicts of interest.

Moutai started driving positive channel mix via Direct Sales in early 2019. The average ex-factory price of Fetien in the "real" direct channel is ~44-55% higher than the distributor channel and Direct Sales now accounts for 34% of Fetien revenues, up from 6% in 2018. In FY21, the impact of Moutai's pivot to Direct Sales was compounded by increasingly positive SKU mix which drove ~22% of FY21 Direct Sales channel growth by our estimates.

More recently, the launch of its new iMoutai DTC channel in March 2022 marks a further positive and margin-accretive milestone, with a 2x higher average ex-factory price compared to standard Fetien sold via distributors.

Our FY23 EPS estimates are 6% above consensus, driven primarily by our view on SKU mix, and we are yet to reflect material upside from the iMoutai platform. We expect Moutai to deliver sustained superior earnings growth of 22% in FY22, 21% in FY23, and 20% in FY24 (see Exhibit 3), and we expect to see further positive revisions to Moutai earnings consensus.

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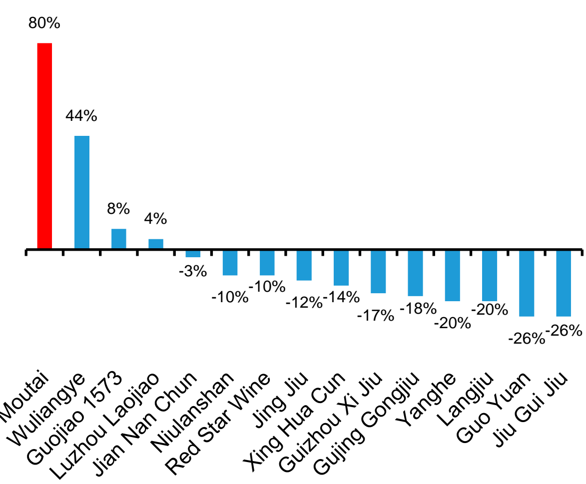
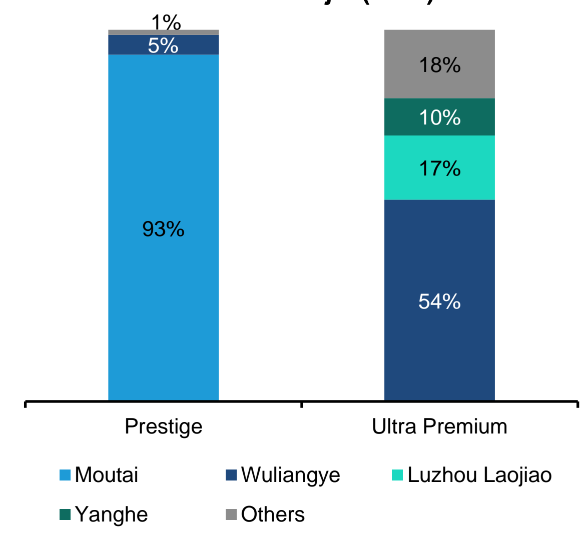
EXHIBIT 1: **Moutai is by far the most differentiated brand in Baijiu and this drives superior pricing power**



Source: Kantar and Bernstein analysis

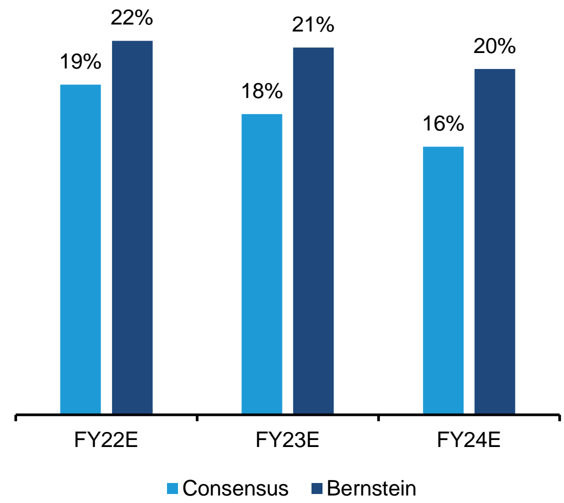
EXHIBIT 2: **Moutai dominates the Prestige segment with a a 93% volume share**



Note: Volume basis

Source: International Wine & Spirits Records (IWSR) and Bernstein analysis

EXHIBIT 3: **We see material upside to consensus earnings growth expectations as a result of channel and SKU mix**



Source: Bloomberg, and Bernstein estimates and analysis

Historically, Moutai's governance has been relatively weak, but we see evidence of ongoing improvement.

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In July 2022, Moutai Group announced the transfer of its 82% stake in Xijiu company to the Guizhou local SASAC, removing a potential conflict of interest for DING Xiongjun who chairs both the Group and ListCo boards (the Group now only owns 18% of Xijiu).

In March 2022, the company launched the iMoutai DTC channel, which is wholly owned and operated by the ListCo, and we see scope for the channel to become very material for Moutai. In 2Q22, the iMoutai sales run rate equated to 20% of 2Q21 reported revenues, and we are confident that at least one-third of these sales are wholly incremental vs. last year, given the Precious Fetien and Moutai 1935 brands were newly launched in December 2021. The remainder of sales are driven by Year of The Zodiac products, and while it is currently unclear to what extent these are incremental to overall volumes (most positive scenario) vs. representing positive channel mix, we expect the sales to have a positive P&L impact.

The launch of iMoutai marks a material improvement in governance compared to the company's previous online foray in 2014-19 when the e-moutai platform was owned and run by the Moutai Group and was plagued by corruption until the Chairman and General Manager were convicted in 2019 and the company was shut down (see Exhibit 4 to Exhibit 7).

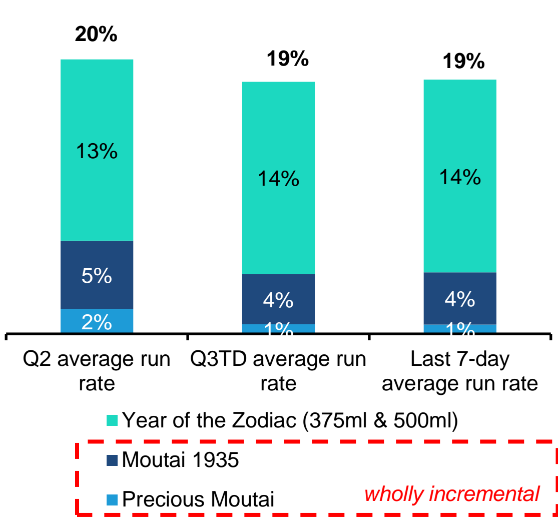
EXHIBIT 4: **After service fees, iMoutai ASP is still ~2x higher than standard Fetien ex-factory price**

Fetien Ex-factory Price vs iMoutai (RMB per 500ml)

	Fetien via Distributor	Fetien via Direct Sales	Avg iMoutai price
RMB per 500ml	969	1,399	1,818

Source: Company reports, channel check, and Bernstein estimates and analysis

EXHIBIT 5: **iMoutai run rate revenues equate to ~20% of 2Q21 reported revenues**



Source: iMoutai and Bernstein analysis

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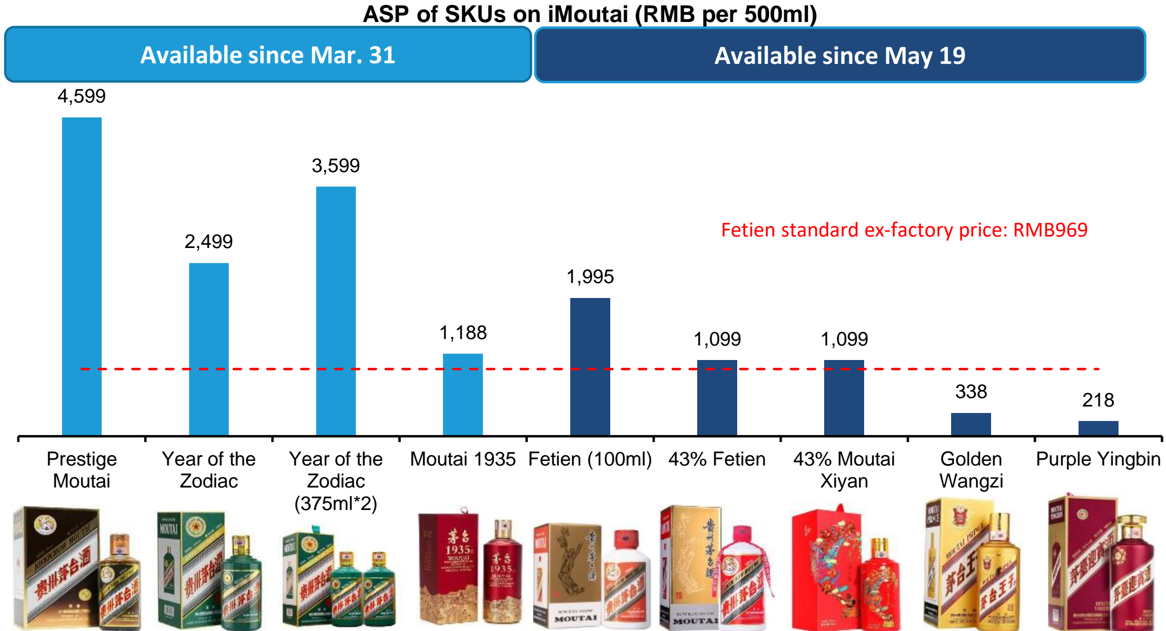
EXHIBIT 6: **Majority of SKUs available on iMoutai are highly mix accretive**



Note: All SKUs are 53% abv in 500ml bottles, otherwise indicated

Source: iMoutai and Bernstein analysis

In 2022, Moutai published its annual report in English for the first time, along with its inaugural ESG report. Moutai is the only Baijiu company to publish English versions of these reports at the same time as Chinese versions, whereas there tends to be a gap of weeks or months for other competitors. In advance of its FY21 results and again in advance of its 1Q22 results, the company announced prelims and, following both sets of results, management held online investor events answering questions in person via webcast. Other Baijiu companies tend to conduct these online events via text responses to questions.

In 2021, the company tightened up its Board of Directors approval limits relating to the approval of related-party transactions, donations, and the use of collateral, which now require shareholder approval when in excess of RMB150Mn or over 1% of full-year net profit. The change in procedures came in response to shareholder outcry over a ~RMB830Mn of donations to local governments for infrastructure construction, which were announced in October 2020 and subsequently revoked in February 2021.

Since late 2018, Moutai has been consistently pivoting toward Direct Sales, a strategy, which is now a key value driver for the company but which got off to a rough start. The company earns a 44-55% higher ex-factory price on sales of Fetien 500ml bottles via "Real" Direct Sales made to large online and supermarket customers. In FY21, this was augmented by ~22% SKU mix as the company increased quotas of Zodiac and other non-standard products sold via the channel. Including SKU mix, we estimate the average ex-factory price of Direct Sales is 159% higher than the standard Fetien distributor price.

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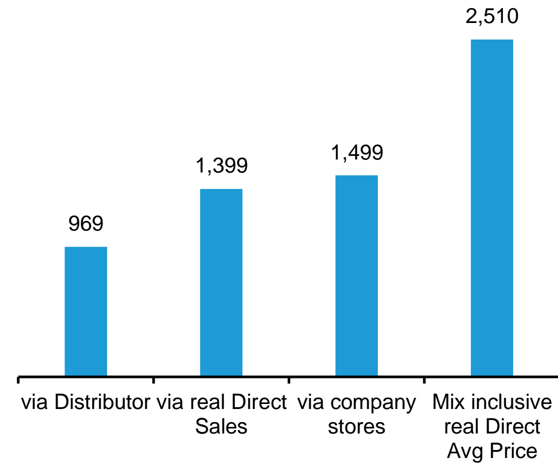
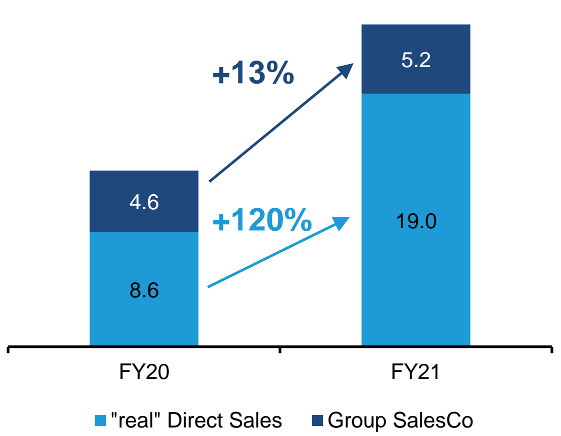
The rocky start to Direct Sales came in May 2019, when the Moutai Group (56% owner of ListCo) set up a wholly-owned Fetien sales company with the intention of internalizing a portion of the excess channel margins. While this did not directly harm minority shareholders, the change provided asymmetric benefits to the majority shareholder and represented a major missed opportunity for minority shareholders. Sales to the Group Sales Company are reported as part of Moutai's Direct Sales Revenue but, unlike "real" Direct Sales, these sales do not command an ex-factory price premium. Group Direct Sales have consistently been growing materially slower than "real" Direct Sales (see Exhibit 8). Recently, there has been talk of closing down the Group Sales Company entirely, which would be positive for minority shareholders as it would free up volume quotas to be redeployed via mix-enhancing channels.

EXHIBIT 7: **"Real" Direct Sales have a hefty price premium to the standard ex-factory price to distributors**



Source: Company reports, and Bernstein estimates and analysis

EXHIBIT 8: **"Real" Direct Sales materially outgrew Group Sales in FY21**



Source: Company reports and Bernstein analysis

In 2018, Moutai made a major push to reduce vested interests in its distribution channel, and began the pivot to Direct Sales in earnest in 2019. Approximately 650 Fetien distributors were terminated for obtaining distribution rights through corruption, being related to Moutai employees and/or government officials in Guizhou, and for reselling large amounts of Fetien for personal benefit.

In our view, this distributor purge drove a material change in the balance of power between the ListCo and distributors by significantly reducing (if not eradicating) vested interests (see Exhibit 9 and Exhibit 10).

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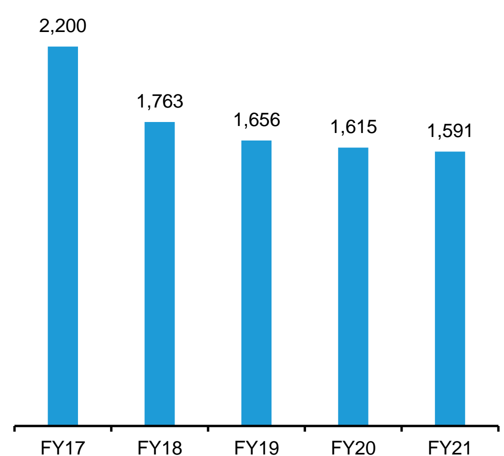
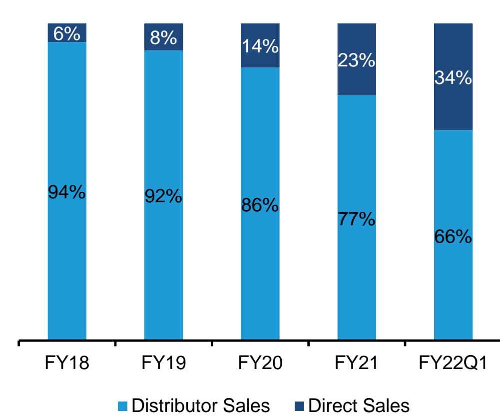
EXHIBIT 9: **Moutai purged over 600 corrupt distributors in 2019**



Source: Company reports and Bernstein analysis

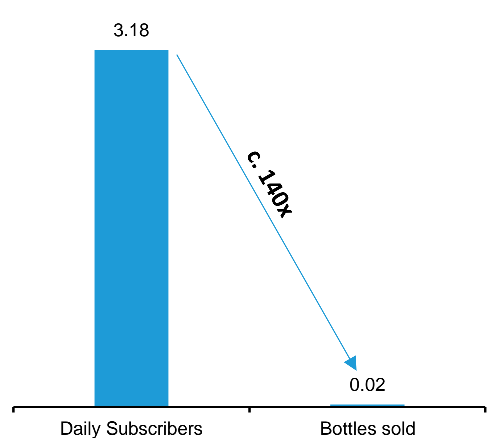
EXHIBIT 10: **Moutai's pivot to Direct Sales has been consistent and sustained**



Source: Company reports and Bernstein analysis

Fetien sales have been largely unaffected by Covid-19 restrictions, given demand materially exceeds supply. This can be seen clearly in both the resilience of the consumer price that is consistently in the region of RMB2,800, 1.9x higher than the recommended retail price of RMB1,499 per bottle (see Exhibit 12). Excess demand is also apparent on the iMoutai platform where the company announced 9 million DAU since launch. According to our daily iMoutai tracking, on average, 3 million individuals subscribe each day for a chance to purchase an average of 23k, bottles made available for sale (see Exhibit 11).

EXHIBIT 11: **Every day on iMoutai >3 million shoppers compete for ~23k bottles**



Source: iMoutai and Bernstein analysis

EXHIBIT 12: **Fetien retail price is consistently ~1.9x the recommended retail price, reflecting excess demand**

Source: Company reports and Bernstein analysis

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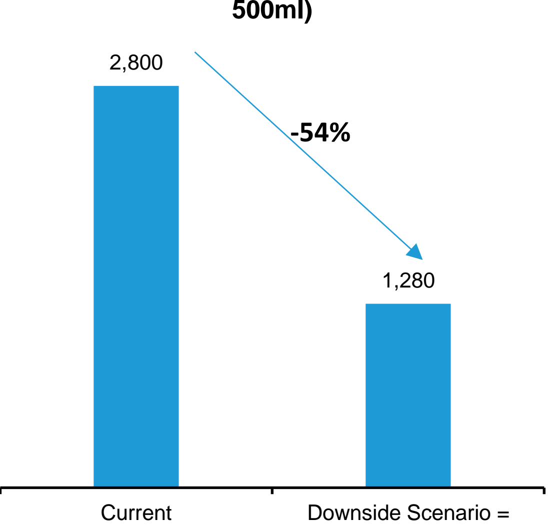
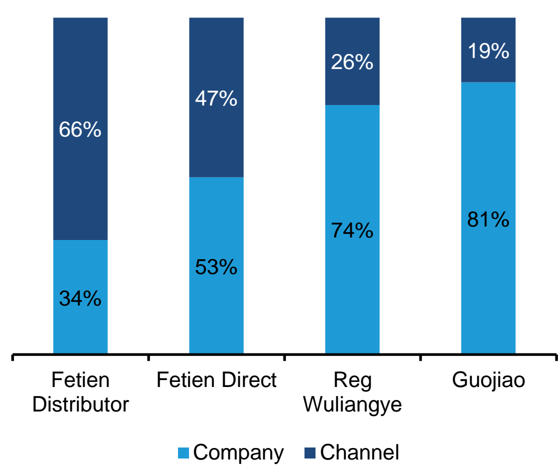
Moutai also offers strong downside protection in the scenario that China macro goes south. Distributor sales account for 73% of Moutai's LTM revenues and the company currently only earns a 34% share of the value chain on these sales (see Exhibit 14). If end-demand weakens materially, consumer price of Fetien can fall by 54% before the channel share of the value chain will be in line with Wuliangye's value chain share (see Exhibit 13). Until this point, we see little risk that Moutai feels the need to consider cutting price/providing rebates or moderating sell-in volumes. Moutai offers the best downside protection across our China coverage, in our view.

EXHIBIT 13: **Fetien's consumer price could drop by ~55% before distributors earn the same margin as Wuliangye**



Source: Company reports, channel check, and Bernstein estimates and analysis

EXHIBIT 14: **Moutai's low share of the value chain offers significant downside protection for earnings**



Source: Company reports, channel check, and Bernstein estimates and analysis

Given the company's 78% EBIT margin, 30% ROIC, and our estimated 21% three-year EPS CAGR, valuation is fair at 36x NTM PE, which is 0.5x standard deviations above the five-year average (see Exhibit 16) and compares favorably vs. international spirits companies, given Moutai's superior margins, ROIC, and EPS growth outlook (see Exhibit 15, Exhibit 17, and Exhibit 18).

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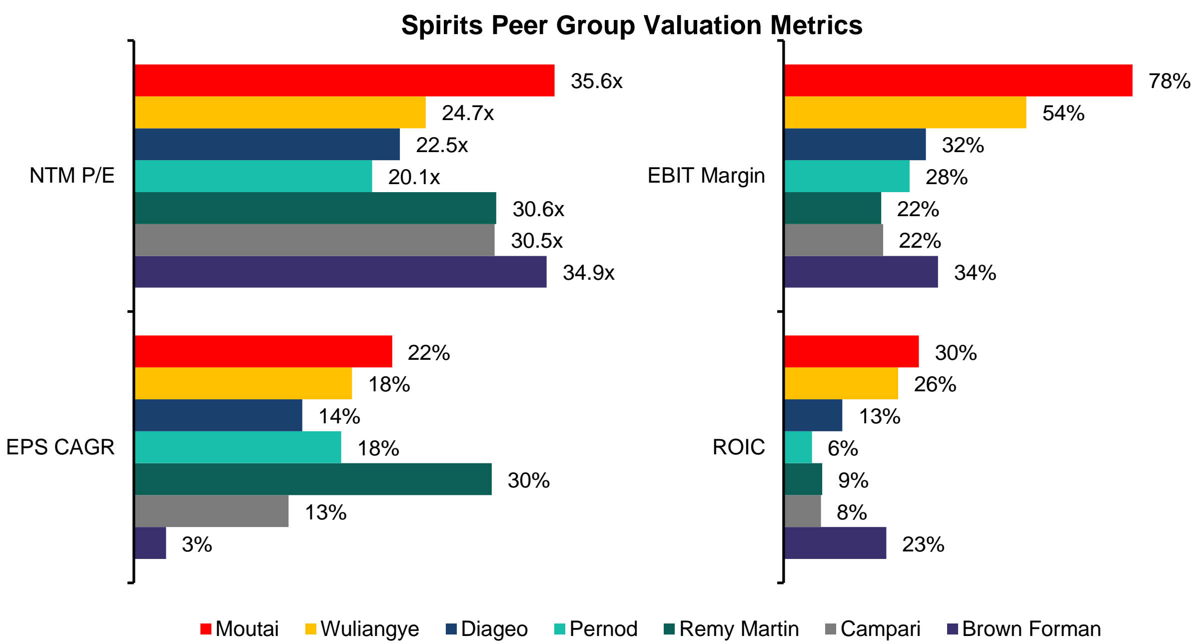
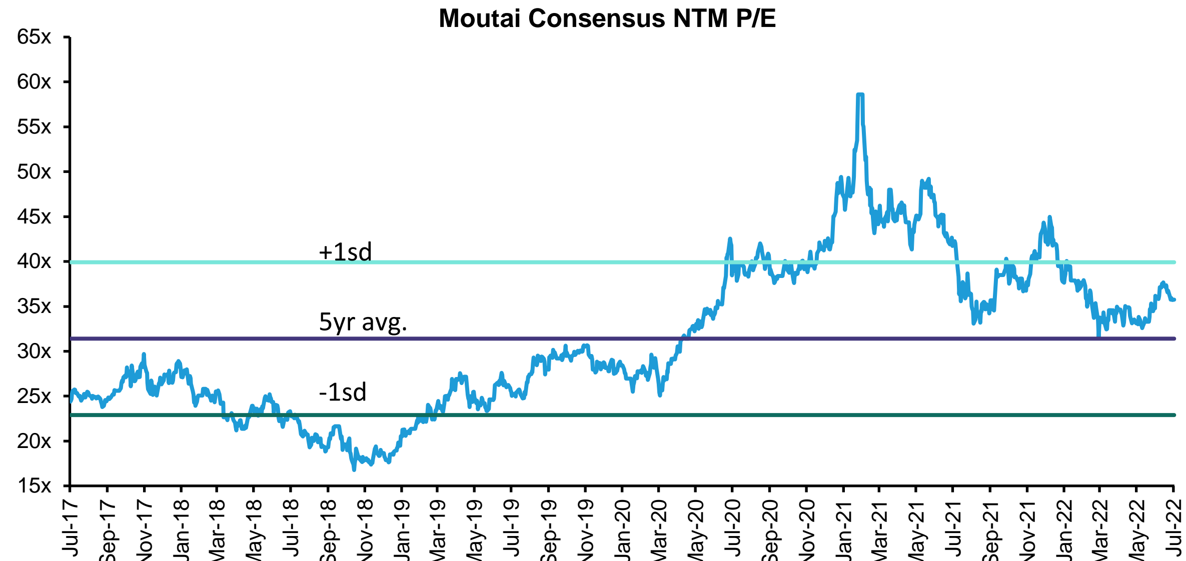
EXHIBIT 15: **Moutai is trading at a 10% premium to global spirits in terms of NTM PE**



Source: Bloomberg and Bernstein analysis

EXHIBIT 16: **Moutai is trading at 0.5x standard deviations above its five-year average forward PE**



Source: Bloomberg and Bernstein analysis

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EXHIBIT 17: **Moutai's first English annual results**

ANNUAL REPORT 2021

Stock Code: 600519 Stock Abbr.: Kweichow Moutai

KWEICHOW MOUTAI CO., LTD.

ANNUAL REPORT 2021

1 / 156

Note: Full report at http://static.sse.com.cn/disclosure/listedinfo/announcement/c/new/2022-03-31/600519_20220331_16.pdf

Source: Company reports

EXHIBIT 18: **Moutai's first English ESG report**

Note: Full report at http://static.sse.com.cn/disclosure/listedinfo/announcement/c/new/2022-03-31/600519_20220331_18_k7BUGOFq.pdf

Source: Company reports

VALUATION METHODOLOGY

Asia-Pacific beverages

We value beverage stocks based on relative price-to-earnings (PE) multiples combined with conservative discounted cash flow (DCF) analysis. We believe the two most important drivers of PE are profit growth and return on invested capital (ROIC). We measure stock performance relative to other consumer staples companies around the region using the MSCI Asia Consumer Staples index or the ASX Consumer Staples index as our benchmark. We apply sector premiums/discounts based on the outlook for growth and margins. We believe stocks with higher long-term growth rates and higher ROIC should carry the highest multiples, and so we apply incremental company premiums or discounts to individual stocks to reflect their outlook for growth and returns. We use forward EPS estimates beginning a year from now to set our target prices. Given the importance of retail investors to the A-share markets, A-share listed stocks may be relatively more volatile than their H-share listed counterparts. Upside or downside risks could come from Chinese government policies as China looks to control the rate of growth of its economy in general, or capital markets in particular. These policies may manifest in market rules that affect A- and H-shares differently. We maintain dual A- and H-share ratings when stocks have both categories of shares listed on the relevant exchange. We derive our A-share target prices

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by translating the H-share target prices from HKD to RMB. As a general matter, we then assign our rating for A-share stocks by comparing this translated price to the current A-share price. Thus, there will be situations where the H-share and A-share ratings on a related security may differ from one another.

Kweichow Moutai Co Ltd

We rate Kweichow Moutai Co Ltd (ticker: 600519.CH) Outperform with a target price of ¥2,500.00. It closed at ¥1,911.53 and is benchmarked against the MXAPJ that closed at 524.70. Closing prices as of August 8, 2022.

RISKS

Asia-Pacific beverages

Downside risks to our views on these stocks include: Economic shock to the economy that could materially impair consumption expenditure leading to lower-than-expected consumption of alcoholic beverages. Material increase in excise tax could raise consumer prices resulting in lower consumption and/or lower producer profits. State Owned Enterprise corporate governance related issues (i.e., abuse of cash balance) could destroy minority shareholders' value. Upside risks to our views on these stocks include: Potential M&A transactions in beer markets could lead to further market consolidation and bring meaningful synergies. Managements' focus shifts from market share gain/top line growth to profit maximization would improve companies' profitability. The decrease in raw material prices could lead to margin expansion and/or volume increase as products become more affordable to consumers.

Kweichow Moutai Co Ltd

Potential downside risks to our rating and target price for Moutai: China macro risk — a shock to the economy results in lower growth of the high-income population and negatively impacts Ultra Premium Baijiu consumption demand; and material excess — Fetien channel inventories accumulate and are released to the market simultaneously, causing a material and unpredictable decline in Moutai's sell in volumes.

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NESTLÉ: HELPING COCOA FARMERS ACHIEVE A LIVING INCOME

HIGHLIGHTS

- **Cocoa is a good product for brand manufacturers**, with steady volume growth and strong retail pricing to consumers. However, **it is a terrible product for cocoa farmers**. In terms of pricing, they have seen real price declines for 60 years and their **share of the value chain shrink from 7.5% (six decades ago) to 4.3% today**. Cocoa production is very efficient at finding poor people with no better options. More than half of Ivory Coast cocoa growers live below the poverty line, and 90% earn less than a living income.

- Earning a living income is a human right. Not earning it materially increases the risk of child labor. The occurrence of child labor and the breaching of human rights linked to the production of your favorite chocolate brand poses a major brand risk. **And the problem can be fixed: pay more to farmers.** We already pay European farmers what politicians think is fair. And it wouldn't cost the earth: 4p on a typical £0.99 chocolate bar solves the issue. Brand companies have an opportunity to lead and strengthen their brands here.

- **Nestlé launched its income accelerator program**, which seeks, over time, to pay all its cocoa farmers a living income. It is a major step forward in tackling the many challenges involved in doing so. We like it, but urge the company to go even faster and be even bolder. The company is remarkably open and engaging on the topic, and provides its view on the issues we raise in this chapter.

INVESTMENT IMPLICATIONS

We rate Nestlé Market-Perform with a price target of CHF120. Nestlé is an exceptionally high-quality company and, as this chapter demonstrates, is resilient during recessions owing to its strong pricing power. That pricing power derives from moving into premium segments with stronger brands. The income accelerator program is an important step for future-proofing confectionery and shifting it toward premium confectionery. Our current Market-Perform rating reflects the short-term uncertainties of the macro landscape in the next 12 months. But for long-term investors seeking resilience with strong and improving ESG performance, Nestlé should be a core holding.

INTRODUCTION

Living incomes and child labor are among the many ESG challenges that companies face. The fact that they are still so prominently on the list of challenges, for some of our companies, is a bit of a puzzle. They seem to pose a material brand risk and a path to resolving them does seem to exist.

- **Material brand risk.** There is a huge emotive gap between the delicious pleasure of chocolate melting in your mouth and giving you some short-term pleasure, and the fact

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that the product is to some extent based on farmers and their children working in poverty. It seems only a matter of time before a successful meme reminds consumers globally about this enormous gap. Brands are based on strong consumer emotions and such a consumer campaign could do enormous damage to those brands.

- **A path to start fixing this problem seems available today, contrary to many other ESG problems.** The complexity and cost of dealing with climate change, biodiversity, and packaging is hard to get our head around. A lot of new technology, time, collaboration, and lots of money will be needed to deal with those. **But dealing with living income in the cocoa supply chain is affordable and needs no new technologies.** Fixing living income in the cocoa supply chain is not "easy," but it seems to us orders of magnitude easier and cheaper than climate change, biodiversity, and packaging waste.

We will start by outlining some of the labor issues in the cocoa supply chain and then discuss the recent progress Nestlé is making in this domain. Overall, the progress that Nestlé is making in this area is remarkable, but we think the company (and its peers) can do more and go faster. During our engagement with the company, Nestlé provided its views on challenges. We integrate Nestlé's feedback in this chapter. The level of transparency and engagement on this topic is commendably high.

COCOA FARMERS ARE NOT ADEQUATELY COMPENSATED FOR THEIR WORK

Facts about cocoa

- **2.5% volume growth p.a.** For 60 years, cocoa consumption ("grindings" in Exhibit 1) has grown at a ~2.5% CAGR, with remarkably little variation over time.

- **Supply and demand** are unsurprisingly **balanced** over the medium term (typically 3+ years) but, as Exhibit 2 shows, production is materially more volatile, due to seasonal yield fluctuations (linked to climate, disease, etc.).

- **Zero price growth for 40 years.** Exhibit 3 and Exhibit 1 show the longer-term price evolution (Cocoa futures on ICE). For the last four decades, USD-based cocoa prices have remained broadly flat. The last 10 years have actually seen a decline in USD cocoa prices. There was only one period with a step-up in USD cocoa prices — during the 1970s.

- **Negative real pricing for last 60 years.** As per Exhibit 4 and Exhibit 1, over the last 40 to 60 years, **cocoa real prices have steadily declined between -0.3% and -1.8% p.a.**, depending on when you start. You would have to pick your time periods carefully to find a period with positive real pricing growth.

- **Losing share in the value chain.** Exhibit 1 compares US CPI growth for confectionery products with Cocoa PPI prices and broader personal consumption CPI. Using long-term data, we see that confectionery retail price increases have exceeded cocoa price increases by 100bps to 150bps every year. **In other words, the share of value captured by cocoa beans has gradually shrunk in the value of confectionery.**

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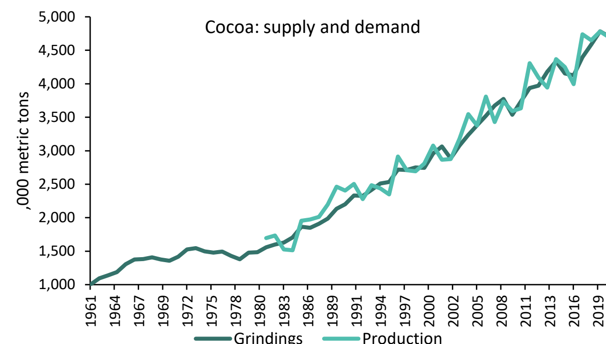
EXHIBIT 1: **Cocoa stats at a glance**

CAGR %	5 Yr	10 Yr	20 Yr	30 Yr	40 Yr	50 Yr	60 Yr
Supply and demand							
Production	2.0%	2.6%	2.1%	2.3%	2.6%		
Grindings	2.5%	2.3%	2.3%	2.6%	2.9%	2.5%	2.7%
Pricing							
Price Cocoa	-3.4%	-1.9%	5.8%	2.6%	0.7%	2.6%	2.9%
Real Price Cocoa	-5.0%	-3.5%	4.0%	0.7%	-1.8%	-0.7%	-0.3%
CPI personal cons.	1.7%	1.6%	1.7%	1.9%	2.5%	3.3%	3.2%
CPI Confectionary	1.0%	1.2%	1.9%	2.0%	2.1%	4.1%	3.9%
Conf. CPI - Cocoa	4.5%	3.1%	-3.9%	-0.6%	1.5%	1.5%	1.0%

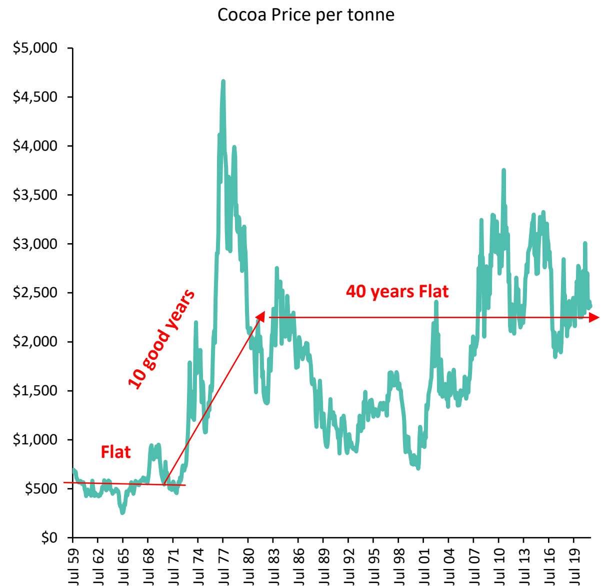
Source: Bloomberg and Bernstein analysis

EXHIBIT 2: **Cocoa supply and demand**



Source: Bloomberg and Bernstein analysis

EXHIBIT 3: **40 years of flat cocoa prices**



Source: Bloomberg and Bernstein analysis

EXHIBIT 4: **60 years of declining real cocoa prices**

Source: Bloomberg and Bernstein analysis

- **4.3% of the value chain.** Exhibit 5 estimates that the farmers capture only 4.3% of the value chain for the six biggest chocolate manufacturers. If we scale that up to the entire market, that becomes a US$7Bn cocoa farmer income on a US$150Bn confectionery market (a slightly higher 5% value chain capture as this will include lower-priced brands and Private Label). We will use the 4.3% value chain capture in this chapter, as that relates closer to companies we describe in this chapter.

- **Ever weaker farmers: from 7.5% to 4.3% of the value chain.** If we combine the last two data points (i.e., 100bps higher retail CPI than cocoa price growth) and the current level of 4.3% value chain, that implies that six decades ago, **cocoa farmers were able to capture 7.5% of the value chain and that has gradually eroded to 4.3% of the value chain today.**

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- **Flat yields.** The limited data there is on cocoa farming yields suggest no noticeable improvement in global production yields. Some farming programs achieve limited productivity gains, but that is more than offset by the many new low-yield farmers that have joined the sector over time. Farmers combine flat volumes with declining real prices.

The conclusion so far is that **cocoa is a good place for brand manufacturers**, with steady volume growth and strong retail pricing to consumers. However, it is **a terrible place for cocoa farmers**. In terms of pricing, they have seen negative real price declines for over half a century and their **share of the value chain has shrunk from 7.5% to 4.3% today**. That decline in real pricing combines with flat volumes (per farmer) to cause 60 years of declining real incomes for cocoa farmers.

EXHIBIT 5: **Farmers capture 4.3% of the confectionary value chain**

	Volume	Price					Value			
Reference year: 2019	cocoa volume bought	Cocoa price	Premium	Price Paid	% to Farmers	Price to Farmer	Farmer	Govt Source	Brand manufacturer	Retail and Food service
Units	*1,000 metric tons*	*per metric ton*	*per metric ton*	*per metric ton*		*per metric ton*	*$ million*	*$ million*	*$ million*	*$ million*
Nestle	414	$2,304	$100	$2,404	65%	$1,563	$647	$995	$10,888	$13,550
Mondelez	400	$2,304	$0	$2,304	65%	$1,498	$599	$922	$9,576	$12,364
Mars	400	$2,304	$0	$2,304	65%	$1,498	$599	$922	$11,365	$14,674
Hersheys	200	$2,304	$0	$2,304	65%	$1,498	$300	$461	$5,883	$7,596
Lindt	148	$2,304	$250	$2,554	65%	$1,660	$246	$378	$4,565	$6,402
Ferrero	135	$2,304	$50	$2,354	65%	$1,530	$207	$318	$3,959	$5,112
Top-6 chocolate companies	1,697	$2,304	$50	$2,354		$1,530	$2,597	$3,995	$46,237	$59,698
% Value Chain							**4.3%**	**6.7%**	**77.5%**	**100%**
Incremental Value								2.3%	70.8%	22.5%

Source: Company reports and Bernstein analysis

Poverty and cocoa production

There seems to be broad agreement that cocoa production happens among the poorest countries. Ivory Coast and Ghana produce two-thirds of all cocoa globally, but 80%+ of the cheaper bulk cocoa, as other countries generate the more premium cocoa varieties.

The average West African grower farms no more than 3.5ha and supports six to eight family members, according to the World Cocoa Foundation industry group. More than half of Ivory Coast growers live below the poverty line. The poverty line is the minimum level of income deemed adequate in a particular country. There is a global absolute minimum, of US$1.90 per day. Hence more than half of cocoa farmers earn below US$1.90 per day and live in poverty. The poverty line is well below a "living income," which we will discuss further in this chapter. On that more generous "living income measure," 90% of cocoa farmers fall below that level.

One other way of looking at this question of poverty is to pose the question: Who are the people who keep joining the ranks of small-scale cocoa farmers? Production keeps going up and yields are not improving, so more cocoa-capacity is being added all the time. Our analysis shows that the *highest growth in cocoa-production is in those countries with limited or zero real-GDP growth in the last 15 years*. Countries that have been able to increase their real GDP per capita (by at least US$1,000) have seen either flat or declining cocoa production. In other words, cocoa production is the option of choice when the country has

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no options to put its population at work in higher labor productivity industries and there is ample tropical forest available to chop down.

Those are the conditions of the places where cocoa production has been steadily growing at 2.5% p.a. for the last half century. Cocoa production is very efficient at finding poor people with no better options.

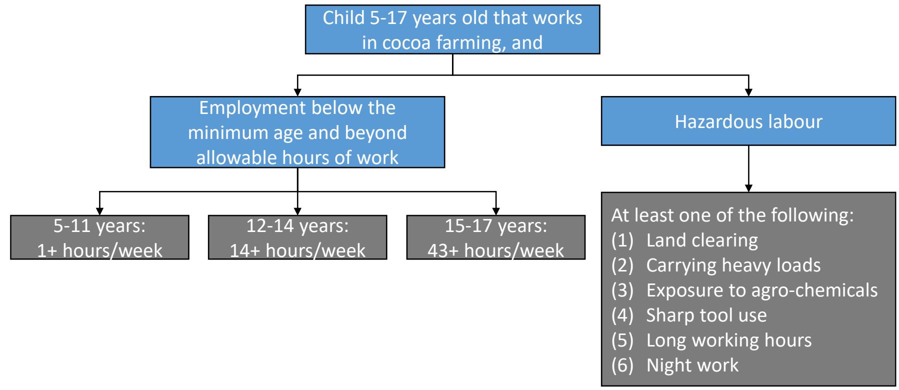
POVERTY-BASED COMMODITY NATURALLY LEADS TO HIGH INCIDENCE OF CHILD LABOR

As we have seen, cocoa farming is undertaken by those who have no better options. In most cases, it merely provides a slightly lessened state of poverty in comparison to the alternatives available. Cocoa farmers are therefore doing all they can to survive and when people are faced with severe poverty, the risk of child labor increases.

In order to measure and understand the extent of the problem of child labor in cocoa production, it is necessary to define exactly what is meant by child labor. The diagram in Exhibit 6 shows the definition of child labor used in a World Cocoa Foundation report, and is consistent with the definitions used in Ivory Coast and Ghana (countries where statistics exist for the incidence of child labor in cocoa production). Defining child labor therefore comes down to: (1) doing hazardous work; and (2) working for too many hours: 43+ weekly hours for children between ages of 15 and 17, 14+ weekly hours for 12 to 14 year olds, and 1+ hour per week for 5 to 11 year olds.

The definition, therefore, does allow for some degree of work by children under the age of 18, as long as the work is not hazardous or exceeds certain prescribed time thresholds.

EXHIBIT 6: **Common definition of child labor**



Source: World Cocoa Foundation

Living income is a human right

Living incomes are linked to human rights. As per the Universal Declaration of Human Rights, Article 25:

"Everyone has the right to a standard of living adequate for the health and well-being of himself and his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control."

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Therefore, ensuring that farmers are paid materially more than what they currently earn would deal with a current breach of human rights. Ensuring farmers earn a living income is not just about dealing with child labor for our companies, but also deals with another important problem in their supply chain — the violation of human rights of people providing the core ingredient for one of our pleasant indulgences.

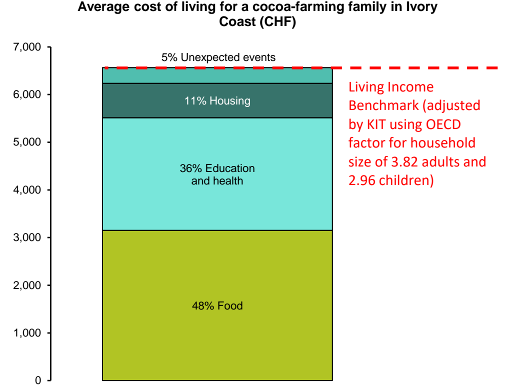
How high is the living income?

The main components of living income (see Exhibit 7) are: (1) cost of food; (2) cost of education, health, transport, and clothing; (3) cost of housing; and (4) cost of unexpected events (accidents, adverse events like drought, wildfire, etc.).

Using the example calculation provided by Nestlé in its recent report, that would lead to a living income of CHF6,564 p.a. or US$7,000 p.a. in the Ivory Coast. The estimated level of farmer income today, for Nestlé Cocoa Plan Farmers is CHF2,973 (US$3,267), less than 50% of the living income level. That level of income is made up of: (1) net income from farming cocoa; (2) premiums paid by organizations, in Nestlé's case the Rainforest Alliance cocoa; and (3) diversified income: farmers grow other vegetables/fruit or have livestock, which generates further income.

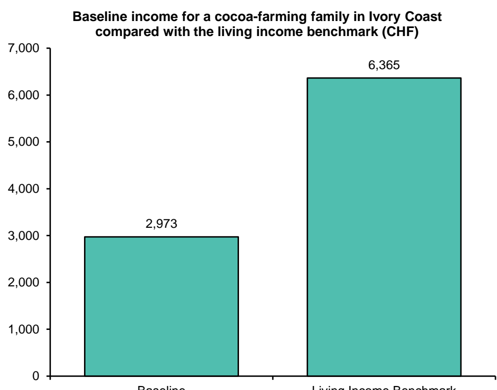
The average Nestlé farmer is probably better off than the **average cocoa farmer and we estimate the average cocoa farmer makes about one-third of the living income today**. There is a huge gap between their current income and what we should pay farmers, if we follow the principles of Human Rights (see Exhibit 8).

EXHIBIT 7: **Breakdown of the Living Income Benchmark for cocoa-growing family in Ivory Coast**



Source: Nestlé, KIT, and Bernstein analysis

EXHIBIT 8: **A typical cocoa-farming family's average income currently falls far short of this**



Source: Nestlé, KIT, and Bernstein analysis

What would it cost to get a living income?

Using the data discussed earlier (cocoa being 4.3% of the value chain for large confectionery companies) and the fact that Nestlé farmers are currently earning about half the living income, implies that a 4.3% price increase on the Nestlé end-product would be sufficient to deal with poverty and its associated effects, assuming a method can be found to get that money directly to the farmers rather than the sticky hands along the supply chain all taking their share. Is that affordable?

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- **3% cut to Nestlé's operating profit:** If the manufacturer pays, it would mean a reduction of 40% of Nestlé's confectionery EBIT margins (from 16% to about 10%) or CHF500Mn p.a., or 3% of the company's group underlying operating profit. Clearly not a minor cost, but not something that would totally change the future of the company. Importantly, as a good marketer, it should allow the company to build a stronger brand, which allows it to share the cost with consumers.

- **One-off jump of 4p in a bar of chocolate:** If consumers were to pay the full bill, it would be an extra 4p on a KitKat Chunky Milk Chocolate Bar Multipack 40G, 4 Pack (retailing for £0.99 at Tesco), or a 4% price hike on their usual confectionery consumption.

- **Consumer price jump much smaller than what they face today.** In the UK, CPI in May was +7.9%, while confectionery CPI was only 5.2%. If consumers were to pay for one year the same amount of price inflation on chocolate this year as they do across the rest of grocery, that would be enough for farmer incomes to get to living income level.

- Or more likely, both brands and consumers would end up paying, making the costs look relatively manageable, compared to the challenge of dealing with climate change or avoiding packaging waste.

None of this seems an unsurmountable problem to the industry. We are fully aware that finding a way to pay that extra income to farmers without distorting the rest of the economic landscape is not easy. There are political and technical problems to overcome, and there will be plenty of unintended consequences that will require further adjustments. Whatever managerial issues there are to get that 4p per bar from the consumer to the farmer seems a much smaller challenge than getting to zero emissions or getting to a circular economy.

Nestlé's feedback on our views — Part 1

Our view, described earlier in this chapter, can be summarized as: "simply pay more." We don't claim that is easy, but we think it can be done and is affordable for consumers and the company. Here is Nestlé's feedback:

Bernstein view 1: Increased pricing is the answer

Nestlé's view: "A conditional incentive approach focused on boosting productivity and improving income (vs. simply paying a higher price) is more feasible and less likely to trigger or exacerbate: (1) an increase in production that would disproportionately benefit larger (volume) farms; (2) periodic oversupply that would increase instability in farmer income levels; and (3) expansion of production leading to deforestation. We want to delink incentives from volume, specifically to ensure smallholders benefit more."

Bernstein view 2: A 3% cut to Nestlé's operating margin would cover the cost of delivering a living income for cocoa farmers

Nestlé's view: "Although the goal of the income accelerator program is to find a sustainable, and effective way of raising farmer incomes, broader systemic change is needed to address the living income challenge. This mission can only be achieved if all stakeholders contribute. Government intervention is needed to address the root causes of poverty and child labor.

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There is progress on this front, as broad recognition that raising price on its own (i.e., via the Living Income Differential payment) will not deliver a living income for all farmers. This has translated into a new Economic Pact for Sustainable Cocoa initiated by the Ghanaian and Ivorian governments.

Nestlé is a signatory of the pact and as such we have committed to:

- Work collectively to develop a joint framework of action towards an Economic Pact for Sustainable Cocoa, through which farmers' income is a determining factor of sustainability;
- Develop proposals for short-, mid- and long-term actions to achieve a lasting mechanism to deliver living income for farmers;
- Support efforts to jointly develop an accountability and monitoring mechanism that would build transparency to ensure a level playing field for all participants; and
- Jointly explore financial resources needed to support the transition to sustainable cocoa."

PROGRESS IS BEING MADE…BUT WE WANT TO SEE MORE

Beyond the small companies (e.g., Tony's Chocolonely), companies are starting to act. Unilever made a commitment to pay living wages/income and living income to its entire supply chain by 2030 (including such farmers as the ones we discuss in this chapter). Nestlé very recently announced a method of top-up payments that help get farmers closer to the living income level. This chapter will focus on the details of this Nestlé program and the progress it is making.

Nestlé income accelerator

At present, Nestlé pays the cost of cocoa (market prices), it pays the normal premiums (e.g., Rainforest Alliance), and it pays the LID (Living Income Differential, set up by Ghana and Ivory Coast to help boost farmers' incomes). It also provides many other elements of farmer support through a detailed cocoa farmer support program (which we won't discuss at any great detail in this chapter).

Nestlé has decided to boost farmer income through a set of top-up payments, based on farmers achieving different objectives:

- School enrolment: CHF100 p.a. gets paid if the children on the farm aged 6 to 16 years are enrolled and attending school. Paid to the spouse/partner of the farmer.
- Good agricultural practices (productivity): CHF100 p.a. gets paid if farmers used certain methods of improving productivity, e.g., the right amount of tree pruning at the right time of year. This also involves training of farmers, to make sure they know the best practices for optimizing productivity. Paid to the farmer.
- Agroforestry activities: CHF100 is paid for improving resilience of the farm. That can take the shape of planting shade trees (forest or fruit trees) and ensuring cocoa farming is done in a manner that protects the wider ecosystem. We think over time this could involve using the right type or right amount of fertilizers. Paid to the farmer.

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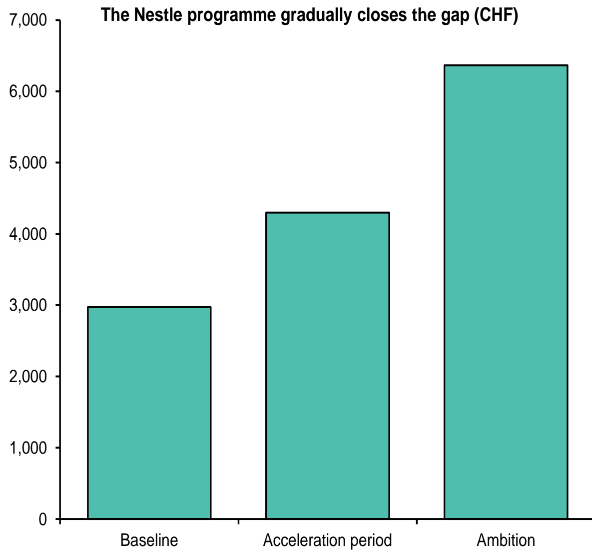
- Diversified incomes: CHF100 is paid if families diversify their incomes by growing additional crops or raise livestock. Paid to the spouse or the farmer.
- Bonus incentive: CHF100 is paid if a farmer achieves all four of those targets and is paid to the spouse and the farmer.

Incentives are paid 50:50 to the farmer and their spouse. Two of the incentives are paid to the spouse, two to the farmer, and the final is shared. During the first two years of this new program, farmers can make CHF500 additional income p.a. After that the maximum amount drops to CHF250 p.a. and the program assumes increased productivity or diversified income compensates for that drop.

Advantages of this payment system

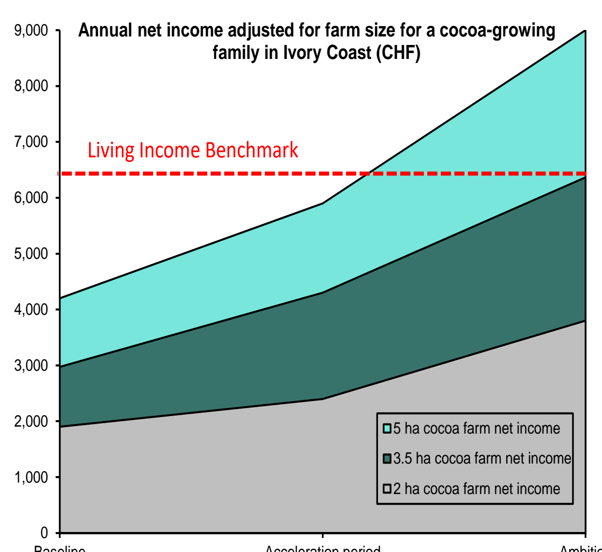
The advantages of such a payment system are that the extra money goes directly to the participating farmers and (tries to) avoid getting stuck in the hands of middlemen. It will be complex to administer and requires the brand to know exactly which co-ops or farmers generate the cocoa for their production (not straightforward in countries where the government manages distribution and sale of the product). This system also allows Nestlé to make progress on other parts of its ESG objectives: protecting biodiversity, protecting the rainforest, empowering women, regenerative farming, etc.

EXHIBIT 9: **One-third of the gap to a living income is closed after two years**



Source: Nestlé, KIT, and Bernstein analysis

EXHIBIT 10: **Program does not raise the incomes of smaller farms sufficiently to reach the living wage**



Source: Nestlé, KIT, and Bernstein analysis

What will it achieve in terms of living incomes?

As per Exhibit 9, the program does not get the farmers to a living wage, but after two years, closes about one-third of the gap to a living wage (called Acceleration period in Exhibit 9). Ongoing productivity savings and income diversification then raise that income to a living wage. There is no reference as to how long the time period would be to achieve that

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ambition. If we look at Exhibit 10, we can see that for smaller farms, those income improvements would still not be enough to get the farmers to a living income.

Program a big step forward...but doesn't go far enough

We applaud Nestlé and others like Unilever who are making material progress toward a living income. However, it does not go far enough in our view.

Our key objection is that it makes Human Rights conditional. The biggest moral flaw to many of these programs is that all the pressure is on the farmer. The farmer who is already living life in very difficult conditions has to: (1) change his ways of working, (2) improve his productivity, and (3) do many extra activities...and if he does all that, for several years in a row...then the human right of a living income kicks in! It puts all the onus of delivering difficult change on the weakest element in the chain. And, if that weak element in the chain doesn't perform sufficiently, the company could potentially say: "you see, you failed."

Making a human right conditional on so much change, over so many years, with the onus to deliver on the weakest element, seems wrong to us. Fair treatment and payment of employees in the developed world isn't so conditional; why should this be so different?

Clearly, the program is a vast step forward compared to what almost everybody else in the industry is doing. We are happy Nestlé is making this step forward. Hopefully, it raises the profile of the issue and at some point consumers or politicians step into the debate and demand even greater and faster action. Going further and faster toward a living income would enable companies such as Nestlé to make this a bigger element of their brands. If they aimed for a 100% living wage very soon, then that allows a communication and a brand to be built. Claiming to consumers that the product has gotten 50% closer to achieving human rights isn't a particularly strong message. Going further faster enables it to become part of the brand proposition, in turn improving price elasticities, allowing it to share the cost of this investment with consumers.

Nestlé's feedback on our views — Part 2

Bernstein view 3: The program puts all the pressure on the farmer to change

Nestlé's view*:* "Cocoa farmers will need to adopt more sustainable agricultural practices because fundamentally, this is the only way that they can feasibly earn a living income via cocoa production. We are incentivizing improvements that will enable cocoa farmers to be more successful.

The income accelerator program comes with a budget of CHF1.3Bn to be spent over the next nine years. That investment will be split between conditional incentives and support programs such as training for spouses to generate alternative incomes and upskilling, equipping, and subsidizing pruning teams. Pruning boosts productivity, enhances drought and disease resistance (fewer branches mean less water, reduced pest and disease transmission) and leads to higher-yielding trees. This practice is often neglected through a lack of awareness or labor to do it. These pruning teams will provide farmers with a low-cost service and/or training."

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Bernstein view 4: Going further and faster toward a living income would enable companies like Nestlé…to make a living income a part of the brand proposition, in turn improving price elasticities, allowing them to share the cost of this investment with the consumer

Nestlé's view: "This proposition may not necessarily resonate with all consumer segments, particularly for those who see chocolate as an affordable indulgence. This is highly relevant in emerging markets."

Bernstein view 5: A full living income would be a great brand attribute of a repositioned premium confectionery division

Nestlé's view: "We need to separate the objectives of the income accelerator from any effort to drive premiumization. The income accelerator is not a marketing campaign, it's an impact initiative. The rationale behind the income accelerator is to develop a smarter, more sustainable way to help cocoa farmers close the gap to living income, not to sell more chocolate per se."

Additional points by Nestlé on the issue of a living income/child labor

Nestlé's view: "In terms of addressing the root causes of child labor, Nestlé is focused on action, and reporting progress**. In contrast to some of our peers, we walk the talk.** The Income accelerator is based on two years of piloting work, with independent development experts such as the KIT Tropical Institute and IDH Sustainable Trade Initiative. We know the accelerator can deliver on income growth because we have tested it in the real world, not on a demo plot.

Farming households participating in the program are not bound to the Nestlé Cocoa plan, they are not our farmers, they are members of co-ops. Co-ops are free to change supplier relationships on an annual basis, and can sell to anyone they want. They tend to stay loyal, given that they want to access other sustainability premiums.

Sustainability will be an important element of many of our brand propositions, and **will support differentiation and the premiumization of many of our confectionery brands, including KitKat.** That said sustainability needs to be done in a smart way that creates value for all stakeholders, not just those consumers that can afford it."

WHY THIS ESG IMPROVER MAKES SENSE IN AN INFLATIONARY OR RECESSIONARY ENVIRONMENT

For investors looking for stocks that have strengthening ESG credentials, and provide resilience against inflation and recessions, we think companies like Nestlé, with exposure to (premium) confectionery are a good match.

Real pricing power

As we argued in a note on pricing power (Global Consumer Goods: Cost Inflation - Who can pass it on and who will get squeezed? A global framework), Nestlé is one of the few companies operating in categories with pricing power ahead of inflation. Our analysis is based on the measured pricing power of the categories the companies operate in (rather than the pricing power of the individual brands). Therefore, our conclusions on Lindt show that premium chocolate has some of the highest pricing power in the consumer industry.

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The ESG improvements that Nestlé is making in its confectionery business are exactly in this area with high pricing power.

Resilient for recessions

Confectionery has a very low sensitivity to economic shocks with a beta of 0.2. Come good times or bad times, chocolate is so affordable that consumers keep treating themselves to a small indulgence. Private Label presence is also relatively low, particularly in the more premium price segment, making the probability of down trading very low. For investors looking for a safe place during recessions and inflationary periods, with a track record of ESG improvements, Nestlé provides an interesting opportunity.

VALUATION METHODOLOGY

We value Nestlé SA in two steps. We use EV/EBITDA multiples as our preferred way of valuing the companies. We first value the sector in aggregate, looking at current sales growth and profitability of the sector, 10-year bond yields, and current earnings growth vs. the MSCI Europe Sector. The companies are then valued on "relative EV/EBITDA vs. the sector." Relative EV/EBITDA multiples are based on each company's long-term sales growth, short-term sales growth, current 10-year bond yields with each company's individual sensitivity to bond yields, and earnings growth. We apply those valuation multiples against our next 12 months forecast of EBITDA and the 12 months beyond that, to derive our price targets.

The sector trades at a premium to the market today, which in our view is justified by superior prospects. Compared to the market, the group promises: (1) higher ROIC; (2) high cash conversion leading to reliable income stream; (3) steady growth, keeping close track of global GDP growth; (4) inflation protection as the sector is typically able to pass on pricing similar to global CPI; and (5) resilience in times of economic downturns as the sector has a very low sales beta to economic growth.

We rate Nestlé (ticker: NESN.SW) Market-Perform with a target price of CHF120. It closed at CHF115.50 and is benchmarked against the MSDLE15 that closed at 1745.03. Closing prices as of August 08, 2022.

RISKS

Downside risks to our rating (or price target) include: (1) the company making acquisitions at expensive valuation and disposals at cheap valuations; (2) M&A integration issues; (3) failure to return excess cash to shareholders (e.g., failure to complete CHF20Bn buyback program, unless due to major M&A); and (4) execution problems in global rollout of Starbucks license.

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CONSTELLATION: WHAT'S THE BLUE SKY SCENARIO FROM BETTER CORPORATE GOVERNANCE?

HIGHLIGHTS

- **Weak capital allocation track record is holding back valuation.** Canopy Growth, Ballast Point, and the Mexicali brewery all contribute to Stub STZ trading at 17.4x NTM+1 PE, well below its historical pre-Canopy multiple and consumer staples peers.

- **Better corporate governance could be just around the corner, but at a price.** The Sands family's proposal would see its voting power reduce from ~60% to ~16% in exchange for a ~US$1.5Bn cash payout. This makes economic sense for Class A investors; the potential for a rerating to 20x NTM+1 PE would likely still put Class A investors in the green. But the high cash payout has left a bitter taste in investors' mouths, and it remains to be seen if this gets approved.

- **What would the blue sky scenario be for Constellation from better corporate governance?** In the short term, we would see a multiple rerating. A 20x NTM+1 PE would give Stub STZ a US$270/share value. A 22x NTM+1 PE, more in line with staples peers at similar earnings growth, would imply a value of US$300/share. In the long term, it could provide Constellation a path to break from its Catch-22 bind: it needs to invest beyond Mexican beer to avoid the inevitable generational shifts in consumer preferences, but cannot due to the market's mistrust. Phase 1 is regaining market trust (e.g., Bill Newlands became CEO, potential Sand's family proposal passing, potentially having a non-family chairman?). Phase 2 is carrying out small-to-medium bolt-on acquisitions in alcohol once trust has been re-established.

INVESTMENT IMPLICATIONS

We rate STZ Outperform, target price US$270. We like Constellation's strong category growth leverage, with 85% of profits derived from a beer portfolio comprised entirely of Mexican imports. We believe Modelo can continue to generate high-single-digit volume growth, first by increasing consumption in the core Hispanic base and second by expanding to new non-Hispanic consumers. Our conviction is strengthened by our Bernstein Proprietary Consumer survey, which shows that despite being 40% larger than Corona, Modelo is a significantly underpenetrated brand. Pacifico offers growth upside for the future. However, we acknowledge management's patchy capital allocation track record, including Ballast Point, Mexicali, and Canopy Growth (not covered). While these are now sunk costs, the reports of a potential deal may keep Constellation range bound until trust in management is built again. We believe that the market's heavy discount on stub STZ is undeserved (i.e., stripping out the market value of Canopy). Even if one ascribes no value to Canopy and assumes future capital misallocation, we believe the stock still looks too cheap.

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WEAK CAPITAL ALLOCATION TRACK RECORD HOLDING VALUATION BACK

Aside from the acquisition of the remaining stake of Crown Imports, Constellation has a poor track record of delivering shareholder value from large-scale acquisitions. This includes investing in both Ballast Point and Canopy Growth (not covered) at stretched valuations and failing to secure federal government backing for the Mexicali brewery. This had held the valuation of the core Constellation business back.

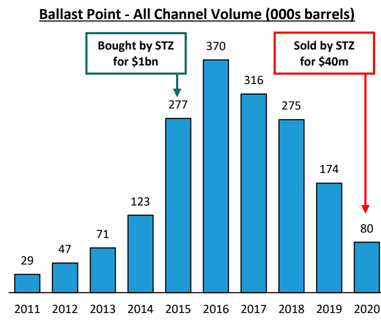
Ballast Point: Bought at peak earnings and valuation…followed by brand mismanagement

At the height of the craft beer boom in end-2015, Constellation acquired Ballast Point Brewing & Spirits (a San Diageo craft beer company) for US$1Bn, implying a forward EV/EBTIDA "in the mid-to-high-teens range." It expected the transaction to be accretive to Constellation's EPS by 2017. Instead, Ballast Point's volume rapidly declined, from a 370k barrel peak in 2016 to just 80k in 2020 (see Exhibit 1). Constellation sold Ballast Point to Kings & Convicts in 2020 at a meaningful loss.

What happened? There is no doubt that the craft beer market had become saturated, but the category has still been able to maintain a healthy mid-single-digit volume growth since its 2015 growth peak (pre-Covid-19) (see Exhibit 2). This implies the collapse in Ballast Point volumes reflected an operational or brand management problem. Indeed, nearly all of Ballast Point's key leadership (including founder and CEO) left in July 2016.[1] Constellation-man Marty Birkel became President of Ballast Point, though he lacked craft beer experience, having been Constellation's Chief Global Sales Officer for Wine & Spirits for the previous seven years (and President of Constellation Spirits for the four years preceding).[1]

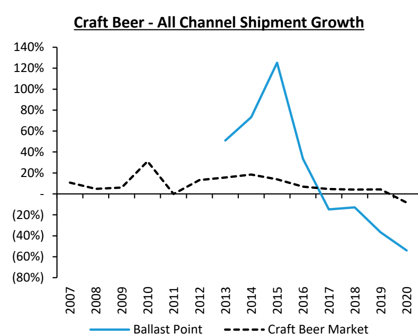
Could it simply be that Big Beer Constellation was doomed to fail in a category that prides itself on small scale and regional roots? Not necessarily. In 2013, ABI kicked off a string of bolt-on craft beer acquisitions over a number of years, resulting in it being the single-biggest craft player in the US today. What's more, most of these brands are still delivering healthy and stable growth, and have helped ABI offset the decline of its premium portfolio (see Exhibit 3 and Exhibit 4).

EXHIBIT 1: **Ballast Point volumes have been in decline since 2012...**



Source: BMI and Bernstein analysis

EXHIBIT 2: **...despite the craft category remaining in modest growth (pre-Covid-19)**



Source: BMI and Bernstein analysis

[1] Including Chief Commercial Officer Earl Knight, who is now the founder and Head of Sales at Cutwater Spirits, owned by ABI.

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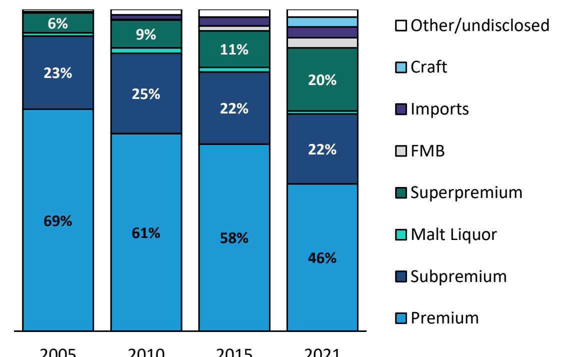
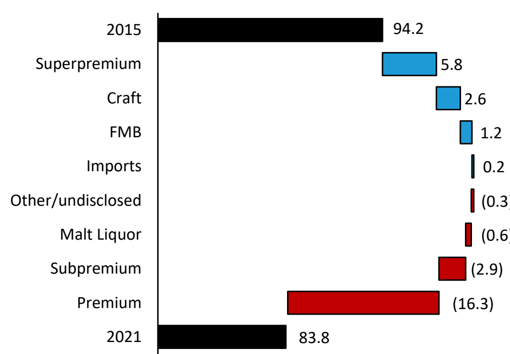
EXHIBIT 3: **ABI has been able to successfully increase its portfolio exposure to the high-end...**



Source: Beer Marketer's Insights (BMI) and Bernstein analysis

EXHIBIT 4: **...allowing it to benefit from growth in super premium, craft, and FMBs**



Source: BMI and Bernstein analysis

MEXICALI BREWERY: CASE STUDY IN HOW ENVIRONMENTAL CONCERNS CAN HAVE FINANCIAL IMPACTS

We have extensively written about the long-term importance of water scarcity for global brewers (ESG: Water and Brewers... Steady progress towards much, much lower water usage). Constellation's first run-in was in 2016. It came under attack from the mayor of a Mexican municipality, who said there was no water for human consumption, while the Nava brewery (its principal brewery) was extracting 1,200 litres of water per second for brewing beer. The brewery is located in a part of Mexico that suffers from water scarcity, and currently draws water from wells that are drilled to a depth of ~500 meters. Constellation responded that even if the brewery did not exist, the municipality would suffer from water problems, and that the aquifer from which it draws water is recharged faster than the rate at which water is extracted to make beer. According to Constellation, an independent study "showed that our operations in Coahuila account for less than 1% of the total water extracted from the Allende-Piedras Negras Aquifer." This study also indicated other industries using water from this basin include livestock (84%), urban supply (13%), industrial (2%), and energy generation (1%).

However, there was much bigger trouble to come. In March 2017, thousands of farmers gathered to protest at Constellation's construction of another brewery in Mexico, in Mexicali (just over the border from California), claiming that the brewery would worsen the already low water table, taxing the source of groundwater even further. Constellation went ahead with the plans, stating that it would not use more than 1% of the valley's water supply and that it purposefully chose Mexicali over other states because of its plentiful water supplies. Complaints had started as early as December 2016, when the state government announced that it was going to build an aqueduct with a 20 million m^3 capacity with Constellation's plant being the main beneficiary; the farmers complained that irrigation systems haven't improved at all and the area already has a deficit of 460 million m^3 p.a.

The pressure on Constellation, local government, and indeed the central government continued to build through 2018 and 2019, when growing protests and the election of President Andrés Manuel López Obrador, keen on direct democracy, culminated in a local vote in March 2020. 76% of voters rejected the construction of the brewery (although we

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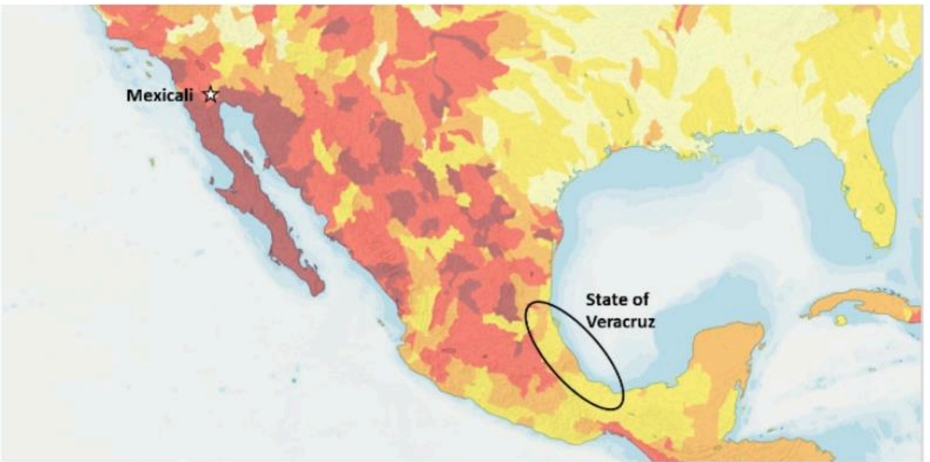
note that turnout was very low, reportedly 3.5%). The Mexican central government refused to provide the necessary water permits and Constellation was obliged to write off US$670Mn of the US$690Mn it had invested in the project. Constellation has now committed to build its new brewery in the state of Veracruz, where water is more abundant.

EXHIBIT 5: **Mexicali Brewery: Case study in how environmental concerns can have financial impacts**



Source: World Resources Institute and Aqueduct Water Risk Atlas

CANOPY GROWTH: AN ATTRACTIVE LONG-TERM MARKET ENTERED AT PEAK VALUATION

We have no problem with brewers investing in cannabis. We believe recreational cannabis in North America will become a significant market in the long term (see our note: The Long View: How high could America get?... A deep-dive into North American cannabis). In a world where we forecast flat beer volumes (albeit with pockets of growth within this), gaining exposure to a disruptive category with high-growth potential such as cannabis can be valuable to beer companies and act as a hedge. With completely different products and business models, there are little cost synergies to be realized. But alcoholic beverage companies are masters at: (i) operating in a highly regulated environment, and more recently embracing the role of good corporate citizens, and (ii) marketing and branding, as evidenced by the negligible private label penetration in alcohol.

But Constellation took its biggest stake in Canopy Growth at peak valuations. Constellation took its first 9.9% stake in Canopy Growth in November 2017, when valuations were still moderate. It then increased its stake to 36.6% in November 2018 when Canopy Growth — and the rest of the Canadian cannabis market — was at peak valuations. Today Constellation holds a 38.6% stake and Canopy's share price is close to all-time lows (see Exhibit 6).

Canopy Growth remains loss making and so Constellation has seen a steady deterioration in the book value of its investment (see Exhibit 7). And while there is now much greater strategic focus at Canopy Growth under CEO David Klein (former Constellation CFO), the Canadian cannabis market continues to face growing pains. And Constellation's Canopy warrants and debt securities — which are marked-to-market every quarter — add volatility to the reported P&L (see Exhibit 8). Net, Constellation's investment in Canopy might well prove to be a good move in the long term; however, in the short/medium term, the added uncertainty it brings continues to act as a drag on Constellation valuation.

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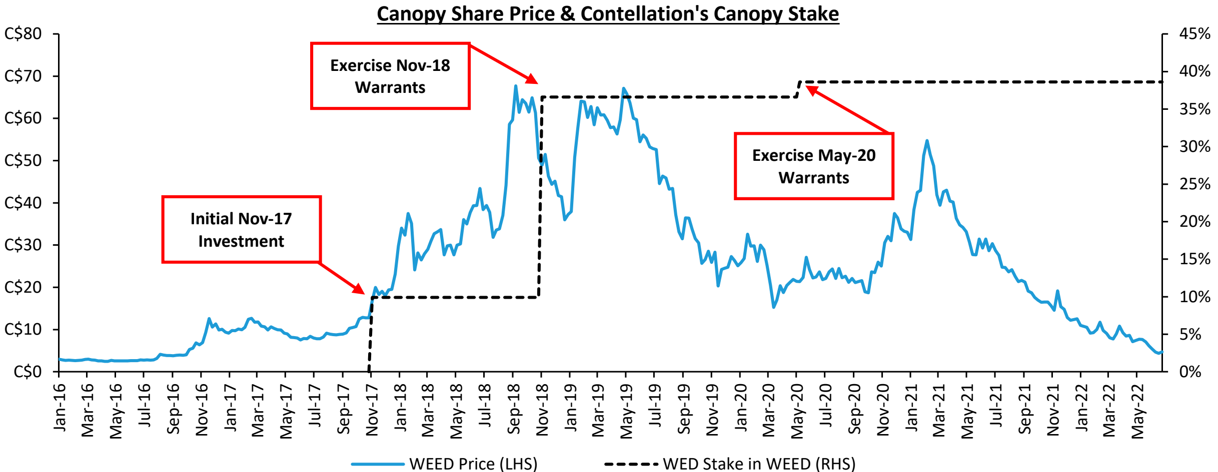
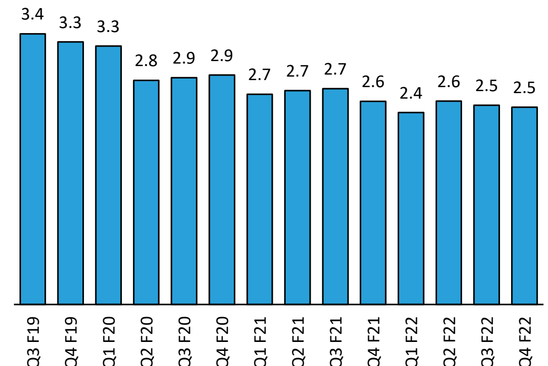
EXHIBIT 6: **Constellation invested in Canopy Growth at peak valuations**



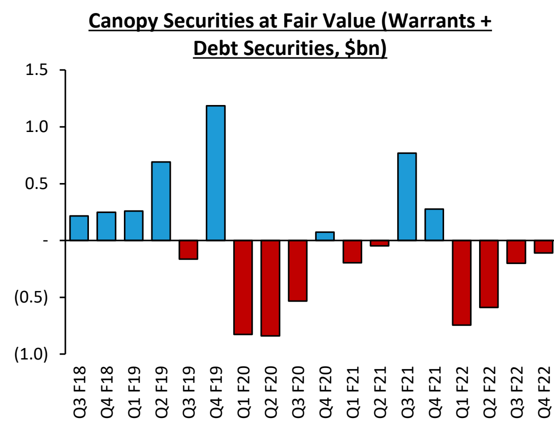
Source: Bloomberg, company reports, and Bernstein analysis

EXHIBIT 7: **Canopy is still loss making; Constellation has seen a steady deterioration in the book value of its investment**



Source: Company reports and Bernstein analysis

EXHIBIT 8: **Constellation's Canopy warrants and debt securities – which are marked-to-market every quarter – add volatility to the reported P&L**



Source: Company reports and Bernstein analysis

VALUATION HAS BEEN HELD BACK DUE TO WEAK CAPITAL ALLOCATION TRACK RECORD

Prior to November 2018 (when Constellation increased its stake in Canopy Growth from 9% to 37%), Constellation traded at 20.3x NTM+1 PE or a 30% premium to the S&P 500 (see Exhibit 9 and Exhibit 10). After November 2018, stub Constellation derated to a 2% discount. This was further exacerbated by Covid-19. Today, Constellation is trading at a 25% premium, while Stub Constellation is trading at a 19% premium.

At first glance, the derating of Stub Constellation makes little sense. If anything, Constellation's portfolio is in better shape than three years ago. It has divested declining Ballast Point and streamlined its Wine & Spirits portfolio to focus on high-end and high-growth brands. Its beer portfolio continues to grow strongly. We see two possible explanations for the derating of Stub Constellation:

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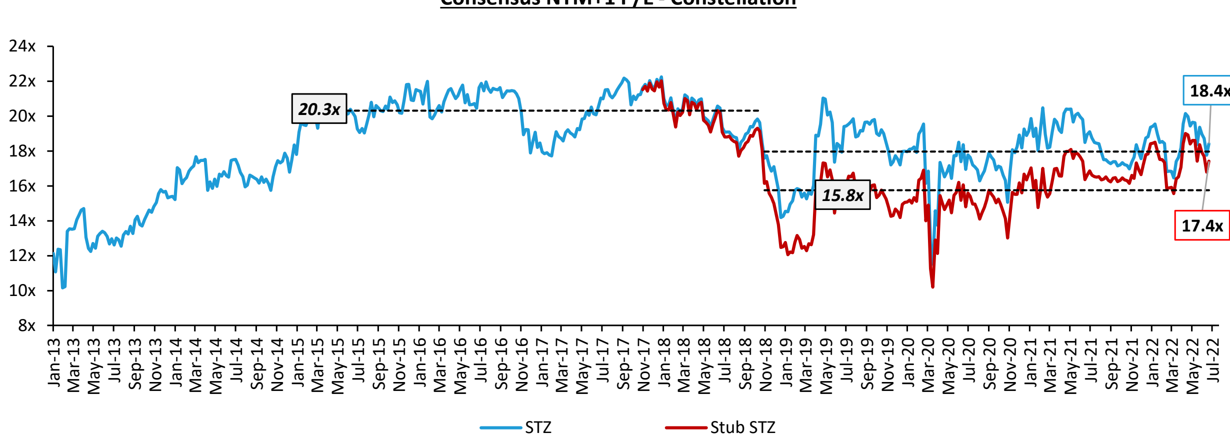
- **Management discount.** Management has a weak track record of inorganic capital allocation. Current investors might fear that management will repeat past errors.

- **Canopy is worthless.** Exhibit 10 assumes that (i) the market is fairly valuing Canopy Growth and (ii) Constellation investors agree with this valuation. In reality, many current Constellation investors dislike the Canopy Growth investment, as they simply seek exposure to Constellation's high-growth beer portfolio and cash generation.

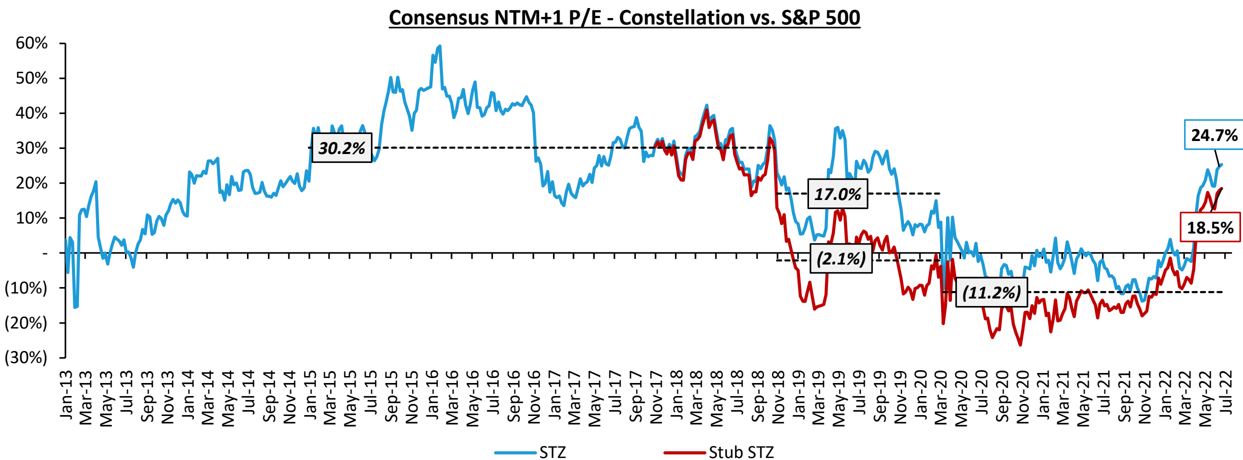
The explanation for the derating likely lies somewhere in the middle of these two explanations.

EXHIBIT 9: **Stub Constellation trades at 17.4x NTM+1 PE vs. 20.3x prior to the stake in Canopy**



Source: Bloomberg and Bernstein analysis

EXHIBIT 10: **Constellation trades at an 18.5% premium vs. S&P 500, vs. a 30.2% premium prior to the stake in Canopy**



Source: Bloomberg and Bernstein analysis

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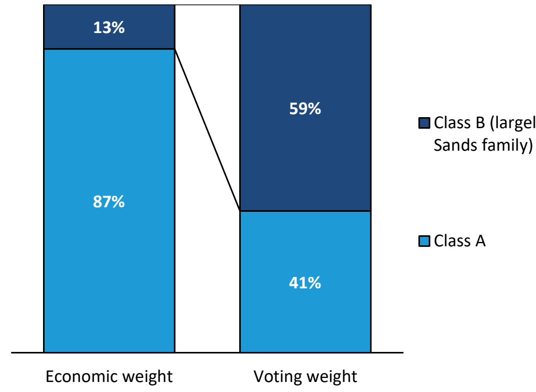
BETTER CORPORATE GOVERNANCE COULD BE JUST AROUND THE CORNER…BUT IS THE PRICE WORTH PAYING?

In April, the Sands family put forth a proposal for each Class B stock (10 voting rights per share) to be converted into 1.35 Class A stock (1 voting right per share). The Sands family currently hold over 98% of Class B stock. This would have reduced the Sands family's voting power from ~59.5% to ~19.7%. Then in late June, the special committee of the board put forth a proposed agreement of eliminating Sands family B shares (e.g., one-for-one transfer of B to A) at a 26.5% cash premium. This would give the Sands an ~16% economic and voting stake in Constellation brands (once their existing holding in Class A shares is taken into account) (see Exhibit 11 and Exhibit 12).

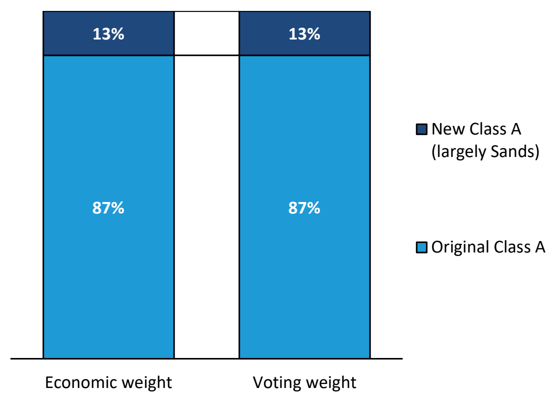
EXHIBIT 11: **The proposal would see the Sands family's voting power go from ~59.5%...**



Source: Company reports and Bernstein analysis

EXHIBIT 12: **...to ~16%**

Constellation - Proposed Equity Structure



Source: Company reports and Bernstein analysis

The reduction of Sands family voting control over Constellation has been desired by many investors because of the weak capital allocation track record mentioned earlier in this chapter. And while the US$1.5Bn price tag is high under the current proposal, the potential for a rerating to 20x NTM+1 PE would likely still put Class A investors in the green. We also suspect Class A investors will prefer cash to the original equity premium suggested in April. Despite this, we now expect resistance from Class A investors on the grounds of principle, given the weak capital allocation track record of the company. For context, US$1.5Bn is 1.1x F23E FCF (which could have otherwise been used for SBB) and 1.5x the amount Diageo paid for Casamigos. Net, we cannot say with conviction that this proposed agreement will be approved by shareholders.

BLUE SKY SCENARIO: WHAT COULD CONSTELLATION LOOK LIKE WITH BETTER CORPORATE GOVERNANCE?

In the short term: Multiple rerating

Because of its history of weak capital allocation and corporate governance, Constellation has historically been in the ESG penalty box. Looking at our European & American Alcoholic Beverages coverage, Constellation is the most under-indexed name for North American ESG funds' positioning on alcohol companies vs. the S&P 500 (see Exhibit 13).

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EXHIBIT 13: **North American ESG funds' positioning on alcohol companies vs. S&P 500, 4Q18-4Q21**

Company	Country	Δ Q4 2018	Δ Q1 2019	Δ Q2 2019	Δ Q3 2019	Δ Q4 2019	Δ Q1 2020	Δ Q2 2020	Δ Q3 2020	Δ Q4 2020	Δ Q1 2021	Δ Q2 2021	Δ Q3 2021	Δ Q4 2021
Constellation Brands	U.S.	-0.07%	-0.07%	-0.08%	-0.07%	-0.08%	-0.08%	-0.07%	-0.08%	-0.11%	-0.10%	-0.07%	-0.06%	-0.07%
Brown-Forman	U.S.	-0.04%	-0.04%	-0.05%	-0.04%	-0.04%	-0.04%	-0.04%	-0.04%	-0.05%	-0.05%	-0.04%	-0.04%	-0.04%
Molson Coors Brewing	U.S.	0.00%	0.00%	0.05%	0.05%	0.04%	0.02%	-0.01%	-0.01%	-0.01%	-0.01%	0.00%	-0.01%	-0.01%
Remy Cointreau	France	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Heineken Holding	Netherlands	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Davide Campari-Milano	Italy	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Boston Beer	U.S.	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Carlsberg	Denmark	0.01%	0.01%	0.00%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.01%
Anheuser-Busch Inbev	Belgium	0.03%	0.03%	0.02%	0.02%	0.01%	0.01%	0.01%	0.01%	0.00%	0.00%	0.01%	0.01%	0.01%
Pernod Ricard	France	0.08%	0.02%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.00%	0.00%	0.01%	0.01%	0.01%
Heineken Nv	Netherlands	0.15%	0.16%	0.14%	0.13%	0.08%	0.07%	0.07%	0.06%	0.04%	0.04%	0.04%	0.03%	0.02%
Diageo	U.K.	0.07%	0.05%	0.03%	0.04%	0.04%	0.03%	0.03%	0.02%	0.01%	0.01%	0.02%	0.03%	0.03%

Source: FactSet, Morningstar, and Bernstein analysis

Before considering the passing of the Sands family's proposal, we believe that Stub Constellation should trade at a 20.0x NTM+1 PE or at ~30% premium to the S&P 500. This is in line with the pre-Canopy multiple, despite the fact that the Stub Constellation business is arguably better today (e.g., Ballast Point and low-end wine business divested). This gives Stub Constellation a target price of US$270. Assuming that Canopy Growth today is trading at fair value would add an incremental US$3 (the mid cases in Exhibit 14 and Exhibit 15).

EXHIBIT 14: **Stub Constellation valuation (US$)**

STUB CONSTELLATION	
1. Bull Case	
Stub EPS NTM+1	13.48
Target Stub STZ P/E NTM+1	22.0x
Stub STZ Share Price	**297**
2. Mid Case	
Stub EPS NTM+1	13.48
Stub STZ P/E NTM+1	20.0x
Stub STZ Share Price	**270**
3. Bear Case	
Stub EPS NTM+1	13.48
Stub STZ P/E NTM+1	19.0x
Stub STZ Share Price	**256**

Source: Bloomberg, and Bernstein estimates and analysis

EXHIBIT 15: **Canopy Growth valuation (US$)**

CANOPY GROWTH	
1. Bull Case	
WEED equity value (USD)	1,490
Premium / (discount)	50%
WEED implied value to STZ	869
STZ Share count	191
Canopy contribution to STZ Price	**5**
2. Mid Case	
WEED equity value (USD)	1,490
Premium / (discount)	-
WEED implied value to STZ	580
STZ Share count	191
Canopy contribution to STZ Price	**3**
3. Bear Case	
WEED equity value (USD)	1,490
Premium / (discount)	(50%)
WEED implied value to STZ	290
STZ Share count	191
Canopy contribution to STZ Price	**2**

Source: Bloomberg, and Bernstein estimates and analysis

If the Sands family's proposal does pass, it opens the door for a higher multiple due to better corporate governance. A very stark example of the importance of this is that no M&A deal could go through that Constellation's institutional investors did not support. This was a legitimate concern when Constellation and Monster were reported to be exploring a deal (see MNST/STZ: What if we suspend our disbelief for a minute?).

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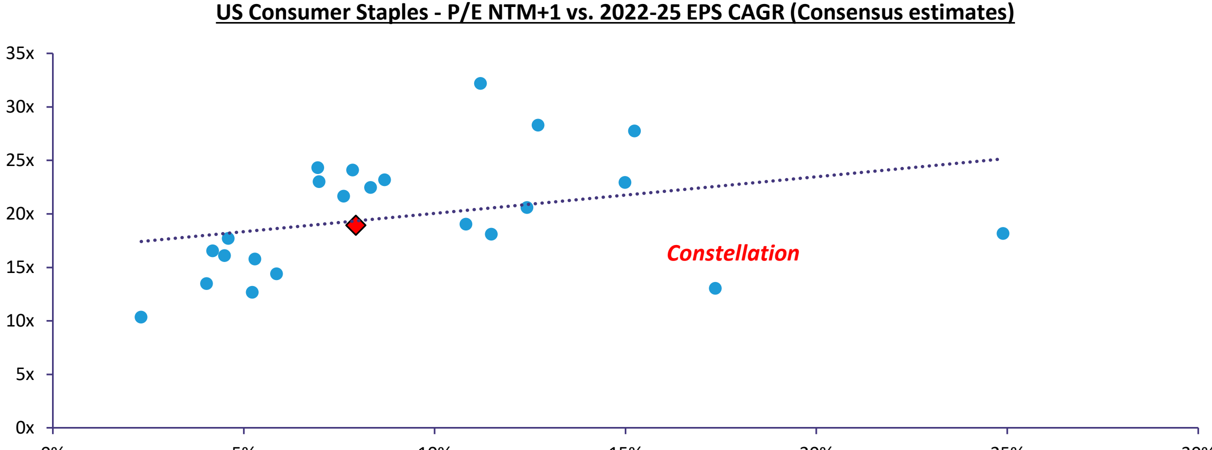
Compared to other US consumer staples, Constellation screens relatively cheap for the earnings growth consensus is forecasting to deliver (see Exhibit 16). If corporate governance was better, this simple regression would argue that Constellation could trade as high as 23x NTM+1 PE, or a Stub Constellation target price of US$310! Even under more cautious multiples, there is meaningful scope for upside from rerating (see Exhibit 17).

EXHIBIT 16: **If corporate governance was better, this simple regression would argue that Constellation could trade as high as 23x NTM+1 PE...**



Source: Bloomberg and Bernstein analysis

EXHIBIT 17: **...even under more cautious multiples, there is meaningful scope for upside from rerating**

Constellation Target Price

Canopy Growth Premium / (Discount) to Today's Price	Stub Constellation P/E NTM+1										
	17.5x	18.0x	18.5x	19.0x	19.5x	20.0x	20.5x	21.0x	21.5x	22.0x	22.5x
(100%)	$236	$243	$249	$256	$263	$270	$276	$283	$290	$297	$303
(75%)	$237	$243	$250	$257	$264	$270	$277	$284	$291	$297	$304
(50%)	$237	$244	$251	$258	$264	$271	$278	$285	$291	$298	$305
(25%)	$238	$245	$252	$258	$265	$272	$279	$285	$292	$299	$306
-	$239	$246	$252	$259	$266	$273	$279	$286	$293	$300	$306
25%	$240	$246	$253	$260	$267	$273	$280	$287	$294	$300	$307
50%	$240	$247	$254	$261	$267	$274	$281	$288	$294	$301	$308
75%	$241	$248	$255	$261	$268	$275	$282	$288	$295	$302	$309
100%	$242	$249	$255	$262	$269	$276	$282	$289	$296	$303	$309

Source: Bloomberg, and Bernstein estimates and analysis

IN THE LONG TERM: A REALISTIC PATH TO EXPANDING BEYOND MEXICAN IMPORTS AND THE US MARKET

From investors with relatively long investment horizons, the most common questions we get are: "For how long can Mexican imports in the US grow?" or "If consumer preferences in US alcohol move in generational waves, won't Mexican imports one day be out of favor?" Over the medium term, we do not anticipate this being an issue. As we examined in our notes: Constellation: A Golden (H)opportunity and Euro and US Alcoholic Beverages: Una cerveza por favor? Proprietary Consumer Survey (Part 2: Import Beer), we find that Modelo still has meaningful room to grow and that Pacifico is waiting in the wings to be the next meaningful growth driver.

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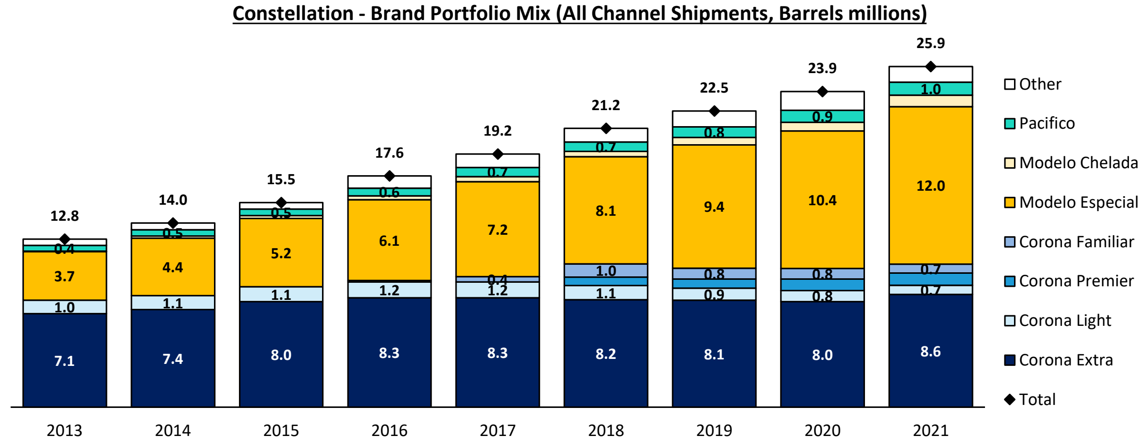
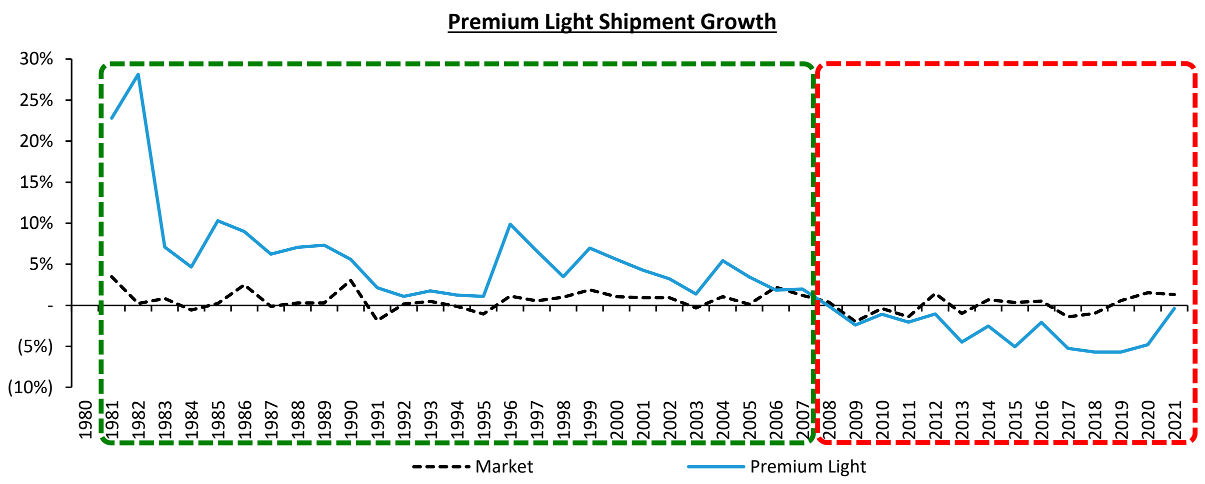
However, over the long term these are valid questions. Constellation's beer business largely comprises two brand families that cannot expand outside the US. And as the cycles of alcohol consumption in the US have shown us for decades, at one point Mexican imports will drop out of favor. Consider the once powerhouse of premium light beer. Miller Brewing launched Miller Lite in 1975. The brand was an immediate success, supported by invaluable marketing including the famous tagline "Everything You Always Wanted in a Beer. And Less." This propelled Miller to the #2 brewery in the US. It wasn't long before others followed — Coors Brewing launched Coors Light (1978) and ABI launched Natural Light (1977), Michelob Light (1978), and Bud Light (1982). The result: premium light beer grew at a 6.5% volume CAGR between 1980 and 2005, outgrowing the overall beer category in every year (see Exhibit 19). But eventually consumer tastes shifted (as they always do) and light beer started losing meaningful share.

EXHIBIT 18: **Constellation's beer business largely comprises two brand families that cannot expand outside the US**



Source: BMI and Bernstein analysis

EXHIBIT 19: **As the cycles of alcohol consumption in the US have shown for decades, at one point Mexican imports will drop out of favor; consider the once powerhouse of premium light beer**



Source: BMI and Bernstein analysis

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Until 2013, Constellation was primarily a wine & spirits business, with a small side of beer. It used to be that Grupo Modelo's brands were imported and distributed in the US by Gambrinus in the eastern half of the country and by Barton Beers (a unit of Constellation brands) in the western half. In 2007, the 50:50 joint venture Crown Imports was created between Constellation and Grupo Modelo to import brands across the entire US, with Constellation reporting the JV under the equity method. Then in 2013, Constellation acquired the remaining 50% stake in Crown Imports, the exclusive US brand rights in perpetuity, and ownership of the associated Mexican breweries (an anti-trust requirement of ABI's acquisition of Grupo Modelo that year). Crucially, Constellation went from having a 50% stake in a distribution company to becoming a 100% integrated brewer.

Up until now, Constellation has been stuck in a Catch-22. (1) Attempt to invest in adjacencies beyond Mexican imports and the market will punish the stock, whether the investment is actually sound or not. Investors' patience is running thin due to a weak capital allocation track record, and just want management to focus on running the beer business. (2) Focus on running the beer business to the satisfaction of the markets today, but risk being hung out to dry once Mexican imports begin to inevitably decelerate. But this proposal by the Sands family, if passed, provides the company with a potential way out of this bind. We would see this as a two-phase process:

Phase #1 — Regain market trust in improved corporate governance. The first part of this process was Bill Newlands replacing Robert Sands as CEO in 2019. The second part would be the reduction of the Sands family's voting rights through the previously mentioned proposal. A potential third part would be having a non-family chairman of the board. Throughout this process, the company would focus on running the beer business and returning cash to shareholders.

Phase #2 — Carry out small to medium bolt-on acquisitions in alcohol. Once trust in corporate governance has been built, Constellation could engage in small-to-medium sized bolt-on acquisitions in growth areas of alcohol such as select FMBs, spirits, or whatever area of alcohol will be in growth in a few years' time. While Constellation's track record of new-to-world innovation is mixed, it is able to very effectively and patiently scale brands with existing momentum by leveraging its brand building and marketing capabilities, as well as its distribution network. Done effectively, this could set up Constellation for decades of top-line growth. Diageo's acquisition of Casamingos is a perfect case study in the power of a well-timed bolt-on; see our note: Diageo: Knocking the cover off the ball but reflected in the price.

BUT WHAT IF THE SANDS FAMILY'S CHANGE IN VOTING STRUCTURE DOESN'T PASS?

The Sands Family's current proposal would see its voting power reduce from ~60% to ~16% in exchange for a ~US$1.5Bn cash payout. Furthermore, Robert and Richard Sands are to retire from their current executive capacity. Robert Sands is to become Non-Executive Chairman (previously Executive Chairman) and Richard Sands will remain a board member. This is a meaningful positive for the stock.

The prospect of better corporate governance is a tempting one. While the US$1.5Bn price tag is high under the current proposal, the potential for a rerating to 20x NTM+1 P/E would likely still put Class A investors in the green. We also suspect Class A investors will prefer

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cash to the original equity premium suggested in April 2022. Despite this, we now expect resistance from Class A investors on the grounds of principle, given the weak capital allocation track record of the company.

Three ways this could play out. (1) The agreement is approved. (2) It's rejected, prompting a renegotiation to a lower premium, and then approved. (3) The agreement is rejected, with no renegotiation and Sands Family voting control remains. This would signal the family prioritizes short-term economic gains over long-term appreciation in Constellation's value. While this wouldn't affect the fundamental earnings power of Constellation and its best-in-class beer portfolio and margins, it would further reinforce concerns over corporate governance.

VALUATION METHODOLOGY

The Outperform rating and target price of US$270 for Constellation Brands (ticker: STZ) is based on an analysis of relative price-to-earnings (PE) multiples backed by conservative discounted cash flow (DCF) analysis. We believe the two most important drivers of PE are profit growth and return on capital. We use forward EPS estimates beginning a year from now, represented by July 2023-June 2024 EPS, to set our target prices. The closing price of Constellation Brands and the S&P 500 on August 8, 2022 were US$234.88 and 4,140.06, respectively.

RISKS

Factors that represent risk to our positive long-term view on the European & American Alcoholic Beverages sectors: (i) a breakdown in the three-tier distribution system in the US, which would expose producers to greater margin pressure from retailers, (ii) current upward trends in US and emerging markets (EM) consumption of alcohol reversing, (iii) difficulties of the alcoholic beverage markets in Western Europe becoming more severe than we anticipate, and (iv) significant foreign exchange movements such as a decline in the dollar, which could reduce the value of non-European profits.

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HERMÈS: LUXURY IS THAT WHICH YOU CAN REPAIR

HIGHLIGHTS

- **Hermès celebrates artisans as the true contributors to its success.** One man, one bag means that each artisan creates a handbag from start to finish, thus preserving the one-of-a-kind nature of the bag. This elevates brand status in terms of *savoir faire* and creates loyalty with consumers.

- **Durability and timelessness are key for the Hermès customer**, with repair requests growing in double digits for the brand across métiers. This guarantees their success on the secondary market as the pieces look virtually new after multiple wears and thus sell at higher prices. **The secondary market has raised the status of Hermès handbags to investment-grade assets.** Another reason for its investment-grade asset quality is that Hermès rations by strict waiting lists rather than price hikes, which were maintained at a 2-3% CAGR over the past 10 years. Waiting lists can then even-out top-line growth in turbulent times and accelerate it in positive times as demand overflows into adjacent products.

- **Longevity transcends Hermès products.** Hermès leadership comprises the sixth and seventh generation of the founder's family, ensuring business continuity. This loyalty commitment is also extended to employees through initiatives such as in-house training, profit-sharing schemes, and office "godparents." As a result, its 1.38% turnover rate is by far the lowest in the industry.

INVESTMENT IMPLICATIONS

High upstream integration, highly trained artisans, and significant employee benefits give Hermès superior ESG credentials. Hermès is also a haven for risk-adverse investors. Keeping capacity well below demand allows Hermès to have the smoothest growth profile of all. This stability and predictability drive Hermès' stellar multiple. Therefore, the stock outperforms when things are bad or uncertain. We rate Hermès Market-Perform, target price €1,180.00.

ONE MAN, ONE BAG

Luxury goods brands define themselves through the *savoir faire* and craftsmanship of their products. However, Hermès takes the artisan model to another level (see Exhibit 1 to Exhibit 3). One man, one bag means each artisan creates a handbag from start to finish, thus preserving the one-of-a-kind nature of the bag. The transfer of *savoir faire* takes place at Hermès via 90 trainers and 200 tutors (see Exhibit 4 and Exhibit 5). Artisans have an 18-month mandatory training period once they join the company. However, it takes nearly five years to gain full leather and saddlery expertise. With 200-250 craftsmen hired p.a., scarcity is created through a stable +8% p.a. volume growth. All bags are signed, which celebrates the individual as an artist (82% of employees said Hermès is a feel-good company in an internal survey) and hedges the company against counterfeits. Sales

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assistants in stores, *Hermès in the Making* pop-up events (see Exhibit 3), and detailed videos posted online then educate customers regarding the sourcing of the raw material, the *savoir faire* needed to finish the bag, and how it will age. The lack of official celebrity endorsements also underlines its timelessness and focus on product quality (LVMH: Dior - the homegrown Chanel challenger). This creates loyalty with consumers (see Exhibit 6).

EXHIBIT 1: **One man, one bag means each artisan creates a handbag from start to finish, thus preserving the one-of-a-kind nature of the bag**

Hermès workshop organisation

+ **Each artisan handcrafts a bag from start to finish** - the artisan signs their bag with his/her mark
+ Each artisan has a wide ranging expertise - more than 40 bag models
+ After joining, the artisan training lasts for 18 months - usually around a Kelly bag. It takes nearly 5 years to gain full leather and sadlery expertise.
+ At the end of the training, the artisan receives certain tools (right photo), which they will use exclusively throughout their career at Hermès
+ **Manuela Bosle (left photo) is the director of the Paris ateliers, who has received the 'Ordre national du Mérite' of France in 2021 for her 29 year career**

Source: Company reports and Bernstein analysis

EXHIBIT 2: **Meanwhile, competitors organize their workshops through assembly lines/production teams, with several craftsmen working on different components of the same bag**

Louis Vuitton Onthego production:
+ 3 assembly lines
+ 2 shifts
+ 70 people

Source: Company reports and Bernstein analysis

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EXHIBIT 3: **Customers have numerous opportunities to meet the artisans behind Hermès sustainable craftsmanship and see them in action during traveling pop-ups or events**

Source: Company website

EXHIBIT 4: **The transfer of *savoir faire* takes place at Hermès via 90 trainers and 200 tutors in leather goods**

Schools and workshops	Details
École du Cuir	>90 in-house trainers, along with partner schools and further education establishments
École Hermès des Savoir-Faire	in liaison with the French Education Department Awarding a nationally recognized qualification (CFA) Launch of dedicated website as part of apprenticeship training
12 École du Cuir programs in 2021	740 employees trained (a total of nearly 6,855 since 2011) 277 diplomas or certifications obtained
In-house training schools	Engineering incubator within the École des Tanneurs and the École du Textile
The Cristalleries Saint-Louis	Internal training actions on hot-part métier savoir-faire for 36 craftspeople
Campus Hermès Group Training	Cross-functional training courses - sustainability, communication, first aid, etc.
École des Artisans de la vente (2022)	Multimodal development program for sales associates and managers

Source: Company reports and Bernstein analysis

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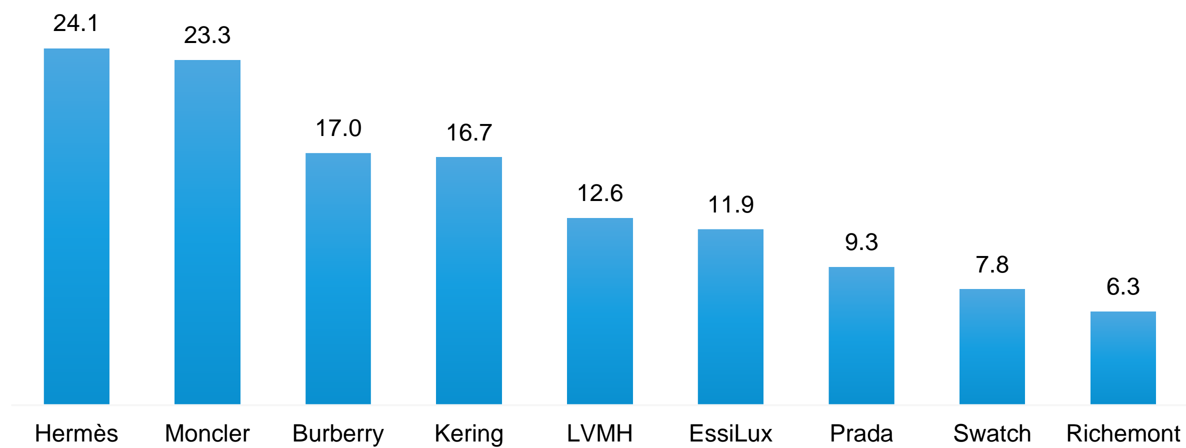
EXHIBIT 5: **Hermès is most invested in its employees' development, offering the highest hours of training compared to peers**



Source: Company reports and Bernstein analysis

EXHIBIT 6: **In the West, Hermès ranks highest in perceived *savoir faire*, with Chanel lowest; meanwhile, the ranks are almost reversed for Mandarin-speaking consumers who see Dior as by far the best performer in the category, with Hermès a close second**

Google search result in English

Google search		+luxury		+ tradition		+ artisan		+ craftsmanship		+ sustainable		Average
results in English	million		vs. og		vs. lux		vs. lux		vs. lux		vs. lux	vs. lux
Hermès	273	36	13%	23	64%	13	36%	5	14%	13	35%	37%
Dior	296	43	14%	27	63%	11	26%	4	11%	19	45%	36%
Chanel	698	94	14%	40	42%	10	11%	5	5%	23	25%	21%
Average			*14%*		*57%*		*24%*		*10%*		*35%*	*31%*

Google search result in Mandarin

results in Mandarin	million		vs. og		vs. lux		vs. lux		vs. lux		vs. lux	vs. lux
Dior	15	3	19%	4	137%	1	33%	2	61%	1	43%	69%
Hermès	11	3	31%	4	104%	0	5%	2	50%	2	55%	54%
Chanel	13	3	24%	3	86%	0	14%	1	44%	1	38%	46%
Average			*25%*		*121%*		*19%*		*56%*		*49%*	*61%*

Source: Google search results and Bernstein analysis

"LUXURY IS THAT WHICH YOU CAN REPAIR" — AXEL DUMAS' GRANDFATHER

Durability and timelessness are key for the Hermès customer. While it may be more subtle than Patek Philippe's tagline: "*You never actually own a Patek Philippe. You merely look after it for the next generation*"; the company is translating its commitment to sustainability into action (*Hermès : ESG in Action… Improvers and Enablers - An underappreciated leader in public rankings' eyes*). Hermès repairs 161,000 objects every year and the demand for this service is growing (see Exhibit 7 to Exhibit 9). To underline this trend, it even had a traveling *Hermèsmatic* pop up over 2016-18, where visitors could bring aged silk scarves that were then re-dyed and brought back to life (see Exhibit 11 and Exhibit 12). In P&L terms this is a cost rather than a profit. However, the repair service acts like a recruiting tool as it brings customers back in store — at Hermès you can repair anything — even a heritage item that

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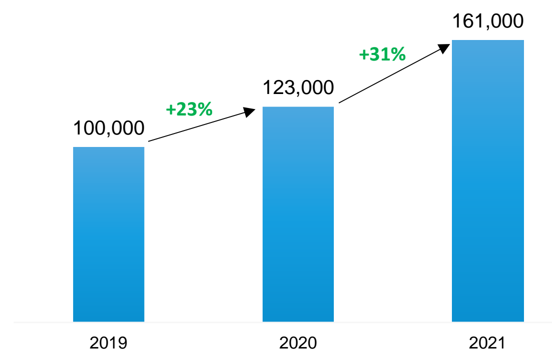
is out of production. This has two important implications: (1) Every new material used by Hermès is guaranteed to be of the highest quality and stress-tested for its durability; e.g., the Sylvania mycelium leather (Circular Economy Series: Circular fashion is the new black), and (2) Durability improves success in the secondary market (see Exhibit 10).

EXHIBIT 7: **Repair requests are accelerating YoY**



Source: Company reports and Bernstein analysis

EXHIBIT 8: **Hermès has 88 craftspeople dedicated to repairs (54 in France, 34 internationally)**

Note: The dots represent the locations where one can find craftspeople dedicated to repairs.

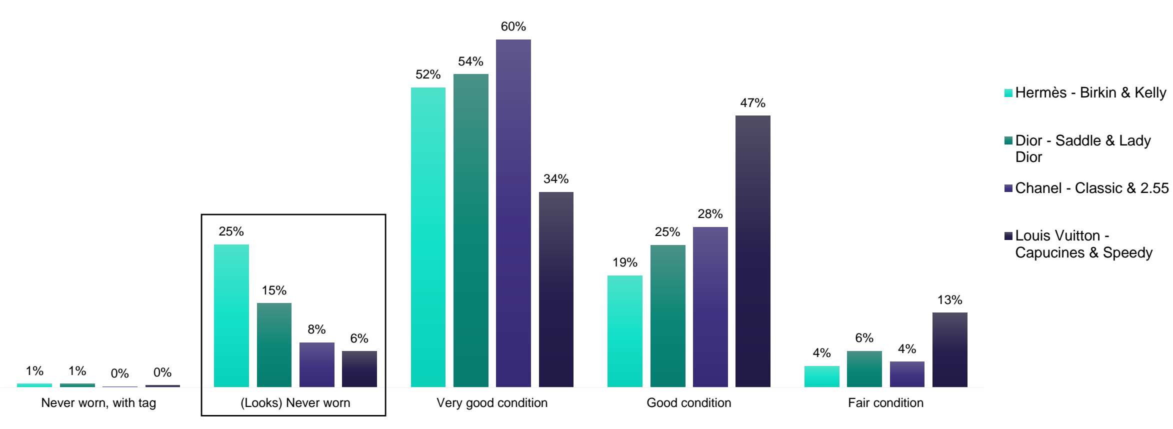
Source: Company reports and Bernstein analysis

EXHIBIT 9: **Repairs are not currently profitable, and are rather considered an after-sale service**

Pricing rationale = retail price of item x raw material x repair time

Source: Bernstein analysis

EXHIBIT 10: **The quality and durability of Hermès leather goods products guarantees their success on the secondary market, as the pieces look virtually new after multiple wears and thus sell at higher prices on the likes of Vestiaire Collective, The RealReal, etc.**



Source: Vestiaire Collective and Bernstein analysis

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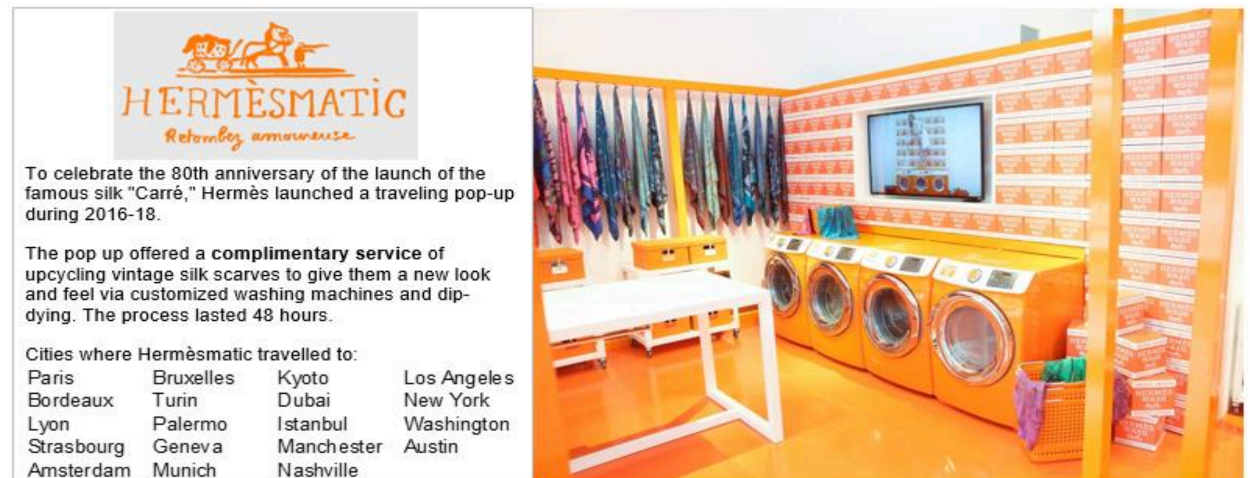
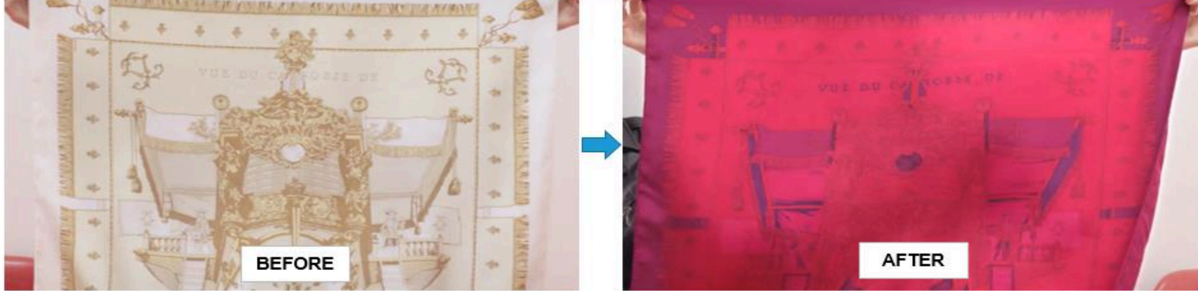
EXHIBIT 11: **Hermèsmatic was a traveling pop-up that underlined the brand's commitment to sustainability**



Source: Company website and Bernstein analysis

EXHIBIT 12: **The complimentary dip-dying service allowed customers to revamp heirlooms and attract a younger generation in store**



Source: Company website and Bernstein analysis

HERMÈS RATIONS BY WAITING LISTS RATHER THAN PRICE HIKES

The secondary market has raised Hermès handbags to investment-grade assets. Besides the quality and durability of the handbags it sells, Hermès has exercised remarkable volume restraint across markets (see Exhibit 13 to Exhibit 15). Production is tightly controlled in a highly upstream-integrated company (see Exhibit 16) with 80% of the items being manufactured in France (The Long View: Global Luxury Goods - Measuring ESG Performance). The lean supply chain leads to low net working capital (NWC) numbers (see Exhibit 17), with a bag, e.g., lasting no more than three months in the inventory accounts from creation to sales. Even when it comes to ready-to-wear (RTW), it produces only two collections p.a. This offers flexibility and the power to quickly adapt to new demand trends, reject overconsumption, and comply with the French law banning destruction of unsold inventory. Product scarcity creates long waiting lists, which can even-out top-line growth in turbulent times and accelerate it in positive times as demand overflows into adjacent products. At the same time, the company has chosen to increase prices much less than it could (2-3% CAGR over the past 10 years) by applying moderate price adjustments based on COGS variations (see Exhibit 18), a strategy it confirmed it will follow going forward. As a result, its items retain almost all their value in the second-hand market (see Exhibit 19), protecting brand equity and an Untapped Price Increase Reservoir.

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EXHIBIT 13: **We estimate the most popular handbag models — Kelly and Birkin bags — account for 75% of handbag sales, but only 49% of handbag production**

Hermès (€)	2021	Average price assumptions	
Leather Goods	4,091	**Price (€):**	
% Handbags	75%	Togo Leather	8,955
Handbags	3,068	*% Increase*	*3%*
Kelly,Birkin % sales	**75%**	Exotic/Premium skins	44,777
Kelly/Birkin	2,301	*% Increase*	*3%*
Avg Price	17,911		
		Mix:	
#Kelly/Birkin sold	128,481	Togo Leather	75%
#Kelly/Birkin per store	424	Exotic/Premium skins	25%
Leather workers	4,300	**Kelly, Birkin % of Total Production**	**49%**
#Handbags produced*	261,225		

Assumptions: One bag takes 20 hours to be manufactured and the leather workers produce bags 75% of their time

Source: Company website and reports, and Bernstein estimates and analysis

EXHIBIT 14: **Hermès has a two Birkins p.a. limit for its customers and strictly limits those who have access to the most coveted items**

The Hermès Birkin waitlists

- **Clients usually have a two-Birkin-per-year limit imposed on them**

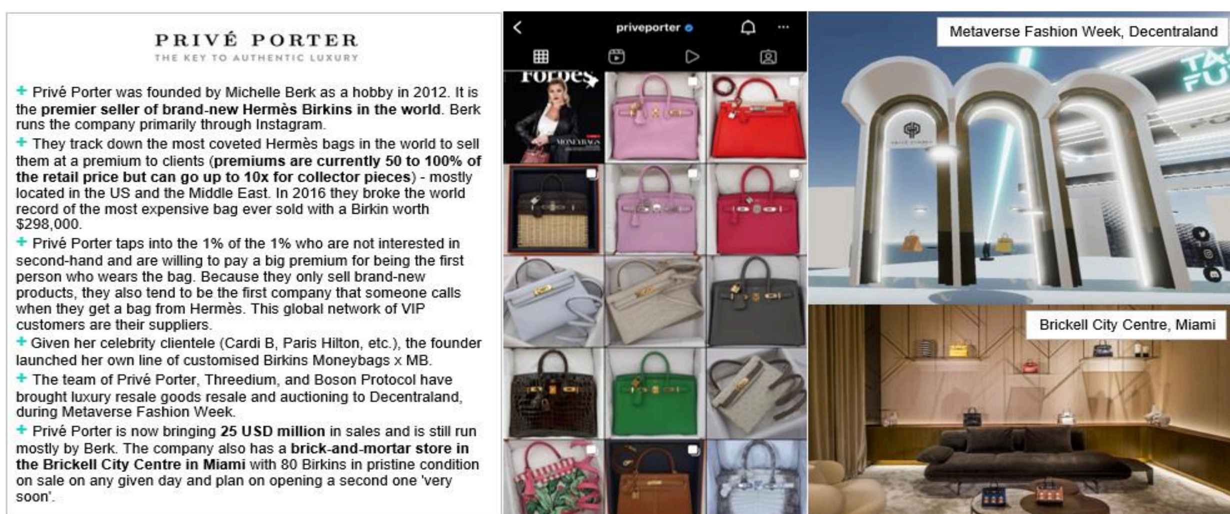
- Clients need to buy other items in order to even be considered for a waitlist. We estimate that Birkin sales account for more than 10% of Hermès' sales, while this amount doubles when considering what clients buy to get on the waitlists.

- For the average customer it is impossible to even get on a waitlist. Hermès, Fabourg Saint Honoré, Paris dialogue:

"Good morning, we would like to buy a Birkin"
"I am sorry, we have no Birkin for you today"
"Could we get on the waiting list?"
"I am sorry, the waiting list for this year is closed"
"Could we get on next year's waiting list?"
"I am sorry, next year's waiting list is yet to open"

Source: Company website, and Bernstein field research and analysis

EXHIBIT 15: **Even this system is not infallible — some inner circle customers are abusing it and trading their bags online**



PRIVÉ PORTER
THE KEY TO AUTHENTIC LUXURY

+ Privé Porter was founded by Michelle Berk as a hobby in 2012. It is the **premier seller of brand-new Hermès Birkins in the world**. Berk runs the company primarily through Instagram.
+ They track down the most coveted Hermès bags in the world to sell them at a premium to clients (**premiums are currently 50 to 100% of the retail price but can go up to 10x for collector pieces**) - mostly located in the US and the Middle East. In 2016 they broke the world record of the most expensive bag ever sold with a Birkin worth $298,000.
+ Privé Porter taps into the 1% of the 1% who are not interested in second-hand and are willing to pay a big premium for being the first person who wears the bag. Because they only sell brand-new products, they also tend to be the first company that someone calls when they get a bag from Hermès. This global network of VIP customers are their suppliers.
+ Given her celebrity clientele (Cardi B, Paris Hilton, etc.), the founder launched her own line of customised Birkins Moneybags x MB.
+ The team of Privé Porter, Threedium, and Boson Protocol have brought luxury resale goods resale and auctioning to Decentraland, during Metaverse Fashion Week.
+ Privé Porter is now bringing **25 USD million** in sales and is still run mostly by Berk. The company also has a **brick-and-mortar store in the Brickell City Centre in Miami** with 80 Birkins in pristine condition on sale on any given day and plan on opening a second one 'very soon'.

Source: Company website and Bernstein analysis

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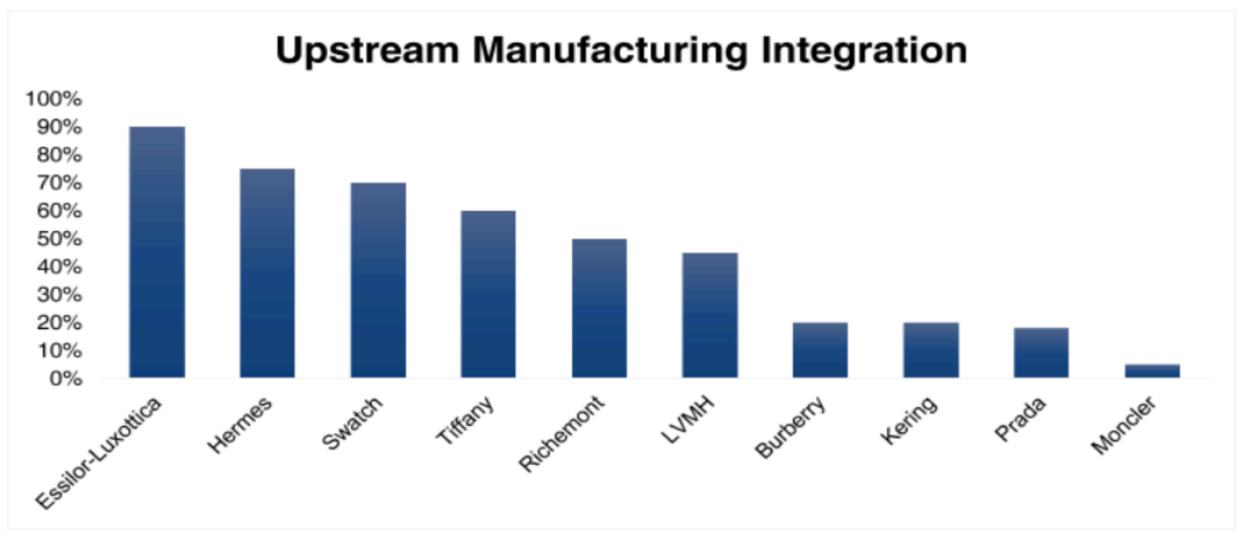
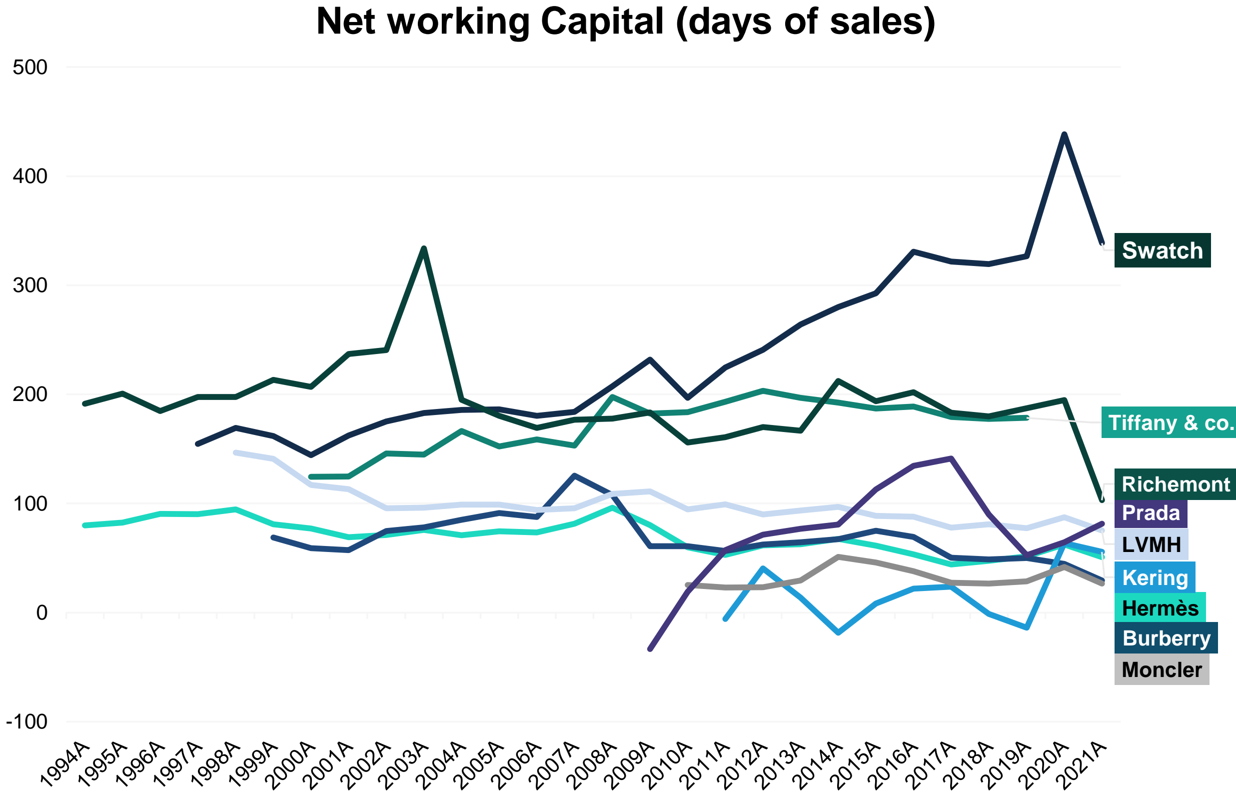
EXHIBIT 16: **Production is tightly controlled in a highly upstream-integrated company with 80% of the items manufactured in France**



Source: Company reports and Bernstein analysis

EXHIBIT 17: **The lean supply chain leads to high desirability levels and low NWC numbers with a bag, e.g., lasting no more than three months in the inventory accounts from creation to sales**



Source: Company reports and Bernstein analysis

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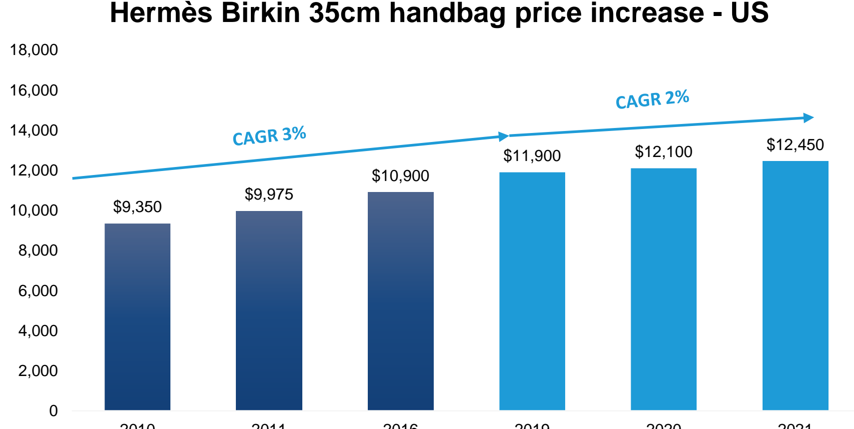
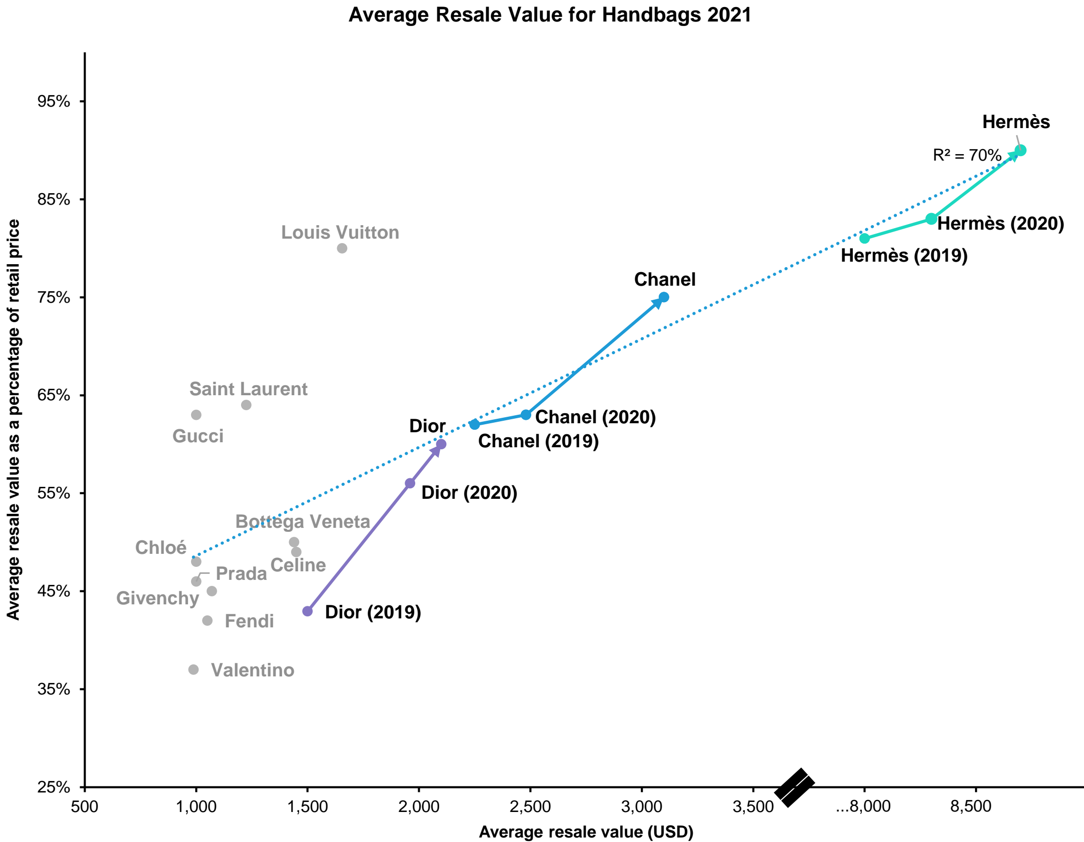
EXHIBIT 18: **At the same time, Hermès as chosen to increase prices much less than it could (2-3% CAGR over the past 10 years) by applying moderate price adjustments based on COGS variations**



Source: Bernstein field research and analysis

EXHIBIT 19: **As a result, its items retain almost all their value in the second-hand market, protecting brand equity and an "untapped price increase reservoir"**



Source: Rebag and Bernstein analysis

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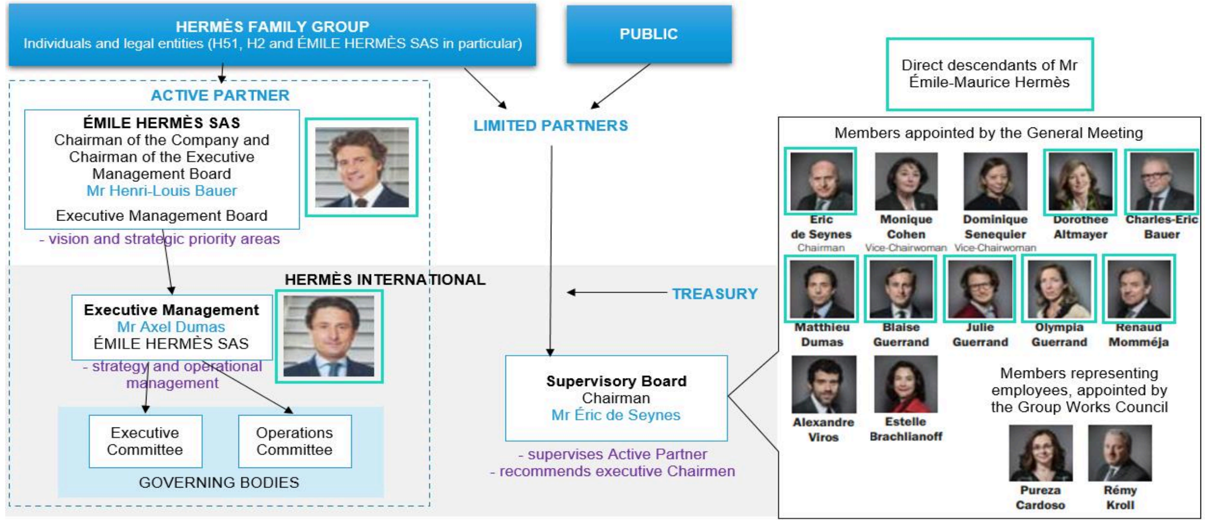
LONGEVITY TRANSCENDS HERMÈS PRODUCTS

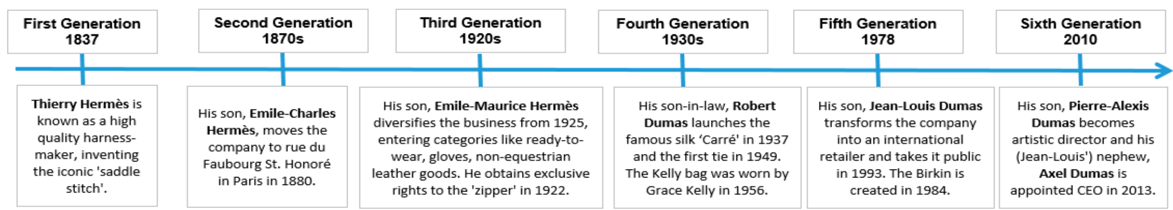
Hermès is structured as a "democratic monarchy" (i.e., a limited partnership) with two executive chairmen: Axel Dumas on the strictly operational side and Henri-Louis Bauer on the long-term strategy side, ensuring business continuity (see Exhibit 20). The family owns 66% of the company (see Exhibit 22) and this has remained stable throughout the years. Family heritage is also preserved by the Supervisory Board composed mainly of family members across the three lines (Dumas, Puech, and Guerrand). To maintain family ownership and avoid a hostile takeover (as attempted by LVMH in 2011), a 75% voting majority is required to change the CEO or the company statutes. Hermès was founded in 1837, so Axel Dumas is part of the sixth generation of the family, with the seventh generation already on the Supervisory Board (see Exhibit 21). To preserve family heritage, members of the next generation are educated in company traditions through regular tours of the brand's facilities and suppliers, as well as pedagogic meetings with management. This loyalty commitment is also extended to employees — the company coaches its artisans in the *L'École Hermès des savoir-faire* and its sales assistants in the *École des Artisans de la Vente* (opened in 2021), offering them profit-sharing opportunities (see Exhibit 23) and office "godparents" as mentors. Hermès did not lay off any employee during the pandemic. As a result, its 1.38% turnover rate is the lowest in the industry, with an average length of service of artisans of nine years (see Exhibit 24).

EXHIBIT 20: **Hermès is structured as a "democratic monarchy" with two executive chairmen: Axel Dumas on the strictly operational side and Henri-Louis Bauer on the long-term strategy side**



Source: Company website and Bernstein analysis

EXHIBIT 21: **The sixth and seventh generations of Hermès heirs are now leading the company**



Source: Company website and Bernstein analysis

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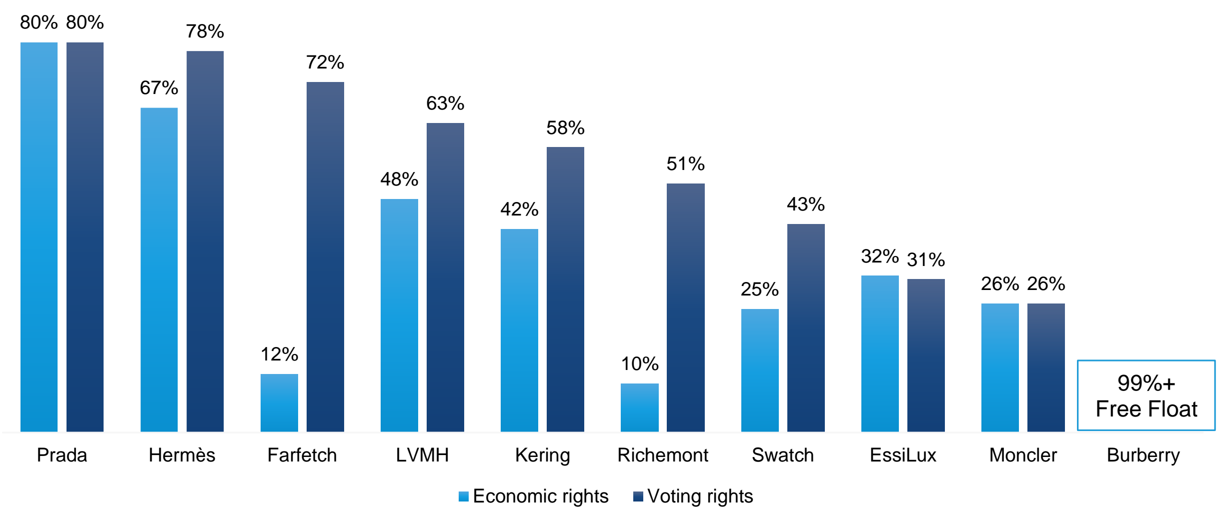
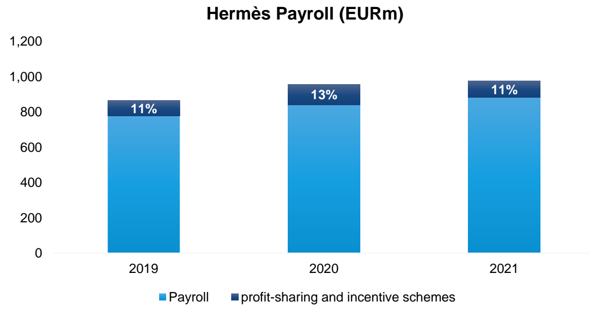
EXHIBIT 22: **The family owns 66% of the company, and this has remained stable throughout the years**



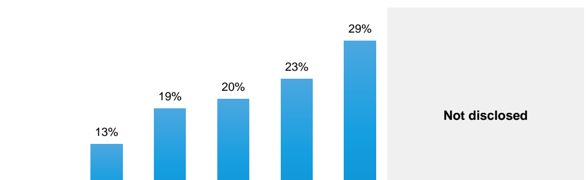
Source: Company reports and Bernstein analysis

EXHIBIT 23: **The family loyalty commitment is also extended to employees through profit-sharing and incentive schemes; this strategy was amplified during the pandemic in 2020**



Source: Company reports and Bernstein analysis

EXHIBIT 24: **As a result, Hermès' turnover rate is by far the lowest in the industry**



Source: Company reports and Bernstein analysis

VALUATION METHODOLOGY

The €1,180.00 target price for Hermès (ticker: RMS.FP), rated Market-Perform, is based on the target relative PE multiple of 3.30x compared to the MSDLE15. The closing prices for Hermès and the MSDLE15 on August 8, 2022 were €1,356.50 and €1,745.03, respectively.

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RISKS

On the upside: Longer resolution of the Covid-19 pandemic could favor defensive exposure and defer sector normalization; Hermès could benefit from the ability to increase prices, while others suffer a consumer spend swing back from products to experiences; and Hermès could significantly accelerate growth of the non-leather goods divisions and improve digital engagement on the back of better traction with younger consumers.

On the downside: Failure to convincingly innovate could push Hermès into a "classic corner," out of sync with younger global luxury consumers; higher leather goods volumes — as silk declines — could reduce "rarity effect," perceived exclusivity, and — ultimately — brand desirability long-term; and social action and social unrest in France could produce higher labor cost inflation — more important for Hermès, given its higher upstream integration.

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CAMPARI: RECESSION-RESILIENT, PRICING POWER AND ESG SCORES STEADILY ON THE UP

HIGHLIGHTS

- **Campari is a great long-term growth story** (see our thesis summary from March 22: Campari: An attractive entry point for a great LT growth story, with many more tailwinds than headwinds). Pre-Covid-19, Campari was growing at a 5%+ run rate. However, Campari accelerated through Covid-19, not just in the US but in all four of its regions. While Aperol remains the biggest single driver of growth, today nearly all the other major brand families are also making significant contributions.

- **Campari has strong pricing power.** In our cross-staples analysis, it ranks close to the top and almost on a par with luxury. **Campari is recession resilient.** Most of its brands face no real threat from private label. Again a cross-staples analysis shows there is a low propensity to down-trading. In 2009, sales did fall -1% organically but EBIT was up 9%; and Campari made a very rapid recovery with organic sales growth of 8% in 2010 and 9% in 2011.

- Historically, Campari has scored low on ESG ranking and disclosure has been weak. However, in recent years, the improvement in disclosure has been dramatic and this has been reflected in **improving ESG scores**.

INVESTMENT IMPLICATIONS

Campari is not cheap. However, given great long-term growth prospects (18% forward CAGR EPS over 2022-25), recession-resilience, and improving ESG score, we think this is a fair entry point, with the stock trading at 23.4x NTM+1 PE, a 48% premium to peers, in a sector that we think is attractively priced at a 40% premium to the market. We continue to rate Campari Outperform, with a €12.60 price target.

CAMPARI IS A GREAT LONG-TERM GROWTH STORY

Pre-Covid-19, Campari was growing at a 5%+ run rate (see Exhibit 1). Campari (alongside Rémy Cointreau) has generated the strongest growth in our sector in the last two years (see Exhibit 2). Campari accelerated through Covid-19, not just in the US but in all four of its regions (see Exhibit 3).

All the brand families (with the notable exception of SKYY) have grown steadily through Covid-19 (see Exhibit 4).

While Aperol remains the biggest single driver of growth, today nearly all the other major brand families are also making significant contributions (see Exhibit 5).

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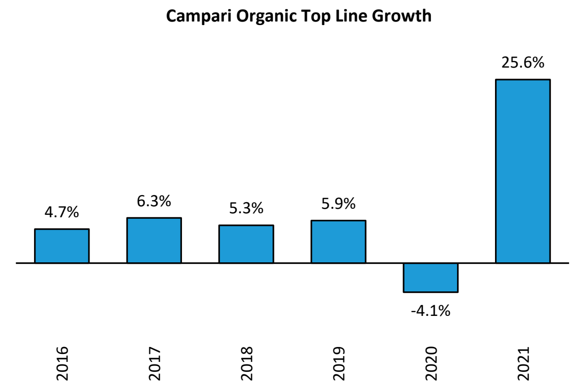
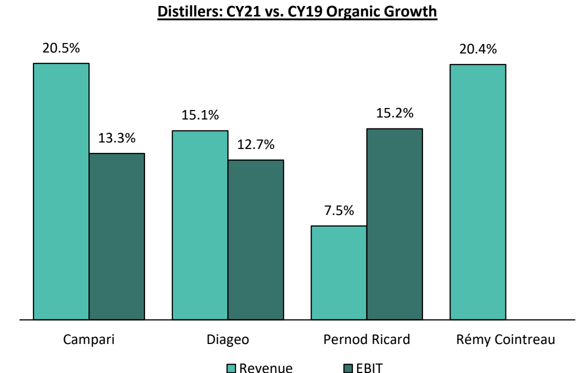
EXHIBIT 1: **Pre-Covid-19, Campari was growing at a 5%+ run rate**



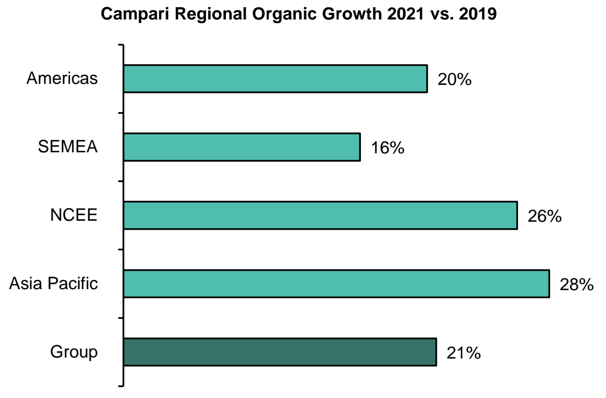
Source: Company reports and Bernstein analysis

EXHIBIT 2: **Campari has generated the strongest growth in our sector in the last two years**



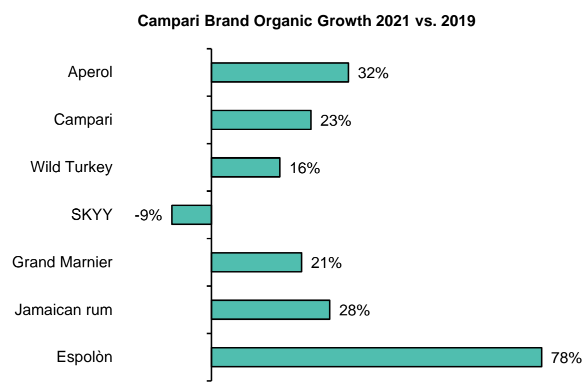
Source: Company reports and Bernstein analysis

EXHIBIT 3: **Campari accelerated through Covid-19, not just in the US but in all four of its regions**



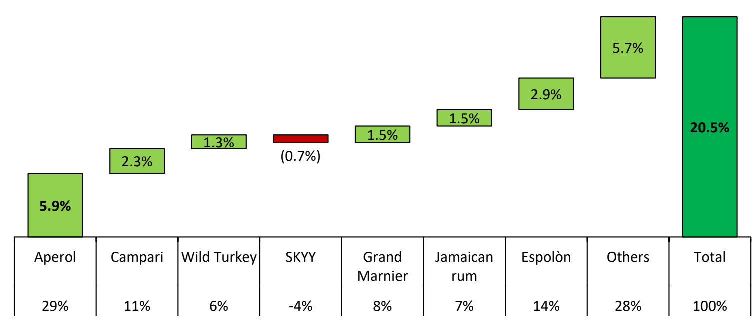
Source: Company reports and Bernstein analysis

EXHIBIT 4: **Nearly all the brand families have grown steadily through Covid-19**



Source: Company reports and Bernstein analysis

EXHIBIT 5: **Aperol remains the biggest single driver of growth, but the other major brand families are also making significant contributions**



Source: Company reports, and Bernstein estimates and analysis

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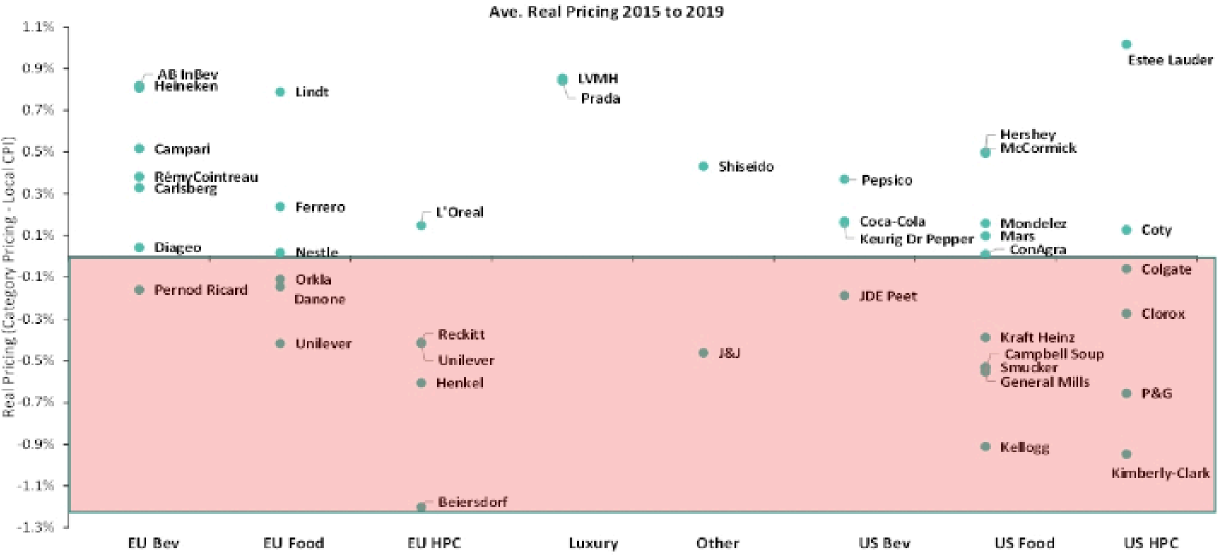
CAMPARI HAS STRONG PRICING AND IS RECESSION-RESILIENT

In our cross-staples analysis, Campari ranks close to the top and almost on a par with luxury (see Exhibit 6).

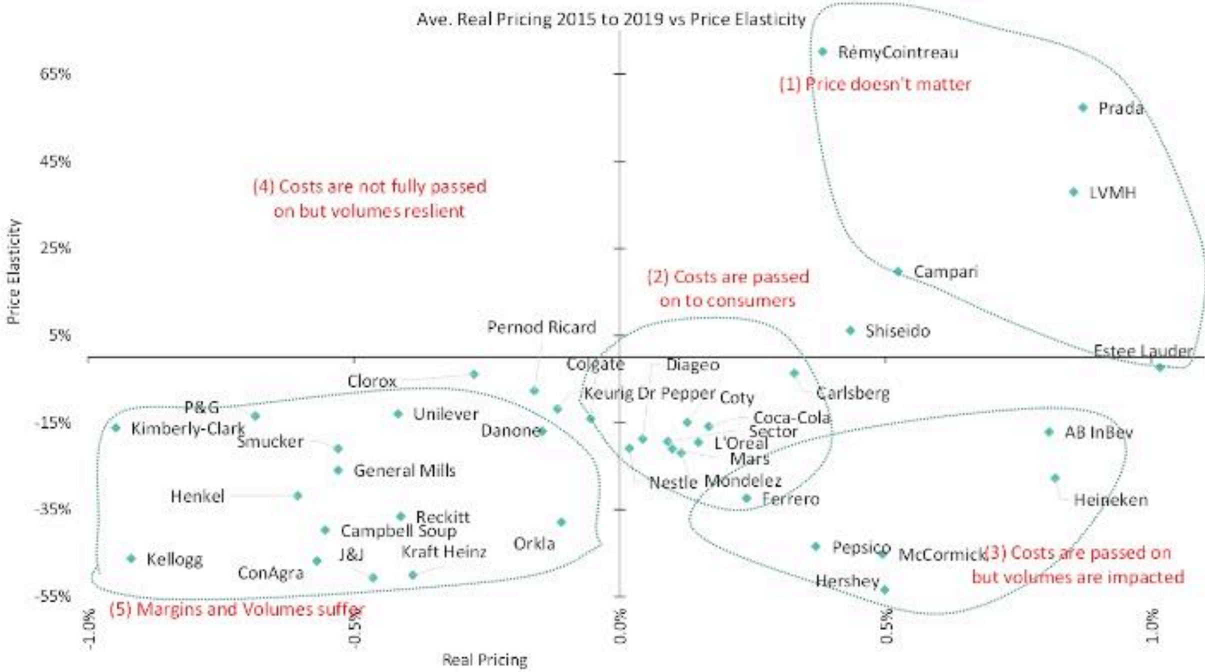
EXHIBIT 6: **In our cross-staples analysis, Campari ranks close to the top and almost on a par with luxury**



Source: Euromonitor, company reports, and Bernstein estimates and analysis

Campari also operates in categories with relatively low price-elasticity (see Exhibit 7).

EXHIBIT 7: **Campari also operates in categories with relatively low price-elasticity**



Source: Euromonitor, company reports, and Bernstein estimates and analysis

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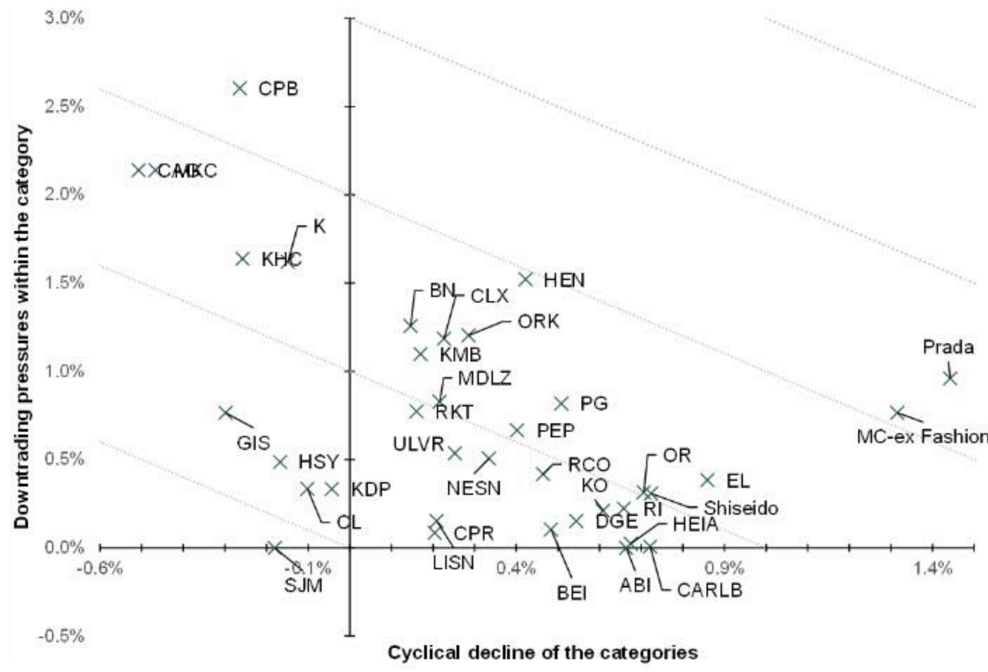
Campari is recession resilient. Most of its brands face no real threat from private label. Again a cross-staples analysis shows that it has a low propensity to down-trading (the vertical axis), operating in categories that have a lower-than-average cyclicality (horizontal axis) — see Exhibit 8.

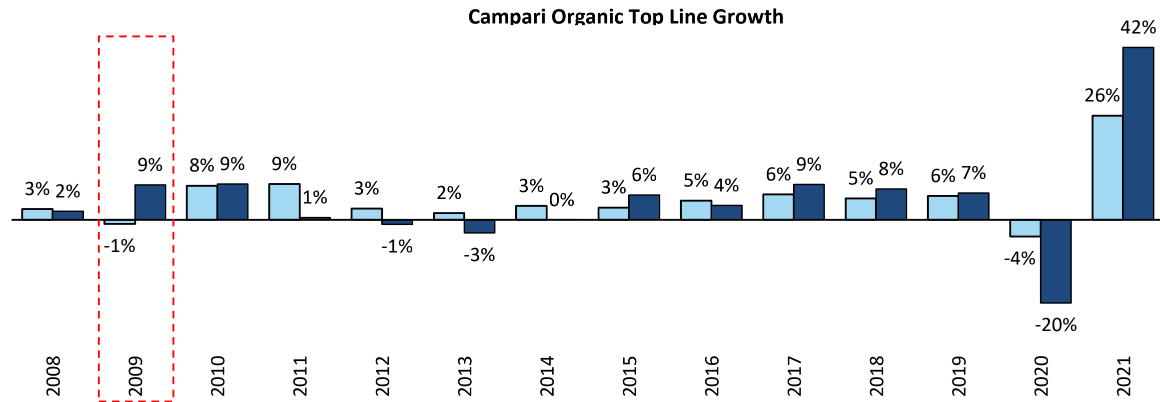
EXHIBIT 8: **Campari has a low propensity to down-trading, operating in categories that have a lower-than-average cyclicality**



Source: Euromonitor, company reports, and Bernstein estimates and analysis

In 2009 sales did fall -1% organically (see Exhibit 9), but EBIT was up 9%; and Campari made a very rapid recovery with organic sales growth of 8% in 2010 and 9% in 2011.

EXHIBIT 9: **In 2009 sales did fall -1% organically, but EBIT was up 9% and Campari made a very rapid recovery**



Source: Company reports and Bernstein analysis

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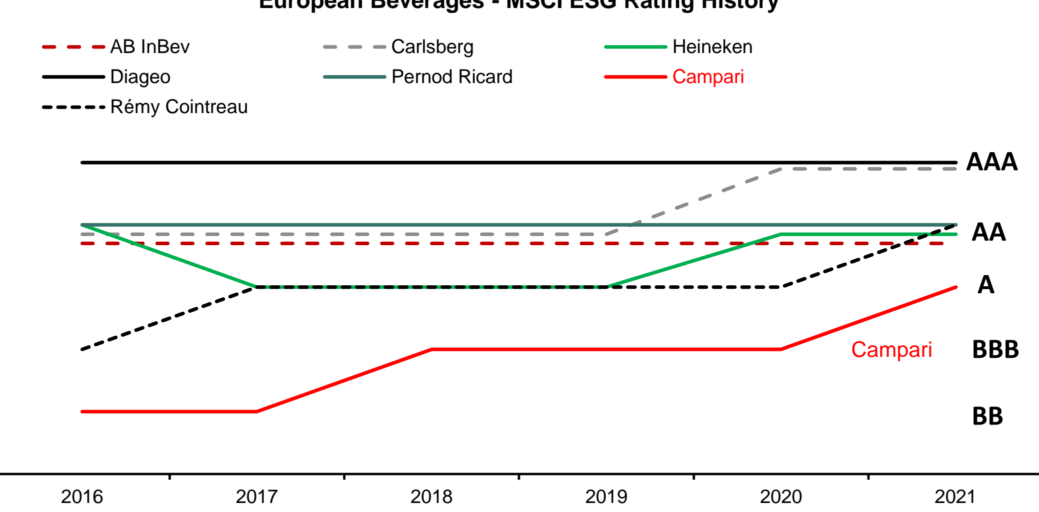
CAMPARI'S ESG SCORES ARE LOW COMPARED TO OUR COVERAGE, BUT STEADILY IMPROVING

MSCI (and certain other ESG scoring services) currently rank Campari as the lowest ranked for ESG performers in our European coverage (see Exhibit 10). In this chapter, we take in an overview of each of the letters in the "ESG" acronym, and explain why we believe Campari has the potential to move up the external rankings in coming years. However, continued improvements in Environmental disclosure and performance, as well as a continued focus on Social factors (responsible marketing and consumption, as well as gender diversity) give us confidence that the company is steadily improving.

EXHIBIT 10: **Campari has the lowest ranking of our coverage in the MSCI ratings**



Note: Ratings from AAA (best in class) through A, BBB through B, CCC through C

Source: MSCI and Bernstein analysis

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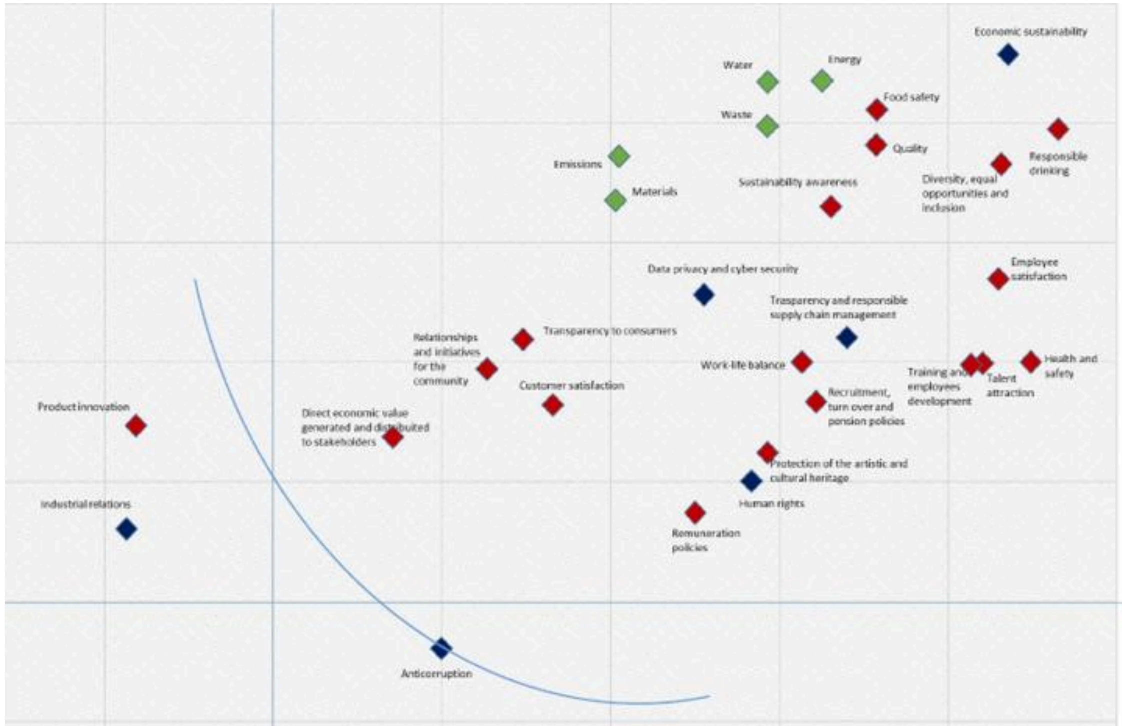
EXHIBIT 11: **Campari's corporate materiality analysis rates economic sustainability as the key risk**



Note: this is a blown-up portion of the full materiality analysis. X-axis is business risk, Y-axis is external stakeholder relevance.

Source: Campari company reports

ENVIRONMENTAL – IMPROVED DISCLOSURE AND TARGETS, LIKELY WITH MORE TO COME

Campari has historically been a relative laggard in our spirits coverage for environmental disclosures. We see a constant trend of improved disclosure, just one step behind the large-cap spirits names. Water consumption efficiency statistics are only available for the past four years, with 2021 water withdrawal a solid 20% below the 2019 level. On carbon, the big missing for Campari is data on Scope 3 emissions, which are between 90% and 95% of total emissions for the other companies in our coverage. Campari's disclosures on Scope 1 and 2 emissions are much improved. However, the bar keeps rising. All the other distillers in our coverage publish Scope 3 emissions data, with the other mid-cap name Rémy Cointreau starting recently. We expect Campari to catch up in due course.

Water — efficiency should improve, aided by sugar manufacturing shutdown

Campari have been reporting the intensity of its water usage since 2018 (see Exhibit 12) and we estimate that, on a comparable measure of water consumption, it uses the highest amount of water to produce a liter of product in our Spirits coverage. This may partly reflect the fact that Campari has relatively fewer operations in water-stressed areas around the globe than Diageo (which has large African and Indian operations) and Pernod Ricard (similarly with India). For Rémy Cointreau, much of its water consumption falls outside Scope 1 and 2, as it buys significant amounts of pre-distilled wine as eau-de-vie for aging into cognac. With the recent closure of the highly water intensive Jamaican sugar manufacturing business, water efficiency metrics should continue to improve. We note that Campari is targeting a 40% reduction in water usage intensity by 2025, and a 42.5% reduction by 2030 against the 2019 baseline.

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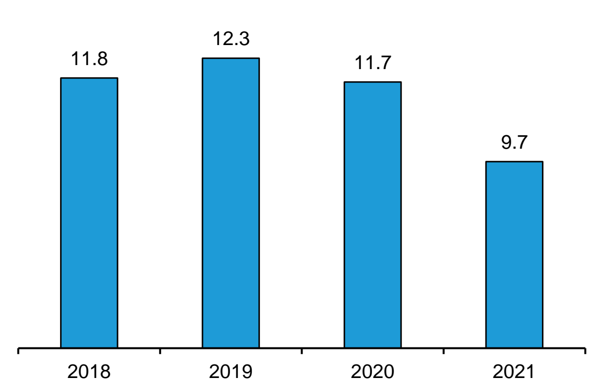
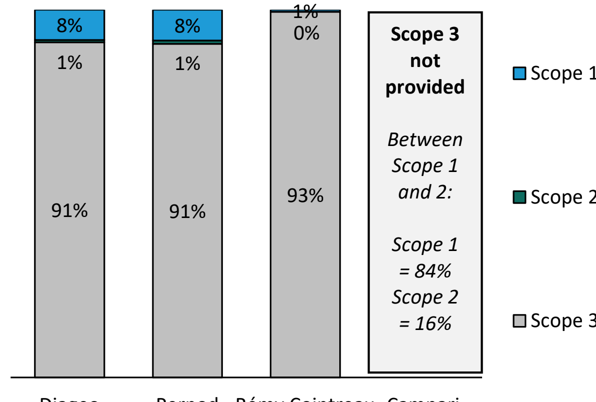
EXHIBIT 12: **Campari's water intensity has been flattish since 2018...**



Note: Consumption defined as withdrawal less discharge of water

Source: Company reports and Bernstein analysis

EXHIBIT 13: **...Scope 3 comprises the vast majority of emissions, and the greatest challenge for our coverage**



Source: Company reports and Bernstein analysis

Carbon — new goals, though still lacking in Scope 3 disclosure and the bar keeps being raised

Diageo and Pernod Ricard lead with the level of disclosure they provide (spanning back a number of years), as well as with clear targets to reduce GHG emissions. Rémy Cointreau has improved on both those counts over the past few years. Campari is the only distiller that does not provide estimates of Scope 3 emissions, **although it has committed to reducing GHG emissions** in Scope 1 and 2 by 30% in 2030 and 25% in Scope 1 to 3 by 2030, against a 2019 baseline. **It has also committed to achieve net-zero emissions by 2050 or sooner.**

The vast majority of GHG emissions for distillers are Scope 3 (see Exhibit 13). This accounts for 91% of Diageo and Pernod Ricard's total emissions, and 93% of Rémy Cointreau's:

- **Upstream and downstream transportation.** Spirits are more volume-efficient to ship than beer (e.g., higher ABV). However, there are many cases where localized production (which could alleviate GHG emissions from transportation) is either inefficient or impossible. Examples include Cognac, Scotch, Irish, and Bourbon, which by definition must be produced in Cognac, France; Scotland; Ireland; and the US, respectively.

- **Packaging.** The majority of packaging for distillers is glass, which is carbon-intensive to produce. Initiatives to tackle these emissions include reducing bottle weight and promoting recycling.

- **Purchase of alcohol from third parties.** This is most meaningful for Rémy Cointreau. The company purchases a significant portion of its eau-de-vie from third-party grower-distillers. Campari, Pernod Ricard, and Diageo use neutral alcohol to produce aperitifs, pastis, and IMFL.

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We estimated GHG emissions intensity for each company to present a standardized and comparable metric across the sector (see Exhibit 14 and Exhibit 15). In FY21, Campari had the lowest reported Scope 1 + 2 intensity among the spirits majors, possibly because it likely buys in industrial alcohol for the production of aperitifs. Rémy Cointreau has the lowest Scope 1 + 2 + 3 intensity at 2,277tCO2e/Mn liters, because of lower Scope 3 emissions; Diageo and Pernod Ricard have higher Scope 1 + 2 emissions, though they have a lower intensity for overall emissions. We do not know Campari's Scope 3 emissions. **Given that a Scope 1-3 target is now in place, it is likely that we can expect disclosure on this in the years to come.**

EXHIBIT 14: **Campari has highest Scope 1-2 intensity...**

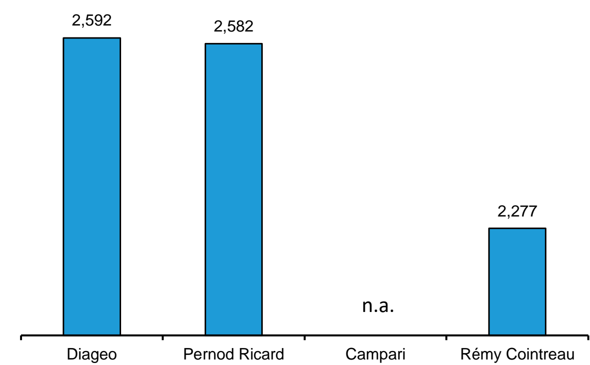
European Spirits - Scope 1 &2 GHG Emissions Intensity, FY21 (tCO2e/mn litres)

229
239
154
110
Diageo
Pernod Ricard
Rémy Cointreau
Campari

Note: Estimated using IWSR volumes

Source: Company accounts, IWSR, and Bernstein estimates and analysis

EXHIBIT 15: **...and data for Scope 3 is not given**



Note: Estimated using IWSR volumes

Source: Company accounts, IWSR, and Bernstein estimates and analysis

Even in the absence of Scope 3 data, from Scopes 1-2 it is evident that progress is being made (see Exhibit 16 and Exhibit 17) with a 2019 switch to natural gas at Jamaican and US distilleries, away from wood combustion and oil-based fuels. Even with the increase in Scope 1 emissions in 2021, Campari has still managed to reduce emissions in operations by 5% since 2019. Net-net, Campari's emissions intensity has declined significantly since 2019.

All four major spirits companies now have targets to be net zero across Scope 1, 2, and 3 by 2050 (or sooner). ABI and Heineken are targeting to be net zero across Scope 1-3 by 2040. Carlsberg does not yet have a public Scope 3 commitment, but we expect one very soon.

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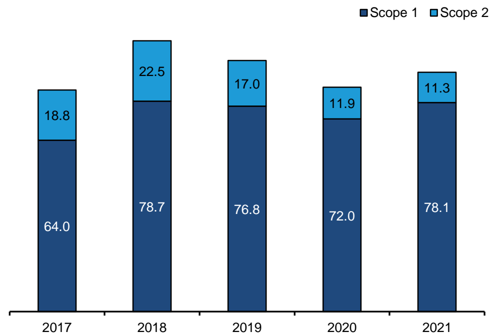
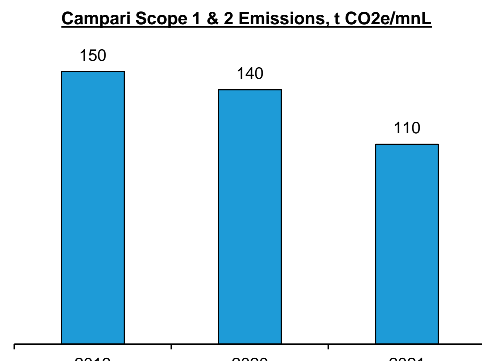
EXHIBIT 16: **Campari only recently started reporting its GHG emissions statistics...though the direction of travel is positive**



Source: Company reports and Bernstein analysis

EXHIBIT 17: **Campari's emissions intensity has declined significantly since 2019**



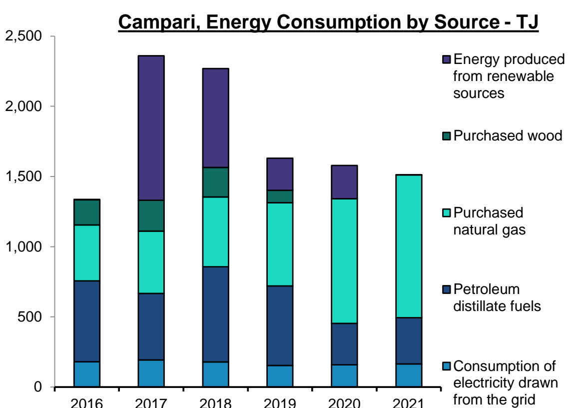
Source: Company reports and Bernstein analysis

Energy

Campari does not have any explicit energy reduction goals, only that 100% of electricity in Europe is renewable by 2025. Electricity forms a relatively small proportion of total energy consumption, so this seems a relatively modest target. In FY19, its energy consumption fell 28% (see Exhibit 18), due to lower production at the sugar plant in Jamaica (32% reduction YoY), a shift away from wood and oil-based fuels in favor of natural gas in Jamaican and US distilleries, and a generally more efficient distillation process. However, renewables account for less than 1% of energy consumption in 2021, due to a decline in production of bagasse, a by-product of sugarcane processing. The cessation of operations at the sugar plant in FY16 was also the reason for the dramatic drop in renewable energy consumption.

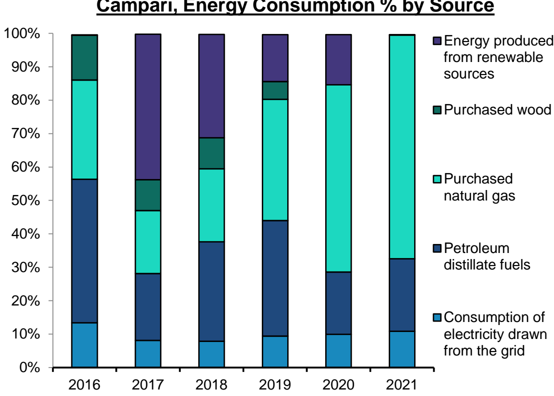
Possibly due to the volatility in its Jamaican sugar operations, the share of energy from renewables has been dropping (see Exhibit 19). Natural gas (67%) and other hydrocarbons (22%) accounted for the majority of Campari's energy consumption in 2021.

EXHIBIT 18: **Campari reduced its energy consumption by 28% in F19...**



Source: Company reports and Bernstein analysis

EXHIBIT 19: **...though renewables are lower due to less "bagasse," a by-product of sugarcane processing**



Source: Company reports and Bernstein analysis

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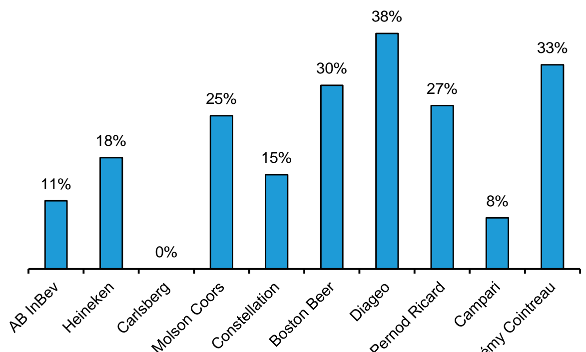
SOCIAL – DIVERSITY, RESPONSIBLE DRINKING & MARKETING

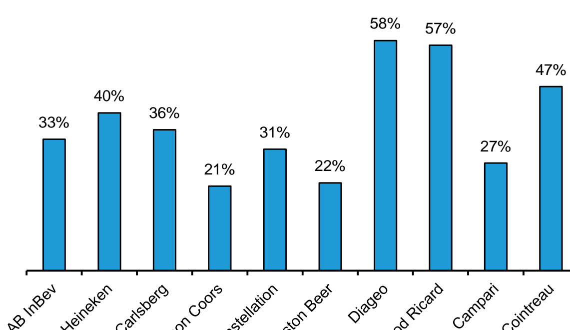
The proportion of women in the workforce at Campari has been steadily rising, from 35% in 2017 to 39% in 2021. But women are still under-represented at senior levels. At the Executive level, Campari has the second-lowest female participation, with one woman on the executive team (see Exhibit 20). We have no doubt about Campari's commitment to diversity of thought but we very much look forward to the day when increasing proportions of women at lower ranks percolate upward onto the Executive. The supervisory board is much more gender balanced (see Exhibit 21), roughly in the middle of its peers.

EXHIBIT 20: **In senior management teams, female participation varies from zero to ~40%...**



Source: Company reports and Bernstein analysis

EXHIBIT 21: **...while supervisory boards are almost always better gender balanced**



Source: Company reports and Bernstein analysis

GOVERNANCE – INCREASED VOTING RIGHTS FOR THE FAMILY IS COUNTER-BALANCED BY INCREASED M&A OPTIONALITY

Campari is ultimately controlled by the Garavoglia family, who through Lagfin currently own 54% of the company. Before 2020, Campari granted double voting rights to shareholders who have owned the shares for a minimum period of a continuous 24 months. In 2020, Campari moved the company's registered office to the Netherlands, which allowed the implementation of a new voting mechanism. We detail the exact changes in: Campari: Lagfin to buy 30m withdrawn shares, redomiciliation looks set to complete. Under the Dutch legal system, Campari has granted even more voting rights per share, depending on the holding period: two voting rights for each share held for a period of two years; five voting rights for each share held for a period of five years; 10 voting rights for each share held for a period of 10 years. We estimate that, over time, the percentage voting rights of the family could rise as high as 87%.

The current leadership at Campari, both family and management, have delivered fantastic returns and a very high degree of trust. Some minority shareholders are anxious that future generations may not have the same trust. However, it also creates more flexibility for value creation through equity-financed M&A. At a €10 share price, we estimate Campari could issue around €5Bn of equity today, increasing to ~€45Bn in eight years, and the family could still maintain ~51% of voting rights. If we also assume Campari would be willing to take leverage up to 3.0x net debt/EBITDA (on a normalized 2019 level) for the right deal, this could generate an additional €500-€700Mn of capital today.

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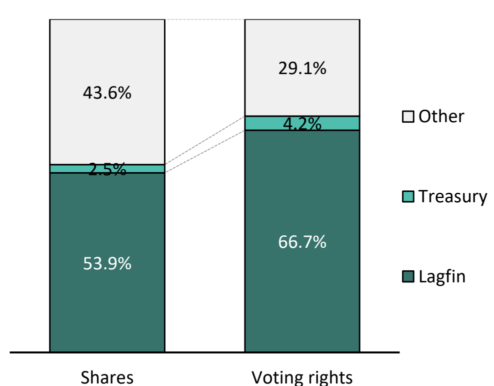
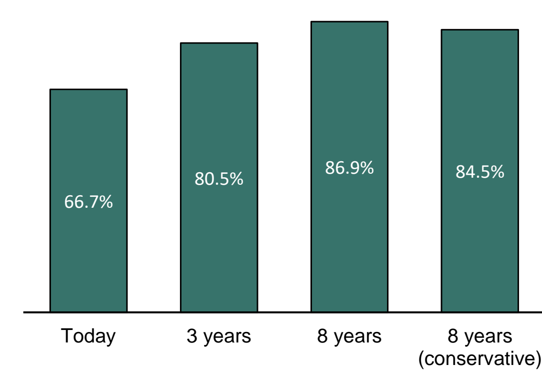
EXHIBIT 22: **Garavoglia family own 54% of Campari with 67% of voting rights**



Source: Company reports, and Bernstein estimates and analysis

EXHIBIT 23: **We estimate that, over time, the percentage voting rights of the family could rise as high as 87%**

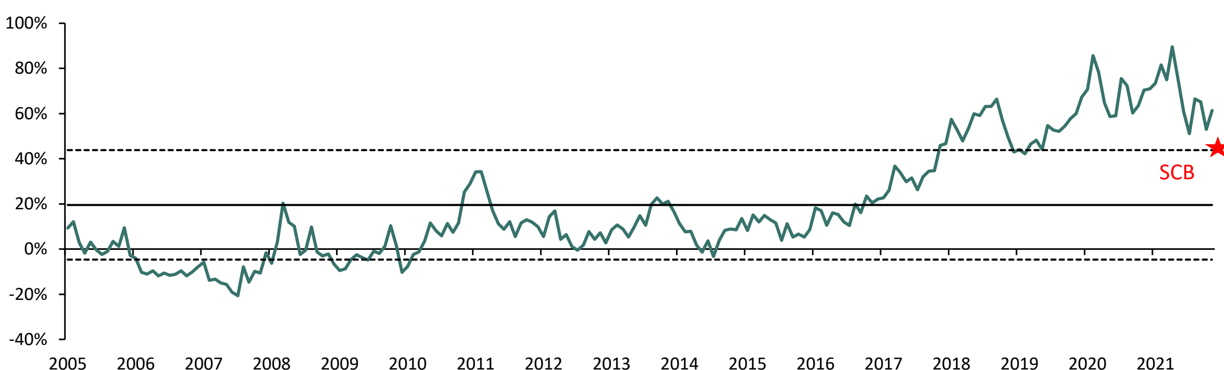


Source: Company reports, and Bernstein estimates and analysis

CAMPARI IS NOT CHEAP, BUT IS ATTRACTIVELY PRICED

Over the course of 2016-19, Campari significantly rerated as prior investments in marketing and sales capabilities paid off and top-line growth accelerated. The stock has touched relative highs of an 80% premium to the sector; but on our estimates is now trading at a much more reasonable low-forties percentage premium (see Exhibit 24), which we view as fair, given we expect EPS growth of 18% for Campari vs. 13% for the sector.

EXHIBIT 24: **Campari is trading at a low-forties percentage premium to the sector on our numbers**



Source: Bloomberg (as of June 30, 2022) and Bernstein analysis

On our (above consensus) estimates, the sector is trading at a 38% premium to the market (see Exhibit 25) compared to the 50% premium we think it deserves.

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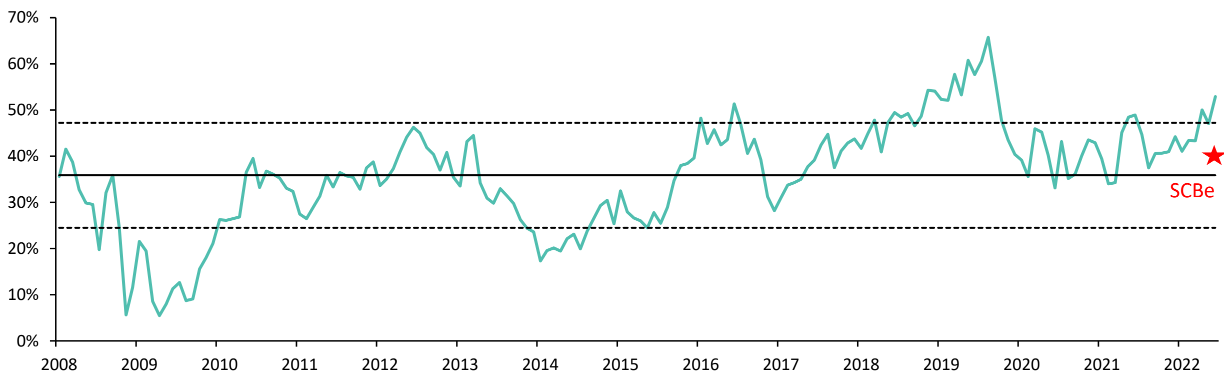
EXHIBIT 25: **On our (above consensus) estimates, the sector is trading at a 38% premium to the market**



Source: Bloomberg (as of June 30, 2022) and Bernstein analysis

VALUATION METHODOLOGY

The Outperform rating and target price of €12.60 for Davide Campari-Milano NV (ticker: CPR.IM) is based on an analysis of relative price-to-earnings (PE) multiples backed by conservative discounted cash flow (DCF) analysis. We believe the two most important drivers of PE are profit growth and return on capital. We use forward EPS estimates beginning a year from now, represented by July 2023-June 2024 EPS, to set our target prices. The closing prices of Davide Campari-Milano NV and the MSDLE15 on August 8, 2022 was €10.22 and 1,745.03, respectively.

RISKS

Factors that represent risk to our positive long-term view on the European & American alcoholic beverages sectors: (i) a breakdown in the three-tier distribution system in the US, which would expose producers to greater margin pressure from retailers, (ii) current upward trends in US and emerging markets (EM) consumption of alcohol reversing, (iii) difficulties of the alcoholic beverage markets in Western Europe becoming more severe than we anticipate, and (iv) significant foreign exchange movements such as a decline in the dollar, which could reduce the value of non-European profits.

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GALAXY ENTERTAINMENT: ENABLING MACAU ECONOMIC DIVERSIFICATION WITH STRONG ESG COMMITMENT

HIGHLIGHTS

- Galaxy has been the most defensive Macau stock during the Covid-19 disruptions that have devastated Macau's gaming industry over the last two-and-a-half years. The stock has outperformed Macau peers with only a 23% decline compared to a ~65% decline for the industry since January 2020. Even with the cash bleed during this prolonged downturn, Galaxy retains a strong net cash balance sheet, and its Galaxy Macau phases 3 and 4 make the company the second-largest investor in Macau. Due to its conservative approach to balance sheet management, Galaxy continues to be well-positioned to handle the Covid-19 downturn and potential China economic slowdown, while continuing to fund its long-term growth strategy.

- Galaxy's successful pivot to mass gaming with the buildout and expansion of Galaxy Macau has supported the non-gaming tourism diversification sought by the Macau government. Galaxy's mass gaming revenue contribution has risen from ~50% to 83% since Covid-19 began. Its well-performing retail operation and construction material business further hedges (albeit on a limited basis) the gaming and lodging softness in Macau. Galaxy Macau's cost control is also among the best of Cotai properties.

- ESG commitment: Galaxy has strongly supported continued employment of its Macau workers through the Covid-19 recession. Galaxy has developed an internal "materiality matrix" covering 12 ESG categories. The company has also made solid investment in responsible gaming, supported local SMEs, and focuses on environmental commitment.

INVESTMENT IMPLICATIONS

Galaxy remains a top long-term investment in Macau's post-Covid-19 recovery and offers a compelling thematic of mass share gains.

PROVEN BEST RELATIVE PERFORMANCE DURING PROLONGED COVID-19 DISRUPTIONS

In the 20-year history of Macau's modern gaming industry and prior to Covid-19 disruption since 2020, Macau experienced two periods of downturn, the 2008 GFC recession and China's anticorruption crackdown during 2014-16. In comparison, the Covid-19 disruptions have resulted in a ~70% decline from the peak in 2018, close to the worst periods in history (see Exhibit 1). In comparison, Galaxy has shown a much lower degree of decline of only 35% to date from the peak in 2021 (see Exhibit 2).

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EXHIBIT 1: **Covid-19 disruptions have resulted in a ~70% decline in Macau stocks from the peak in 2018, close to previous significant downturn periods**

Macau Gaming stocks price index (BIGAMEAC)
Maximum Drawdowns in previous cycles

GFC 86% drawdown

Anti-corruption 74% drawdown

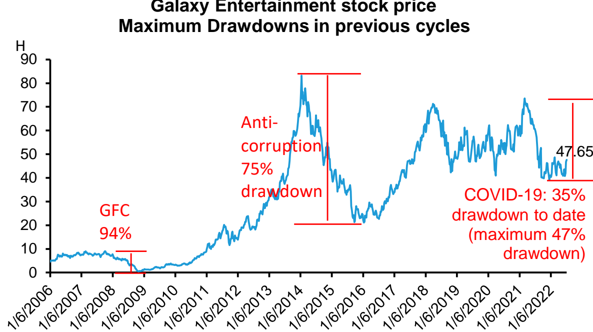
COVID-19: 70% drawdown to date (maximum 75% drawdown)

165

Note: Data until market close of July 8, 2022

Source: Bloomberg and Bernstein analysis

EXHIBIT 2: **In comparison, Galaxy has shown a much lower degree of decline of 35% to date (maximum -47% during Covid-19 disruptions)**

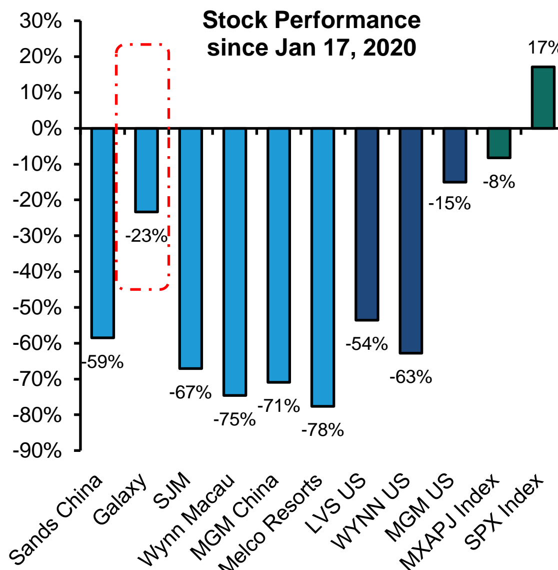


Note: Data until market close of July 8, 2022

Source: Bloomberg and Bernstein analysis

During the over two-and-a-half years of Covid-19, Galaxy's stock has stood out with share price significantly outperforming Macau peers, showing a much lower degree of decline of only 23% since January 2020, compared to a ~65% decline for the industry (see Exhibit 3). Galaxy's stock has also achieved positive return of +18% YTD 2022 (see Exhibit 4), materially outperforming Macau peers, as well as the Asia and US market indices.

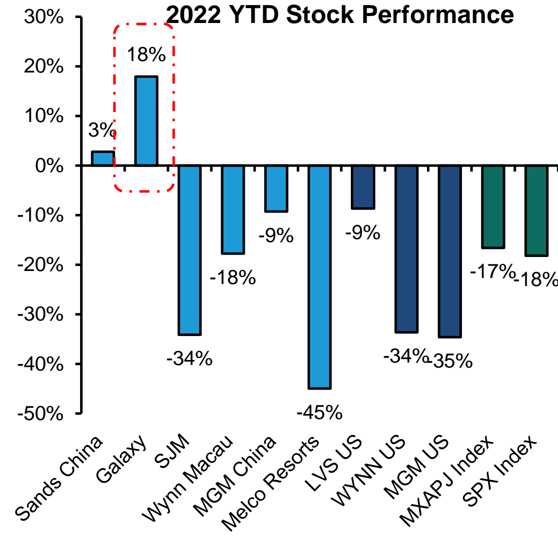
EXHIBIT 3: **Galaxy has the best relative performance among Macau gaming stocks since January 17, 2020 (the initial news of the epidemic)...**



Note: Market data through July 8, 2022

Source: Bloomberg and Bernstein analysis

EXHIBIT 4: **...while YTD 2022, Galaxy has outperformed major Macau and US gaming stocks as well as general market indices**



Note: Market data through July 8, 2022

Source: Bloomberg and Bernstein analysis

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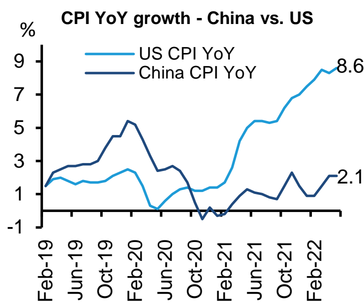
CHINA'S MACROECONOMIC INDICATORS HAVE YET TO SUGGEST A NEAR-TERM RECESSION, BUT A SLOWDOWN IS EVIDENT

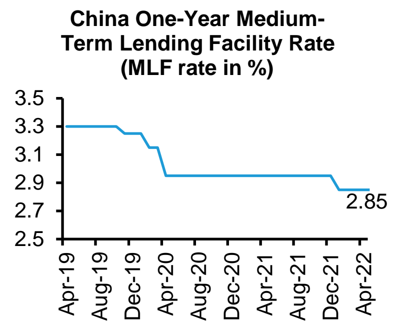
Concerns over recession risk continue to rise this year, along with soaring inflation in the US (and across Europe and other parts of the world), coupled with increasing cost of capital as the Fed aggressively hikes interest rates. Although a recession is now largely baked into investors' expectations for US gaming, China's macroeconomic indicators have not suggested a near-term recession despite an evident slowdown (see Exhibit 5 to Exhibit 7).

EXHIBIT 5: **Compared to the US, China's low inflation has not suggested near-term recession risk**



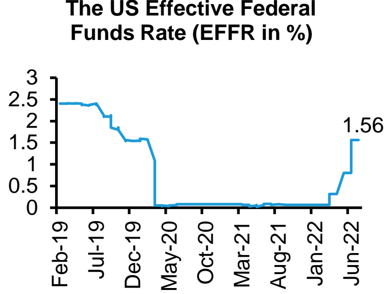
Source: Bloomberg and Bernstein analysis

EXHIBIT 6: **China's central bank is still cutting rates to boost the economy...**



Source: Bloomberg and Bernstein analysis

EXHIBIT 7: **...while the US Fed has delivered significant rate hikes to combat soaring inflation**

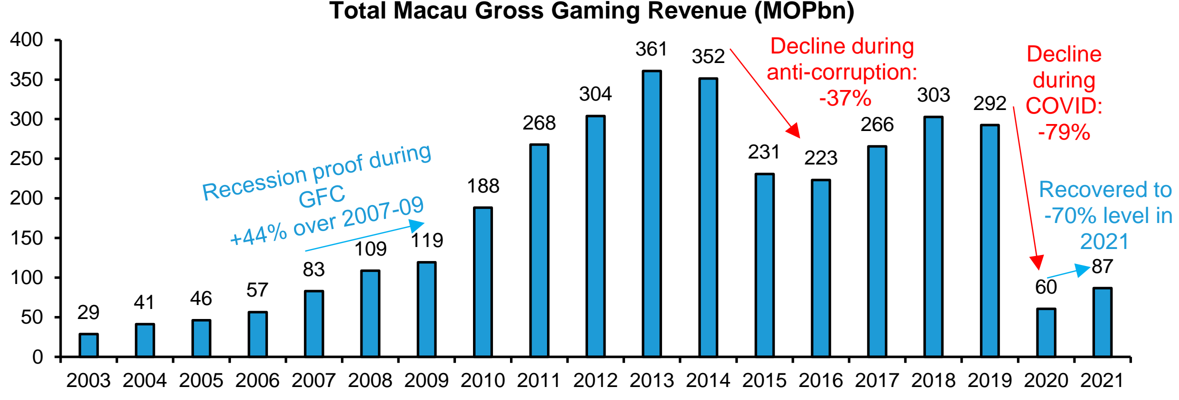


Source: Bloomberg and Bernstein analysis

STILL, MACAU GAMING REVENUE IS AT ROCK-BOTTOM TODAY AND ANY ECONOMIC SOFTNESS IN CHINA WOULD BE MORE THAN OFFSET BY A TRAVEL OPENING RECOVERY

From a pure economic impact perspective, a ~37% decline in gaming revenue during 2014-16 could be the worst-case scenario (see Exhibit 8) that we can benchmark for the next economic recession, but this is overstated as a large portion of the downturn was driven by government policy (i.e., junket play and smoking ban) with more limited impact from a softer China economy and stock market collapse in 2015. On the other hand, the Macau border policy with China under Covid-19 restrictions has a much more severe impact than any economic downturn. We believe a recovery from Covid-19 disruptions in Macau will mitigate much of the potential negative demand impact from a China economic slowdown.

EXHIBIT 8: **Compared to previous market downturns, Macau GGR was hit most heavily by Covid-19**



Source: Macau Gaming Inspection and Coordination Bureau (DICJ) and Bernstein analysis

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GALAXY'S NET CASH AND STRONG BALANCE SHEET POSITION THE COMPANY WELL DURING A DOWNTURN

Needless to say, cash is king during any recession (and with the Covid-19 situation in China, Macau has been in recession since early 2020). Macau's gaming industry remains in recession until unfettered travel resumption occurs; while other consumer and travel sectors have benefited from a recovery trade, Macau remains in the doldrums. Galaxy remains well-positioned to weather any prolonged Macau revenue drought as the company has the strongest balance sheet among all Macau gaming operators (see Exhibit 9).

EXHIBIT 9: **Snapshot of Macau operators' balance sheet, liquidity, and cash burn; in the worst-case scenario where casinos were to be shut down, Galaxy has cash on hand to operate for 30 months**

	Galaxy	Sands China	MGM China	SJM	Wynn Macau	Melco (Macau only. Ex SC)	Studio City
As of Mar 31, 2022	**HK$ mm**	**US$ mm**	**HK$ mm**	**HK$ mm**	**HK$ mm**	**US$ mm**	**US$ mm**
Leverage Ratio							
Gross Debt / 2019 EBITDA	0.6x	2.6x	4.2x	6.8x	5.4x	4.5x	6.8x
Net Debt (Cash) / EBITDA	-1.5x	2.5x	3.8x	6.4x	4.3x	3.7x	4.2x
Gross Debt / 2023E EBITDA	0.6x	2.4x	4.3x	5.9x	6.0x	5.3x	7.0x
Net Debt (Cash) / EBITDA	-1.4x	2.3x	3.9x	5.6x	4.8x	4.3x	4.3x
Cash Availability (as of Mar 31, 2022, except for Melco as of year-end 2021, SJM as of Jun 20, 2022 and Wynn Macau as of Jun 15, 2022)							
Cash and Equivalents	35,000	531	2,232	1,750	9,998	849	926
Available revolver (1)	N/A	1,539	9,757	5,700	5,517	1,505	30
Total liquidity	**35,000**	**2,070**	**11,989**	**7,450**	**15,515**	**2,354**	**956**
Debt (as of Mar 31, 2022, except for MGM China and Melco as of year-end 2021)							
Gross Debt	10,500	8,042	24,251	28,811	50,143	4,500	2,450
Net Debt/ (Cash)	(24,500)	7,511	22,019	27,061	40,145	3,651	1,524
Cash Run-rate (in the worst case, zero-revenue scenario) (2)							
Cash on hand - No. of months	30	3	5	3	13	10	13
Total liquidity - No. of months	30	12	22	12	18	26	14
Cash Run-rate (in a breakeven EBITDA scenario) (3)							
Cash on hand - No. of months	48	9	13	7	35	27	16
Total liquidity - No. of months	48	32	55	28	47	62	17
Cash Run-rate (in a scenario of best quarterly EBITDA during COVID period) (4)							
Cash on hand - No. of months	93	29	44	5	92	92	16
Total liquidity - No. of months	93	91	131	23	122	152	17

(1) Available revolver refers to undrawn amounts under existing revolving facilities. Galaxy has a multi-billion dollar uncommitted facility.

(2) Assumes no reduction in operating costs or capex from estimated and a zero-revenue environment.

(3) Assumes EBITDA achieves breakeven every month.

(4) Assumes EBITDA maintains as the recorded best quarterly EBITDA during COVID period.

Note: Cash and equivalents of SJM and Wynn Macau are as of March 31, 2022. Total liquidity includes refinancing (SJM) and shareholder loan (Wynn) completed in June 2022. 2022E and 2023E could be worse, depending on timing of travel resumption, which would negatively impact liquidity and credit metrics.

Source: Company reports, and Bernstein estimates and analysis

GALAXY HAS BEEN CONSERVATIVE WITH RETURNING CAPITAL TO SHAREHOLDERS, WHICH CONTRIBUTED TO ITS CURRENT STRONG LIQUIDITY AND BALANCE SHEET

Galaxy has always had a modest dividend payout plan, compared to other Macau operators. Galaxy's average dividend payment ratio from 2010 to 2019 was only 23%, the lowest among the six operators (see Exhibit 10 and Exhibit 11). Even comparing in absolute terms, Galaxy paid out the smallest amount of profit (US$2.4Bn) over the past decade. Galaxy's disciplined dividend payout plan has helped the company reserve an abundant liquidity cushion (see Exhibit 11) to navigate through the current tough business environment.

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EXHIBIT 10: **Gaming operators' dividend payout ratio (1/2)**

US$ mn	Sands China			MGM China			Galaxy		
Year	Total cash dividend	Total net income	Dividend Payout Ratio	Total cash dividend	Total net income	Dividend Payout Ratio	Total cash dividend	Total net income	Dividend Payout Ratio
2010	-	666	0%	-	202	0%	-	116	0%
2011	1,202	1,133	106%	398	421	95%	-	386	0%
2012	1,382	1,236	112%	499	584	85%	-	951	0%
2013	2,600	2,215	117%	739	688	108%	-	1,296	0%
2014	2,071	2,548	81%	657	736	89%	629	1,333	47%
2015	2,070	1,459	142%	122	401	30%	231	537	43%
2016	2,070	1,224	169%	137	391	35%	181	809	22%
2017	2,053	1,603	128%	104	298	35%	324	1,348	24%
2018	2,056	1,875	110%	48	136	35%	501	1,723	29%
2019	1,025	2,033	50%	86	246	35%	503	1,665	30%
2020	-	(1,523)	0%	-	(671)	0%	251	(512)	-49%
'10-'19	**16,528**	**15,992**	**103%**	**2,790**	**4,104**	**68%**	**2,370**	**10,164**	**23%**

Source: Company reports and Bernstein analysis

EXHIBIT 11: **Gaming operators' dividend payout ratio (2/2)**

US$ mn	Wynn Macau			Melco (includes share purchases)			SJM Holdings		
Year	Total cash dividend	Total net income	Dividend Payout Ratio	Dividend + share purchase	Total net income	Dividend & Buyback Ratio	Total cash dividend	Total net income	Dividend Payout Ratio
2010	507	569	89%	-	(11)	0%	245	458	54%
2011	800	761	105%	-	295	0%	518	682	76%
2012	829	830	100%	-	417	0%	644	870	74%
2013	990	993	100%	-	637	0%	716	993	72%
2014	1,172	831	141%	301	608	49%	613	868	71%
2015	402	311	129%	63	106	59%	182	318	57%
2016	562	185	304%	1,166	176	663%	175	300	58%
2017	640	475	135%	2,525	347	728%	145	252	58%
2018	796	797	100%	938	340	276%	210	364	58%
2019	298	645	46%	307	373	82%	217	409	53%
2020	-	(930)	0%	79	(1,263)	-6%	-	(390)	0%
'10-'19	**6,997**	**6,397**	**109%**	**5,299**	**3,289**	**161%**	**3,664**	**5,514**	**66%**

Source: Company reports and Bernstein analysis

GALAXY'S GAMING BUSINESS HAS SUCCESSFULLY BEEN PIVOTING FROM VIP RELIANCE TO A MASS-CENTRIC OPERATION

China's crackdowns on online and offshore gambling started in 2019 and intensified over the last two years, and junkets have been decimated by government action. Over the past year, Macau VIP GGR suffered much more than the mass sector, the latter being more constrained by travel restrictions (see Exhibit 12 and Exhibit 13). As mass business has much lower volatility than VIP, once Macau's border fully reopens, recovery in mass should drive the sector to recover in a more stable and assured manner than previous VIP-led recoveries.

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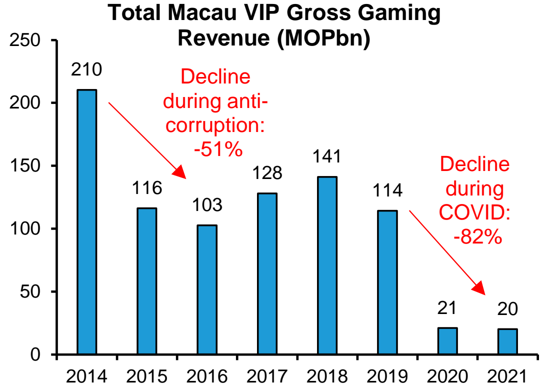
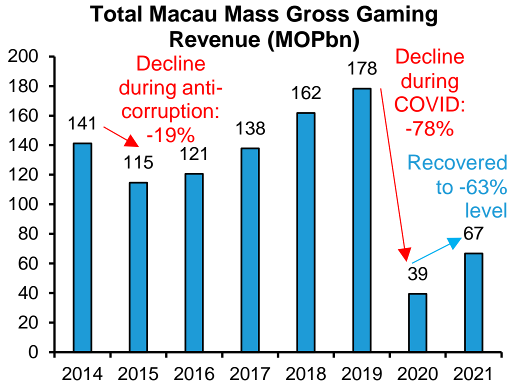
EXHIBIT 12: **Macau VIP GGR was hit much harder by Covid-19 and junket crackdown...**



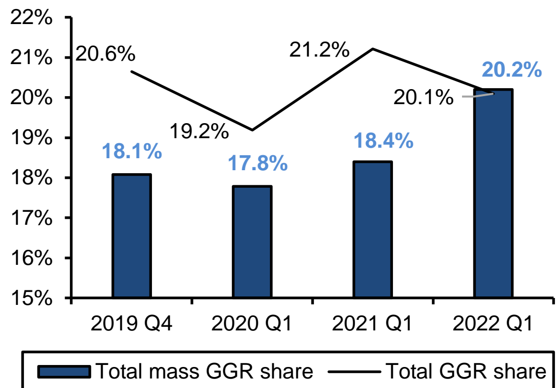
Source: DICJ and Bernstein analysis

EXHIBIT 13: **...while Mass GGR had better recovery than VIP despite prolonged Covid-19 impact**



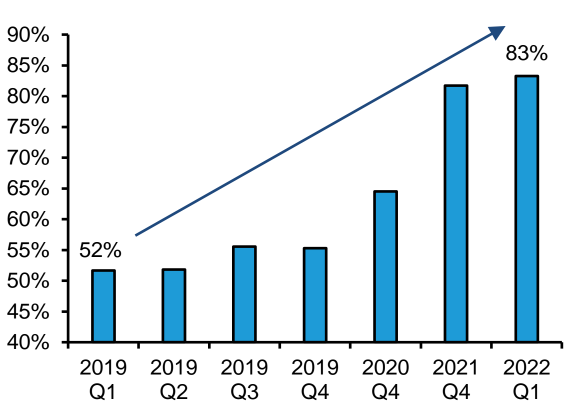
Source: DICJ and Bernstein analysis

EXHIBIT 14: **Galaxy has managed to maintain total market share while increasing mass market share**



Source: DICJ, company reports, and Bernstein analysis

EXHIBIT 15: **Galaxy's GGR contribution from mass improved significantly during VIP junket crackdown**



Source: Company reports and Bernstein analysis

DIVERSIFICATION INTO TOURIST RELATED NON-GAMING AND MITIGATING RISKS OF PROLONGED TRAVEL RESTRICTIONS

Galaxy is uniquely positioned to benefit from having a strong retail mall operation, which has outperformed during China's prolonged travel restriction period. Over the past two years, some Chinese travelers sought out Macau as the only destination outside mainland China available to travel for luxury goods (with Macau's inherent duty-free cost advantage and large-scale offerings). Overall, Galaxy's mall revenue had achieved an average of 75% of pre-pandemic (4Q19) level, and over 100% of pre-pandemic level since 2021, making it the only operator that has a fully recovered retail business (see Exhibit 16).

Furthermore, compared to the other five Macau operators, Galaxy is further diversified into the non-entertainment sectors by having a B2B construction materials business, which is another hedge to the loss of gaming revenue due to China's zero-Covid-19 strategy. The construction materials business contributes consistent (albeit somewhat seasonal)

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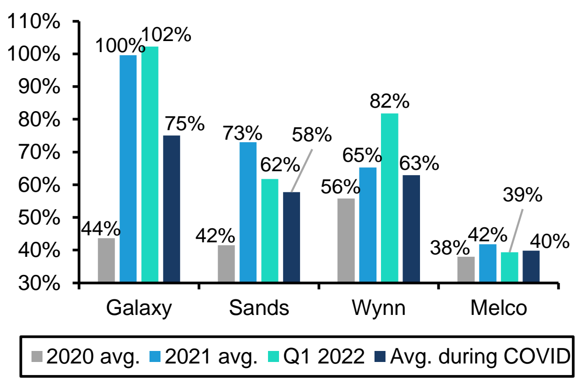
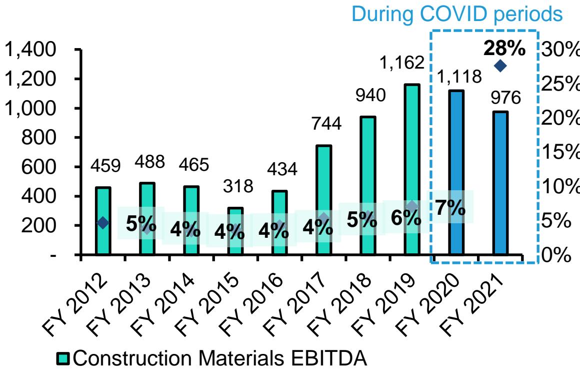
revenue and profit to the company. During 2020-21, the construction business maintained a stable EBITDA contribution close to pre-pandemic levels (see Exhibit 17).

EXHIBIT 16: **Galaxy's retail (mall) business performed much stronger than peers**



Source: Company reports and Bernstein analysis

EXHIBIT 17: **Galaxy's construction materials business contributed a stable income amid Covid-19 restrictions**



Source: Company reports and Bernstein analysis

GALAXY MACAU HAS OPTIMIZED COSTS WHILE SUPPORTING LOCAL EMPLOYMENT DURING THE PANDEMIC

Galaxy has managed to reduce costs during the weak business environment brought on by Covid-19. Since Covid-19 began, the company's flagship property (Galaxy Macau) has maintained an average quarterly fixed cost at 66% of 4Q19 level, being one of the lowest among peer operators' major Cotai properties, despite its relatively large-scale operation (see Exhibit 18). Being disciplined in fixed costs has rewarded the company with the best EBITDA performance when every operator's revenue is constrained by Covid-19 disruptions. Further, this has been done while maintaining local employment (with only voluntary local departures). Like other Macau operators, Galaxy has been committed to supporting the local workforce and community during the difficulty of the pandemic.

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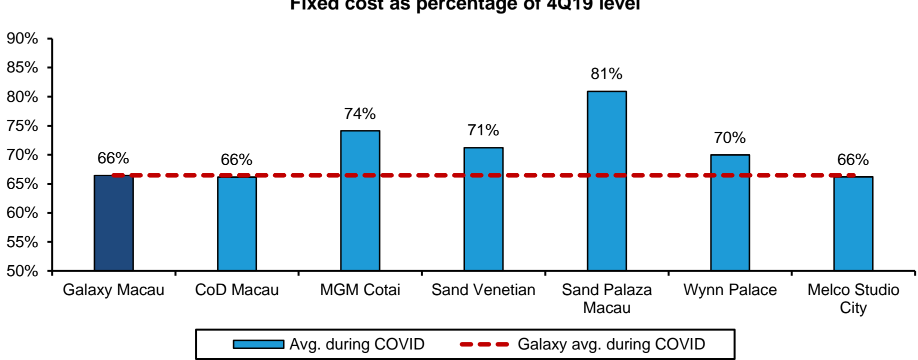
EXHIBIT 18: **Galaxy Macau's fixed cost as percentage of pre-Covid-19 level (4Q19) is among the lowest of Cotai properties**



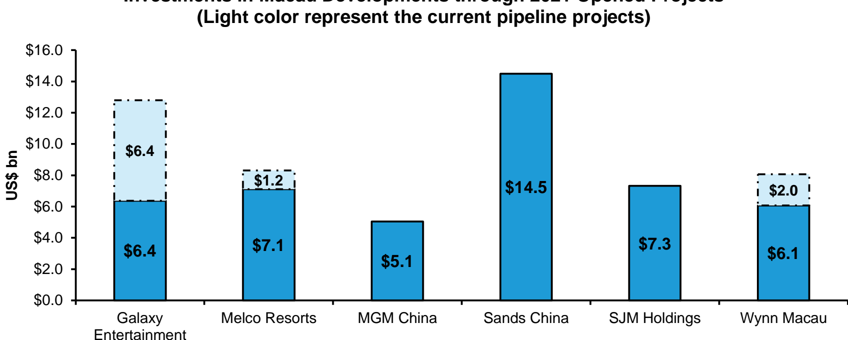
Note: "COVID period" refers to quarters between 1Q20 and 1Q21. The fixed cost includes opex items such as raw materials, consumables, and employee expenses (i.e., all operating cost lines below taxes, player discounts, and promotional allowance).

Source: Company reports and Bernstein analysis

GALAXY, A LEADER IN MACAU'S NON-GAMING DIVERSIFICATION, CONTINUES TO INVEST AND POSITION FOR THE LONG TERM

Galaxy, with its ~HK$50.Bn (US$6.4Bn) investment commitment in Macau through 2024 (the development of Galaxy Macau phases 3 and 4), is well-positioned for long-term growth from its property capacity expansion. The scale of investment in Macau itself is the best example of social impact contribution — numerous jobs have and will be created, and local small and medium business are also beneficiaries by the procurement and service contracts from Galaxy's operations in Macau (see Exhibit 19). We forecast Galaxy's gaming revenue to fully recover to pre-pandemic level in 2024E, and further grow to 118% of 2019 level in 2025E (with a vast majority of revenue coming from the mass business), while its non-gaming revenue will likely surpass the 2019 level in 2023E and be 55% higher than 2019 in 2025E (see Exhibit 20). It should be understood by investors who may have concerns about investing in gaming expansion — any incremental dollar invested in Galaxy today will not likely cause the expansion of gaming operations until 2025E (through natural demand growth and market share gains), but will make a much faster and larger contribution to Macau's economic diversification, employment, and tax base.

EXHIBIT 19: **Galaxy's total US$12.8Bn investment commitment in Macau made it the second-largest investor since Macau opened modern casino gaming, and the largest investor in Macau's new gaming law regime**



Source: Company reports and Bernstein analysis

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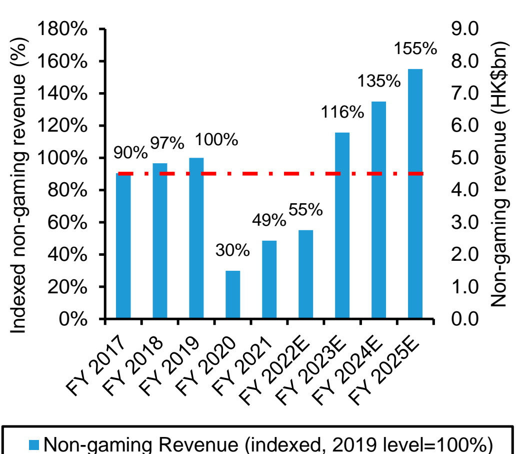
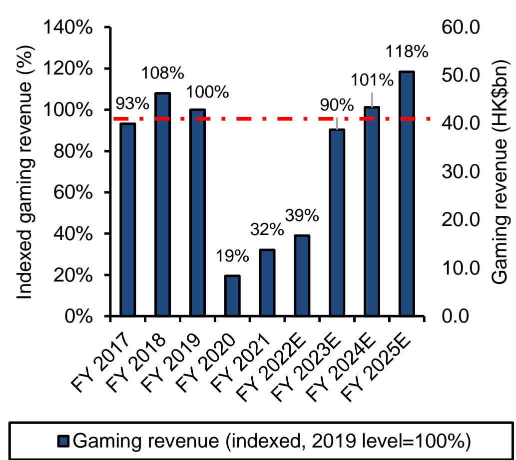
EXHIBIT 20: **Galaxy's non-gaming revenue is expected to fully recover in 2023E and reach 155% of 2019 level by 2025E...**



Note: 2022E and 2023E could be lower, depending on timing of travel resumption.

Source: Company reports, and Bernstein estimates and analysis

EXHIBIT 21: **...while its gaming revenue is expected to be 118% of 2019 in 2025E, lower than non-gaming growth**



Note: 2022E and 2023E could be lower, depending on timing of travel resumption.

Source: Company reports, and Bernstein estimates and analysis

GALAXY HAS MADE CONSISTENT INVESTMENT IN ITS ESG COMMITMENT

Galaxy has developed a comprehensive ESG framework highlighted by its "materiality matrix," which includes sound procedures and targets to engage with stakeholders on critical ESG issues. The matrix covers 12 major ESG components, including business ethics and integrity, compliance with regulation, customer experience and satisfaction, health and safety, economic performance, privacy and cybersecurity, responsible gaming, waste management and recycling, employee wellbeing, green procurement, community engagement and investment, and training and development.

SOCIAL BENEFIT CONTRIBUTOR – RESPONSIBLE GAMING

The social component usually comes first when evaluating a gaming company's ESG practices. Inheritably among the "sin stocks" due to the inevitable gambling-related social harm, a gaming stock may be simply avoided by some institutional investors who have an exclusion-based practice on ESG investing. However, we believe some ESG investors' simple "absence" strategy to avoid gaming stocks would be worse than active selection and engagement (leaving a vacuum for less-responsible investors to push for a more profit-driven approach). See our deep-dive note into the issues surrounding "sin stocks": Global ESG Research: "Sin" Stocks - From exclusion to integration, responsibly. Galaxy was the first Macau gaming operator to establish a dedicated Responsible Gaming Team. The company's major initiatives include:

- **Responsible Gambling Kiosk and Station:** Every Galaxy casino has been equipped with a Responsible Gambling Kiosk to provide customers with essential information about responsible gaming through digital interactions. It also connects customers to a 24-hour helpline and an electronic self-exclusion application for any visitor

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- **Responsible gaming campaigns:** Galaxy has been arranging a series of responsible gaming campaigns every year. Its latest includes responsible gaming training for the Galaxy Responsible Gaming Committee and all team members, the annual Responsible Gaming Promotion Week, and responsible gaming roadshows.

- **Holistic approach enhancing responsible gaming awareness:** Galaxy has integrated responsible gaming concepts into the entire customer journey through a holistic approach, with measures including posting stickers promoting responsible gaming, helpline messages on all Galaxy slot machines, casino exclusion application forms, and strictly prohibiting persons under the age of 21 from entering any Galaxy casino.

SOCIAL BENEFIT CONTRIBUTOR – SUPPORTING LOCAL SMES

Galaxy has been focusing on supporting Macau's small and medium-sized enterprises (SMEs) by prioritizing commercial collaboration with SMEs. For example, Galaxy was the first gaming operator to initiate a dedicated SME partnership program in 2015 and through 2021; over 90% of Galaxy's total purchases on products and services have come from Macau enterprises and SMEs. Meanwhile, Galaxy has been empowering its SME partners through assistance and support offered to its qualifying suppliers including technical assistance, tailored training courses, and events and sponsorship.

ENVIRONMENTAL COMMITMENT

For **waste management**, Galaxy practices in accordance with the 4R Principles (Reduce, Reuse, Recycle, and Recovery). In 2021, when compared to the 2017 baseline level, Galaxy Macau and Broadway Macau improved their waste recycling by 10% and 41%, respectively. For **water management**, Galaxy strives to reduce water waste and executes regular inspection and maintenance programs on wastewater management. In 2021, Galaxy achieved a 46% reduction in household water usage for Galaxy Macau and a 39% reduction in domestic water consumption for Broadway Macau, compared to 2016 baseline levels. StarWorld Macau achieved a 29% reduction in household water consumption. As for **emissions and energy consumption**, In 2021, Galaxy had greenhouse gas (GHG) emissions reduction at Galaxy Macau, Broadway Macau, and StarWorld Hotel of 21%, 30%, and 21%, respectively, compared to the 2016 baseline levels.

Green transportation

Galaxy has been improving guest shuttle bus operations and lowering its carbon footprint. Galaxy was the first gaming operator to introduce electric passenger buses in Macau. The company has been replacing diesel-powered guest shuttle buses with electric and compressed natural gas (CNG) vehicles. By the end of 2021, half the shuttle bus fleet had been converted to electric or CNG buses.

Consistently improving environmental KPIs

Galaxy is devoted to environmental protection and aims to comply with all current environmental legislation and execute plans to reduce GHG emissions. In the most recent five years (2017-21), Galaxy's comparable environmental KPIs (total energy consumption intensity, total GHG emissions intensity, waste intensity, and water consumption intensity) are generally lower than Macau peer operators (see Exhibit 22 and Exhibit 23).

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EXHIBIT 22: **Environmental KPIs of Macau casinos (1/2)**

		Galaxy[1]					Melco[2]					MGM China[3]				
		2021	2020	2019	2018	2017	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017
Total energy consumption	mWh	359,583	303,880	441,934	404,394	399,136	383,628	380,403	518,668	508,604	476,791	207,652	186,669	222,371	215,666	89,150
Total energy consumption intensity	mWh/m²	0.28	0.24	0.36	0.32	0.32	0.27	0.27	0.36	0.33	0.35	0.36	0.32	0.45	0.40	0.42
Total greenhouse gas emissions	MT CO²e	267,543	223,905	344,386	301,446	320,919	15,122	16,996	32,361	24,104	279,205	157,986	139,620	161,864	159,024	70,280
Greenhouse gas emissions (Scope 1)[7]	MT CO²e	13,826	11,477	21,955	18,827	16,253	14,842	16,331	30,327	21,605	17,309	6,397	5,803	9,268	6,620	6,075
Greenhouse gas emissions (Scope 2)[8]	MT CO²e	253,717	212,427	322,431	282,619	304,666	280	665	2,034	2,499	261,896	151,589	133,817	152,596	152,404	64,205
GHG emission intensity	MT CO²e/m²	0.20	0.18	0.28	0.24	0.26	0.01	0.01	0.02	0.02	0.20	0.27	0.24	0.32	0.33	0.34
Total Waste produced	tons	11,419	9,624	24,452	24,294	24,301	9,699	8,275	18,395	15,612	16,245	6,261	5,293	9,381	8,057	3,575
Waste intensity	tons/m²	0.009	0.008	0.020	0.019	0.020	0.01	0.01	0.01	0.01	0.01	0.011	0.009	0.019	0.015	0.017
Water consumption	m³	2,547,140	2,288,979	4,082,419	4,079,589	3,921,084	2,267,281	2,192,805	3,531,191	3,351,836	3,179,784	1,268,067	1,060,232	1,494,352	1,402,056	662,923
Water consumption intensity	m³/m²	1.95	1.84	3.31	3.27	3.15	1.6	1.56	2.24	2.17	2.32	2.17	1.82	3.02	2.60	3.12

Source: Company ESG reports and Bernstein analysis

EXHIBIT 23: **Environmental KPIs of Macau casinos (2/2)**

		Sands China[4]					SJM[5]					Wynn Macau[6]				
		2021	2020	2019	2018	2017	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017
Total energy consumption	mWh	732,614	662,782	794,656	778,579	789,928	933,046	156,653	88,844	90,145	94,116	286,690	268,340	338,634	352,892	356,481
Total energy consumption intensity	mWh/m²	0.20	0.24	0.30	0.30	0.32	1.15	0.54	0.66	0.67	0.66	0.35	0.33	0.42	0.43	0.44
Total greenhouse gas emissions	MT CO²e	508,985	439,620	744,245	748,135	807,912	391,468	109,953	59,640	60,156	63,209	204,464	188,193	253,375	249,614	273,010
Greenhouse gas emissions (Scope 1)[7]	MT CO²e	25,703	33,476	167,414	207,607	200,339	154,313	3,490	3,034	3,224	3,199	10,998	9,121	14,825	16,233	15,910
Greenhouse gas emissions (Scope 2)[8]	MT CO²e	483,282	406,144	576,831	540,528	607,573	237,156	106,463	56,606	56,932	60,010	193,466	179,072	238,550	233,381	257,100
GHG emission intensity	MT CO²e/m²	0.14	0.16	0.28	0.29	0.33	0.48	0.38	0.42	0.42	0.44	0.25	0.23	0.31	0.31	0.33
Total Waste produced	tons	80,669	84,632	65,723	38,038	36,790	1610.57	3459.025	n/a	n/a	n/a	7,935	7,054	15,177	14,025	12,288
Waste intensity	tons/m²	0.021	0.031	0.025	0.015	0.015	0.002	0.012	n/a	n/a	n/a	0.010	0.009	0.019	0.017	0.015
Water consumption	m³	13,725,903	4,269,944	6,980,299	7,972,840	7,668,903	1,570,008	836,891	740,081	745,863	755,673	1,956,255	1,754,094	2,471,480	2,514,611	2,308,401
Water consumption intensity	m³/m²	3.66	1.54	2.67	3.04	3.10	1.94	2.90	5.46	5.51	5.58	2.39	2.16	3.07	3.09	2.83

Source: Company reports and Bernstein analysis

FURTHER INVESTMENT IN MACAU'S LOCAL FINANCIAL MARKETS – GREEN BONDS AND SME SOCIAL BONDS

The development and modernization of the local financial sector has been on the Macau government's agenda for many years and was reinstated in the central government's 15-year master plan for Macau. In response to government policy initiatives, Galaxy has been supporting Macau's local financial market development by investing in various corporate social responsibility (CSR) bonds and thematic "green bonds." Recent investments made by the company include Galaxy's US$10Mn investment in Macau's first corporate green bonds (December 2021), its RMB100Mn investment to Macau's first biodiversity-themed green bonds issued by BOC Macau branch (in September 2021), and its HK$100Mn investment in the SME-themed Covid-19 Impact Alleviation Social Bonds to support Macau locals.

VALUATION METHODOLOGY

Global gaming

Asian gaming

We value our Asian gaming stocks using two methodologies: (1) discounted cash flow, and (2) a one-year forward EV/EBITDA multiples valuation based on long-historical trading multiples for each company. We believe valuations are driven by the ability of a company to

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generate return on its capital base, grow its business profitably, and, if applicable, return capital to shareholders. The DCF factors in growth prospects, while the EV/EBITDA multiples valuation method adds market color to setting the target price.

We rate Galaxy Entertainment (ticker: 27.HK) Outperform with a target price of HK$57.50. It closed at HK$46.70 and is benchmarked against the MXAPJ that closed at 524.70. Closing prices as of August 8, 2022.

RISKS

Global gaming

Macau gaming

Our sector outlook for Macau gaming should be discounted by macroeconomic and sector-specific risks. Over the near to medium term, a slower-than-expected ramp up of Macau gaming post-Covid-19 could pose volatility to the sector. The sector's performance is also contingent on China's economy not faltering, with the Chinese government providing strong stimulus. Over the longer term, our view is based on our belief that China's GDP growth will continue in mid-single digits, the economy will continue to shift toward greater consumer spend, and the numbers of individuals achieving income levels sufficient to visit Macau will continue to grow. Thus, one of the critical risk factors to our Macau view is a deterioration of China's economic backdrop (GDP forecast erosion, loss of stock market indexes, decline in real estate values, a decrease in consumer confidence, and a decrease in disposable income) or a negative liquidity event. Further sector risks include changes in Chinese consumer attitudes toward casino gaming, the level of anti-corruption activity in China (and Macau), regulatory risk surrounding junket activity and AML, restrictions on Union Pay usage, marketing curbs in China, labor union pressures, delays in infrastructure project openings, political unrest in Macau, decrease in visitation, taxation changes, revision of the concession structure post-2022, and forex (RMB vs. HKD) fluctuations.

Galaxy Entertainment Group Ltd

Galaxy specific downside risks include difficulty in growing premium mass and direct VIP play to offset junket loss, slower-than-expected ramp up of Galaxy Macau Phase 3, and delays in the development and/or cost increases of Phase 4.

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TESCO: DEFENSIVE, INFLATION BENEFICIARY, AND ESG IMPROVER

HIGHLIGHTS

- **If there is ever a time to own a food retailer, a period of higher inflation and the possibility of a recession is the time.** Inflation is passed on, margins hold flat, and food retailers tend to outperform the market. However, we wouldn't buy the whole sector and prefer those with strong price positioning and private label offering, and lower non-food mix.

- **We think Tesco is best positioned into a period of higher inflation and a potential downturn.** It has strong price perception within the UK, a strong private label offering, and strong execution. It has been adding >30bps share each month since February 2021 and has the most loyal shopper base in the UK. It is behaving rationally on pricing, but the pricing delta to Aldi and Lidl has narrowed. It is inexpensive on 10.1x PE and 11% FCF yield, with £1Bn buybacks and 4.5% dividend yield.

- In terms of ESG, **Tesco is a clear leader in the space and has made significant improvements over the last five years**. Despite having limited control over its footprint, it is integrating ESG throughout its business from store-based food waste projects to ESG metrics in executive pay and sustainability-linked bonds. It has reduced energy usage by -20%, packaging by -4%, and food waste by -45%. It leads on worker pay, paying 10% above minimum wage and paying a London living wage; it has narrowed its gender pay gap by -210bps over five years; and scores well on supply chain labor.

INVESTMENT IMPLICATIONS

Tesco is the best-positioned UK food retailer to benefit from the inflationary environment, given its strong pricing and private label range, good customer traction, and a track record of execution. It has been narrowing pricing gap vs. discounters and consistently gaining share. The diversified nature of the business, with dominance in wholesale and online, on top of store retail, provides resilience in top-line growth. It's also attractively valued at 10.1x PE (in line with peers) and on an 11% FCF yield (ahead of peers) with £1Bn of buybacks this year and a 4.5% dividend yield.

TESCO: DEFENSIVE, INFLATION BENEFICIARY, AND ESG IMPROVER

Even with a cautious view on the sector, a period of higher inflation and the possibility of a recession is the time to own a food retailer. Inflation is passed on, margins hold flat, and the profit pools grow (see Exhibit 4 and Exhibit 5). In a downturn, people still need to eat and the food retail market tends to grow just slightly short of headline inflation as price mix (trading down to private label, cheaper alternatives, and different categories) dilutes growth (see Exhibit 3). And, in a recession, food retailers tend to outperform for 40-60ppts as seen in 2007-10 and 1990-93 (see Exhibit 1 and Exhibit 2). However, we wouldn't buy the whole sector and prefer companies with strong price positioning, a strong private label offering, and lower non-food/financials exposure.

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- **Tesco is best positioned into a period of higher inflation and a potential downturn.** It's a simplified and diversified business with strong pricing, strong execution, strong private label, and good customer traction. It has been consistently gaining share through the pandemic and afterward (see Exhibit 6). Its exposure to wholesale and convenience provides insulation and will help performance over the next year or so. Its price positioning has been improving vs. Aldi and Lidl, but it's passing on inflation in line with the market (potentially a little bit less and later helped by its scale) (see Exhibit 7). Tesco also has the most loyal customer base in the UK, which should protect it a bit from downtrading and cross-shopping (see Exhibit 8). It's also inexpensive vs. peers trading at 10.1x PE in line with peers and on an 11% FCF yield (ahead of peers) with £1Bn of buybacks this year and a 4.5% dividend yield (see Exhibit 9 and Exhibit 10).

- From an ESG perspective, **food retailers are neither ESG darlings nor ESG dogs. They're stuck in a difficult position because they have very limited control over the majority of their impact.** Most of their upstream supply chain is a complex web of suppliers, producers, and growers (over which food retailers have limited influence), while their store-based emissions are relatively limited. In this chapter, we look at the E, the S, and the G for Tesco covering areas such as supply chain, energy usage, food waste, packaging, worker pay, board independence, and healthy diets.

- **Tesco is a clear leader and ESG improver within the space.** It's integrating ESG metrics into executive pay, has launched sustainability-linked bonds, disclosed a raft of initiatives on its website, and set out target-driven improvements. On Bloomberg scores it's in the middle due to lack of specific disclosure (which could be a simple fix), but we like Tesco's committed target-driven approach to ESG improvement with a clear and open approach to investors.

- **On the environment, Tesco is making important progress in a number of key areas** (GHG emissions, supply chain, and food waste). Over 90% of its emissions are not within its control, but Tesco has reduced overall GHG emissions per £ sales by -56% since 2015 and energy consumption by -20%. It has shifted to renewable electricity, launched the UK's first electric heavy goods vehicle (HGV) and installed solar panels on stores. It is committed to being carbon neutral in group operations by 2035 and net zero across the value chain by 2050. It is also making important steps to reduce packaging (down -4% since 2018) and food waste (down -45% since 2016).

- **On social issues, Tesco is a market leader in terms of workers, suppliers, and customers.** It's committed to fair pay (paying >10% above the minimum wage) and reducing gender pay gap (down -210bps over the last five years and ahead of peers). It scores well on an Oxfam review of supply chain practices with a top score of 61% (+600bps ahead of Sainsbury's) and it also scores well on the UK Government's review of supplier practices (coming out at the top of the survey). For customers, Tesco takes its responsibility to push healthier diets seriously through initiatives such as "Better Baskets" and reformulation of private-label products.

- **On governance, Tesco has a strong independent board and is integrating ESG throughout its business** with many policies published on its website, introducing ESG

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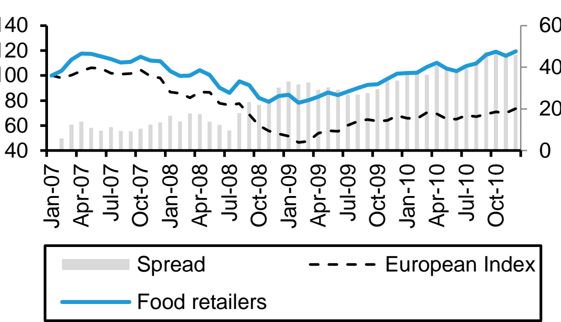
metrics into executive remuneration, launching some of the first sterling sustainability-linked bonds, and establishing a C-suite-sponsored committee focused on climate.

Recession and inflation hedge

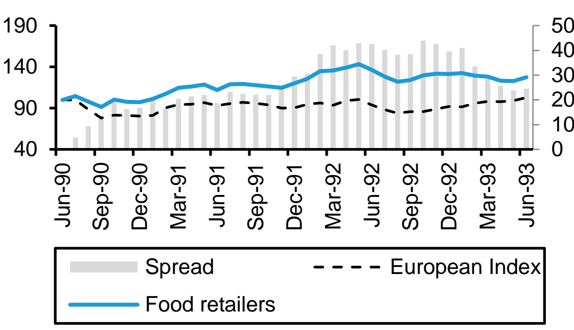
EXHIBIT 1: **EU food retailers vs. index price performance (2007-10)**



Note: EU food retailers including TSCO, SBRY, MRW, CA, CO, AD, and DELB (excluding JMT due to strong performance). Morrisons is private not covered; Casino is not covered; Ahold & Delhaize merged in 2016.

Source: Bloomberg and Bernstein analysis

EXHIBIT 2: **EU food retailers vs. index price performance (1990-93)**



Note: EU food retailers including TSCO, SBRY, MRW, CA, CO, AD, and DELB (excluding JMT due to strong performance). Morrisons is private not covered; Casino is not covered; Ahold & Delhaize merged in 2016.

Source: Bloomberg and Bernstein analysis

EXHIBIT 3: **UK grocery market metrics 2007-22YTD**

UK	2007	2008	2009	2010	2011	2012	2013	2014		2020	2021	2022-YTD	Source
Food retail market YoY growth	5.3%	7.1%	4.5%	3.9%	3.9%	3.7%	3.6%	1.1%		10.9%	-0.1%	-3.7%	Kantar - June latest
Annual food inflation	4.5%	9.1%	5.4%	3.4%	5.5%	3.2%	3.8%	-0.2%		0.6%	0.3%	5.5%	ONS - 4M22 latest
Implied volume / price mix change	0.8%	-2.0%	-0.9%	0.5%	-1.6%	0.5%	-0.2%	1.3%		10.3%	-0.4%	-9.2%	
GDP growth	2.3%	-0.2%	-4.2%	2.1%	1.5%	1.5%	1.9%	3.0%		-9.3%	7.4%	8.6%	ONS - Q1-22 latest
Unemployment rate	5.2%	6.2%	7.8%	7.9%	8.4%	7.8%	7.3%	5.9%		5.1%	4.1%	3.8%	ONS - Q1-22 latest
Real wage growth	0.7%	-0.4%	-0.9%	-1.6%	-1.5%	-1.1%	-0.5%	1.6%		3.9%	1.0%	3.5%	ONS - Mar-22 latest
Petrol price change YoY	16.8%	-14.9%	23.0%	14.9%	7.3%	-0.4%	-1.4%	-13.0%		-8.0%	26.1%	30.0%	Bloomberg - Q1-22 latest

Source: Kantar, ONS, Bloomberg, and Bernstein analysis

EXHIBIT 4: **Food retailers pass on inflation**

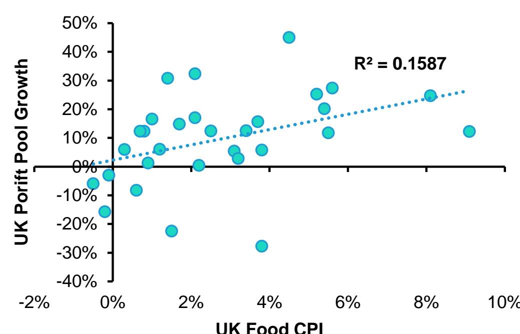
UK Food CPI vs. PPI (1999-2022YTD)

y = 0.7544x + 0.0058
R^2 = 0.6832

UK Food CPI (y-axis: -6% to 14%); UK Food PPI (x-axis: -5% to 15%)

Source: ONS and Bernstein analysis

EXHIBIT 5: **Inflation grows the profit pool**



Source: Bloomberg, company reports, and Bernstein analysis

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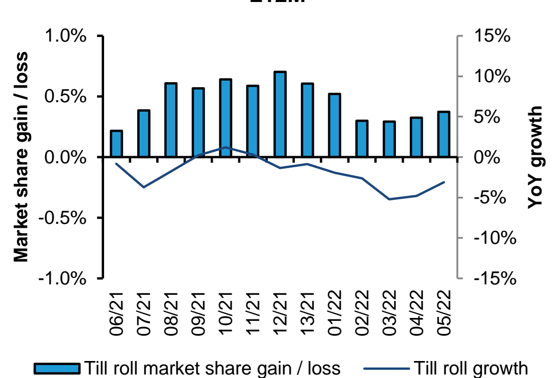
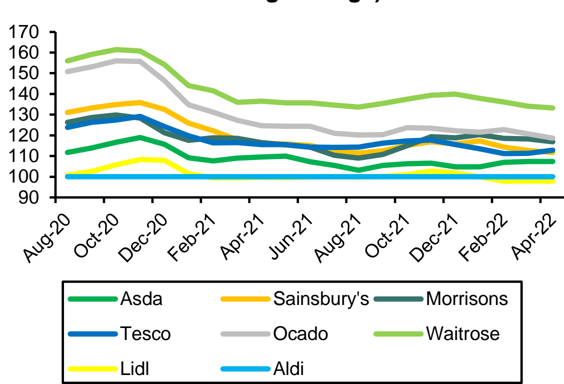
EXHIBIT 6: **Tesco market share gain/loss and YoY growth**



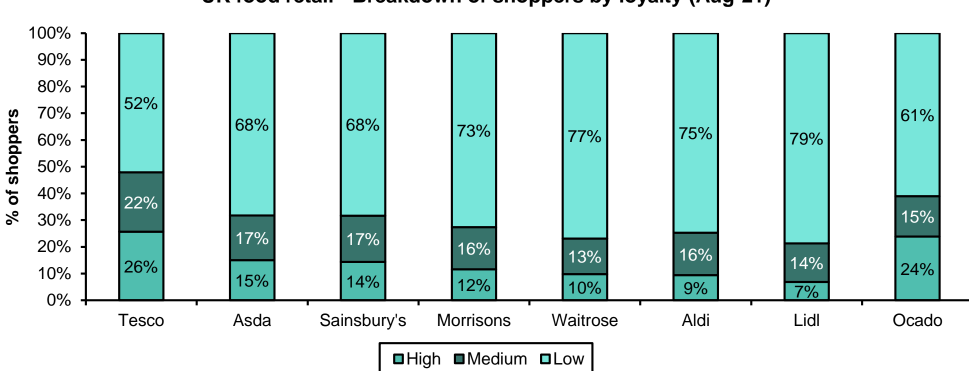
Source: Kantar and Bernstein analysis

EXHIBIT 7: **UK grocer pricing indexed to Aldi – three-month trailing average**



Source: Which and Bernstein analysis

EXHIBIT 8: **Tesco has the most loyal shopper base, closely followed by Ocado**



Source: Kantar and Bernstein analysis

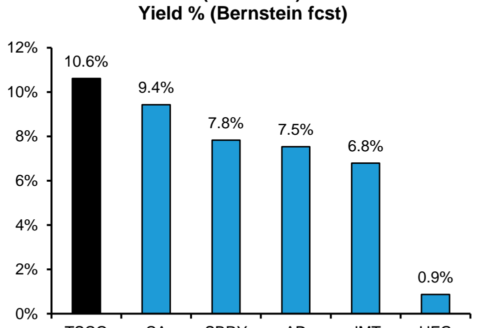
EXHIBIT 9: **EU food retail NTM+1 PE**

EU Food Retail (ex. OCDO) - NTM+1 PE (Bernstein fcst)

HFG	JMT	SBRY	TSCO	AD	CA
23.3	17.8	10.1	10.1	9.8	9.6

Source: Bloomberg, and Bernstein estimates and analysis

EXHIBIT 10: **EU food retail NTM+1 FCF Yield %**



Source: Bloomberg, and Bernstein estimates and analysis

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ENVIRONMENT

Tesco scores relatively well according to Bloomberg's Environmental ESG score at 4.94 (coming #2 vs. peers; see Exhibit 13). We think Tesco is making important progress across a number of key areas (GHG emissions, supply chain, and food waste), which demonstrates its focus and commitment to the environment. Most Tesco emissions aren't within its control, with 90% of emissions coming from areas it can influence but not control (see Exhibit 11). Notwithstanding the lack of control, Tesco is pushing to change where it can and influence where it has less control.

- **Energy usage:** Tesco has significantly reduced its emissions footprint since 2015, reducing overall GHG emissions per £ sales by -56% and energy consumption by -20% (see Exhibit 14 and Exhibit 15). It shifted to 100% renewable electricity in 2020, plans to install a fully electric UK home delivery fleet by 2028, has launched the UK's first electric HGVs, and installed solar panels at stores. Within Tesco's control, the main emissions come from refrigeration, heating, and transport, which are focus areas for the company.

- **Energy targets:** Tesco aims to be carbon neutral by 2035 in group operations and net zero across the value chain by 2050 (aligned to a 1.5-degree trajectory, covering all indirect Scope 3 emissions) (see Exhibit 12).

- **Food waste:** Food waste is a critical challenge for food retailers and a major contributor to GHG emissions, with Tesco's own research finding that 40% of food is uneaten and food waste makes up 9% of total global GHG emissions. **Tesco has successfully reduced food waste as a percent of food handled by 45% since 2016**, driven by better processes to improve forecasting, ordering, and markdown, and better food redistribution (either to charities/community groups or to anaerobic digestion). As a result, it has **accelerated the target to halve food waste across operations by 2025** (five years ahead of the SDG target). This is also beneficial to society, with 83% of food that is suitable for human consumption being redistributed instead of being wasted. Tesco is also influencing its suppliers, with 79 suppliers (responsible for >50% of fresh food in the UK) now reporting on food wastage.

- **Packaging:** Tesco has taken steps to reduce packaging, with total packaging per £Mn sales in weight reduced by -4% since 2018. Tesco is focusing on removing unnecessary plastic packaging where possible (e.g., secondary yoghurt lids), with 1.6 billion pieces removed cumulatively or 1,200tonnes of unnecessary plastic packaging removed. Tesco aims to have all packaging be fully recyclable on own-brand by 2025 and is at 87% in FY21, up +400bps from 83% in FY19 (see Exhibit 16).

- **Deforestation:** Deforestation is also a focus, given its dependency on soy and beef. Tesco stopped sourcing beef from Brazil in 2008 and has committed to sourcing all its soy within the supply chain from deforestation-free areas by 2025. 100% of its wood and paper products are certified by the Forest Stewardship Council or are recycled, while 100% of palm oil for own-brand products is sourced from Sustainable Palm Oil.

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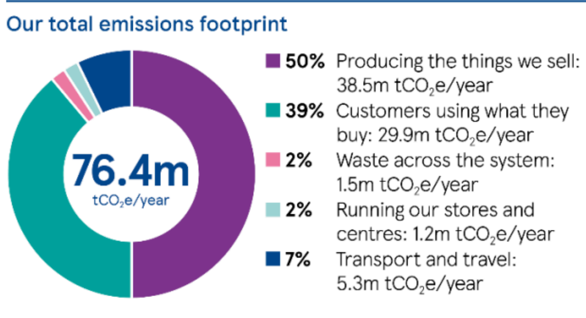
EXHIBIT 11: **Tesco emissions footprint**



Source: Company reports and Bernstein analysis

EXHIBIT 12: **Tesco GHG targets**

Group data					
Commitment	KPIs	2018/19	2019/20	2020/21	2021/22
Climate neutral across our operations by 2035, aligned to a 1.5 degree pathway	Percentage reduction of Scope 1 and 2 market-based greenhouse gas emissions across the Group (baseline 2015/16)	-41%	-49%	-54%	-52%[◊] [(a)]
Source 100% of our electricity from renewable sources by 2030	Percentage electricity from renewable sources: Proportion of contractually committed volumes from Grid PPAs and on-site generation as a percentage of energy consumption at a Group level ('contracted additional')	81%	84%	100% (21% contracted additional)	100% (26% contracted additional)[◊]

Source: Company reports

EXHIBIT 13: **Bloomberg Environmental ESG score**

EU Food Retail - Bloomberg ESG Environmental Score

	SBRY	TSCO	AD	CA	JMT	HFG	OCDO
Score	5.23	4.94	4.57	2.92	2.7	2.05	1.61

Source: Bloomberg and Bernstein analysis

EXHIBIT 14: **Tesco GHG emissions per £ sales**

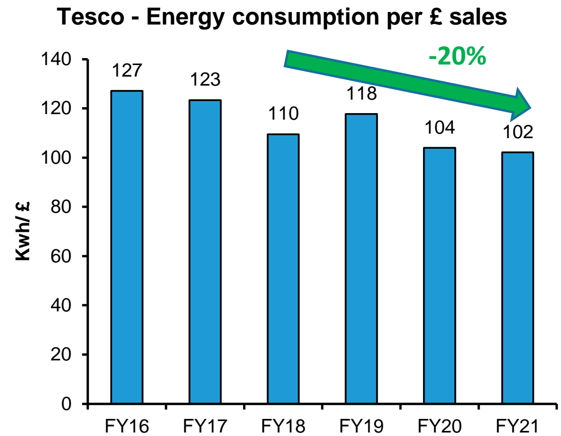
Tesco - total GHG emissions per £ sales (FY16-21)

Metric tonne/ £	FY16	FY17	FY18	FY19	FY20	FY21
	64.3	58.9	49.4	49.0	30.6	28.6

-56%

Source: Bloomberg, company reports, and Bernstein analysis

EXHIBIT 15: **Tesco energy consumption per £ sales**



Source: Bloomberg, company reports, and Bernstein analysis

EXHIBIT 16: **Total packaging per £Mn sales**

Tesco - total packaging (metric tonnes) per £m sales (FY18-FY20)

	FY18	FY19	FY20
	21.8	20.5	20.9

Source: Company reports and Bernstein analysis

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SOCIAL

Tesco does not score as well on the Bloomberg ESG score at 1.43 vs. Sainsbury's at 4.62 and other peers at 2-2.5 (see Exhibit 17). However, this is **mainly driven by weak disclosure** (which is an easy fix; see Exhibit 18) and we don't see any fundamental issues with Tesco's social behavior. The main areas of disclosure that are missing are around organized labor, minorities and disabled workers in the workforce, data security, and health & safety. We have focused our analysis on three key areas where we see Tesco as an improver in social matters, which are employees and workers, suppliers, and customers.

Employees and workers

Tesco maintains that it is a fair employer and typically pays >10% above the minimum wage for store and warehouse staff as shown in Exhibit 19. Worker feedback is positive with Tesco's internal surveys showcasing that ~80% of colleagues would recommend Tesco as a great place to work. **Tesco also pays more than the London living wage (+8%)** for its London-based colleagues at £11.89 per hour vs. the London living wage of £11.05.

- **Gender pay gap (which all UK companies over a certain size now have to disclose) is relatively positive for Tesco**, with positive improvements over the last five years reducing its median hourly pay gap by -210bps (see Exhibit 20) and performing relatively well on actual gender pay gap (see Exhibit 21). The bonus gap is much higher at 26%, which should be addressed but is in line with peers (see Exhibit 22 and Exhibit 23). However, the bonus gap is skewed by having a large proportion of women in part-time roles which is not accounted for in the calculations. According to Tesco, when adjusting the median for full-time equivalents, median bonus gap declines to 8.2%. Women in the top-earnings quartile is also relatively good vs. peers at 41% (see Exhibit 24 and Exhibit 25). Report found here (*"Everyone's Welcome Report 2021"*).

- However, on the negative side, Tesco (along with all other major UK supermarkets) is **currently subject to a major equal pay dispute between store and warehouse staff**, where both claim that their roles are comparable and, therefore, they should be paid equally. This concerns mostly female store staff who were being paid less than their mostly male warehouse counterparts. The equal pay claimants have won the first stage of the tribunal, which allows workers to directly compare the two roles (*FT* article here, *"Asda workers win first round of equal pay lawsuit"*). This is a major ongoing legal case and will not be resolved until at least 2027 with two further stages (equal value assessment and a consideration of material factor defenses). Tesco has a number of contingencies in place for this and, at this stage, the company cannot take a view on the outcome of the equal pay tribunal, given the long timelines and complexity of the case. See note 35 in the FY21-22 annual report for details.

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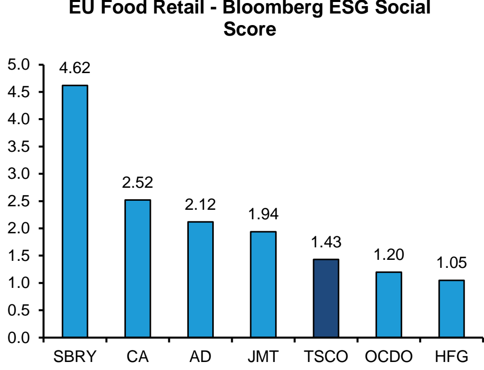
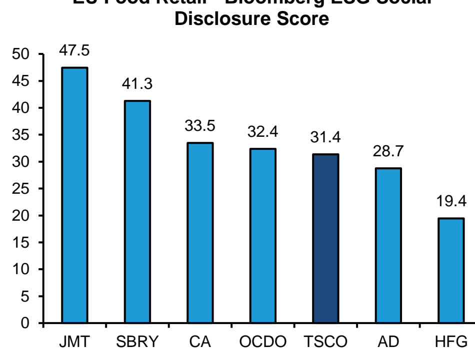
EXHIBIT 17: **Bloomberg Social ESG score**



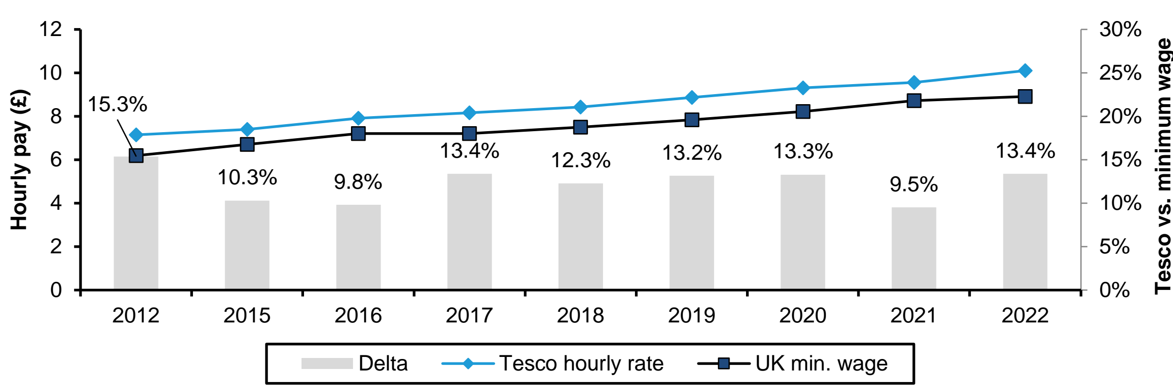
Source: Bloomberg and Bernstein analysis

EXHIBIT 18: **Bloomberg ESG Social disclosure score**



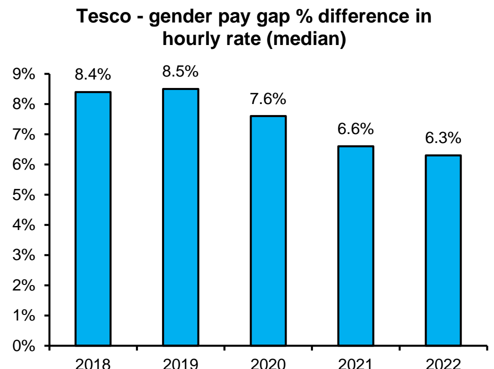
Source: Bloomberg and Bernstein analysis

EXHIBIT 19: **Tesco hourly wage (store and warehouse)**



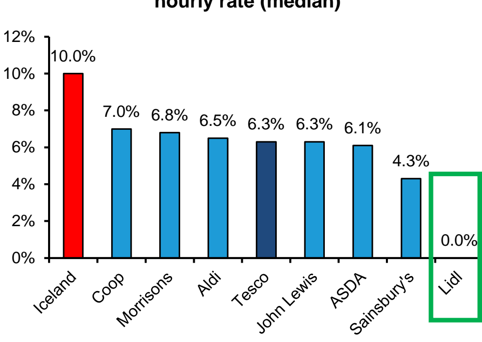
Source: UK government, company reports, and Bernstein analysis

EXHIBIT 20: **Tesco median gender pay gap (hourly rate, 2018-22)**



Source: UK government and Bernstein analysis

EXHIBIT 21: **UK supermarkets median gender hourly pay gap**



Source: UK government and Bernstein analysis

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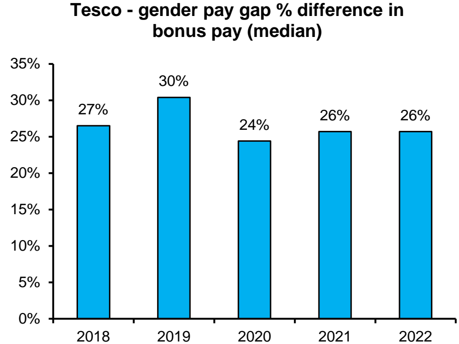
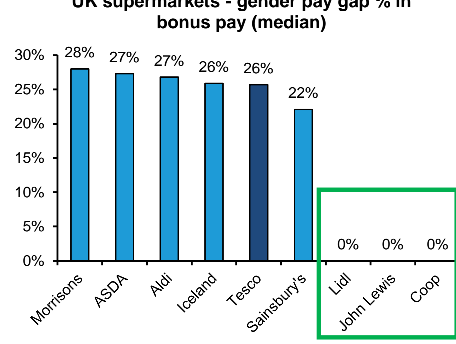
- **Supply chain labor:** Tesco performs well and has been improving significantly in its policies to manage human rights within its supply chain according to work completed by Oxfam. In the 2022 Global Supermarket Scorecard[1] (link here), Tesco came out on top with a score of 61% vs. 23% in 2018 (see Exhibit 26). Tesco's main areas of strength are around transparency and accountability, policies on workers, and treatment of women (gaining industry leading scores in all these areas; see Exhibit 27). However, Tesco still needs to improve around small-scale farmers, where it only scores 29% vs. peers such as Sainsbury's, Aldi, and Lidl scoring >50%. This is because Tesco has not conducted Humans Rights Impacts Assessments on its small-scale farming suppliers, has not conducted a Living Income assessment, and does not have explicit commitments to ensure fair sourcing from small-scale partners.

EXHIBIT 22: **Tesco median bonus pay gap (2018-22)**



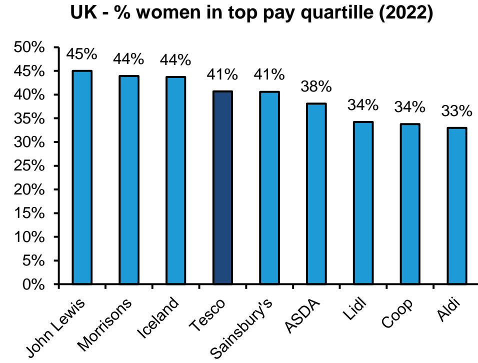
Source: UK government and Bernstein analysis

EXHIBIT 23: **UK supermarkets median gender gap in bonus pay**



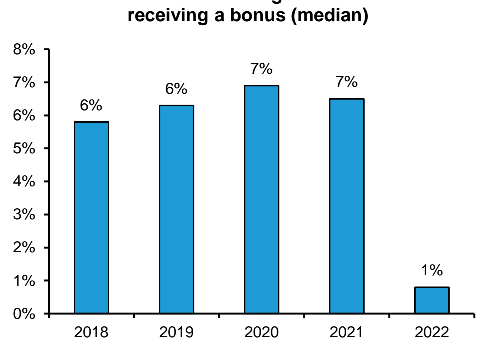
Source: UK government and Bernstein analysis

EXHIBIT 24: **UK: % women in top-pay quartile**



Source: UK government and Bernstein analysis

EXHIBIT 25: **Tesco: % women receiving a bonus vs. men receiving a bonus**



Source: UK government and Bernstein analysis

[1] This scorecard takes into account more than 100 data points ranging from "has the company made an explicit commitment to upholding the UN Principles on Business and Human Rights" to "the company has a published gender policy for its own operations and its supply chain." The scorecard focuses on four key areas: (1) Transparency & Accountability; (2) Workers; (3) Small-scale farmers; and (4) Women.

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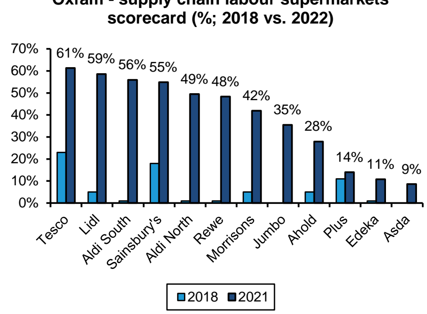
EXHIBIT 26: **Oxfam supply chain labor supermarkets scorecard**



Note: Lidl, Aldi South & North, Rewe, Jumbo, Plus, Asda, and Edeka are all private not covered.

Source: Oxfam and Bernstein analysis

EXHIBIT 27: **Oxfam supply chain labor global supermarkets scorecard**

	Oxfam - supply chain labour scorecard				
	Overall score	Transparency & accountability	Workers	Small-scale farmers	Women
Tesco	**61%**	63%	79%	29%	76%
Lidl	**59%**	65%	67%	54%	48%
Aldi South	**56%**	65%	63%	54%	40%
Sainsbury's	**55%**	58%	54%	58%	48%
Aldi North	**49%**	63%	46%	46%	43%
Rewe	**48%**	58%	54%	50%	29%
Morrisons	**42%**	54%	63%	25%	24%
Jumbo	**35%**	54%	38%	17%	33%
Ahold	**28%**	33%	33%	25%	19%
Plus	**14%**	33%	13%	8%	0%
Edeka	**11%**	17%	13%	13%	0%
Asda	**9%**	17%	8%	4%	5%

Note: Lidl, Aldi South & North, Rewe, Jumbo, Plus, Asda, and Edeka are all private not covered.

Source: Oxfam and Bernstein analysis

Suppliers

Tesco scores well in its compliance with the UK Government's Grocery Supply Code of Practice (GSCOP) and, as shown in Exhibit 28, is a very close second to Aldi and close to M&S, well ahead of many peers. The GSCOP is an independent government-supported survey of retailers' behaviors with their suppliers every 12 months. The GSCOP looks at compliance across a number of different areas, including payment terms, forecasting, promotions, buyer behaviors, and terms and conditions. Tesco has consistently improved its position in the scorecard over the last few years.

- **Supplier support has also increased** over the last year as a result of suppliers facing high inflationary pressures. For example, Tesco recently announced a £10Mn funding package to support pig farmers in the UK, and has extended its supply contracts with egg producers. However, there are still a number of pressure points such as milk prices, which are not being passed on as quickly by retailers and The Grocer reported that Tesco has been pressuring suppliers for back margin payments (i.e., for promotions) in order to absorb some of the cost increases. Tesco denies that it has changed its back margin policy in any way.

EXHIBIT 28: **UK Grocery Code compliance**

Overall assessment of compliance with the Code

Direct suppliers commenting on the retailers they have supplied in the past 12 months

		Consistently well	Mostly	Rarely	Never
Aldi	2022 (n=365)	49.86%	47.67%	2.47%	0.00%
Tesco	2022 (n=415)	49.16%	47.47%	3.13%	0.24%
M&S	2022 (n=144)	47.92%	48.61%	3.47%	0.00%
B&M	2022 (n=232)	48.28%	46.12%	4.31%	1.29%
Sainsbury's	2022 (n=463)	44.06%	50.32%	4.97%	0.65%
Co-op	2022 (n=303)	47.19%	46.86%	5.61%	0.33%
Waitrose	2022 (n=310)	48.71%	45.16%	4.52%	1.61%
Asda	2022 (n=487)	36.14%	56.67%	6.57%	0.62%
Ocado	2022 (n=290)	38.62%	52.41%	7.59%	1.38%
Home Bargains	2022 (n=271)	42.44%	45.02%	11.07%	1.48%
Iceland	2022 (n=236)	35.59%	50.85%	12.71%	0.85%
Morrisons	2022 (n=443)	30.02%	56.21%	11.96%	1.81%
Lidl	2022 (n=261)	32.57%	51.72%	14.18%	1.53%

Source: Groceries Code Adjudicator (GCA), UK government, and Bernstein analysis

EXHIBIT 29: **Tesco Better Baskets Initiative**

Source: Company website

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CUSTOMERS

Healthy diets: Tesco also takes on some responsibility to encourage customers to have healthier diets. It recently introduced the Better Baskets Initiative (see Exhibit 29), whereby dedicated signs show customers where healthier products are. Plus Tesco has been leading the way with the recent HFSS (high fat, salt, and sugar) legislation, despite the withdrawal by government. Tesco has continued to reduce volume-led promotions of HFSS products to support affordable, healthy diets. Tesco is also focusing on removing calories from food through reformulation (taking out 59 billion calories since 2018) and introducing more vegetables to ready meals (with 52% of ready meals not containing one of the five-a-day). Reformulation has also reduced sugar by 9.3pps, salt by 6.1pps, and increased fiber by 11.4pps, which has been constantly improving own-brand products' nutritional value. Tesco was ultimately ranked the #1 retailer in the Access to Nutrition Initiative UK Retailer Index, receiving commendations for a focus on nutrition and strong reporting. Tesco significantly improved its score since the 2020 supermarket review. More details found here (*"Healthy sustainable diets"*)and here (*"UK Retailer Index 2022"*).

Community support: Tesco has developed a Community Food Connection scheme that focuses on providing two million meals a month to charities and community groups. Tesco has partnered with FareShare and Olio (food redistribution charities), and now supports >3,900 charities. Tesco also provides a number of community support grants for local initiatives and charities.

GOVERNANCE

In terms of governance, Tesco scores well across board composition, executive compensation, and shareholder rights. Plus the revolt over executive pay in 2021 (mainly due to the removal of Ocado as a peer) is over, and the recent AGM passed executive pay without any significant issues. Board independence is strong, executive pay includes ESG metrics, and Tesco has launched a number of sustainability-linked debt instruments.

- **Board composition is strong with 85% of directors being independent** in line with leaders. Female representation is ok at 31% in the management team and on the board, but could be better (see Exhibit 31 to Exhibit 33).

- For the first time, in 2022, **Tesco introduced ESG metrics into executive remuneration**. The PSP (Performance Share Plan) now includes carbon reduction targets aligned with the company's commitment to be internally carbon neutral by 2035 (see Exhibit 30).

- **Financing has also shifted toward ESG with an revolving credit facility (RCF)** linked to the achievement of environmental targets (GHG emission reduction, renewable energy, and food waste), the **creation of a sustainability-linked bond** (€750Mn) with the coupon linked to Scope 1 and Scope 2 emissions reduction performance, and the **scaling up of the first sustainability-linked supply chain finance** program to bolster engagement with the supplier base. Tesco was the first retailer to launch a sustainability-linked bond and the fourth company to issue a Sterling sustainability-linked bond.

- Tesco has also introduced a **committee focused on climate** with the Group Chief Product Officer (Executive team member) to focus on the topic of climate change.

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EXHIBIT 30: **Tesco executive pay ESG metrics**

ESG metric	Weighting	2021/22 actual	Threshold (25% vesting)	Stretch (100% vesting)
Carbon reduction	8.3%	52%	56%	60%
Percentage reduction in Scope 1 and 2 market-based GHG emissions compared to a baseline year of 2015/16				
Food waste reduction	8.3%	45%	48%	55%
Percentage change in tonnes of food wasted as a percentage of food handled compared to a baseline year of 2016/17				
Diversity & Inclusion (gender/ethnicity)	8.3%	26%/11%	32%/13%	40%/15%
Percentage of female and ethnically diverse top global leaders compared to a baseline year of 2021/22				

Source: Company reports

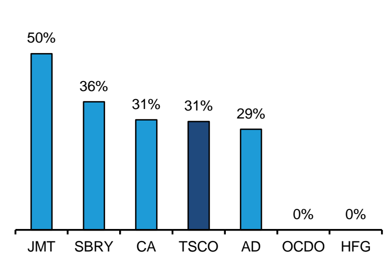
EXHIBIT 31: **UK food retail: % independent board directors**

% independent board directors (exc. CEO & CFO)

TSCO 85%, AD 82%, SBRY 78%, HFG 71%, OCDO 62%, CA 53%, JMT 50%

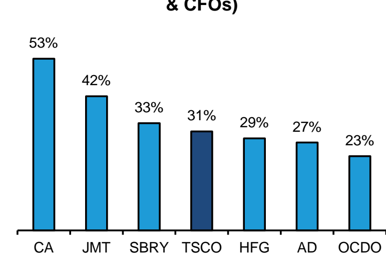
Source: Company reports and Bernstein analysis

EXHIBIT 32: **UK food retail: % women in management team**



Source: Company reports and Bernstein analysis

EXHIBIT 33: **UK food retail: % female board members**



Source: Company reports and Bernstein analysis

VALUATION METHODOLOGY

We value Tesco as an average of PE, EV/EBITDA, and FCF yield valuations. We derive these multiples through an assessment of relative performance and growth based on our forecasts and vs. consensus expectations. We rate Tesco (ticker: TSCO.LN) Outperform with a target price of £3.30. It closed at £2.62 and is benchmarked against the MSDLE15 that closed at 1745.03. Closing prices as of August 8, 2022.

RISKS

Downside risks to our rating and target price include: (1) a deterioration of the price war in the UK that could lead to a permanent reset of UK profitability; (2) rapid changes in food price inflation driving gross margin contraction; (3) Asda's recovery slowing the recovery path for Tesco; and (4) post-pandemic behavior shifts radically affecting top-line performance.

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Financials

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ETHEREUM: LOWER ENERGY USAGE, LOW INFLATION, AND HIGH YIELDS

HIGHLIGHTS

- **(1) Energy use down by ~99%:** Proof-of-work (PoW) is an energy-intensive way of establishing consensus in a decentralized network. Each node performs the same task to confirm the authenticity of the transaction. These nodes run high-end hardware that consumes a lot of energy (see Exhibit 1). PoS replaces miners with validators. Validators do not need to run energy-intensive equipment. Further, PoS restricts transaction processing to a group of randomly chosen validators. This is expected to reduce Ethereum's energy usage by ~99% (~35Wh/transaction; see Exhibit 1). Lower energy usage removes a key hindrance for ESG-conscious capital from investing in ETH (as a token, or as a yield instrument).

- **(2) Token emissions down ~80-90%, token inflation <1%:** Network design changes change the ETH emission schedule. Annual issuance of ETH is expected to drop by 80-90% (see Exhibit 6, Exhibit 7, and Exhibit 10). Token burn (introduced by EIP-1559) will further reduce ETH supply. This makes Ethereum a unique asset — an attractive ~9% yield (at Merge, ~5-7% steady-state), with ~80-90% lower gross ETH emissions (currently at ~15k ETH/day) (see Exhibit 7 and Exhibit 10). Lower emissions mean we forecast gross ETH's token inflation to fall from ~4% to ~0.5 (at Merge) and ~0.8% in the steady state (see Exhibit 3, Exhibit 6, Exhibit 7, and Exhibit 10).

- **(3) Multi-billion-dollar bond product in the making:** The Merge creates a new source of cash flow for ETH holders — staking yield. The staking yield (staking rewards/locked ETH) is expected to be ~9% immediately after the migration (the Merge). We forecast it to stabilize at ~5-7% (in the steady state). Exhibit 7 to Exhibit 12 show our forecasts and the sensitivity to key input variables — ETH staked, daily transaction fee, and burn. DeFi asset management platforms are creating single-click, automated products with levered/un-levered exposure to ETH staking (see Exhibit 15). We expect an entire financial industry with multiple institutional and retail products to be built on the sustainable staking yield cash flows of Ethereum.

INVESTMENT IMPLICATIONS

Amid the current bear market, investors should focus on specific asset themes that could emerge stronger in a new cycle once the market finds a bottom. We like Ethereum (over BTC), cross-chain infrastructure, and NFT-based gaming as potential themes that could see increased traction.

~99% LOWER ENERGY CONSUMPTION AFTER THE SWITCH TO PROOF-OF-STAKE

Proof-of-work is an energy-intensive way of establishing consensus in a decentralized network. In the PoW mechanism, all miners solve a hashing riddle (consumes energy) to demonstrate their commitment to the network. Miners who solve the riddle first are allowed to process the transaction and create a new block on the blockchain. Other miners validate

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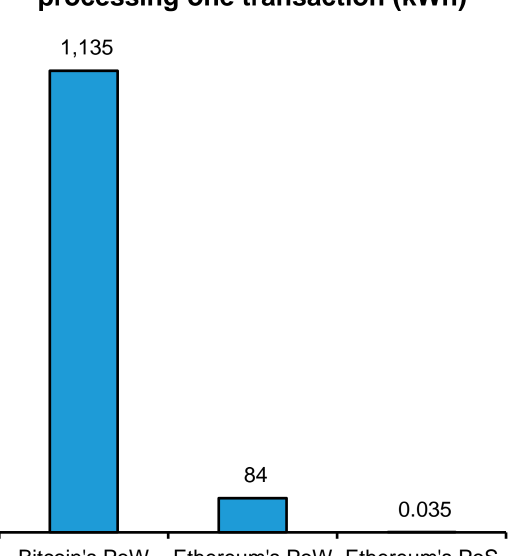
that the transaction is correct. This is how consensus is established in a PoW system. This is an energy-intensive operation running on high-end hardware. The hardware also generates a lot of heat, which requires more energy to cool the mining rig/area. Calculations by Ethereum Foundation show that processing one transaction on the Ethereum network under the current consensus design takes ~84kWh of energy (see Exhibit 1 and Exhibit 2). While this is lower than Bitcoin's PoW consensus mechanism, it still is an extremely high level of energy consumption for a network that aims to be the de facto crypto platform for users and applications to interact with each other.

A migration to a PoS consensus mechanism is expected to reduce Ethereum's energy consumption by ~99%. PoS replaces miners with validators. Validators do not need to run energy-intensive equipment. Further, PoS restricts transaction processing to a group of randomly chosen validators. The members of this group are periodically changed to maintain security. This is expected to reduce the energy consumption of validating one transaction to ~35Wh (per Ethereum Foundation's calculations) (see Exhibit 1 and Exhibit 2). The lower energy consumption removes a key hindrance for ESG-conscious capital from investing in ETH (as a token or as a source of yield — more on this later in this chapter).

EXHIBIT 1: **Energy consumption for one transaction (1/2)**



Source: Etehreum.org and Bernstein analysis

EXHIBIT 2: **Energy consumption for one transaction (2/2)**

Energy Consumption for processing one transaction on Ethereum
(indexed to 100)

100
-99.95%
0.04
Ethereum's PoW
Ethereum's PoS

Source: Etehreum.org and Bernstein analysis

~80-90% LOWER INFLATION AS ETH EMISSIONS DECLINE UNDER PROOF-OF-STAKE

Proof-of-work compulsions meant ETH was a token with an ever-increasing supply and high inflation

Ethereum is the largest and the first smart contract blockchain. It currently operates on the PoW consensus mechanism. PoW is the consensus mechanism followed by Bitcoin as well. It entails a miner operating a mining rig (think high-end hardware) to solve computation-intensive math problems to demonstrate their commitment to the decentralized network.

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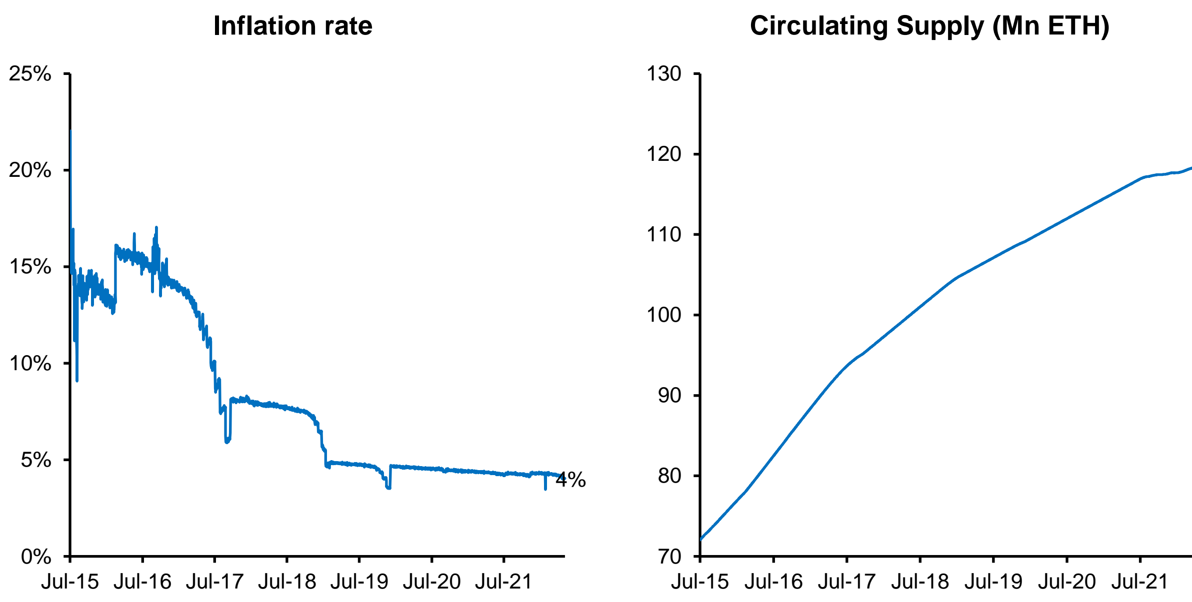
On completion of the math puzzle, one of the miners is allowed to process a transaction. The miner gets Ether tokens and the transaction fee as rewards. As the cost of the hardware and operating expenses (energy, processing power, etc.) are high, miner rewards need to be high.

The network was designed to issue Ether tokens (also known as ETH tokens) as a reward for miners. The network design meant ETH had no supply cap (unlike BTC) and miners captured all the economic value from the network. The number of ETH tokens given to miners reduces every few years (like the Bitcoin network). The issuance leads to a natural inflation schedule. Ethereum network's inflation today stands at ~4% (block rewards currently stand at 2 ETH per block). It has come down over time as the number of ETH tokens given as block rewards reduced, and the circulating supply of ETH grew (see Exhibit 3 and Exhibit 4).

EXHIBIT 3: **Inflation rate for ETH has come down to 4%**

EXHIBIT 4: **Circulating Supply of ETH is ~119 million**



Source: Etherscan and Bernstein analysis

Source: Etherscan and Bernstein analysis

THE MERGE: SEAMLESS MIGRATION OF ETHEREUM FROM POW TO POS CONSENSUS MECHANISM – LOWER EMISSIONS/INFLATION

Explaining the Merge, lower ETH emissions

The roadmap for Ethereum has always included a migration from a PoW consensus mechanism to a PoS consensus mechanism. As part of the roadmap, the Ethereum Foundation led research into PoS models and laid down a series of network upgrades required to bring about a seamless migration to PoS. This includes the launch of a test chain called Beacon-chain. This chain has been operational since December 2020 and acts as a proof of concept for Ethereum's plans for a PoS-based consensus mechanism. Currently, Ethereum runs both the main net (PoW-based) and the Beacon-chain (PoS-based). Transactions are currently processed on the main net only, but as the migration happens, the transactions will start to be validated on the PoS-based chain. The two chains will merge at a pre-determined level of accumulated network difficulty (think lifetime Ethereum throughput). Exhibit 5 shows a diagrammatic representation of the Merge — a term

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referring to the merger of the existing main net Ethereum chain (PoW) and the new PoS chain.

EXHIBIT 5: **The Merge — a diagrammatic representation**

Source: Ethereum.org and Bernstein analysis

HOW WILL THE POS-BASED ETHEREUM CHAIN WORK? HOW ARE EMISSIONS LOWER? WHAT IS THE STAKING YIELD FOR ETHEREUM?

A PoS chain will see people stake (deposit) their ETH tokens on the Beacon chain and become validators. Validators will get a chance (randomized) to validate and attest transactions (this replaces mining) to arrive at a consensus. The network will create a committee of a randomized set of validators. One of the validators will be assigned the role of validating the transactions. The others will be assigned the role of attesting to the veracity of the transactions being validated. The validators made responsible for verifying/ attesting a transaction will be rewarded in the form of new ETH tokens issued and the priority fees (tip) paid by users of the network. The base fee will continue to be burnt as per EIP-1559 (benefits all ETH token holders).

Emissions and staking yield

Block rewards: The number of new tokens issued as block rewards in the PoS chain will be determined by a formula (see Exhibit 6), instead of a flat block reward schedule in the PoW chain. The formula determines the ETH emissions dependent on the level of ETH staked in the PoS chain. A higher level of ETH staked will lead to a higher level of ETH emissions/issuance (to fairly compensate validators for processing the transactions). ETH emissions form one part of the total income for validators. The ETH emissions/issuance divided by the ETH staked in the system is the issuance-based staking yield (from emissions).

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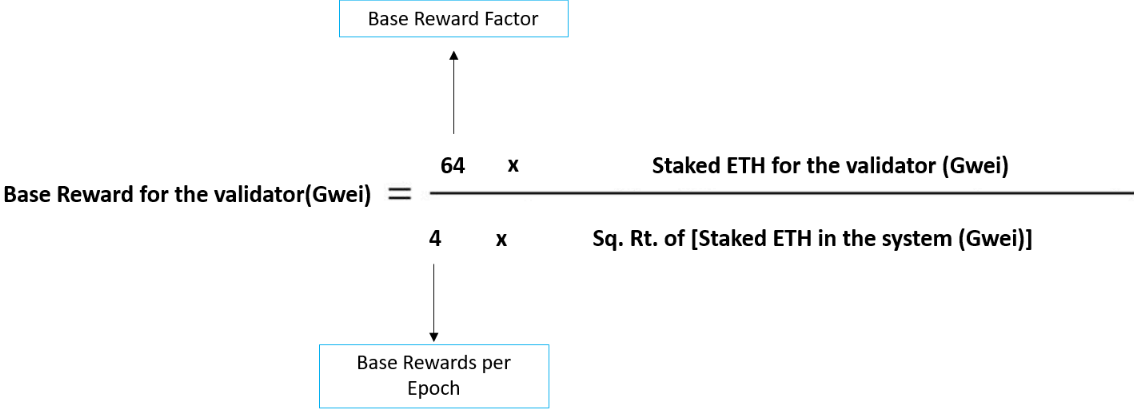
EXHIBIT 6: **ETH emissions will be calculated based on the formula**



Source: Ethereum Foundation and Bernstein analysis

Currently, there are ~13 million ETH staked by ~400k validators. The Merge is expected to happen soon. Assuming that ~15 million ETH are staked by the time of the Merge, we expect daily ETH emissions at the time of the Merge to be ~1,750 ETH — a ~90% reduction from the current ~15k ETH/day. This translates to a ~0.5% annualized inflation. The daily emissions and inflation rate will rise as more ETH gets staked in the PoS chain (we forecast steady-state inflation of ~0.8% annualized). Consequently, the issuance-based staking yield is expected to be ~4.3% (see Exhibit 7). The total staking yield is equal to issuance + transaction fee-based yield (more on this later in the chapter). Exhibit 7 shows the calculation for the daily emissions and staking yield from issuance post-Merge (assuming ~15 million ETH staked). Exhibit 8 shows a sensitivity analysis for the issuance-based staking yield (linked to the level of ETH staked at the time of the Merge). We expect more ETH to be staked in the PoS chain post the Merge. Assuming ~30% of the total ETH supply gets staked, we forecast the issuance-based yields to stabilize at ~2.8% and inflation to stabilize at ~0.8% annualized. Exhibit 10 shows the calculation for the daily emissions and staking yield from issuance in the steady state (assuming ~35 million ETH staked). Exhibit 11 shows a sensitivity analysis for the issuance-based staking yield (linked to the level of ETH staked in the steady-state).

Transaction fees: The other component of the miners/validators' reward is the transaction fees. As explained earlier in the chapter, EIP-1559 has led to sharing of transaction fees between miners and network participants. Therefore, only the priority fees will now be shared with miners/validators. We calculate a ~4.9% transaction-fee linked staking yield (assuming a ~5k ETH paid in daily transaction fees, with a ~60% burn rate — both in line with current fee and burn trends). It is important to note that transaction fees are very volatile and, thus, incorporating a wide range of outcomes is important. Exhibit 9 shows a sensitivity analysis for a transaction fee-based staking yield (at Merge), linked to the daily transaction fee, the ratio of fees burnt, and the amount of ETH staked. As more ETH gets staked post the Merge, we expect fee-based staking yield to stabilize at ~2.1% (see Exhibit 10). Exhibit 12 shows a sensitivity analysis for a transaction fee-based staking yield (in

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steady-state), linked to the daily transaction fee, the ratio of fees burnt, and the amount of ETH staked.

As a result, the staking yield will vary over 8-12% at the time of the Merge, depending on the level of ETH staked, daily transaction fees, and burn rates. Exhibit 7 gives a full breakdown of the various factors impacting the staking yield at Merge using our base-case assumptions. Exhibit 8 and Exhibit 9 show the sensitivity analysis for our yield forecasts (at the time of the Merge). Further, we forecast that Ethereum will deliver a steady-state yield of ~5-7%. Exhibit 10 shows the same forecasts for staking yield in the steady state, assuming the amount of ETH staked in the PoS chain increases to ~30% of the total supply. Exhibit 11 and Exhibit 12 show the sensitivity analysis for our steady-state yield forecasts.

The design changes implemented/being implemented on the Ethereum network also affect the demand-supply dynamics for the ETH token. While miners would dump their ETH received in block rewards and transaction fees to cover costs, miners are no longer required to sell their ETH income to cover costs. Further, the natural issuance/gross monetary inflation for the ETH token reduces from ~4% to ~0.5% (without factoring in a burn, which could take the net inflation to low/negative rates). The demand for ETH tokens previously came from users wanting to use ETH as a mode for paying fees. We expect that to continue, being complemented by demand for ETH to generate yield through staking.

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EXHIBIT 7: **Staking yield analysis: We expect ETH yield at Merge to touch ~9% (annualized)**

ETH emissions		Particulars
Total ETH staked at Merge (ETH)	*A*	15,000,000
ETH staked by each node (gwei)	*B*	32,000,000,000
Active Validators	*C = A/B*	468,750
Slot Time (sec)	*D*	12
Epoch Length (slots)	*E*	32
Epochs/Year	*F=365*24*60*60/(D*E)*	82,125
Base Reward Factor*	*G*	64
Base Reward Factor/Epoch*	*H*	4
ETH Total Supply at Merge	*I*	120,000,000
Base Reward/Validator/transaction (gwei)	***J, refer Exhibit above***	**4,180**
Base Reward/Validator/Epoch (gwei)*	***K=J*H***	**16,722**
Annual Rewards (ETH)	***L=K*F*C/10^9***	**643,726**
Daily Rewards (ETH)	***M=K/365***	**1,764**
Issuance Yield	***N=L/A***	**4.3%**
Daily Ethereum Fees	*O*	5,000
Expected Fee Burn (EIP-1559)	*P*	60%
Fee Rewards Per Year	***Q=O*365*(1-P)***	**730,000**
Fees Yield	***R=Q/A***	**4.9%**
Total Staking Yield	***S=N+R***	**9.2%**

** Assumes no downtime/penalties*

** The values of the base reward factor and base reward factor/epoch are set by the protocol*

Note: Cells in grey are Bernstein assumptions (base case) with sensitivities in the following exhibits.

Source: Ethereum.org, and Bernstein estimates and analysis

EXHIBIT 8: **Sensitivity analysis: Issuance-based yield (at Merge)**

Emission Yield		Total Supply
	4.3%	120,000,000
ETH Staked at Merge	13,000,000	4.6%
	15,000,000	**4.3%**
	18,000,000	3.9%
	20,000,000	3.7%
	22,000,000	3.5%

Source: Ethereum.org and Bernstein analysis

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EXHIBIT 9: **Sensitivity analysis: Fee-based Yield (at Merge)**

Fee-based Yield		Daily Fees (ETH)					
	4.9%	1,000	3,000	5,000	8,000	10,000	15,000
Burn Ratio (%)	50%	1.2%	3.7%	6.1%	9.7%	12.2%	18.3%
	55%	1.1%	3.3%	5.5%	8.8%	11.0%	16.4%
	60%	1.0%	2.9%	**4.9%**	7.8%	9.7%	14.6%
	65%	0.9%	2.6%	4.3%	6.8%	8.5%	12.8%
	70%	0.7%	2.2%	3.7%	5.8%	7.3%	11.0%
	75%	0.6%	1.8%	3.0%	4.9%	6.1%	9.1%
	80%	0.5%	1.5%	2.4%	3.9%	4.9%	7.3%

Fee-based Yield		Daily Fees (ETH)					
	4.9%	1,000	3,000	5,000	8,000	10,000	15,000
ETH Staked at Merge	13,000,000	1.1%	3.4%	5.6%	9.0%	11.2%	16.8%
	15,000,000	1.0%	2.9%	**4.9%**	7.8%	9.7%	14.6%
	18,000,000	0.8%	2.4%	4.1%	6.5%	8.1%	12.2%
	20,000,000	0.7%	2.2%	3.7%	5.8%	7.3%	11.0%
	22,000,000	0.7%	2.0%	3.3%	5.3%	6.6%	10.0%

Source: Ethereum.org and Bernstein analysis

EXHIBIT 10: **Staking yield analysis: ETH yield (steady state) will touch ~5% (annualized)**

ETH emissions		Particulars
Total ETH staked in steady-state (ETH)	*A*	35,000,000
ETH staked by each node (gwei)	*B*	32,000,000,000
Active Validators	*C = A/B*	1,093,750
Slot Time (sec)	*D*	12
Epoch Length (slots)	*E*	32
Epochs/Year	*F=365*24*60*60/(D*E)*	82,125
Base Reward Factor*	*G*	64
Base Reward Factor/Epoch*	*H*	4
ETH Total Supply at Merge	*I*	120,000,000
Base Reward/Validator/transaction (gwei)	***J, refer Exhibit above***	**2,737**
Base Reward/Validator/Epoch (gwei)*	***K=J*H***	**10,947**
Annual Rewards (ETH)	***L=K*F*C/10^9***	**983,308**
Daily Rewards (ETH)	***M=K/365***	**2,694**
Issuance Yield	***N=L/A***	**2.8%**
Daily Ethereum Fees	*O*	5,000
Expected Fee Burn (EIP-1559)	*P*	60%
Fee Rewards Per Year	***Q=O*365*(1-P)***	**730,000**
Fees Yield	***R=Q/A***	**2.1%**
Total Staking Yield	***S=N+S***	**4.9%**

** Assumes no downtime/penalties*

** The values of the base reward factor and base reward factor/epoch are set by the protocol*

Note: Cells in grey are Bernstein assumptions (base case) with sensitivities in the following exhibits.

Source: Ethereum.org, and Bernstein estimates and analysis

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EXHIBIT 11: **Sensitivity analysis: Issuance-based yields (steady-state)**

Emission Yield		Total Supply
	2.8%	120,000,000
ETH Staked in steady-state	15,000,000	4.3%
	25,000,000	3.3%
	30,000,000	3.0%
	35,000,000	2.8%
	40,000,000	2.6%

Source: Ethereum.org and Bernstein analysis

EXHIBIT 12: **Sensitivity analysis: Fee-based yield (steady-state)**

Fee-based Yield		Daily Fees (ETH)					
	2.1%	1,000	3,000	5,000	8,000	10,000	15,000
Burn Ratio (%)	50%	0.5%	1.6%	2.6%	4.2%	5.2%	7.8%
	55%	0.5%	1.4%	2.3%	3.8%	4.7%	7.0%
	60%	0.4%	1.3%	2.1%	3.3%	4.2%	6.3%
	65%	0.4%	1.1%	1.8%	2.9%	3.7%	5.5%
	70%	0.3%	0.9%	1.6%	2.5%	3.1%	4.7%
	75%	0.3%	0.8%	1.3%	2.1%	2.6%	3.9%
	80%	0.2%	0.6%	1.0%	1.7%	2.1%	3.1%

Fee-based Yield		Daily Fees (ETH)					
	2.1%	1,000	3,000	5,000	8,000	10,000	15,000
ETH Staked in steady-state	15,000,000	1.0%	2.9%	4.9%	7.8%	9.7%	14.6%
	25,000,000	0.6%	1.8%	2.9%	4.7%	5.8%	8.8%
	30,000,000	0.5%	1.5%	2.4%	3.9%	4.9%	7.3%
	35,000,000	0.4%	1.3%	2.1%	3.3%	4.2%	6.3%
	40,000,000	0.4%	1.1%	1.8%	2.9%	3.7%	5.5%

Source: Ethereum.org and Bernstein analysis

ETHEREUM STAKING CAN BE A MULTI-BILLION-DOLLAR YIELD PLAY

Staking yield on Ethereum opens avenues for investors to invest in high-yield bonds built on top of Ethereum's staking cash flows. Financial repackaging of these cash flows along with hedging out of ETH price risk can allow institutional investors to earn mid-single digit yields before factoring in leverage. Considering a ~30-40% staking penetration for ETH (steady-state), this translates to a multi-billion-dollar market for ETH bonds (staking yield-backed cash flows). We discuss staking mechanisms (direct and pooled staking), liquid staking (Lido Finance), and possible financial innovation on top of liquid staking (e.g., InstaDapp Lite and IndexCoop) in this chapter.

Explaining staking yield dynamics and possible financial innovation on ETH staking

There are two types of staking possible on Ethereum — direct staking and pooled staking. Direct staking refers to any ETH holder depositing 32 ETH tokens in the Beacon chain contract. 32 ETH tokens represent the minimum amount needed to become a validator. Pooled staking refers to any ETH holder depositing their tokens with an aggregator for jointly staking 32 ETH tokens. Think of it as fractionalized staking. The aggregator will pool ETH from many members and stake it as a single entity. This removes the requirement for a large upfront investment for becoming a miner. Leaders in pooled staking include liquid staking protocols (such as Lido), exchanges (Binance, Kraken, etc.), and staking solution providers (such as Figment and Staked.us) (see Exhibit 13). Currently, ~13 million ETH has been staked by ~400k users. These form ~11% of the total supply of ETH and include both

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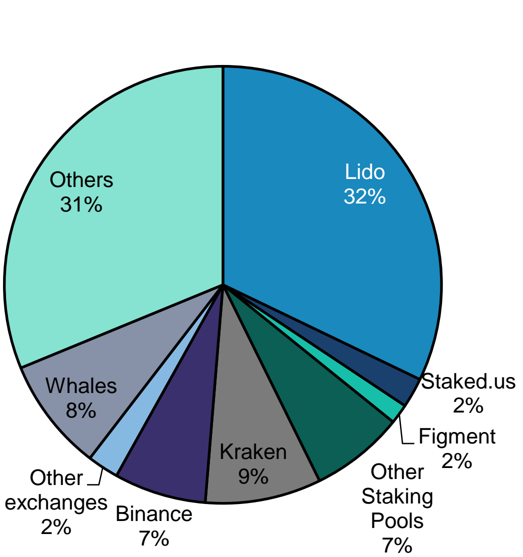
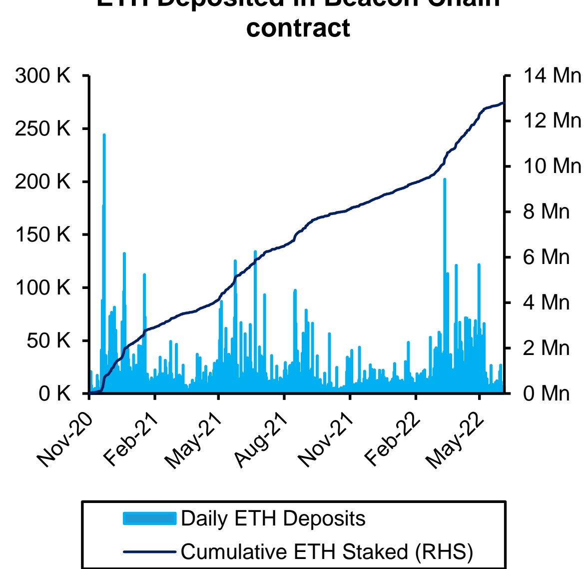
direct staking and pooled staking. Exhibit 13 shows the split of total ETH staked by category — Lido Finance, Kraken, and Binance lead the pooled/liquid staking market. Exhibit 14 shows the trend in deposits made to the PoS chain. We expect ~15 million ETH will be staked by the time the Merge happens, for our staking yield analysis (see Exhibit 7 to Exhibit 9).

EXHIBIT 13: **Lido, Kraken, and Binance dominate the pooled staking market**



Source: BeaconScan, Etherscan, and Bernstein analysis

EXHIBIT 14: **ETH locked in PoS chain at ~13 million**



Source: BeaconScan, Etherscan, and Bernstein analysis

Liquid staking is a concept where staking aggregators issue a liquid token in exchange for the ETH deposited for fractionalized staking. Lido Finance is a leader in liquid staking. It allows users to deposit ETH and issues them a stETH token. The stETH token is 1:1 collateralized with ETH. It is like a liquidity token provided by decentralized exchanges and can be freely traded for/used as collateral in DeFi protocols. This allows users to lock their ETH in staking pools, earn staking rewards, and continue to use their ETH (indirectly via stETH). Some platforms such as InstaDapp Lite and IndexCoop are using the liquid staking concept to allow users to get 3x levered staking yields. We explain the concept in more detail in the following section. We think financial innovations by Wall Street/DeFi entrepreneurs could open an attractive yield instrument for institutional capital and financial services players.

LEVERED STAKING – USING FLASH LOANS TO BOOST YIELD INCOME FROM ETH STAKING

How does levered staking work?

Consider a user has 1 ETH token. The user can go to a liquid staking protocol such as Lido Finance and deposit the 1 ETH to get 1stETH. They can then use the 1 stETH like one would use the 1 ETH. Consider that they deposit the 1 stETH in Aave and borrow more ETH against it (Aave loans are over-collateralized). They can repeat the whole process recursively to accumulate more ETH. This allows users to lever up their ETH positions and

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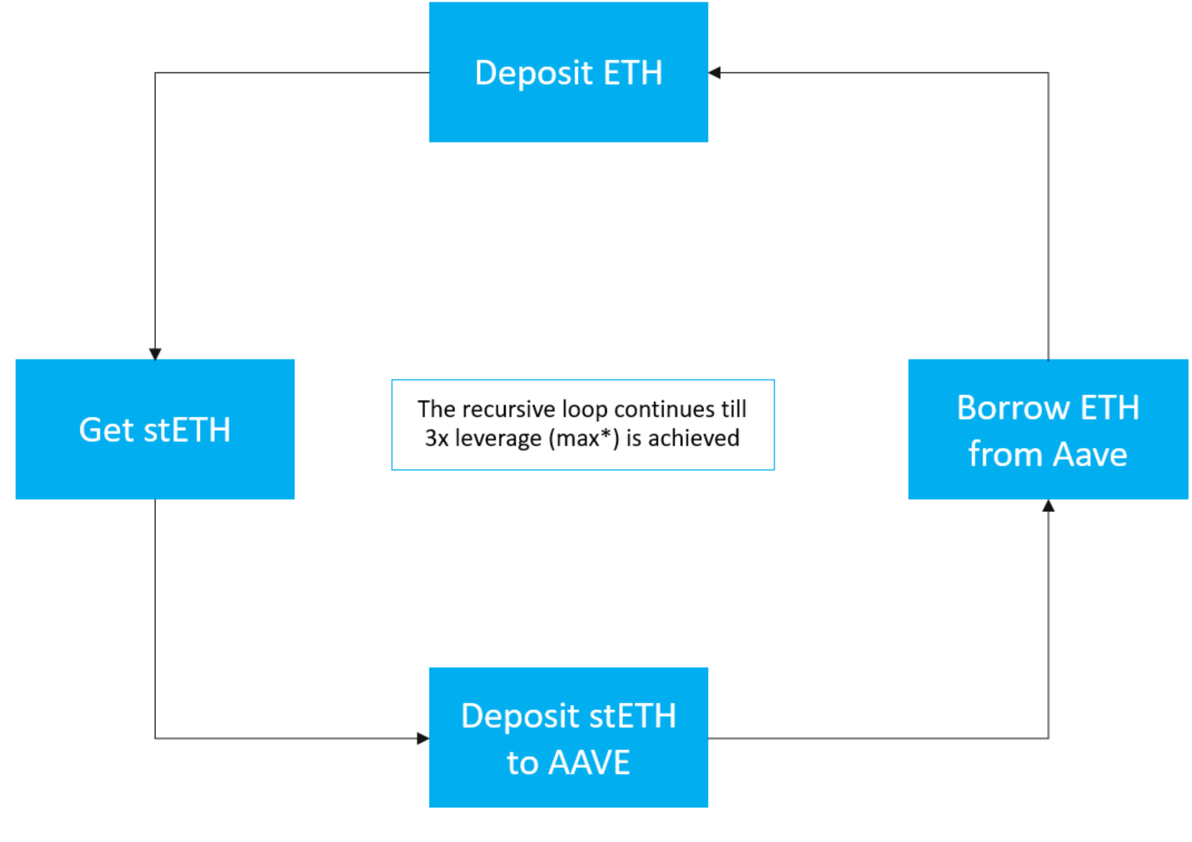
earn a higher yield, 3x higher yield to be precise. Exhibit 15 shows a diagrammatic representation of the process.

EXHIBIT 15: **How levered staking works**



Source: InstaDApp Lite and Bernstein analysis

VALUATION METHODOLOGY

India financials

India is a growth market and investors generally seek growth-based returns in India. We believe all lenders in India trade on what the market believes to be the sustainable earnings growth momentum. Lenders that have sustained cross-cycle earnings growth despite sector asset quality concerns trade at a premium. On the other hand, lenders that have been inconsistent in earnings growth get penalized by the market until they build investor confidence again. We value our coverage on a target PE multiple based on one-year forward earnings calibrated by trading history and our expectation of three-year sustainable earnings growth. We use a one-year forward multiple based on FY22 earnings to arrive at FY21 end target price. We corroborate our target price-earnings multiples with a P/BV based multiple and a PE vs. ROA comparison as a secondary check. We believe the market can be brutal with growth stocks if the growth story shows any structural weakness and, thus, we constantly stress-test for structural growth weakness across our industry and company investment thesis.

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EXHIBIT 16: **Ratings and target prices**

Ticker	Rating	Currency	8-Aug-2022 Closing Price	Target Price
HDFCB.IN	O	INR	1,462.05	1,890.00
AXSB.IN	M	INR	745.55	810.00
ICICIBC.IN	O	INR	836.95	790.00
KMB.IN	O	INR	1,844.50	1,970.00
MXAPJ			524.70	

Note: KMB.IN base year is 2022

Source: Bloomberg, and Bernstein estimates and analysis

RISKS

India financials

Key risks to our sector thesis include asset quality risks in consumer lending; excessive competition in retail lending due to margin pressures; and banks countering net interest margin pressures by going up the risk curve sharply that boosts earnings in the near term.

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BRI: RECESSION? STRANGELY, INFLATION-DEFENSIVE AND GROWTH-RESILIENT

HIGHLIGHTS

- **High inflation a manageable risk.** Indonesia has been dealing with high inflation historically — averaging ~5% over the last decade. Higher commodity prices are helpful offsets and could drive higher borrowing demand, especially in the micro segment.
- **Accelerating, rather than slowing growth.** Driven more by domestic demand, the country has seen growth pick up through 1Q22 — and BRI's microfinancing has been higher than system through time.
- **Rising rates, indeed, but this will help the banks see expanding margins.** While growth becomes a concern with premature rate hikes, loan growth has gathered pace; rate hikes, when they come, help the top line with rebound in margins.

INVESTMENT IMPLICATIONS

While many are battling inflation, Indonesia is likely to keep this under control while seeing further rise in credit growth and higher margins as rates are hiked. From a broader ESG angle, BRI stands out in terms of financial inclusion. Since 2020, when Covid-19 hit, the bank's focus on the micro segment has intensified, going even smaller ticket, while staying very profitable. We believe the ESG edge of BRI is underappreciated.

HIGH INFLATION A MANAGEABLE RISK

While inflation will likely edge up in Indonesia, it isn't the first time the country has been dealing with high inflation — even climbing to 5% would be just the historical average over the last decade (highest at 9%). Higher commodity prices are also helping offset inflation through the current account surplus (helping soften the pressure on the rupiah), with the government also getting higher receipts that can help with subsidies to reduce pain from higher prices.

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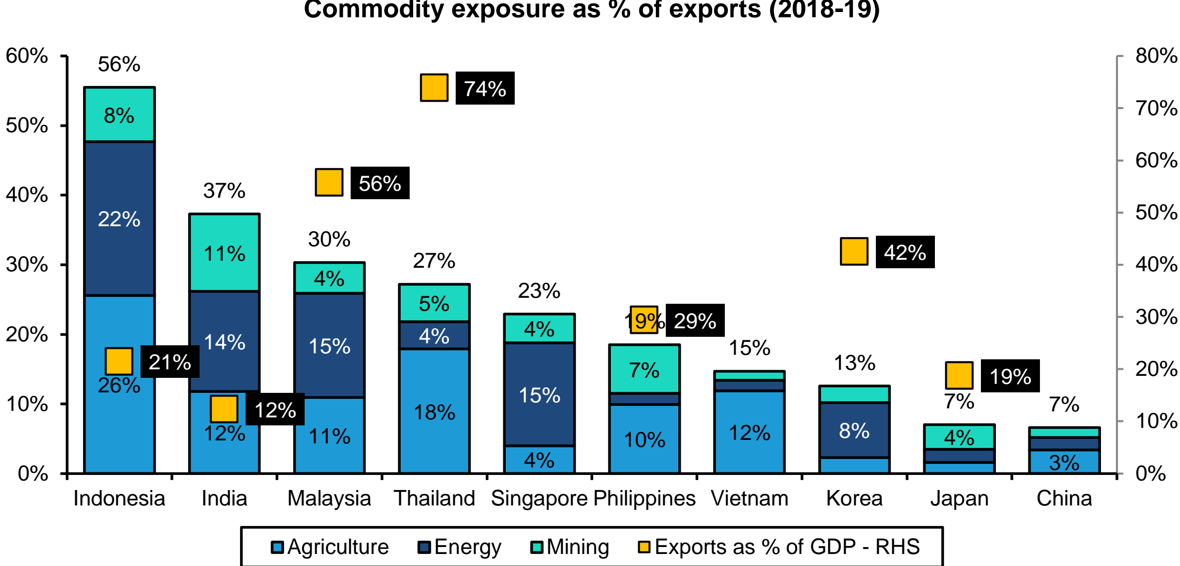
EXHIBIT 1: **Indonesia is "used to" high inflation through time, though inflation has been more manageable over the last few years**

Source: Bloomberg and Bernstein analysis

EXHIBIT 2: **Indonesian exports are largely commodity driven...**



Source: HAVER and Bernstein analysis

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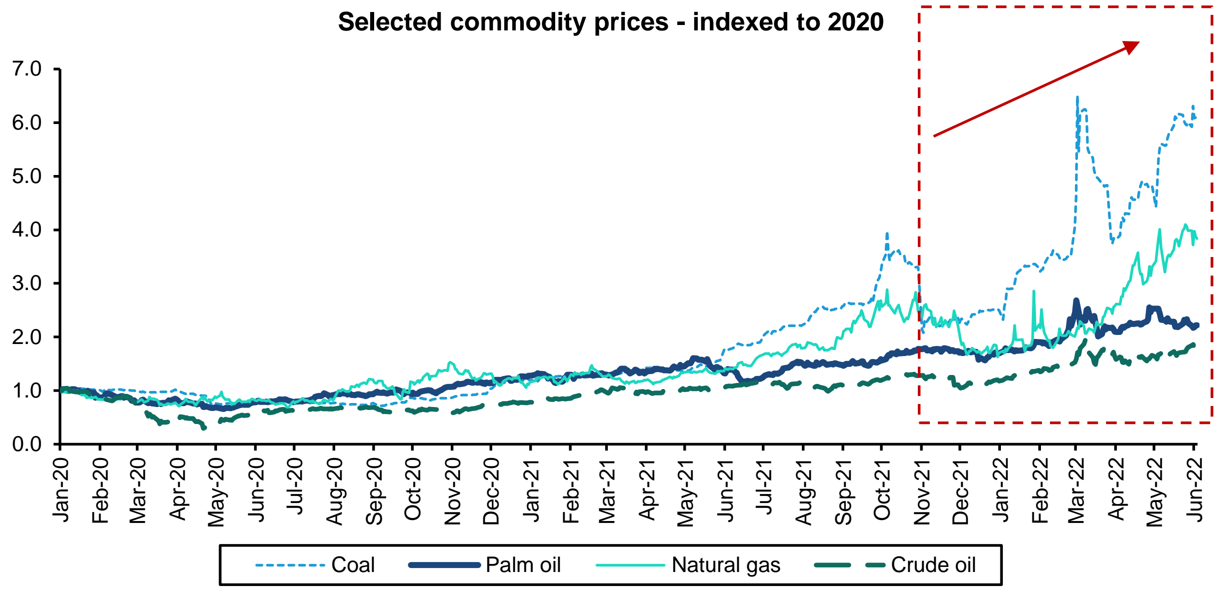
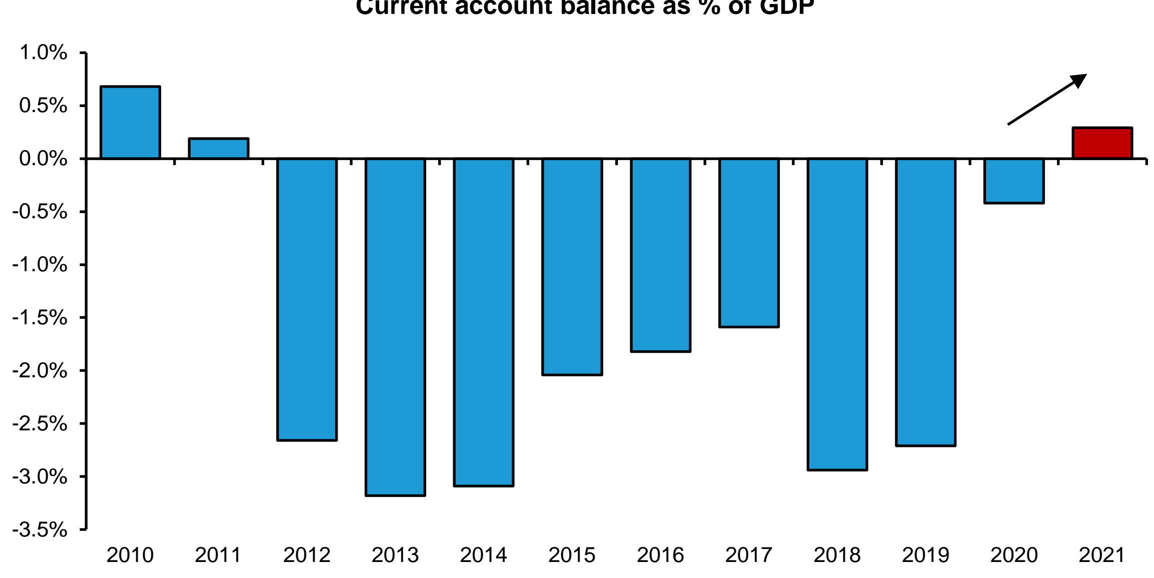
EXHIBIT 3: **...and higher commodity prices have been benefiting net commodity exporters — Indonesia is the largest global exporter of palm oil, for instance**



Source: Bloomberg and Bernstein analysis

EXHIBIT 4: **This has driven a current account surplus — not seen since 2011 — to buffer against currency weakness, while helping enlarge fiscal receipts**



Source: HAVER and Bernstein analysis

ACCELERATING, RATHER THAN SLOWING GROWTH, ESPECIALLY IN MICRO

As a country that's driven more by domestic demand, with relatively lower exposure to China/ASEAN (unlike say Thailand), the country has seen growth pick up since 2H21, continuing through 1Q22.

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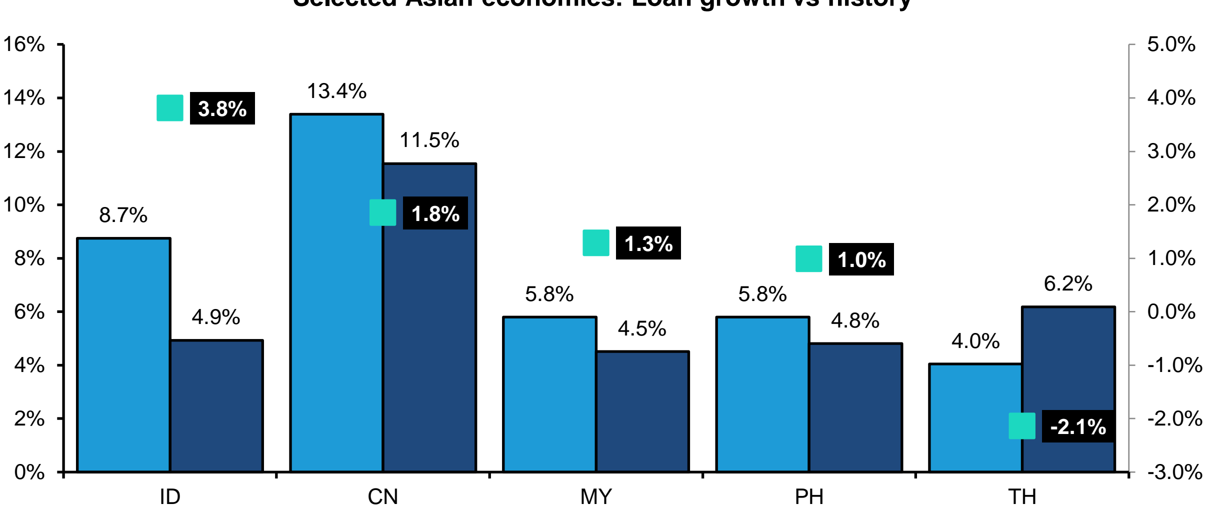
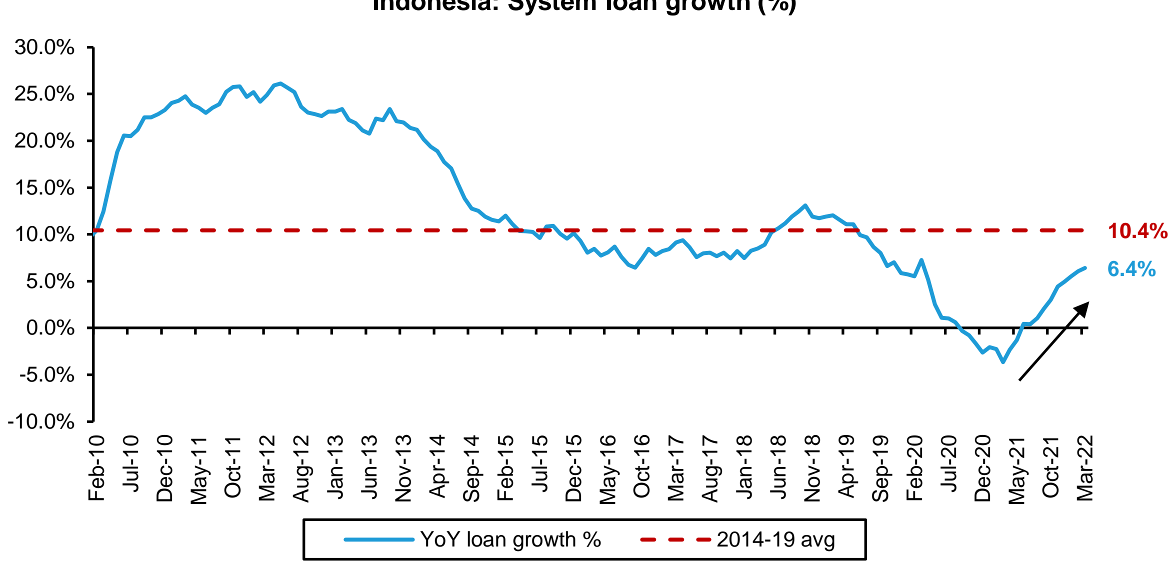
The microfinancing segment received special attention through Covid-19, as the government sought to help the poorer rungs of the country — an area that BRI has excelled in through at least three decades. In fact, the micro segment has continued to see growth runway, and for BRI, micro growth has typically been higher than system loan growth.

EXHIBIT 5: **Loan growth rebound potential for Indonesia is stronger vs. other ASEAN countries**



Source: HAVER, central bank data, and Bernstein analysis

EXHIBIT 6: **Loan growth rebound has been seen since mid-2021, picking up further since**



Source: Central bank data and Bernstein analysis

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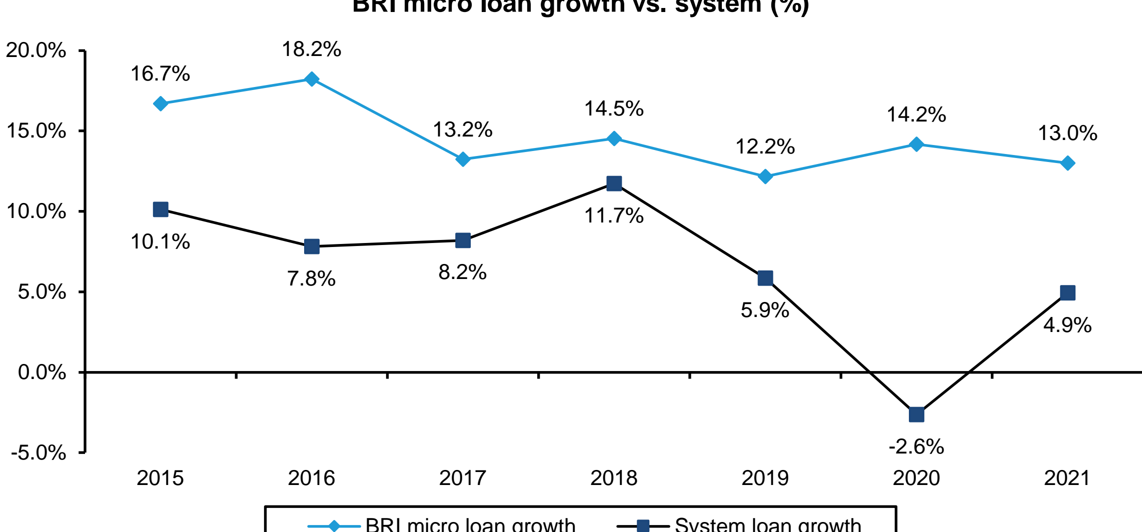
EXHIBIT 7: **BRI has typically been able to drive more consistent and higher growth than the system in its micro segment**

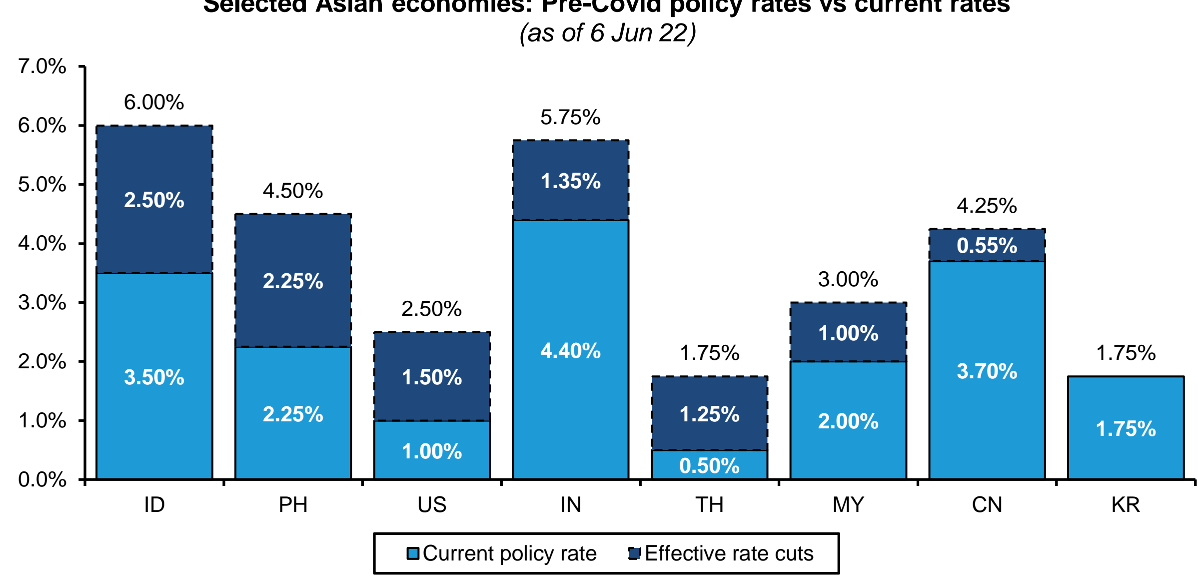


Source: HAVER, company reports, and Bernstein analysis

RISING RATES, INDEED, BUT THIS WILL LIKELY HELP BANKS SEE EXPANDING MARGINS

While growth becomes a concern with premature rate hikes, loan growth (as mentioned) has gathered pace, so rate hikes, when they come, help the top line with the rebound in margins.

EXHIBIT 8: **Starting with high interest rates, there were several cuts since 2019 as Covid-19 began — among the largest by quantum in the region**



Source: Bloomberg and Bernstein analysis

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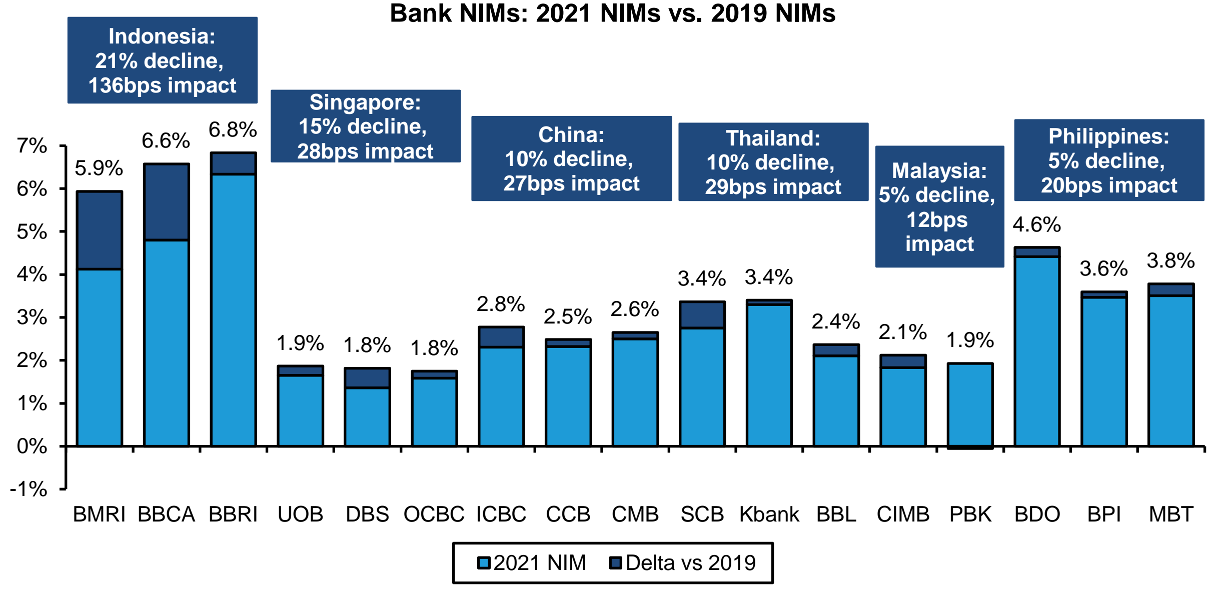
EXHIBIT 9: **Although micro is fixed-rate, margins are likely to expand for BRI's other segments (half the book), which should drive NIMs higher**

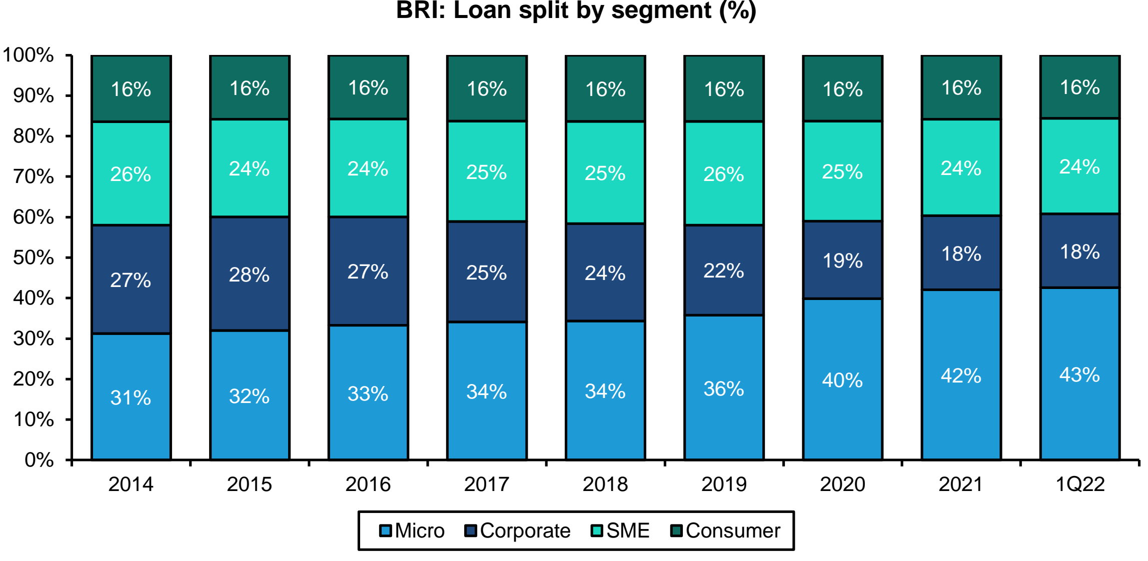


Source: Bloomberg and Bernstein analysis

FROM A BROADER ESG ANGLE, BRI STANDS OUT ON FINANCIAL INCLUSION

Since 2020 when Covid-19 hit, the bank's focus on the micro segment has intensified as the country sought to ensure the poor were taken care of, via moratoriums (as was the case with many other countries). The broader strategic intent even before Covid-19 was also to refocus BRI more toward the micro segment, one that BRI has succeed in doing well and profitably for over three decades.

EXHIBIT 10: **BRI has more decisively refocused on the micro segment since 2018 — with intent to be 55% of total**



Source: Company reports and Bernstein analysis

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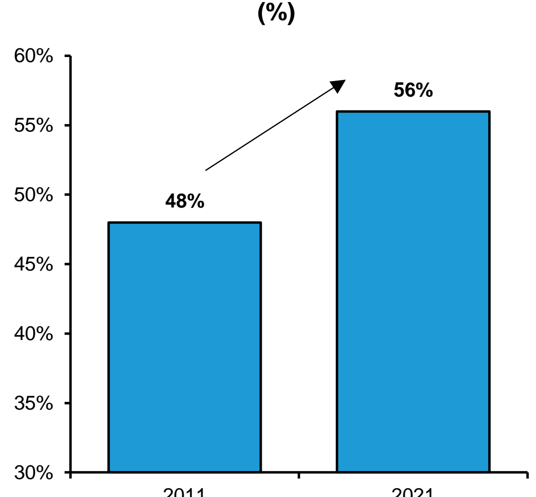
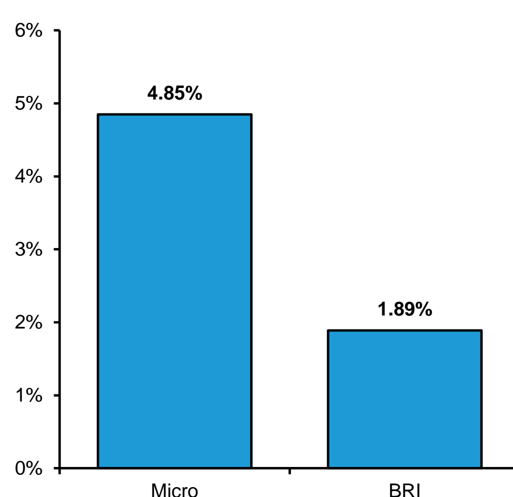
EXHIBIT 11: **Micro segment has been a large contributor to the bank's profits over time...**



Source: Company reports and Bernstein analysis

EXHIBIT 12: **...and it posts much higher ROAs – so any tilt to micro helps**

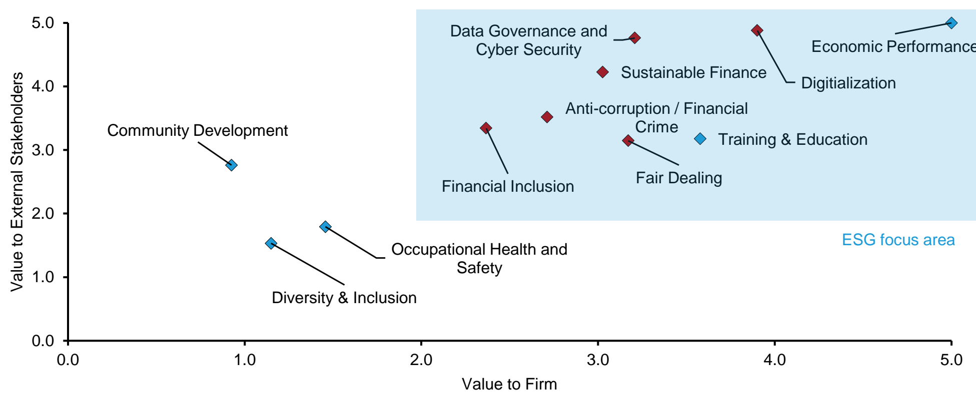


Source: Company reports and Bernstein analysis

From the broader ESG angle: First of all, why Indonesia? Few countries match it in financial inclusion potential

Indonesia is one of the few (and largest) markets for financial inclusion in the region. It is the fourth most populous in the world and severely underbanked with half of the population without a bank account. While the potential is high, however, not many banks have been able to penetrate the micro segment successfully (grow meaningfully while keeping credit costs sustainable).

EXHIBIT 13: **Financial inclusion ranks among the highest on the materiality matrix for Asian banks**



Note: Countries in ASEAN included

Source: Corresponding bank's reports and Bernstein analysis

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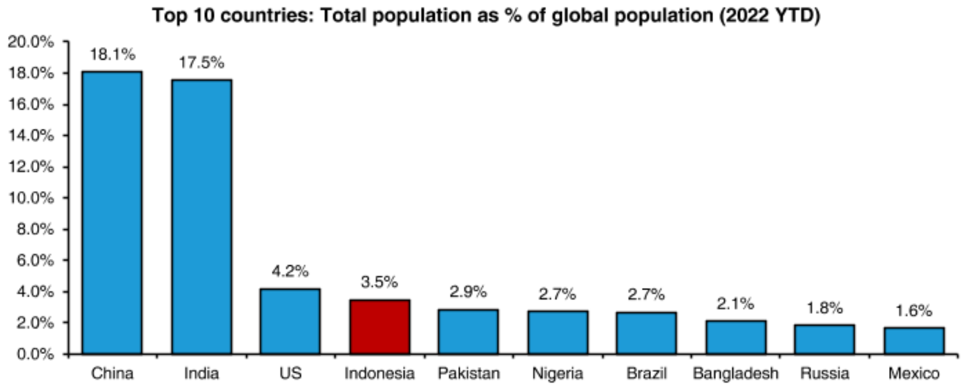
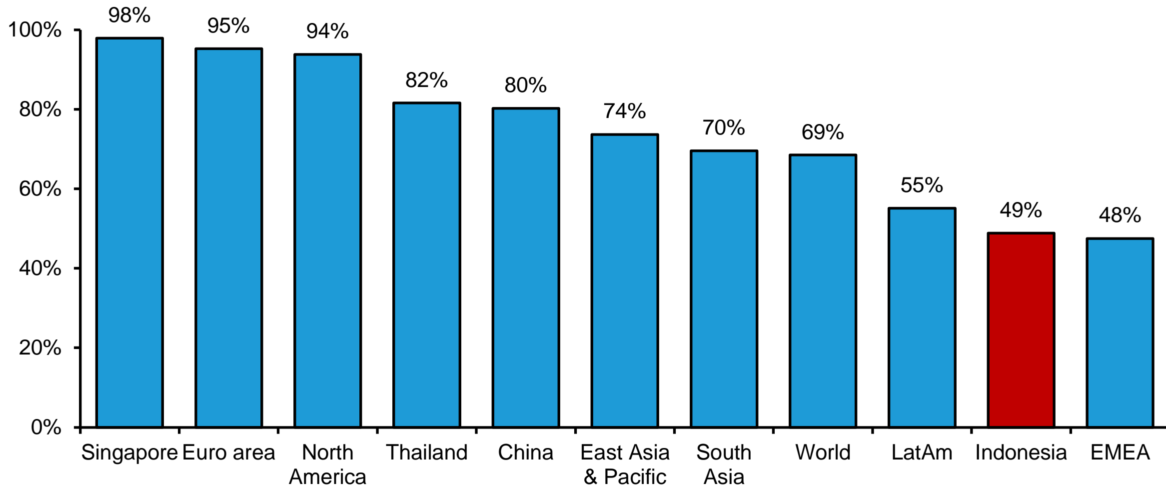
EXHIBIT 14: **Indonesia is among the most populous in the world...**



Source: World Bank and Bernstein analysis

EXHIBIT 15: **...and half of the population doesn't have a bank account**



Source: World Bank and Bernstein analysis

BRI is both able and willing to be Indonesia's financial inclusion champion — and sees no equal

A tried and tested business model developed over four decades, BRI has continued to adapt the model to match needs of customers, by leveraging technology to be efficient and cheap-to-serve. Examples include making full use of mobile-based approaches to run outlets and automate processes, moving away from paper. This, alongside the scale it has achieved, ensured one key aspect of BRI's sustained profitability over a long period of time, by ensuring low cost.

On the distribution side, BRI stands unique in ensuring maximum reach (and again at low cost) — the bank's agent banking program (BRILink) is possible through the appointment

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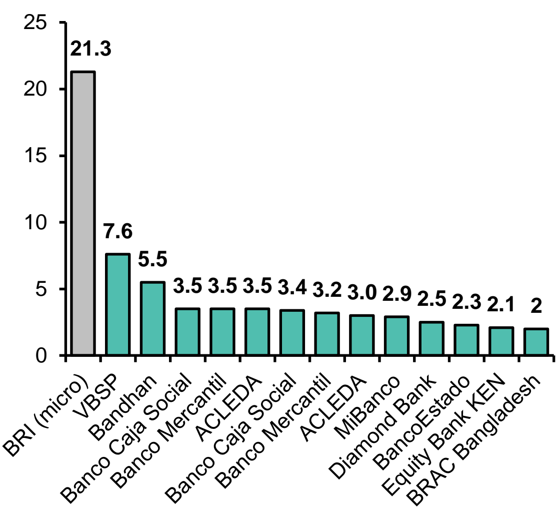
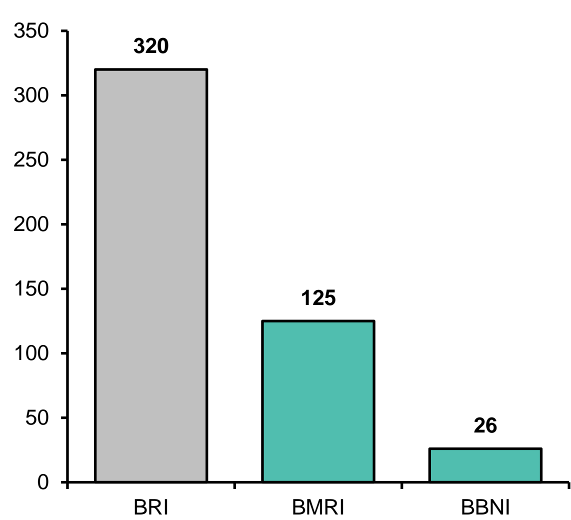
of half-a-million agents from its very large (~10 million) borrower base. This not only provides access points to BRI's customers, but also allows the bank to scale down on already-cheap two-person outlets (Teras) and ATMs. BRI has more agents than the rest of its peers put together, and >4x the transaction value/volumes of BNI (the runner up).

EXHIBIT 16: **BRI is among the largest microfinancing banks in the world**



Source: Company reports and Bernstein analysis

EXHIBIT 17: **In Indonesia, it is by far the most dominant micro player, with an over 60% market share**



Source: Company reports and Bernstein analysis

EXHIBIT 18: **BRI has done the most to "reach the unreachable"...even deploying their own satellite...**

Source: Company reports

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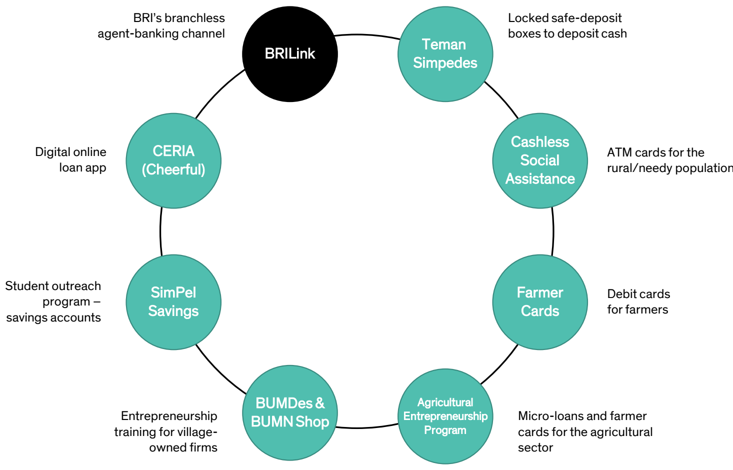
EXHIBIT 19: **...and importantly, through a wide network of BRILink agents that drives key financial inclusion initiatives via its extensive reach**



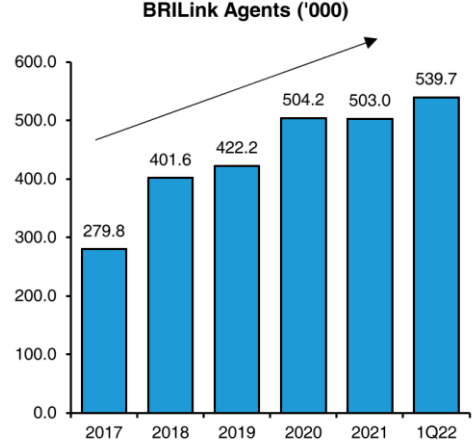
Source: Company reports and Bernstein analysis

Only for financial inclusion? Or does it make the bank money? Yes – and for its agents too.

The agent network is near zero-fixed-cost, meaning the program is profitable from day one. In addition, BRILink contributes ~2% of 2019 PBT via fee income while driving outsized savings deposit growth. BRILink agents are kept happy too, with a meaningful ~US$600 p.a., or 15% of GDP per capita (of US$4,000).

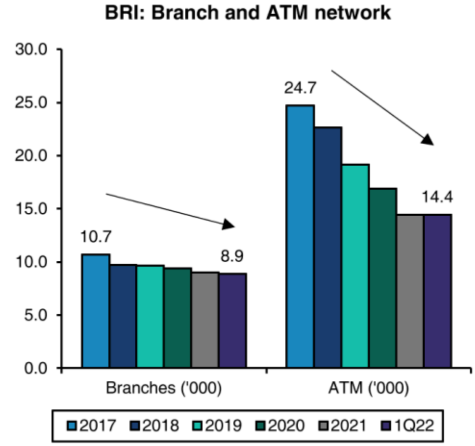
More fundamentally, the BRILink program has enabled BRI to cut down on its physical footprint, driving lower cost-income ratios vs. peers.

EXHIBIT 20: **As the BRILink agent headcount grew...**



Source: Company reports and Bernstein analysis

EXHIBIT 21: **...the bank shrank its brick-and-mortar footprint**



Source: Company reports and Bernstein analysis

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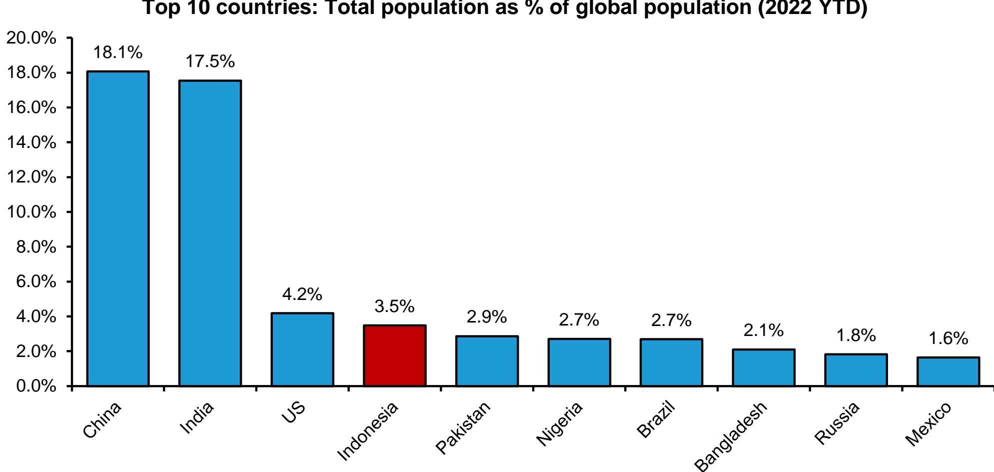
EXHIBIT 22: **This enabled the bank to boast low cost-income ratios vs. peers**

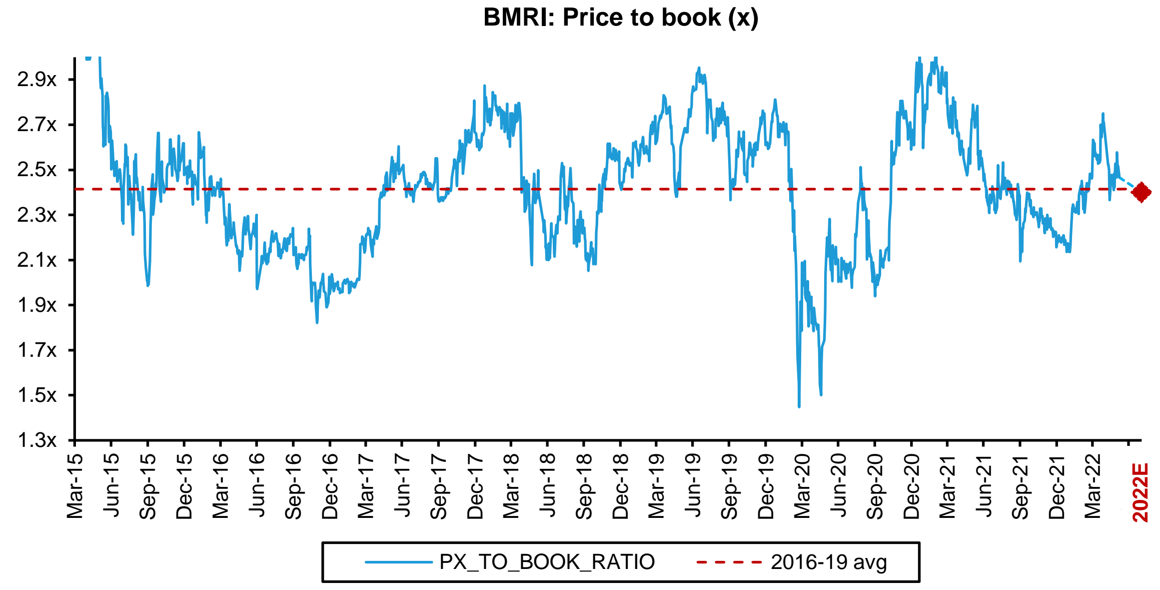


Source: SNL Financial and Bernstein analysis

Investment conclusion

While inflation, rising rates, and growth are current concerns across the region, these factors are manageable, even favorable to the Indonesian banking sector. Specifically for BRI, microfinancing growth has been strong against the robust financial inclusion potential in Indonesia. As BRI focuses even more on micro, we think the ESG improvement potential has been overlooked — even as the bank sees returns improving as it does so to justify further rerating.

EXHIBIT 23: **Target PBx of 2.4x (2022E) is in line with the historical average (and vs. 3.3x peak since 2015); bear in mind conditions look optimistic right now, not the opposite (implies ~25% potential upside)**



Source: Bloomberg, and Bernstein estimates and analysis

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VALUATION METHODOLOGY

The IDR5,500.00 target price for BBRI, rated Outperform, is based on the PB-ROE model, itself a function of Return on Equity (RoE), Growth (g), and Cost of Equity (Ke). We calculate each bank's respective Ke as a function of the long-term (five-year) beta, the Bernstein Quant Team-derived equity risk premium (ERP) with adjustments, and the risk-free rate. Our target prices are based on valuations for YE2022 using this method. The closing prices for BBRI and the MXAPJ as of August 8, 2022 were IDR4,370.00 and524.70, respectively.

RISKS

Pan-Asia financials and fintech

Coronavirus outbreak: The severity of the global outbreak and its impact on Asian economies remains a lingering risk affecting banks across the region. Anticipated re-openings and recoveries could help growth and the banks, while prolonged slowdowns or delayed recoveries could extend earnings impact on earnings and even asset quality issues that may not be factored in today.

China. Investors have feared hard-landing risks previously and the implications on the rest of Asia, including ASEAN. While the country seems to have enjoyed a V-shaped recovery in 2020, global demand is still subdued, with Covid-19 restrictions posing new risks. With the China property downturn, there is increased risk of the country failing to achieve targeted economic growth, to be a drag on China, and indirectly the region.

Asset quality risks. If growth slows down materially, credit quality of the banks as well as fintech internet lenders may be affected, such that provisioning normalization takes longer.

Bank Rakyat Indonesia Persero Tbk PT

The bank is substantially exposed to the microfinance segment, the reason for its attractiveness to investors. Any segment-specific risks, such as government-directed write-offs due to "default hardships" unique to the segment or additional pressure to do more KUR (subsidized lending), would affect BBRI disproportionately.

Microfinance is also exposed to geographic risks that can drive borrowers of an entire region to face repayment hardships (e.g., tsunami-affected towns); however, this risk is diversified across the country, and the likelihood of widespread impact to materially affect the bank is low. In addition, there is the compensating factor of microfinance being least correlated with the overall economy and other segment NPLs.

While strong in microfinance, other business areas face significant competition and higher risks compared to micro. In this regard, however, the ongoing shift of focus back to micro is positive for the stock.

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VISA AND MASTERCARD: ARE THEY BEING OVERLOOKED?

HIGHLIGHTS

- **A "win, win" scenario: Secular growth from cash-to-card conversion is the #1 revenue driver for Visa/Mastercard and is also an important ESG topic.** Cash digitization is beneficial for society as it increases transparency and traceability of payments. It helps reduce crime and tax evasion, as well as help governments reduce costs when conducting large-scale payments (e.g., pandemic stimulus). For merchants, it leads to more security, better checkout conversion, and increased sales. It also drives a higher level of financial inclusion for individuals and gives the underbanked/unbanked the opportunity to access financial services. ESG factors also pose risks (e.g., regulation, government nationalism, and litigation) that we closely monitor, but are likely contained and mitigated by the companies through stakeholder management, partnerships, and investments (e.g., on financial inclusion and prepaid cards). Overall, perhaps **not surprisingly, Visa and Mastercard fare very well on third-party ESG metrics.**

- **However, when analyzing positioning data from top ESG funds (North America (NA) and global), we found that Visa and Mastercard are less overweight (and sometimes underweight) vs. other names in the sector.** Globally, they are the most underweight names in our coverage, while in NA they are less overweight vs. the sector (IT Services). This is surprising, as we believe they are both beneficiaries of many ESG trends, and in our view will also outperform in an environment of high inflation and slowing growth.

- **ESG in action:** While both companies are enablers/beneficiaries of ESG trends, **we also believe that Visa and Mastercard are defensive names in a potential downturn. In a recession, we estimate Visa and Mastercard will have 2-8% constant currency (cc) revenue growth.** The lower end of the range assumes -3% real GDP growth, 2% inflation, 3% card penetration growth, some decline (as opposed to benefit from recovery) in cross-border, partially offset by resilient transaction growth. The higher end of the range assumes mid-single-digit inflation and benefits from pent-up travel demand.

INVESTMENT IMPLICATIONS

Visa and Mastercard (both Outperform) are our top picks within our coverage for five key reasons: (1) triple whammy benefits from cross-border recovery (e.g., on cross-border revenue, processing revenues, and client incentives), (2) benefits from inflation — majority of revenue is linked to dollar purchase volumes, (3) many perceived disruptive risks (e.g., crypto, BNPL, and fintech) have come down to earth and others (e.g., A2A) have had slow traction, (4) revenue growth likely to be resilient in a potential downturn; e.g., in 2008-09, Visa's and Mastercard's purchase volume growth was positive, and (5) valuation relative to the market is below five-year and 10-year averages. We see upside from ~20% earnings compounding even without multiple expansion.

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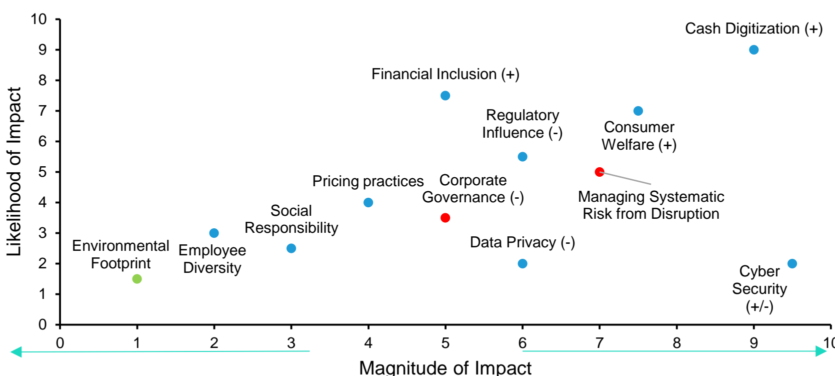
ESG – IMPORTANCE OF 'S' FOR VISA AND MASTERCARD

We begin with an overview on how Visa and Mastercard are performing on key ESG metrics and topics, and their initiatives and investments.

Broader view of the sector

When analyzing our sector's ESG materiality matrix, where we map what we perceive to be the most relevant topics in our sector to long-term fundamentals, we see cash digitization and financial inclusion are two of the biggest opportunities for our coverage in terms of magnitude and likelihood of impact (see Exhibit 1).

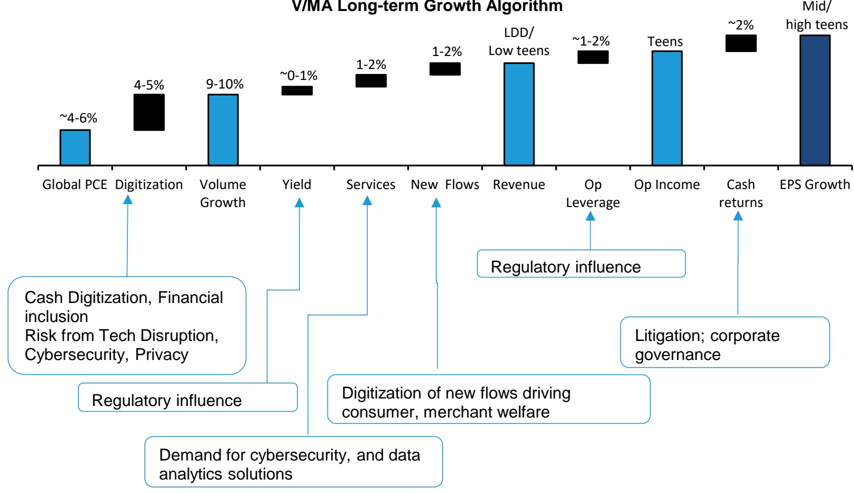
EXHIBIT 1: **ESG Materiality Matrix of our coverage; ESG factors generally present opportunities (+) (as opposed to risks) to payments companies**



Note: We have color-coded the factors; green/light gray (Environment), blue/medium gray (Social), red/dark gray (Governance)

Source: SASB and Bernstein analysis

EXHIBIT 2: **A win-win? ESG factors (e.g., cash digitization and financial inclusion) have a tangible impact on the long-term earnings growth algorithm for Visa and Mastercard**



Source: Company reports, and Bernstein estimates and analysis

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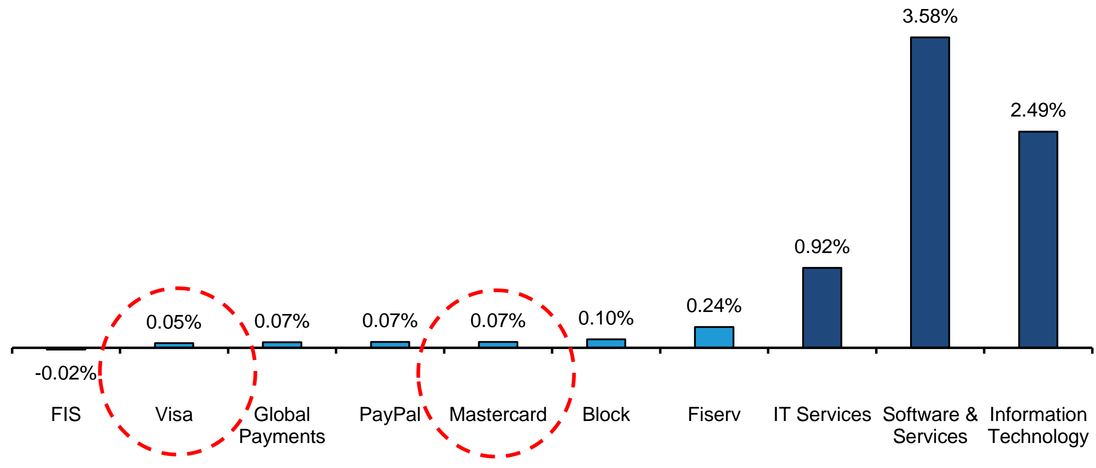
Zooming in on Visa and Mastercard, we also believe many of the factors highlighted in the matrix have tangible impacts/are drivers of Visa and Mastercard's long-term growth algorithm (see Exhibit 2).

In NA, ESG investors are less overweight on Visa and Mastercard vs. our coverage, while globally they are the most underweight names in our coverage

We measure investors' positioning as the percentage of the stock's weight on ESG fund's AUM (for the top funds by AUM) benchmarked against the MSCI ACWI (for global data) and the S&P 500 (for NA). The funds are classified based on geographical focus, i.e., if a fund has >70% exposure to North American equities, it's classified as a North American fund, whereas if a fund does not have >70% exposure to any geography, it's considered global. (Note: This methodology classifies our coverage companies' industry as IT services, and the industry group as Software & Services. The sector is Information Technology, which is the umbrella in which Software & Services and IT Services are categorized.)

When analyzing how Visa and Mastercard are positioned by top ESG investment funds in NA in 1Q22, we observe that despite both companies being slightly overweight, the magnitude is much lower vs. industry (IT Services), industry group (Software & Services), as well as other names in our coverage. We also find investors are slightly more overweight on Mastercard vs. Visa (0.07% vs. 0.05%) (see Exhibit 3). (Note: the Software & Services industry group also includes popular software names such as Adobe, VMWare, and Autodesk, which are among the most overweight stocks in that category.)

EXHIBIT 3: **When looking at funds in NA, even though both Visa and Mastercard are overweight, the magnitude is much lower vs. industry, industry group, as well as Block and Fiserv**



Source: Emerging Portfolio Fund Research (EPFR), Morningstar, and Bernstein analysis

Globally, despite investors being underweight on the IT services industry in general, within our coverage, Visa and Mastercard are the most underweight names. Looking at our coverage, investors are overweight on PayPal (0.08%) and neutral on Global Payments (0%). Among IT services companies, PayPal is leading (the most overweight). We believe

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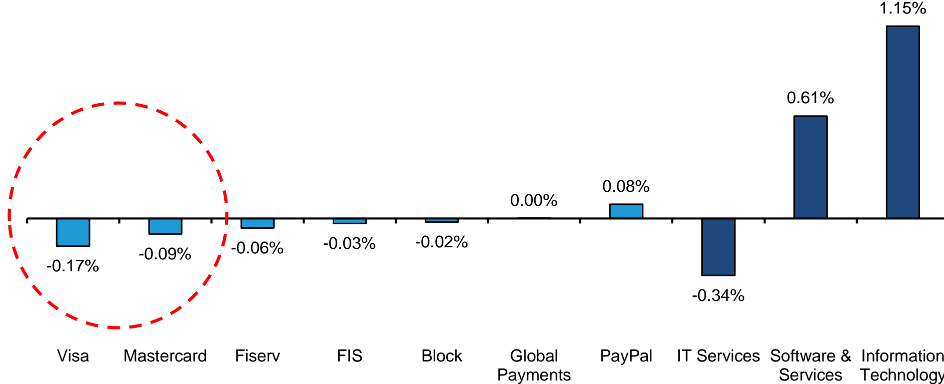
this could be due to the significant price drop in its stock (-56% YTD as of July 22, 2022) (see Exhibit 4).

EXHIBIT 4: **Globally, investors are more underweight on Visa and Mastercard vs. all other names in our coverage**



Source: EPFR, Morningstar, and Bernstein analysis

This is surprising to us, as we believe both Mastercard and Visa are strong enablers/beneficiaries of structural ESG trends, and are poised (in our view) to outperform in an environment of high inflation and slowing growth.

"Win, win" all around — cash digitization is both crucial to Visa and Mastercard's core business and positive from a social perspective: Secular growth from cash-to-card conversion remains the #1 revenue driver for Visa and Mastercard.

We estimate that consumer-to-business (C2B) payments is a US$35Tn market globally (ex-China), and that it is currently 56% penetrated by cards (vs. 40% five years ago); we expect that to reach ~62-65% by 2026 (see Exhibit 5). Over the next five years, we forecast ~9-10% cc C2B purchase volume CAGR (see Exhibit 6).

Cash digitization is an important ESG topic, as it benefits not only governments, but also merchants and consumers. For governments, a higher number of digital payments can lead to less crime (cash is recognized by the US government as a catalyst for crime) and tax evasion, as it increases transparency and traceability of payments. It can also help reduce costs for governments when conducting large-scale payments such as social transfers (e.g., distribution of pandemic stimulus payments). For merchants, it can lead to more security, better check out conversion, and increased sales. The higher influx of data also gives merchants more insights into their customers' spending habits and preferences. It also drives higher financial inclusion and provides an opportunity for the underbanked or unbanked to own digital wallets and access financial services.

For both Mastercard and Visa, cash digitization is an extremely important component of their growth story, which means the incentives are completely aligned. We estimate card penetration increases contributed to almost half of Visa and Mastercard's revenue growth over 2016-21.

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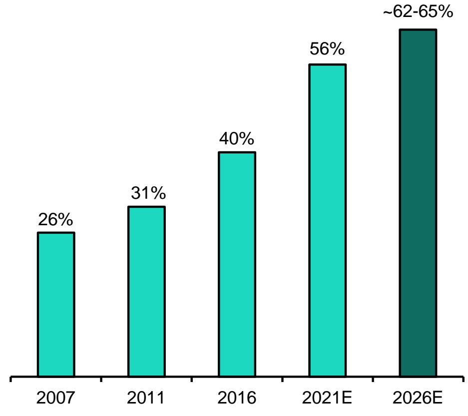
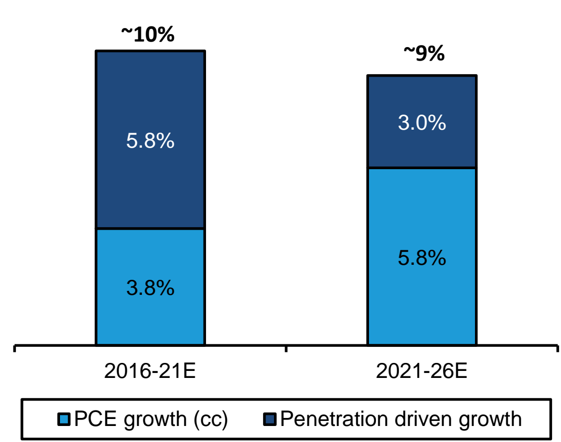
EXHIBIT 5: **C2B payments is currently 56% penetrated by cards vs. 40% five years ago; we expect that to reach ~62-65% by 2026**



Source: Nilson, World Bank, IMF, and Bernstein estimates and analysis

EXHIBIT 6: **We forecast ~9% cc general-purpose card purchase volume growth over 2021-26 (modest deceleration vs. ~10% growth over the last five years)**



Source: Nilson, World Bank, IMF, and Bernstein estimates and analysis

There are also indeed ESG risks, e.g., regulation, government nationalism, and litigation. While we closely monitor these risks, we believe they can be mitigated by better stakeholder management (e.g., engagement with governments, merchants, and banks), partnerships (with perceived "disruptors"), and aggressive investments in technology (e.g., through strategic M&A, reinvestments), which are fortunately all things companies in our sector are already doing.

Not surprisingly, Visa and Mastercard fare very well on third-party ESG metrics

Payment companies under our coverage generally score well and above peers in similar verticals due to more disclosures on ESG issues, better human capital management/diversity, and inclusion than peers, and the positive roles played by the companies in promoting financial inclusion. **According to the MSCI scoreboard, Mastercard is recognized as an ESG leader on key issues such as corporate governance, human capital development, and access to finance, while Visa is considered a leader on access to finance.**

MSCI Ratings: Most payment stocks in our coverage received a rating of 'A' or higher, with FIS scoring AA (see Exhibit 7). While Visa has maintained its score since 2017, Mastercard was rated BBB in 2017 and managed to rise to an A the following year and maintain it. We note that 67% of the 143 Software & Services companies have a rating at 'A' or above (see Exhibit 8).

Sustainalytics: Payment companies all rank considerably low/medium (low score = good) on Sustainalytics metrics, which suggests they are all perceived as having less unmanaged ESG factor risks compared to other firms (see Exhibit 9). According to the scoreboard, any score between 10 and 20 is considered low risk, while anything between 20 and 30 is

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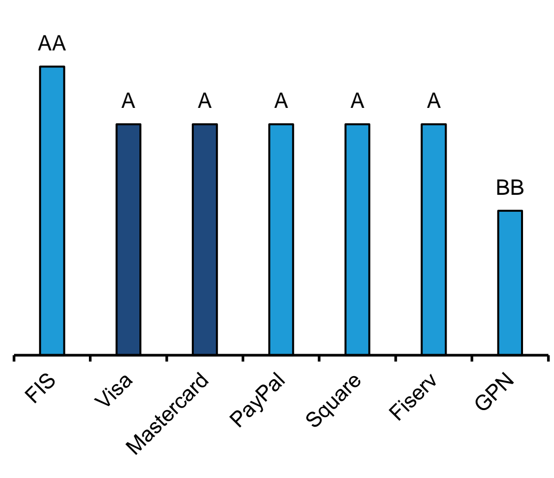
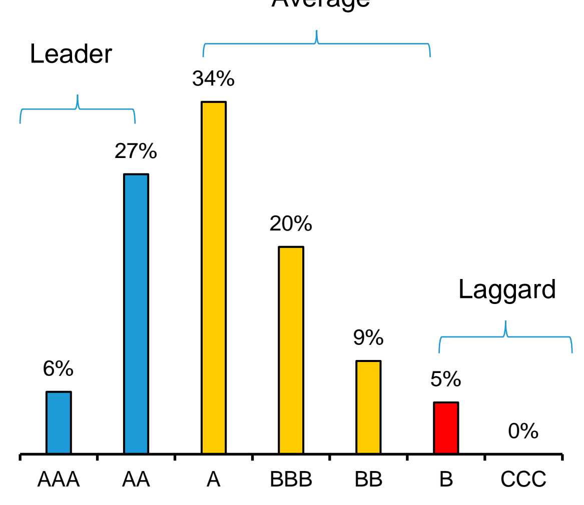
categorized as medium risk. (Note: This ranking is among all companies under Sustainalytics, which includes companies in a variety of industries, not just the tech sector.)

EXHIBIT 7: **Visa and Mastercard both have "A" on MSCI scores**



Source: MSCI, Bloomberg, and Bernstein analysis

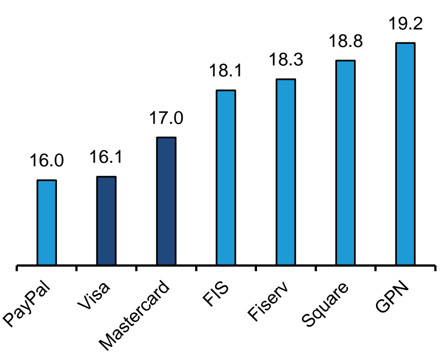
EXHIBIT 8: **Of 143 Software & Services companies rated by MSCI, 67% have a rating of "A" or better**



Source: MSCI, Bloomberg, and Bernstein analysis

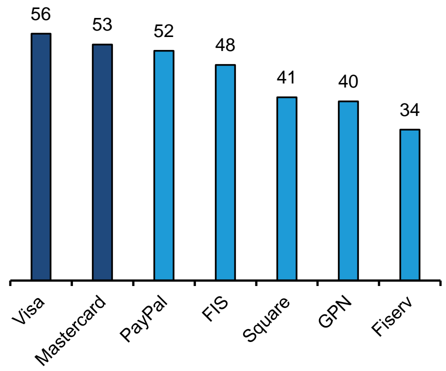
Bloomberg Disclosure Score: Visa and Mastercard are the leaders in terms of disclosure score in our coverage, with Visa at 56 and Mastercard at 53 (see Exhibit 10).

EXHIBIT 9: **Visa and Mastercard rank low by Sustainalytics metrics (suggesting they have less unmanaged ESG factor risks compared to other firms)**



Source: Sustainalytics, Bloomberg, and Bernstein analysis

EXHIBIT 10: **Both Visa and Mastercard are leaders in our coverage on disclosure scores**



Source: Bloomberg and Bernstein analysis

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EXHIBIT 11: **Although Technology Services (the broader umbrella that contains Payments sector) lags behind other industry groups in terms of disclosure, Mastercard and Visa are leaders in terms of disclosure score**

Sector	Bloomberg Disclosure Index
Metals & Mining	73.4
Oil & Gas	64.5
Food Production	62.1
Diversified Industrials	61.9
Chemicals	61.0
Machinery Manufacturing	58.5
Semiconductors	57.2
Wholesale - Consumer Staples	56.2
Electrical Equipment Manufacturing	55.8
Visa	55.5
Biotechnology & Pharmaceuticals	55.2
Apparel & Textile Products	55.0
Home & Office Products Manufacturing	54.8
Commercial Support Services	54.4
Technology Hardware	54.1
Mastercard	53.1
Medical Equipment & Devices Manufacturing	51.1
Transportation & Logistics	49.0
Institutional Financial Services	47.9
Health Care Facilities & Services	47.8
Banking	46.7
Software	44.6
Specialty Finance	43.6
Technology Services	43.2
Retail - Consumer Staples	43.1
Aerospace & Defense	41.8
Leisure Facilities & Services	40.4
Home Construction	40.3
Insurance	39.7
Internet Media & Services	39.1
Wholesale - Consumer Discretionary	38.8
Retail - Consumer Discretionary	38.3
Cable & Satellite	36.4
Asset Management	36.3

Source: Bloomberg and Bernstein analysis

ESG IN ACTION — VISA AND MASTERCARD ARE ALSO POISED TO DO WELL IN A DOWNTURN AND IN AN INFLATIONARY ENVIRONMENT

"Sensitivity of our coverage's financials in a downturn" is now one of the most frequently asked questions we receive from investors, and we conducted an extensive analysis on all companies in our coverage. We believe Visa's and Mastercard's financials will be resilient in a downturn, and they also benefit from high inflation (50%+ of revenue is linked to US$ volumes).

What happened to Visa and Mastercard in 2008-09?

We found card growth metrics were relatively resilient and credit was impacted more vs. debit. **Visa and Mastercard's purchase volume growth during the GFC was positive at +4% and +2%**, respectively (see Exhibit 12). Transaction growth was more resilient (see Exhibit 13) at +10% and +7%, respectively. Consumers typically trade down in a recession, i.e., reduce AUV/ basket size but maintain a much more stable purchase frequency.

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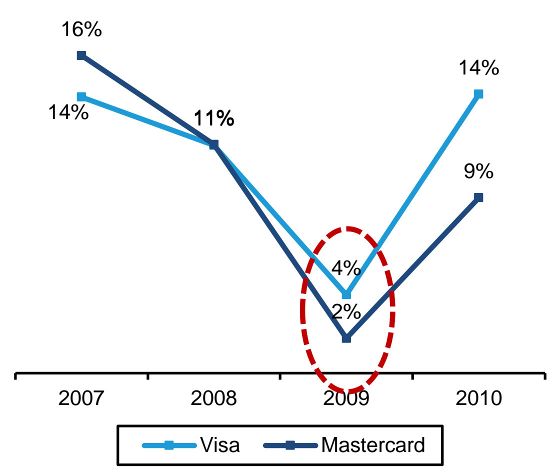
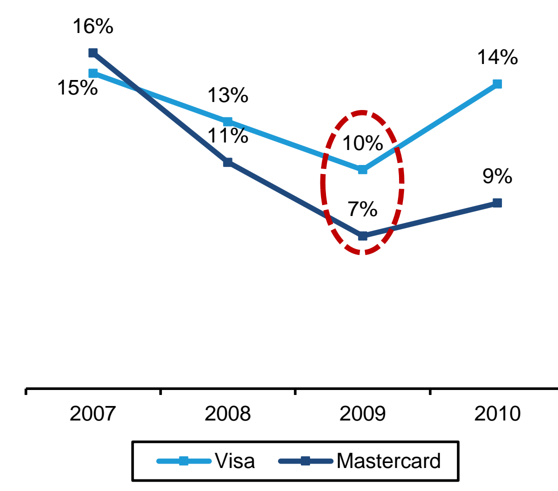
EXHIBIT 12: **Visa/Mastercard global purchase volume growth was positive in the GFC**



Source: Company reports and Bernstein analysis

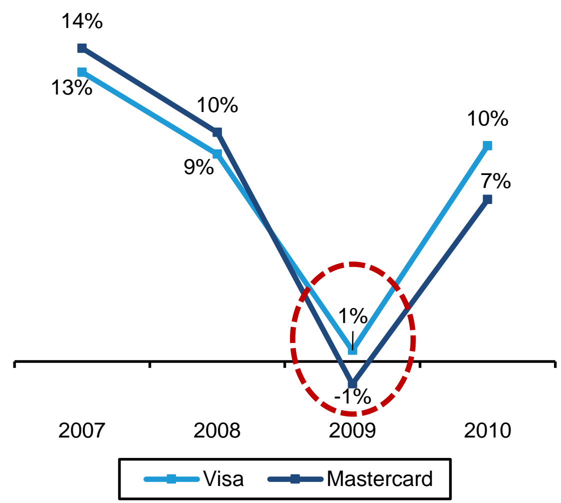
EXHIBIT 13: **Processed transactions growth was solid double digits**



Source: Company reports and Bernstein analysis

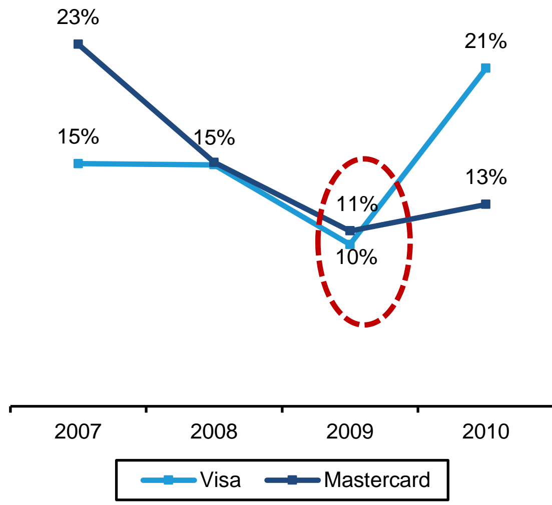
Credit underperformed debit volume growth by ~10ppt. Note: Credit tends to skew toward discretionary purchases vs. debit, which is more geared toward everyday metrics (see Exhibit 14 and Exhibit 15).

EXHIBIT 14: **Credit card volumes, not surprisingly, decelerated by 10ppt to flat YoY growth; credit card tends to skew toward discretionary spend...**



Source: Company reports and Bernstein analysis

EXHIBIT 15: **...while debit card purchase growth remained resilient at double digits**



Source: Company reports and Bernstein analysis

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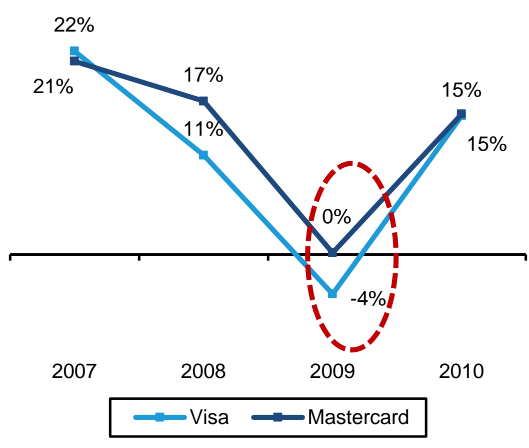
Cross-border payment volume growth for Visa and Mastercard decelerated from ~11%/17% growth in 2008 to negative low-single-digit/flat in 2009. However, growth rebounded quickly in 2010 to mid-teens (see Exhibit 16).

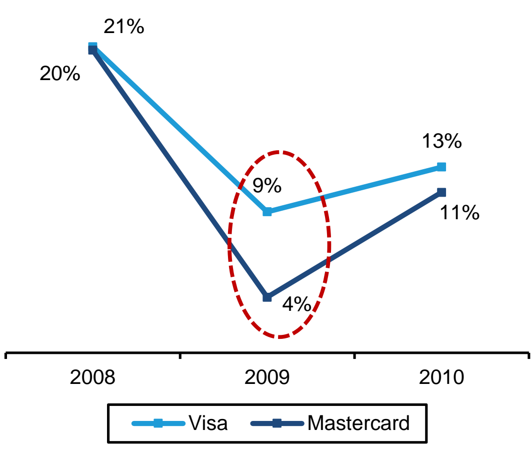
Interestingly, Visa and Mastercard revenue performance was very strong at +9% and +4% in 2009, respectively, given the resilient (and positive) volume growth and increases in pricing post-IPO (for Visa) (see Exhibit 17).

EXHIBIT 16: **Cross-border volume slowed meaningfully**



Source: Company reports and Bernstein analysis

EXHIBIT 17: **Visa and Mastercard grew revenues at 9%/4%, respectively, in the GFC; Visa benefited from pricing increases post IPO**



Source: Company reports and Bernstein analysis

WHAT DO WE EXPECT SHOULD HAPPEN IN THE EVENT OF A POTENTIAL DOWNTURN IN 2023?

For Visa and Mastercard, we estimate 2-8% cc revenue growth in a potential downturn. The lower end of the range assumes -3% real GDP growth, 2% inflation, 3% card penetration growth, some decline (as opposed to benefit in cross-border) partially offset by resilient transaction growth. The higher end of the range assumes mid-single-digit inflation and benefits from pent-up travel demand (see Exhibit 18 and Exhibit 19).

Macro assumptions we make for this potential recession scenario are: (1) negative low-single-digit real GDP (and consumer spending) growth, (2) LSD-MSD inflation, (3) HSD/LSD card transaction growth as ticket sizes often shrink in a downturn, and (4) lingering pent-up demand for cross-border travel partially offset by a decline in other discretionary spend (e.g., cross-border e-commerce) (see Exhibit 20).

We also believe Visa and Mastercard are potential beneficiaries of higher inflation, as their revenues are assessed as basis points on nominal purchase volumes. For example, 60% of Visa's revenues are linked to dollar purchase volumes. They also have a much broader exposure (less concentrated on discretionary spend) vs. other names in our coverage (e.g., PayPal). Also, they benefit from increased transactions, as individuals tend to split more purchases in this environment (e.g., more trips to gas stations and grocery stores).

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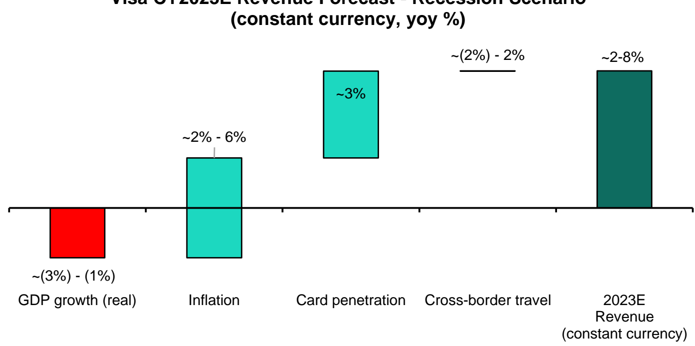
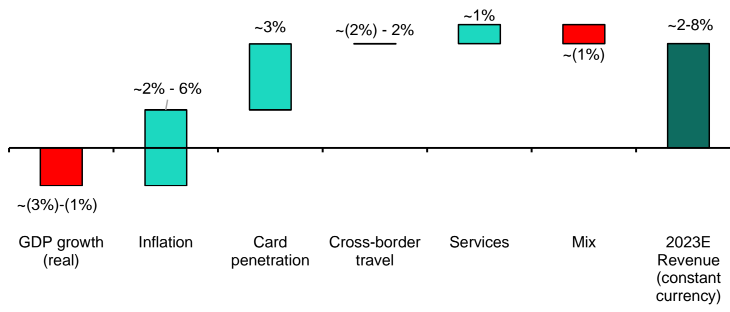
EXHIBIT 18: **For Visa, we estimate 2-8% cc revenue growth in a potential downturn**



Source: Company reports, and Bernstein estimates and analysis

EXHIBIT 19: **Even though Mastercard is typically a faster grower/share gainer, we estimate similar growth for Mastercard in a downturn because of less exposure to debit and greater exposure internationally**



Source: Company reports, and Bernstein estimates and analysis

As highlighted earlier in this chapter, when analyzing data from 2008-09 (GFC), we found Visa and Mastercard fared comparatively well with revenues, purchase volumes, and transaction growth holding up well at positive levels. However, there are a few caveats to extrapolating what happened in 2008-09 to an upcoming recession. On the positive side: (1) There is likely still strong pent-up demand for cross-border travel, which will likely be a positive for growth (and not a drag) in the event of a recession, especially as more borders reopen/frictions ease. Travel still has not recovered to trend growth. For example, cross-border travel (ex-intra EU) is currently at 110% of 2019 levels for Visa. Had the pandemic not happened, it would have been 130% of 2019 levels. (2) The networks were more exposed to credit vs. debit and, therefore, to discretionary spend in 2008-09 (see Exhibit 21). (3) Contactless payments often used for small/everyday transactions were non-existent. On the flipside: Visa went public in March 2008 and had more room for margin expansion during the last downturn, as it completed its transition to a public company. Card penetration was lower in 2008-09, offering slightly better secular growth support. (4) Cash digitization was in its early stages, providing a stronger tailwind to growth than today.

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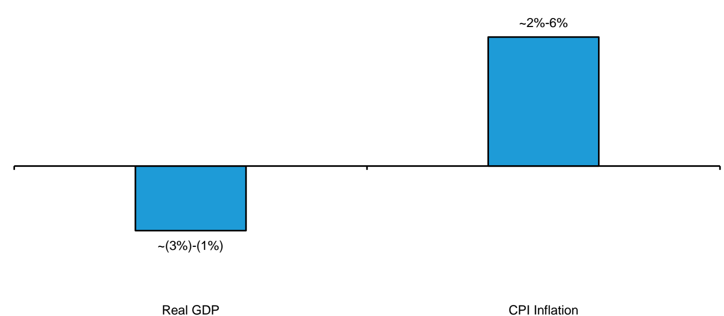
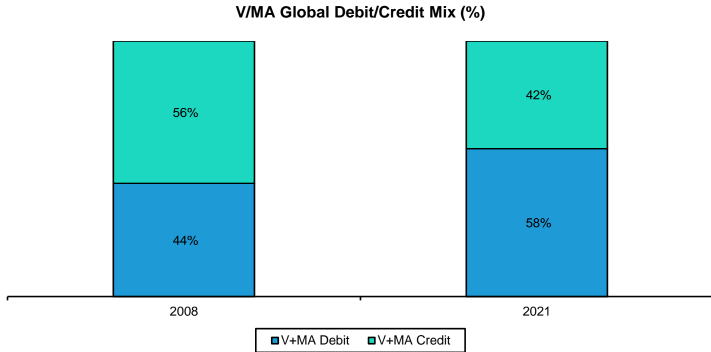
EXHIBIT 20: **Our recession assumptions**



Source: Bernstein estimates and analysis

EXHIBIT 21: **Visa/Mastercard global volume mix has shifted to debit from being skewed to credit in 2008**



Source: Company reports and Bernstein analysis

VALUATION METHODOLOGY

US payments

We value the companies in our coverage using the discounted cash flow approach, using a forecast period of 10-15 periods. We use weighted average cost of capital for calculating annual discount rates, assume a risk-free rate equal to the current 10-year Treasury yield, an implied market risk premium, and a tax rate in line with the US Federal corporate tax rate. Our explicit period assumptions are based on annual projections for Net Income, Depreciation, Working Capital, and Capital Expenditure. We take the sum of all future FCFs and the terminal value discounted to today and add back net debt and minority interest to arrive at total Equity Value.

Visa Inc and MasterCard Inc

We value Visa and MasterCard using a discounted cash flow (DCF) approach. Our DCF model is based on annual cash flow forecasts over 10 periods, combined with a continuing value component intended to capture the firm's value into perpetuity. We use the WACC method for calculating annual discount rates. Our assumptions assume a risk-free rate equal to the current 10-year Treasury yield, an implied market risk premium, and a tax rate in line with company guidance. Our explicit period assumptions are based on annual projections for Net Income, Depreciation, Working Capital and Capital Expenditure. We

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take the sum of all future FCF and terminal values discounted to today and add back excess cash while removing total debt to arrive at total Equity value. We use total Equity Value divided by total number of shares outstanding to arrive at our target price.

We rate Visa (ticker: V) Outperform with a target price of US$280. It closed at US$213 and is benchmarked against the S&P 500 that closed at 4,140.60. Closing prices as of August 8, 2022. We rate Mastercard (ticker: MA) Outperform with a target price of US$460. It closed at US$352 and is benchmarked against the S&P 500 that closed at $4,140.60. Closing prices as of August 8, 2022.

RISKS

US payments

Downside risks to our coverage include: (1) regulatory risks limiting the fees or interest that can be charged to merchants and/or consumers, (2) legal risks and associated settlement costs, (3) macroeconomic risks including a slowdown of consumer spending, a deterioration of the credit environment, a reduction of international and national tourism/travel and discretionary expenditure, (4) competitive and business risks, and (5) various operational risks, including loss of key management or employees. Upside risks to our coverage include: (1) favorable business outcomes tied to faster-than-expected development and rollout of new products or services or faster-than-expected international expansion, (2) faster-than-expected margin expansion, (3) a benign competitive environment, (4) a favorable macroeconomic environment, and (5) a favorable regulatory environment.

Visa Inc and Mastercard Inc

Downside risks to our rating and price target include: **competitive risks** — international expansion of domestic networks, e.g., China Union Pay outside China; brand disintermediation arising from increased popularity/use of so-called digital "wallets"; and increased popularity/use of domestic payment networks such as ACH, or alternative networks such as Person-to-Person (P2P); **regulatory risks** such as regulation that imposes caps on interchange rates for debit or credit transactions and preferences domestic networks over global networks; **legal risks** — legal settlements or fines to resolve disputes with merchants over payment processing fees; and litigation costs to resolve legal disputes; **macroeconomic risks** — slowing global economy slowing growth in global payment volumes; increased international tensions either reducing tourism/travel, or resulting in economic sanctions imposed in regions where the card networks operate (e.g., Russia); lack of foreign exchange volatility reducing cross-border transaction processing fees; **operational risks** — network disruption due to cyber-attacks or a technical failure; reputational risk if subject to a public security breach; **other** — narrowing of outperformance in cross-border volume growth of MasterCard vs. Visa.

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PING AN: SAVINGS RESILIENT VS. FALLING RATES; PROTECTION TO RECOVER POST DOWNTURN

HIGHLIGHTS

- **Protection correlates with the overall economy and should recover post downturn.** If we think of insurance as a consumer product, protection is discretionary. Historically, GDP growth has been a leading indicator for Ping An's next six to 12 months of protection sales. With the underlying demand in China, protection insurance — a social equality enabler from the ESG lens — will likely accelerate as the overall economy recovers. We expect the total health insurance market in China to grow at a 17% CAGR to RMB2Tn premium by 2025E.

- **Savings insurance products remain resilient against the backdrop of falling rates and a slowing economy.** Ping An Life grew savings insurance at a 10% CAGR over 2015-21, while protection declined. With their long-term investment nature, savings-type insurance products offer competitive yields to meet people's long-term savings demands and are favored in falling interest rate cycles. Among all financial assets, China's insurance reserves grew faster, at a 13% CAGR over 2015-19, compared to other low-risk investments.

- **Why is Ping An a quality defensive?** A strong residual margin balance has powered Life OPAT (operating profit after tax) despite near-term sales headwinds. We expect Ping An to grow OPAT at a 9% CAGR by 2025E, with a 6% dividend yield. Dividend payout is linked to OPAT at ~28% to avoid noise from short-term market fluctuations.

INVESTMENT IMPLICATIONS

We rate Ping An Group Outperform with a target price of HK$100/RMB84. Risk/reward ratio remains attractive. Ping An trades at 0.8x PB today, at a historical low. It offers the best route to access China's insurance market, with an 18% long term group RoE (25% for Ping An Life insurance), 9% OPAT growth, plus a 6% dividend yield.

VALUATION COMPS

See summary table in Exhibit 1.

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EXHIBIT 1: **Insurance companies valuation comp**

Company	Ticker	Type	Stock Price Currency	Stock Price (Aug 8, 2022)	Market cap (USD Bn)	YTD %	Y-o-Y %	P/Embedded Value	FWD P/B	Current year Dividend yield %
China insurers										
Ping An (H)	**2318 HK Equity**	**Life, P&C**	**HKD**	**45**	**109**	**-20%**	**-34%**	**0.6x**	**0.8x**	**6.3%**
Ping An (A)	**601318 CH Equity**	**Life, P&C**	**RMB**	**41**	**109**	**-18%**	**-23%**	**0.6x**	**0.8x**	**7.3%**
China Life (H)	2628 HK Equity	Life	HKD	12	93	-11%	-11%	0.2x	0.5x	6.6%
China Life (A)	601628 CH Equity	Life	RMB	27	93	-12%	-5%	0.6x	1.5x	2.5%
CPIC (H)	2601 HK Equity	Life, P&C	HKD	16	26	-23%	-28%	0.3x	0.6x	7.2%
CPIC (A)	601601 CH Equity	Life, P&C	RMB	20	26	-28%	-26%	0.4x	0.8x	5.1%
NCI (H)	1336 HK Equity	Life	HKD	18	11	-12%	-15%	0.2x	0.4x	9.2%
NCI (A)	601336 CH Equity	Life	RMB	29	11	-26%	-26%	0.4x	0.8x	5.0%
Taiping	966 HK Equity	Life, P&C	HKD	8	4	-25%	-28%	0.1x	0.3x	5.8%
PICC P&C	2328 HK Equity	P&C	HKD	8	22	22%	17%	N/A	0.7x	6.2%
PICC Group	601319 CH Equity	Life, P&C	RMB	5	27	-3%	-9%	1.6x	0.9x	6.4%
Median (H share)								**0.2x**	**0.5x**	
Median (A share)								**0.6x**	**0.8x**	
Foreign insurers										
AIA	**1299 HK Equity**	**Life**	**HKD**	**77**	**117**	**-2%**	**-16%**	**1.6x**	**1.8x**	**1.9%**
Pru plc	**2378 HK Equity**	**Life**	**HKD**	**93**	**33**	**-30%**	**-38%**	**0.7x**	**1.8x**	**1.4%**
Pru plc	**PRU LN Equity**	**Life**	**GBP**	**1,003**	**33**	**-21%**	**-29%**	**0.6x**	**1.7x**	**1.3%**
MetLife	MET US Equity	Life	USD	63	50	1%	4%		1.2x	3.2%
Manulife	MFC CN Equity	Life	CAD	24	35	-2%	-6%		0.9x	5.6%
Median								**0.7x**	**1.8x**	
								FWD P/E	**FWD P/B**	**Dividend yield %**
Insure tech										
Zhong An	6060 HK Equity	P&C	HKD	20	4	-25%	-51%	30.9x	1.4x	
Waterdrop	WDH US Equity	Broker	USD	1.2	0.5	-10%	-68%		1.3x	
Huize	HUIZ US Equity	Broker	USD	1.0	0.05	-29%	-69%	40.7x	0.9x	
Median								**35.8x**	**1.3x**	
Ping An Universe										
Ping An Bank	000001 CH Equity	Bank	RMB	12	35	-26%	-32%	6.5x	0.7x	1.9%
Lufax	LU US Equity	Fintech	USD	4	10	-25%	-40%	3.8x	0.6x	4.0%
Autohome	ATHM US Equity	Internet	USD	36	5	23%	-14%	15.1x	1.3x	1.5%
Ping An Good Doctor	1833 HK Equity	Health tech	HKD	21	3	-28%	-72%		1.6x	
OneConnect	OCFT US Equity	Fintech	USD	1	1	-46%	-75%		1.1x	
Median								**6.5x**	**1.1x**	
Index										
SPX Index	SPX Index			4,140		-13%	-7%			
CSI 300	SHSZ300 Index			4,148		-16%	-16%			
HSI Index	HSI Index			20,046		-14%	-23%			

Source: Bloomberg, company reports, and Bernstein analysis

REPORTS ON PING AN

April 29, 2022: Quick Take: Ping An 1Q'22 - Lackluster growth as expected. All eyes on its NBV recovery in 2H this year.

April 12, 2022: Corporate Actions: Ping An Group - Less is more.

April 1 , 2022: Ping An: Best Idea Second Quarter 2022 - Why would agent numbers stop falling and NBV start to grow in 2022. Outperform.

March 17, 2022: Quick Take: Ping An FY21 result - What is and not expected - positive NBV progress from pilot branches.

December 7, 2021: Ping An: From pyramid to diamond - A deep dive on Ping An's life insurance agent quality in comparison with peers.

PROTECTION IS DISCRETIONARY AND CORRELATES TO OVERALL ECONOMIC GROWTH

Will protection slowdown become the new normal, after a 40% agent reduction at the industry level? We disagree. If we think of insurance as a consumer product, protection is discretionary. Putting aside the huge underlying protection demand in China, protection

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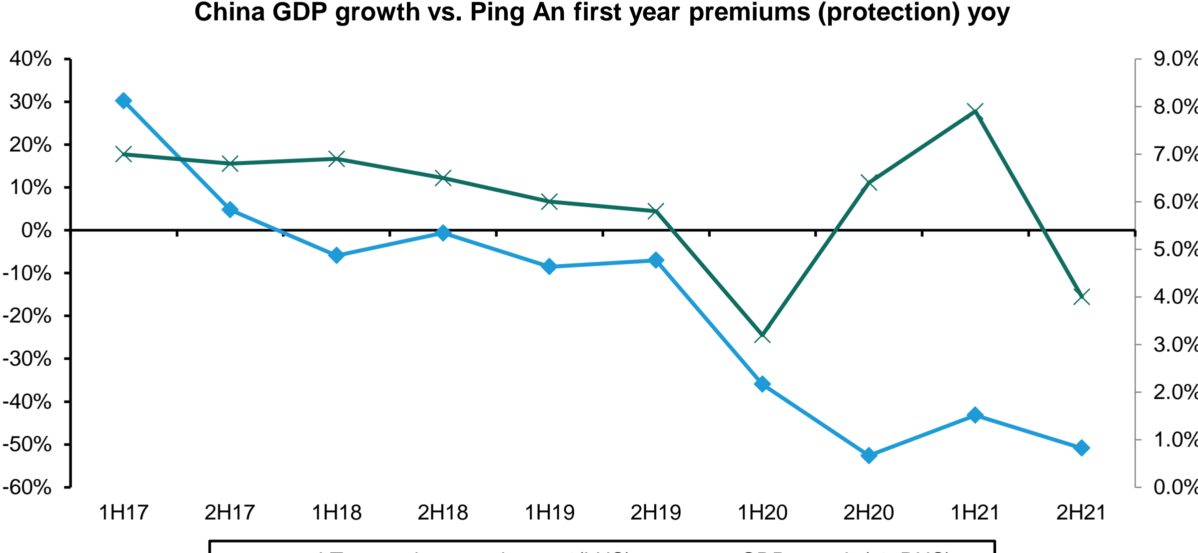
insurance correlates to overall economic growth. Historically, GDP growth has been a leading indicator for Ping An's next six to 12 months of protection sales (see Exhibit 2). This partially explains why Ping An's long-term protection sales declined by 46% in 2021 during the economic downturn.

EXHIBIT 2: **Protection insurance growth correlates to the overall economy; historically, GDP growth has been a leading indicator for Ping An's next six to 12 months of protection sales; Ping An LT protection sales declined by 46% in 2021 during the Covid-19 downturn; we think demand for "protection" is just temporarily on hold during the economic downturn**



Source: Bloomberg, company reports, and Bernstein analysis

WE EXPECT THE TOTAL HEALTH INSURANCE MARKET IN CHINA TO GROW AT A 17% CAGR TO RMB2TN PREMIUM BY 2025E

We believe demand for "protection" is only temporarily on hold due to the overall economic slowdown. Underlying demand, driven by an aging population and inflating medical expenses, combined with a lack of quality healthcare, will likely continue to push protection insurance sales, as China gradually recovers from the dampened economic outlook (see Exhibit 3).

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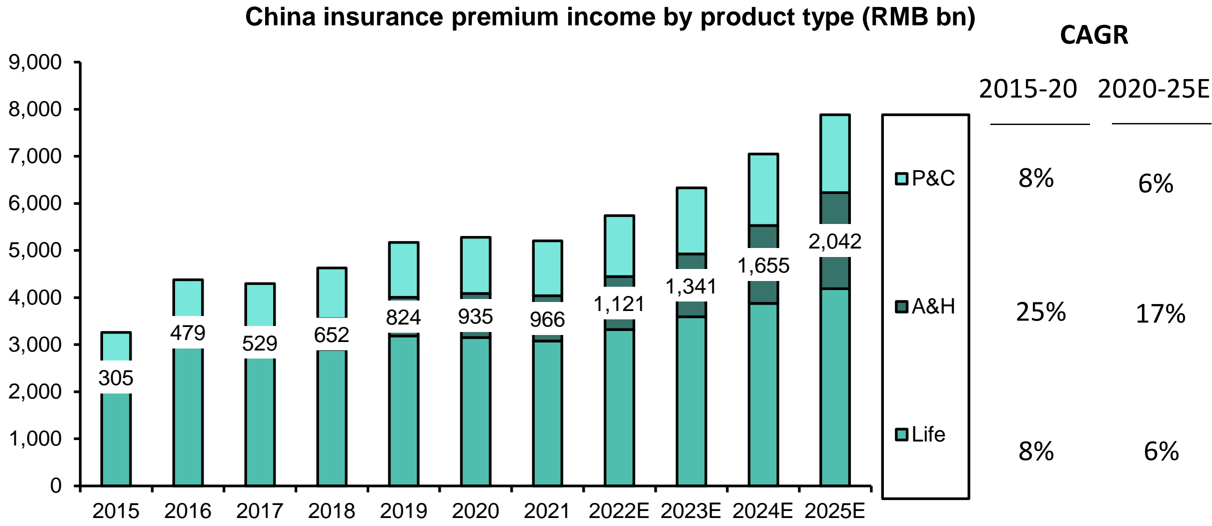
EXHIBIT 3: **We expect total health insurance market in China to grow at a 17% CAGR to RMB2Tn premiums by 2025E**



Note: A&H premiums include both P&C and Life players.

Source: China Banking and Insurance Regulatory Commission, and Bernstein estimates and analysis

FROM AN ESG ANGLE: PROTECTION INSURANCE – SOCIAL EQUALITY ENABLER – WILL LIKELY ACCELERATE AS OVERALL ECONOMY RECOVERS

Today, China's healthcare spending is shared by three payers — two-thirds of total health expenses are covered by the social insurance scheme, ~30% is out of pocket, and commercial insurers only pay for the remaining 5% (see Exhibit 4). With inflation in medical expenses in China, we expect commercial insurers to take a bigger ESG role in sharing the burden of the system in future, as we have seen with the launch of HuiMinBao. Apart from basic insurance coverage, with rising awareness of healthcare services, mass affluent+ Chinese are willing to pay more for better care, including access to hospitals, treatments with advanced medicines/better healthcare services, and long-term care support.

In 2021, Ping An paid a total of RMB41Bn in claims, of which 51% was paid to protect people with critical illnesses and 29% was paid to cover other medical-related expenses (see Exhibit 5). Of critical illness claims, 82% was paid to people fighting cancer, heart disease, and strokes (see Exhibit 6).

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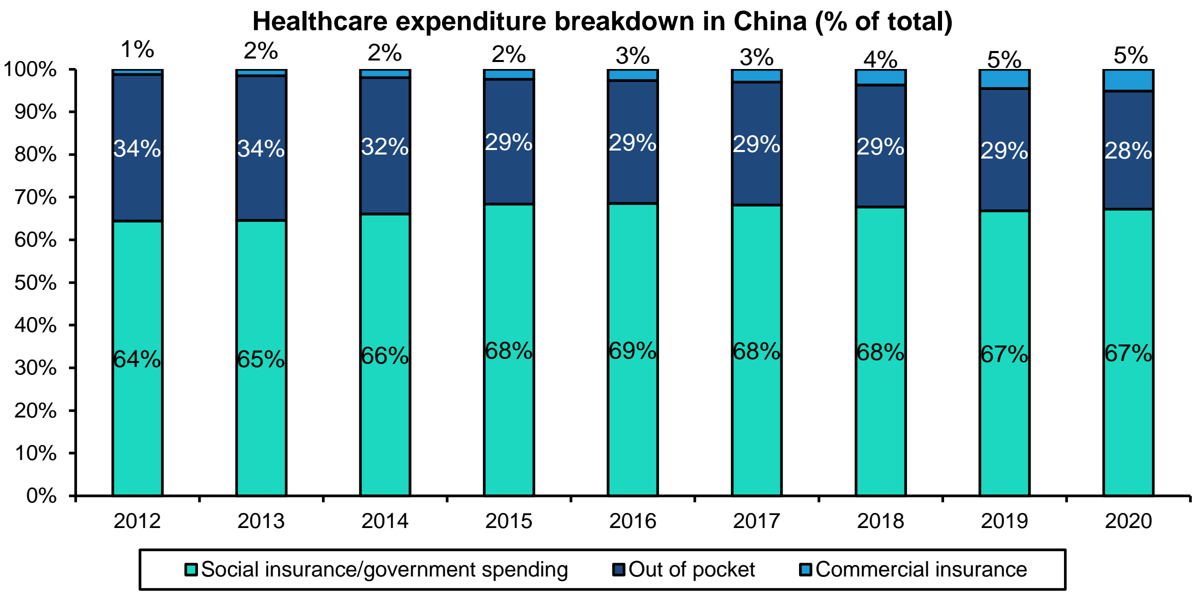
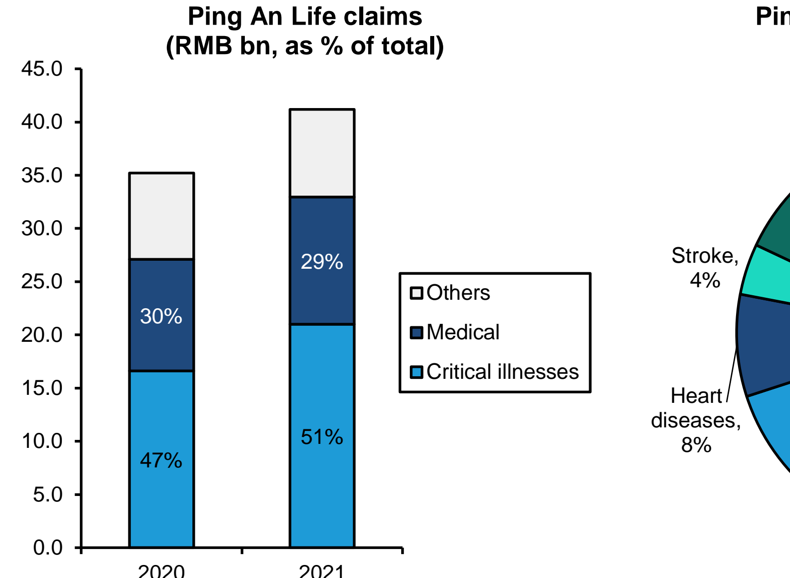
EXHIBIT 4: **Commercial insurance covers only 5% of total healthcare spending in China, another ~30% is out of pocket; with medical expense inflation in China, we expect commercial insurers to take a bigger ESG role in sharing the burden of the system in the future**



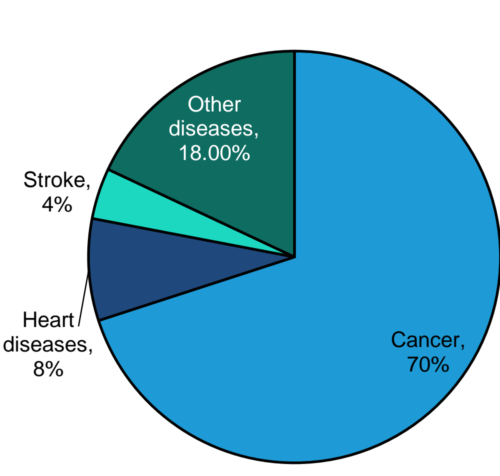
Source: National Health Commission, CBIRC, and Bernstein analysis

EXHIBIT 5: **51% of Ping An's total claims (RMB41Bn) was paid to protect people with critical illnesses...**



Source: Company reports and Bernstein analysis

EXHIBIT 6: **...in 2021, 82% of critical illness claims was paid to people fighting cancer, heart disease, and stroke**



Source: Company reports and Bernstein analysis

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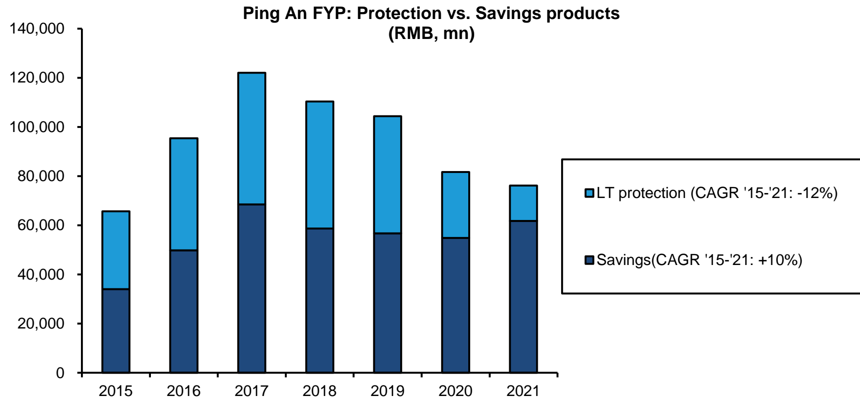
SAVINGS INSURANCE, WITH A LONG-TERM INVESTMENT NATURE, IS FAVORED IN A FALLING INTEREST RATE CYCLE IN CHINA, CATERING TO PEOPLE'S LONG-TERM SAVINGS DEMAND

China is a savings-dominant country. Over 50% of household financial assets are bank savings and cash. Through the cycles of macroeconomic changes, savings insurance products remain resilient against the backdrop of falling rates and economic slowdown. Ping An Life grew savings insurance premiums at a 10% CAGR over 2015-21, while protection declined (see Exhibit 7).

The falling interest rate is a double-edged sword. On the one hand, it sets a headwind on near-term earnings as China's liabilities-sensitive insurance companies will top up with more reserves to back up the growth. On the other hand, it also brings opportunities for new business sales. With their long-term investment nature, savings-type insurance products offer competitive yields to meet people's long-term savings demand. Among all household financial assets, China's insurance reserves grew faster, at a 13% CAGR (2015-19) than other low-risk investment categories (see Exhibit 8).

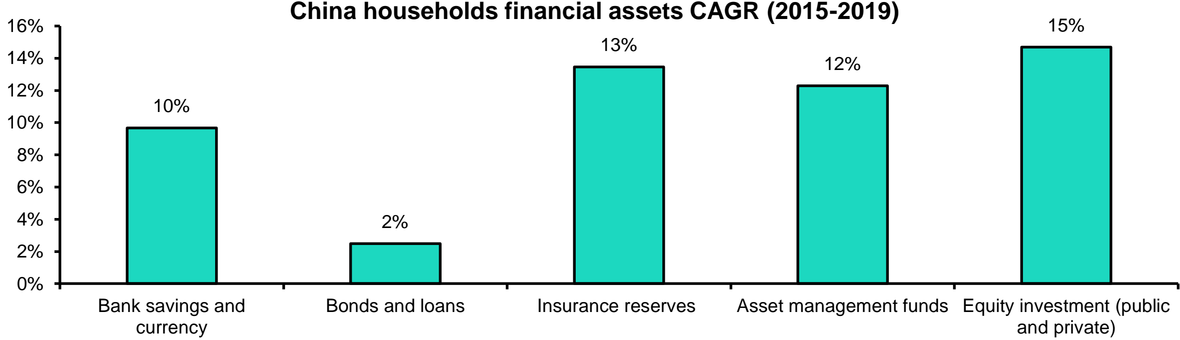
EXHIBIT 7: **Compared to protection insurance, savings products are resilient in a falling interest rate environment; Ping An savings products continued growing at a 10% CAGR over 2015-21 vs. protection declining at -12%**



Note: Savings include products distributed by both agency and bancassurance.

Source: Company reports and Bernstein analysis.

EXHIBIT 8: **Through the interest rate cycle from 2015, China's insurance reserve grew faster than other low-risk investment categories**



Source: Wind, Chinese Academy of Social Sciences, and Bernstein analysis

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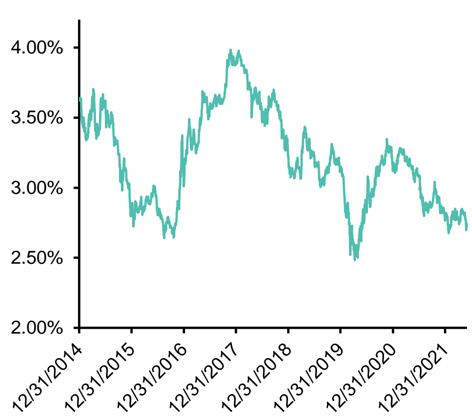
WHY IS PING AN A QUALITY DEFENSIVE?

We expect Ping An to continue growing OPAT at a 9% CAGR over 2021-25E, with a 6% dividend yield to shareholders.

OPAT is immune to short-term market fluctuations

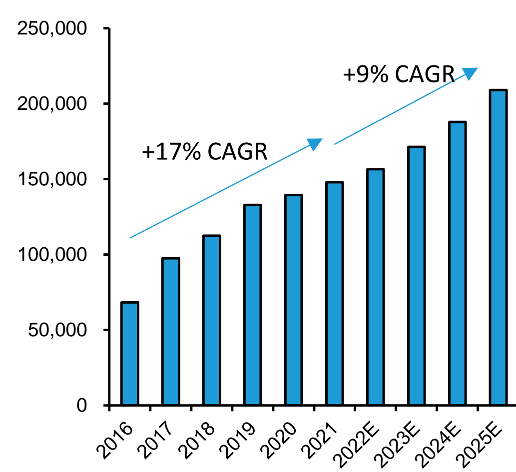
Throughout the cycle of interest rate volatility in China since 2015, and the economic downturn during the Covid-19 lockdowns in 2020-21, Ping An Group grew OPAT consistently at a 17% CAGR over 2016-21 (see Exhibit 9 and Exhibit 10). Every year, Ping An distributes 28% of OPAT as dividends to company shareholders, translating into a ~6% dividend yield. Dividend payout is linked to OPAT (not net profit) to avoid noise from short-term market fluctuations (see Exhibit 11).

EXHIBIT 9: **Throughout the cycle of interest rate volatility in China since 2015, and the economic downturn during Covid-19 lockdowns in 2020-21...**



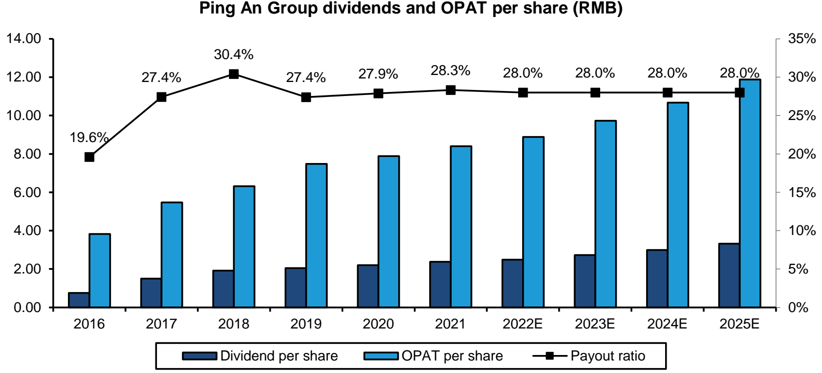
Source: People's Bank of China, Bloomberg, and Bernstein analysis

EXHIBIT 10: **...Ping An Group grew OPAT consistently at a 17% CAGR over 2016-21; and we expect it to continue growing at a 9% CAGR to 2025E**



Source: Company reports, and Bernstein estimates and analysis

EXHIBIT 11: **Ping An distributes 28% of its OPAT as dividends, translating into a ~6% dividend yield; dividend payout is linked to OPAT (not Net Profit) to avoid noise from short-term market fluctuations**



Source: Company reports, and Bernstein estimates and analysis

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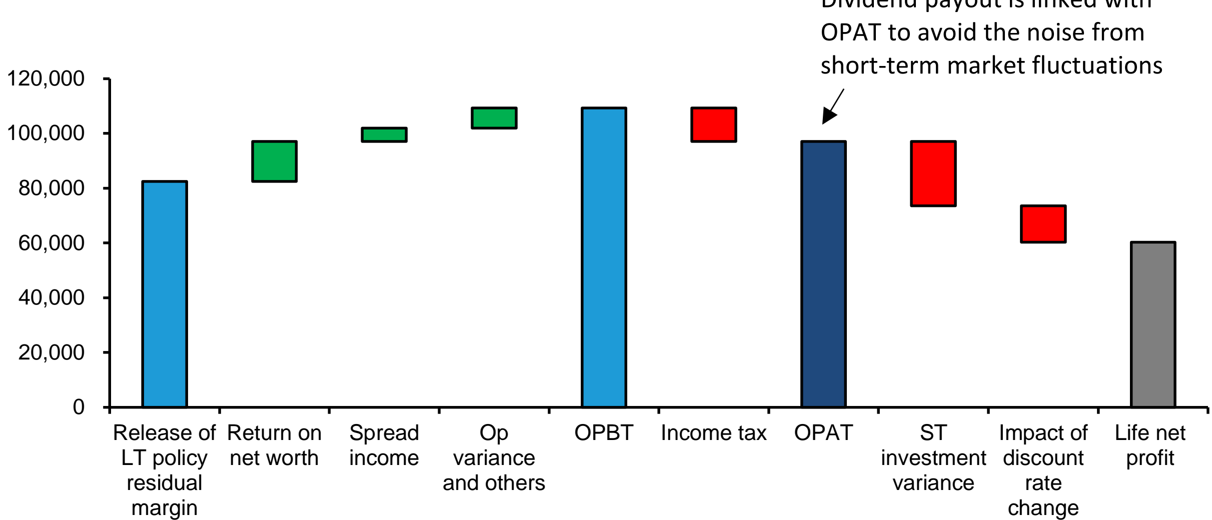
STRONG RESIDUAL MARGIN BALANCE HAS POWERED PING AN LIFE'S OPAT GROWTH

We look deeply into the source of Ping An's operating profit. At the group level, Life insurance contributes around two-thirds of total group OPAT. With the nature of Life insurance, ~75% of Life operating profit is released from the residual margin balance (see Exhibit 12 to Exhibit 15). Every year, a portion of new business written will be added to the parked residual margin and this addition of Value of New Business (VoNB) is usually higher than the residual margin release. Consequently, new policies written create an overlaying effect on residual margin balance over time, and it is critical to appreciate the engine of the long-term growth. Ping An's residual margin balance, at RMB941Bn in 2021, has been accumulated over decades. A particular year's sales number can be noisy, but has much less impact on that year's profitability and is negligible in the longer term.

EXHIBIT 12: **Strong residual margin balance has powered Ping An Life's OPAT growth**



Source: Company reports and Bernstein analysis

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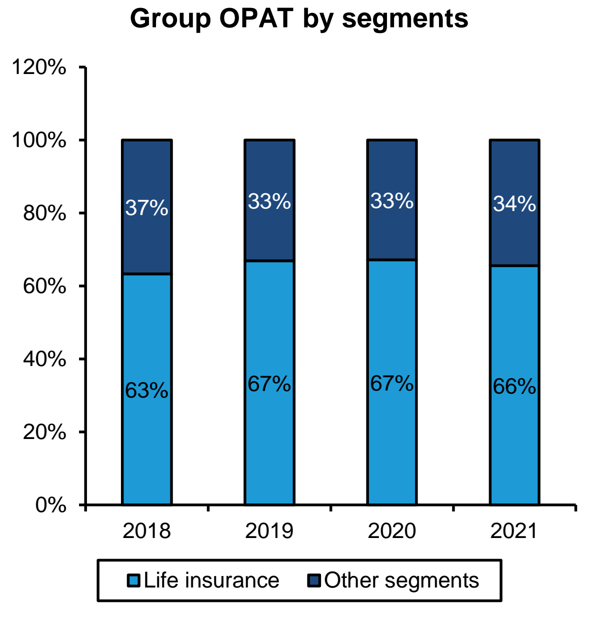
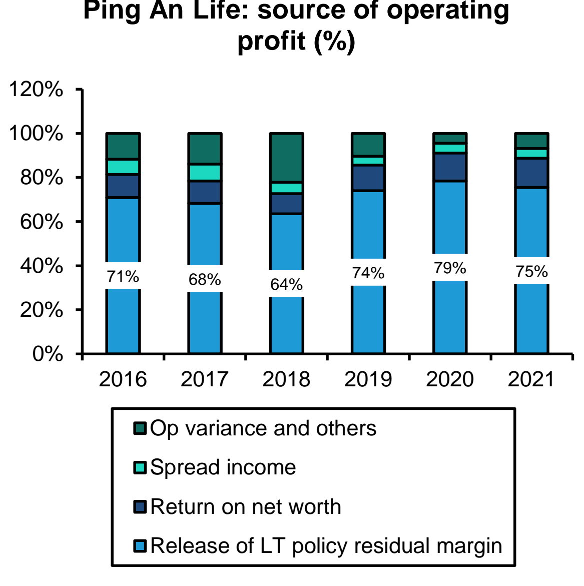
EXHIBIT 13: **Two-thirds of group OPAT comes from Life insurance business**



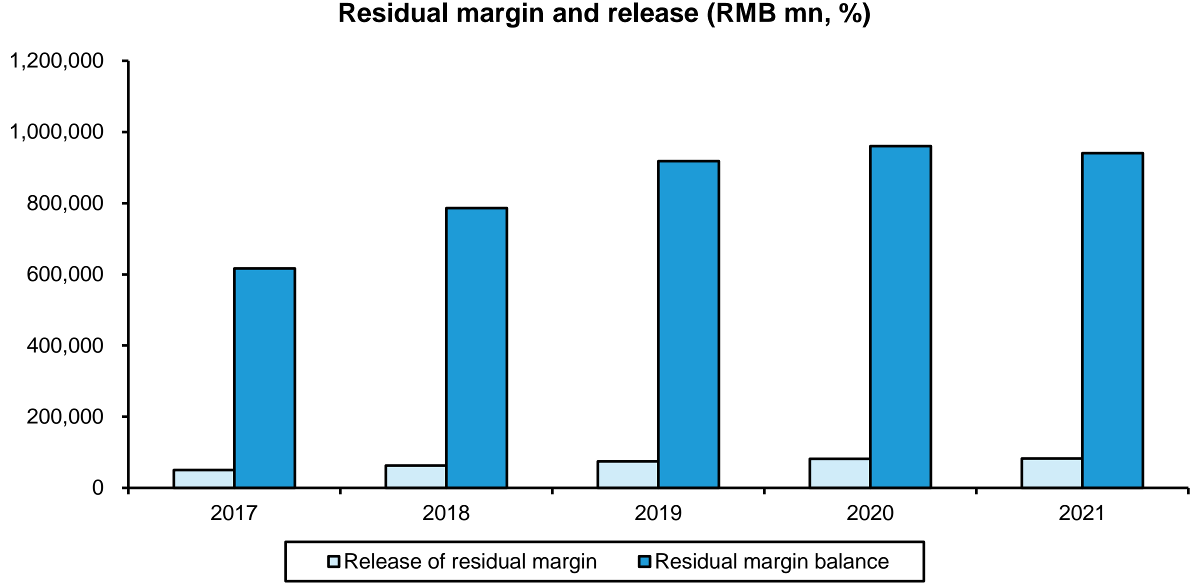
Source: Company reports and Bernstein analysis

EXHIBIT 14: **With the nature of Life insurance, ~75% of operating profit is released from residual margin balance**



Source: Company reports and Bernstein analysis

EXHIBIT 15: **New policies written create an overlaying effect on residual margin balance over time; Ping An's residual margin balance, at RMB941Bn in 2021, has been accumulated over decades**



Source: Company reports and Bernstein analysis

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FINANCIAL FORECASTS

See Exhibit 16 and Exhibit 17 for summary of Ping An's financial forecast.

EXHIBIT 16: **Ping An Group financial forecast**

Ping An Group Income Statement						
(RMB mm, unless otherwise stated)	**2020**	**2021**	**2022E**	**2023E**	**2024E**	**2025E**
Gross written premiums	797,880	760,843	770,651	827,640	907,536	1,008,347
Net premiums earned	757,599	739,933	750,603	805,987	883,754	981,937
Total revenues	**1,321,418**	**1,287,675**	**1,326,305**	**1,379,357**	**1,448,325**	**1,520,742**
Total expenses	**(1,133,654)**	**(1,148,095)**	**(1,138,935)**	**(1,160,726)**	**(1,208,408)**	**(1,253,782)**
Profit before tax	187,764	139,580	187,370	218,632	239,917	266,959
Income tax	(28,405)	(17,778)	(23,865)	(27,847)	(30,558)	(34,002)
Profit for the year	**159,359**	**121,802**	**163,505**	**190,785**	**209,359**	**232,957**
- Owners of the parent	143,099	101,618	146,822	171,319	187,998	209,188
- Non-controlling interests	16,260	20,184	16,683	19,467	21,362	23,770
EPS to ordinary equity holders of the parent						
Basic Operating EPS	7.9	8.4	8.9	9.7	10.7	11.9
Basic net profit EPS	8.1	5.8	8.3	9.7	10.7	11.9
Group OPAT (Total)						
- Group OPAT (to the shareholder)	139,470	147,961	156,531	171,319	187,998	209,188
- to non-controlling interests	16,200	20,518	18,182	19,899	21,837	24,298
Dividends declared						
DPS (RMB)	2.20	2.38	2.49	2.72	2.99	3.33
- Interim	0.80	0.88	0.90	1.00	1.10	1.20
- Final	1.40	1.50	1.59	1.72	1.89	2.13
% Divi declared as % OPAT per share	28%	28%	28%	28%	28%	28%

Ping An Group Balance Sheet						
(RMB mm, unless otherwise stated)	**2020**	**2021**	**2022E**	**2023E**	**2024E**	**2025E**
Total assets	**9,527,870**	**10,142,026**	**10,998,331**	**12,104,780**	**13,323,233**	**14,691,455**
Total liabilities	**8,539,965**	**9,064,303**	**9,818,444**	**10,789,929**	**11,859,040**	**13,060,977**
Equity attributable to owners of the parent	762,560	812,405	889,418	991,156	1,103,732	1,229,081
Non-controlling interests	225,345	265,318	290,469	323,695	360,461	401,397
Total equity	**987,905**	**1,077,723**	**1,179,887**	**1,314,850**	**1,464,193**	**1,630,478**

Source: Company reports, and Bernstein estimates and analysis

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EXHIBIT 17: **Ping An Life financial forecast**

Ping An Life Insurance Income Statement						
(RMB mm, unless otherwise stated)	**2020**	**2021**	**2022E**	**2023E**	**2024E**	**2025E**
Gross written premiums	514,513	494,011	463,163	489,525	534,292	594,551
Net earned premiums	504,326	479,195	453,993	479,832	523,713	582,779
Interest revenue from non-banking operations	93,779	98,317	106,974	116,997	128,559	141,451
Investment income	83,061	57,835	61,128	66,856	73,462	80,829
Total revenues	**717,823**	**664,934**	**651,400**	**693,579**	**756,322**	**836,436**
Claims and policyholder benefits	(461,753)	(444,096)	(414,057)	(444,125)	(483,962)	(540,731)
Net increase in reserves	(294,890)	(254,573)	(244,286)	(261,543)	(284,497)	(320,578)
Commission	(65,156)	(52,277)	(54,479)	(57,580)	(62,846)	(69,934)
Administrative expenses	(49,057)	(48,177)	(41,437)	(42,356)	(44,658)	(47,947)
Total expenses	**(610,689)**	**(604,649)**	**(538,710)**	**(560,709)**	**(612,893)**	**(679,904)**
Profit before tax	107,134	60,285	112,689	132,871	143,430	156,532
Income tax	(11,062)	18	(22,538)	(26,574)	(28,686)	(31,306)
Profit /(losses) after tax	**96,072**	**60,303**	**90,152**	**106,296**	**114,744**	**125,226**
- Attribute to owners of the parent	95,018	59,468	88,945	105,016	113,362	123,718
- Minority	1,054	835	1,206	1,280	1,382	1,508
Life OPAT	**93,665**	**97,075**	**100,152**	**106,296**	**114,744**	**125,226**
- Attribute to owners of the parent	92,672	95,906	98,945	105,016	113,362	123,718
OPAT RoE (Life total)	**35%**	**32%**	**29%**	**26%**	**25%**	**23%**
OPAT RoE (Life, to shareholder)	**36%**	**34%**	**31%**	**28%**	**26%**	**25%**

Ping An Life Insurance Balance sheet						
(RMB mm, unless otherwise stated)	**2020**	**2021**	**2022E**	**2023E**	**2024E**	**2025E**
Cash in banks and other financial institutions	224,480	207,013	227,714	250,486	275,534	303,088
Balances with Central bank and statutory deposits for insurance operations	8,267	8,293	8,293	8,293	8,293	8,293
Financial assets	**2,832,010**	**2,928,758**	**3,184,049**	**3,501,512**	**3,844,712**	**4,238,207**
Financial assets at FVTPL	587,173	709,874	636,810	700,302	768,942	847,641
Financial assets at AC	1,724,256	1,771,695	1,974,110	2,170,938	2,383,721	2,627,689
Financial assets at FVTOCI	520,581	447,189	573,129	630,272	692,048	762,877
Investments in associates and JVs	142,206	134,856	161,827	194,193	233,031	279,637
Total assets	**3,572,561**	**3,716,504**	**4,041,043**	**4,436,613**	**4,867,886**	**5,360,989**
Insurance contract liabilities	2,710,089	2,995,147	3,282,543	3,590,240	3,924,942	4,302,093
Investment contract liabilities for policyholders	67,562	72,820	84,168	92,057	100,640	110,310
Due to Banks and other financial institutions	36,290	32,020	33,621	35,302	37,067	38,921
Total Liabilities	**3,291,037**	**3,397,184**	**3,666,875**	**4,002,703**	**4,368,522**	**4,789,520**
Equity attributable to owners of the parent	273,161	296,877	347,869	403,413	464,267	531,304
Total equity	**281,524**	**319,320**	**374,167**	**433,910**	**499,364**	**571,468**

Source: Company reports, and Bernstein estimates and analysis

VALUATION METHODOLOGY

We value Ping An Group using a sum-of-the-parts (SOTP) methodology, at a blended 1.5x PB. We see risk/reward ratio remains attractive at today's valuation. Ping An trades at 0.8x PB, at a historical low. It offers the best route to access China's insurance market with 18% long-term group RoE (25% for Ping An Life), 9% OPAT growth, plus a 6% dividend yield.

We rate Ping An Group (2318.HK and 601318.CH) Outperform with a target price of HK$100/RMB84, and closed at HK$45/RMB41. The stocks are benchmarked against the MXAPJ that closed at 524.7. Closing prices as of August 8, 2022.

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RISKS

Ping An Insurance Group Co of China Ltd

Downside risk comes from: (1) Ping An Life: (a) recovering FYP and VNB slower than expected, or continuing to lose agent headcount dramatically, (b) increasing investment exposure into high-risk products/segments, and (c) losing its competitive edge and market share in the Chinese life insurance business; (2) further regulatory tightening in key business segments including Life, auto insurance, fintech, and health; and (3) keyman risks, including sudden change of management that leads to change of company strategies.

Tianjiao Yu tianjiao.yu@bernstein.com +852-2918-5798

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Healthcare

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WUXI BIOLOGICS: MORE THAN A SAFE HAVEN

HIGHLIGHTS

- **Strong backlog and defensive business model to fend off stagflation.** Wuxi Biologics has a strong backlog of ~US$8Bn, which it is set to realize over a 10-year period irrespective of new demand. Typical contracts are two to three years and take-or-pay. With increasing contribution from late-stage commercial assets, Wuxi's revenue profile is becoming more and more resilient and fairly recession proof. With standard price increases baked into contracts, rising inflation will not impact margins.

- **Manufacturing technologies environmentally friendly — Wuxi's Biologics has been exclusively investing in SUBs while SSBs remain mainstream in the industry.** Single Use Bioreactors (SUBs) have a far lower environmental impact mainly due to lower energy consumption (almost one-sixth lower according to various studies) and water consumption compared to Stainless Steel Bioreactors (SSBs). The biggest argument against SUBs is the use of plastic for the bioreactor bags that are discarded after every manufacturing cycle. However, the environmental impact of the use of plastic contributes <1% to the total impact. SSBs are popularly believed to be more cost-effective, but Wuxi's own data and several independent studies point to parity in costs between SUBs and SSBs up to a 10,000L/1,000kg scale. With more drugs in the pipeline targeting smaller indications, the use case for SUBs continues to strengthen.

- **Valuation off the peak and attractive.** Apart from geopolitical risks, the stock is pricing in a slowdown in biotech funding, Covid-19 therapeutics/vaccines-related demand, and some regulatory risks in the near term. We model revenue growth at 39% in 2022 and 25% in 2023, a slowdown due to fewer project additions in the near term but estimate 10-year CAGR to remain a healthy 20%+.

INVESTMENT IMPLICATIONS

We maintain our Outperform rating on Wuxi Biologics, with a target price of HK$80 a share.

WUXI BIOLOGICS – ESG MATERIALITY

In the healthcare sector, the subject of ESG is complex, as the industry serves a clear social function — improving health outcomes and promoting patient well-being. However, with that comes higher expectations on other social dimensions such as affordability and access, and product safety. As we think about applying ESG in the biotech Contract Development and Manufacturing Organizations (CDMOs) context, we focus on ESG integration — identification of material factors across environment, social, and governance factors and quantification of these factors with implications for company valuations. We borrow from the standards compiled by the Sustainability Accounting Standards Board (SASB), an independent organization that aims to increase company disclosure on sustainability issues, as they serve as a useful starting point. Note that these standards are US-centric and we will customize them to include additional factors we feel are relevant to

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the CDMO sector. Exhibit 1 outlines the factors identified by SASB as relevant to the healthcare sector.

EXHIBIT 1: **ESG factors relevant to pharmaceuticals**

Factor	Description
Access to medicines	1. Initiative to provide access to medicines in priority countries
	2. List of products on the WHO list of prequalified products
Drug safety and side effects	1. List of products listed in the FDA's Medwatch Safety Alerts for Human Medical products
	2. Number of fatalities associated with products as reported in the FDA adverse event reporting system
	3. List of prodcuts recalled
	4. Description of product stewardship initiatives to promote take-back and redistribution or safe permanent disposal of unused product at the end of its lifecycle
Safety of clinical trial participants	1. Ensuring quality and patient safety during clinical trials
	2. Number of FDA Clinical Investigator inspections of investigators used during clinical trials that resulted in VAI or OAI
	3. Legal and regulatory fines and settlements
Affordability and fair pricing	1. Ratio of weighted average net price increase
Ethical marketing	1. Legal and regulatory fines and settlemets associated with false marketing claims
	2. Code of ethics governing off-label promotion
Employee recruitment, development and retention	1. Talent recruitment and retention of scientists and R&D personnel
	2. Training and development expenditure per full time employee
	3. Employee turnover
Employee health and safety	1.Total injury rate
	2. Days away, restricted and transferred rate
	3. Laboratory acquired infection rate
Counterfeit drugs	1. Methods and technologies used to maintain traceability of products through the supply chain
	2. Process for alerting end customers of potential risks
	3. Number of actions that lead to raids, seizures, arrests or criminal charges related to counterfeit drugs
Energy, water and waste efficiency	1. Annual energy consumed and percentage renewed
	2. Water withdrawals and percentage in water stressed regions
	3. Amount of waste and percentage recycled
Corruption and bribery	1. Legal fines and settlements
	2. Code of ethics governing interactions with healthcare professioanals
Manufacturing and supply chain quality management	1. FDA enforcement actions - 483s, Warning Letters and Import Alerts
	2. Percentage of facilities participating in the Rx-360 International Pharmaceutical Supply Chain consortium audit program

Source: SASB and Bernstein analysis

We think 11 factors take prominence in the biotech CDMO sector (see Exhibit 2). Manufacturing quality and safety, and IP protection are factors that bubble right up to the top. Poor performance on these can have a significant impact on the CDMO's credibility and ability to win customers. Given the wide manufacturing footprint of these companies, environmental health and safety standards are also critical. CDMOs typically employ large workforces (Samsung Biologics had >4,000 employees by end 2021). Effective employee recruitment, development, retention, and diversity are therefore critical for a sustainable business. Also, corporate governance is as relevant in the CDMO sector as elsewhere.

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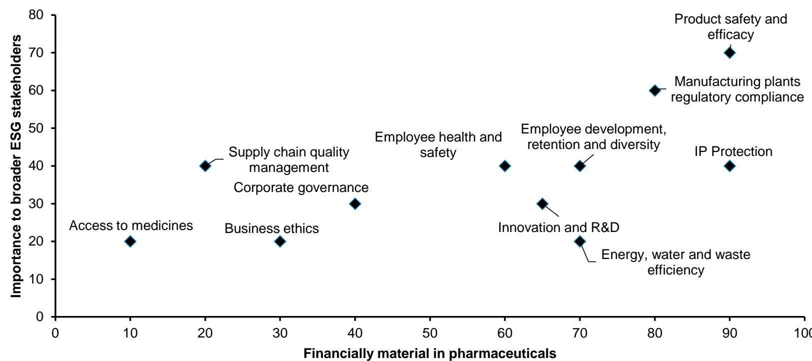
EXHIBIT 2: **11 critical factors for biotech CDMO**

Factor	Description
Environmental	Energy, water and waste efficiency
Social	Product safety and efficacy
	Manufacturing plants regulatory compliance
	Access to medicines
	IP Protection
	Innovation and R&D
	Employee development, retention and diversity
	Employee health and safety
Governance	Supply chain quality management
	Corporate governance
	Business ethics

Source: Bernstein analysis

Most of these factors can impact multiple levers such as revenues, margins, and valuation; e.g., we argue that product quality issues in manufacturing impact top line due to slowdown in approvals, loss of new customers, margins due to remediation costs, and the multiples or discount factor due to the risk that similar issues might be uncovered at other manufacturing plants. In Exhibit 3, we provide a relative assessment of the financial impact of each of these issues to companies in the sector and the probability of an adverse event. Affordability and pricing, which normally feature as an important ESG controversy in the sector, is not of key importance here as CDMOs have no control over end-market pricing.

EXHIBIT 3: **Bernstein materiality matrix for CDMOs**



Source: Bernstein estimates and analysis

Wuxi Biologics scores well on manufacturing quality and safety, and IP protection. The company boasts of several Big Pharma customers, including GSK and Genentech, for whom product quality and IP protection is key. All facilities are also Good Manufacturing Practice (GMP) compliant with a clear audit status from US FDA, European Medicines Agency (EMA), and National Medical Products Administration (NMPA), the most stringent regulatory authorities across the globe. Wuxi Biologics discloses ESG matters in its annual reports and its disclosure levels are particularly high across environmental safety, water management, greenhouse gas (GHG) emissions, energy management, and hazardous waste management. The company has ambitious aspirations of 50% reduction in GHG emissions and 70% reduction in water consumption by employing single-use technology and is systematically investing toward that goal (see Exhibit 4).

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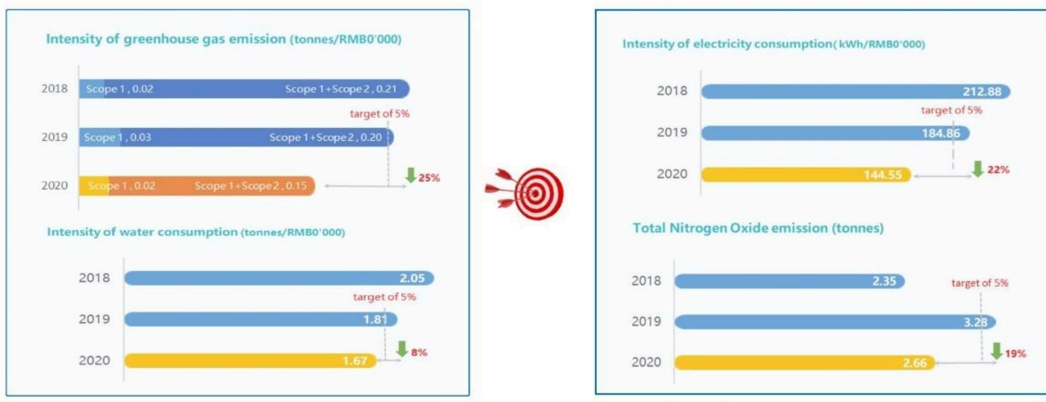
EXHIBIT 4: **Reduction in energy consumption and CO_2 emissions**



Source: Company reports

Wuxi Biologics enjoys a high employee retention rate of ~90% and its key-talent retention rate is ~94% in 2021. It has ~53% representation of women in its workforce as of 2021. Its ESG committee is led by the CEO and management is well devoted to the promotion of ESG awareness within the organization. Wuxi Biologics has been recognized as a Top-Rated ESG Company by Sustainalytics in 2021 and 2022, showcasing the effectiveness of its ESG framework. In the following section, we will explore the environmental impact of the choice of single-use bioreactors over stainless steel bioreactors.

THE SUB VS. SSB DEBATE

Wuxi Biologics has chosen to exclusively focus on single-use bioreactors in its biomanufacturing facilities. Stainless steel bioreactors is the old favorite and boasts of a long history in biomanufacturing, though recent advances in SUBs have made them more attractive. In the 1990s, biopharma manufacturers were used to sub gm/L scale and the large-scale stainless reactors made sense for a low titre process targeting a large patient population. Over the last few years though, processes have intensified and yields have improved, making production volumes lower and single-use reactors more feasible. The biggest advantage of SUBs over SSBs is the reduced cleaning and validation requirement, while SSBs retain the edge on cost at large scales of production. Exhibit 5compares the technologies on various parameters.

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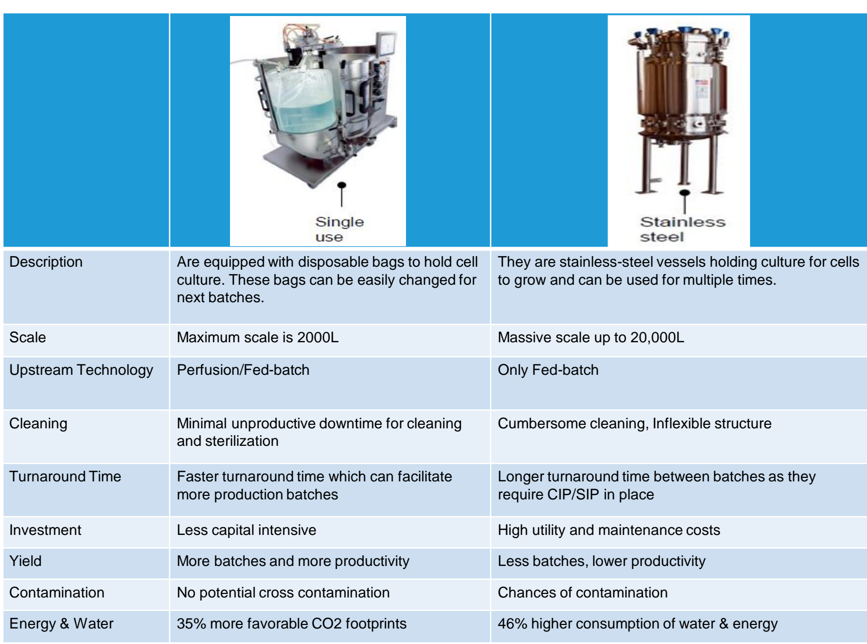
EXHIBIT 5: **SUB vs. SSB comparison**



	Single use	Stainless steel
Description	Are equipped with disposable bags to hold cell culture. These bags can be easily changed for next batches.	They are stainless-steel vessels holding culture for cells to grow and can be used for multiple times.
Scale	Maximum scale is 2000L	Massive scale up to 20,000L
Upstream Technology	Perfusion/Fed-batch	Only Fed-batch
Cleaning	Minimal unproductive downtime for cleaning and sterilization	Cumbersome cleaning, Inflexible structure
Turnaround Time	Faster turnaround time which can facilitate more production batches	Longer turnaround time between batches as they require CIP/SIP in place
Investment	Less capital intensive	High utility and maintenance costs
Yield	More batches and more productivity	Less batches, lower productivity
Contamination	No potential cross contamination	Chances of contamination
Energy & Water	35% more favorable CO2 footprints	46% higher consumption of water & energy

Source: Bernstein analysis

COST DIFFERENTIAL

The capex required to set up an SUB facility is ~30-40% lower than an SSB facility at a similar scale. In terms of direct operating costs, in SUB, the lower indirect cost (depreciation) is compensated for by the high consumable cost (the use and throw bag) while in SSB, both indirect costs and the reagent cost for CIP/SIP (clean-in-place/steam-in-place) for cleaning and validation is higher. Labor and QC costs are broadly similar between the two. Scientific literature and case studies point to SUBs offering a lower COGS up to 1,000kg p.a. (or 10,000L assuming 5g/L yield/batch) and 20 batches p.a.). At 1,000kg and beyond, SSBs become more cost-effective (see Exhibit 6). See End-to-end continuous bioprocessing: Impact on facility design, cost of goods, and cost of development for monoclonal antibodies.

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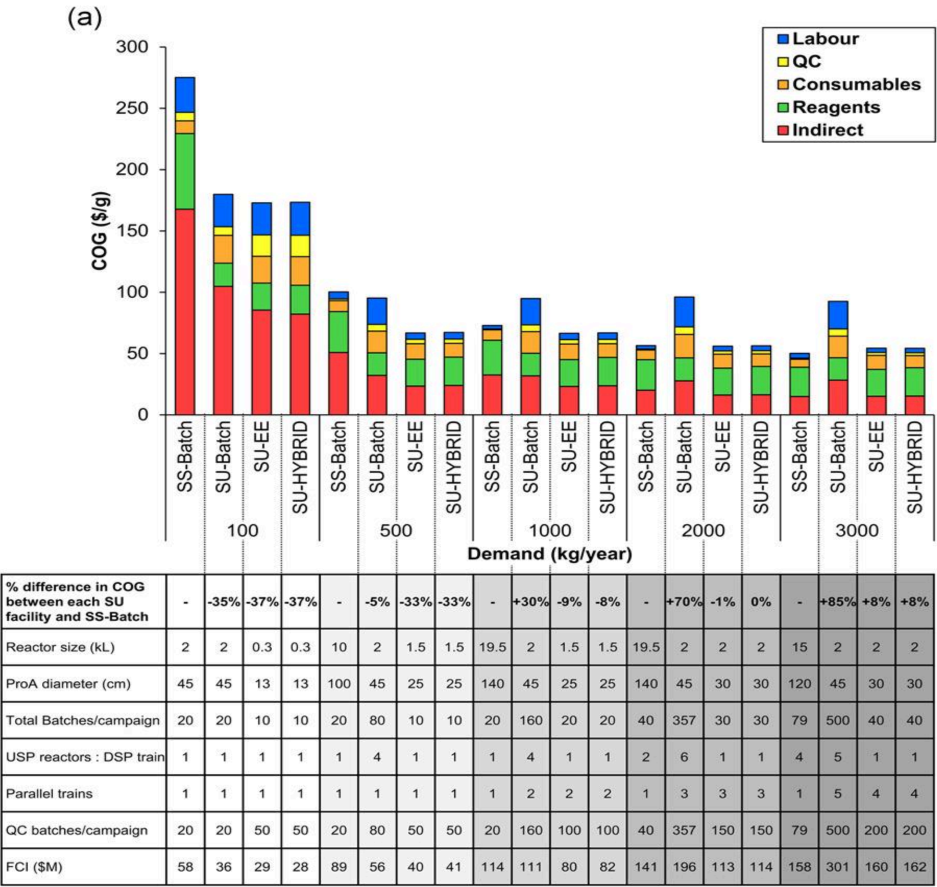
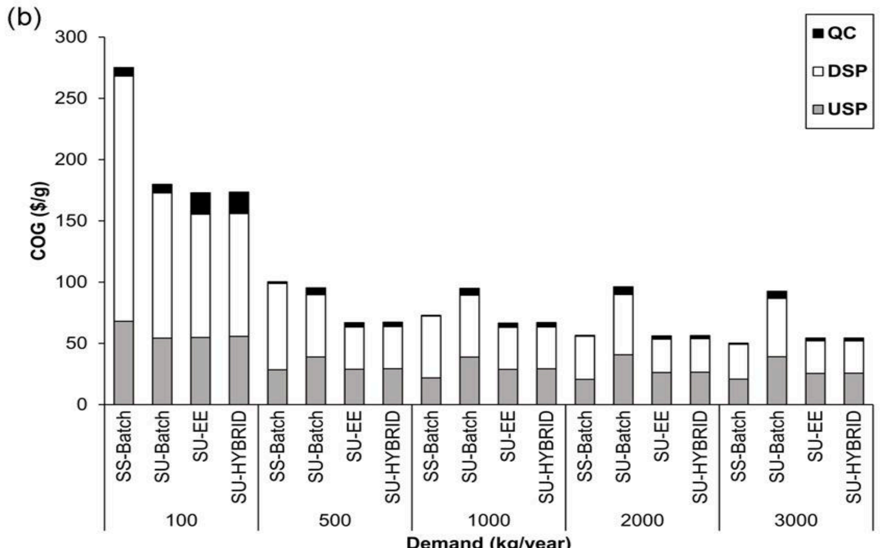
EXHIBIT 6: **COGS comparison between SUB and SSB at various scales**



% difference in COG between each SU facility and SS-Batch	-	-35%	-37%	-37%	-	-5%	-33%	-33%	-	+30%	-9%	-8%	-	+70%	-1%	0%	-	+85%	+8%	+8%
Reactor size (kL)	2	2	0.3	0.3	10	2	1.5	1.5	19.5	2	1.5	1.5	19.5	2	2	2	15	2	2	2
ProA diameter (cm)	45	45	13	13	100	45	25	25	140	45	25	25	140	45	30	30	120	45	30	30
Total Batches/campaign	20	20	10	10	20	80	10	10	20	160	20	20	40	357	30	30	79	500	40	40
USP reactors : DSP train	1	1	1	1	1	4	1	1	1	4	1	1	2	6	1	1	4	5	1	1
Parallel trains	1	1	1	1	1	1	1	1	1	2	2	2	1	3	3	3	1	5	4	4
QC batches/campaign	20	20	50	50	20	80	50	50	20	160	100	100	40	357	150	150	79	500	200	200
FCI ($M)	58	36	29	28	89	56	40	41	114	111	80	82	141	196	113	114	158	301	160	162



Note: Batch = fed batch, EE = end to end perfusion, COGS = Direct + Indirect costs

Source: End-to-end continuous bioprocessing: Impact on facility design, cost of goods, and cost of development for monoclonal antibodies, Mahal et al., and Bernstein analysis

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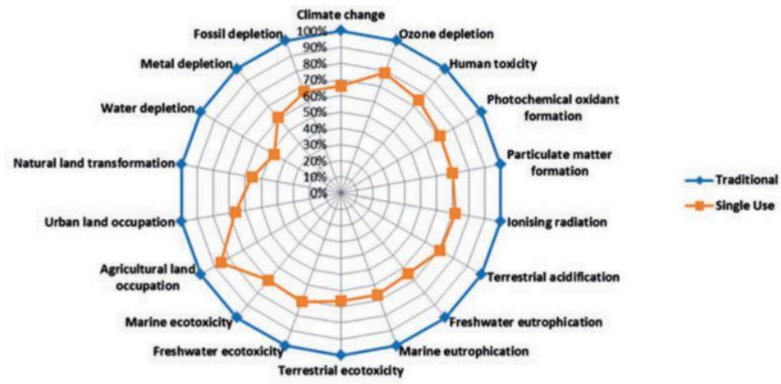
ENVIRONMENTAL IMPACT

The biggest argument against SUBs is the plastic use-and-throw bags and the environmental impact. While the use of single-use plastic is high, the overall environmental impact considering the energy, water consumption, and waste generation is lower for SUBs than for SSBs. A study by GE Healthcare (An Environmental Lifecycle Assessment of Single-Use and Conventional Process Technology: Comprehensive Environmental Impacts) looked at the production of monoclonal antibodies to compare SUBs and SSBs. The authors split pharmaceutical production into 14 unit operations, plus an additional support unit encompassing all operations required for CIP/SIP. Energy costs were determined based on the assumption that multiuse equipment has a 10-year lifetime, with 25% of equipment then reused, 67% recycled, and the remaining 8% land filled. The full process trains were evaluated at 100-L, 500-L, and 2,000-L working volume scales. Calculations were based on a 10-batch campaign assuming 6g/L titers. Exhibit 7 shows the lifecycle midpoint impact for SUB vs. SSB for the full process train with a 2,000-L working volume. Traditional impacts are normalized to 100%, and single-use impacts are expressed relative to traditional impacts within each impact category. SUB exhibits lower environmental impact in all 18 midpoint impact categories studied.

EXHIBIT 7: **Lifecycle midpoints impact for SSB vs. SUB**



Source: GE study (linked in text) and Bernstein analysis

Exhibit 8 shows the lifecycle endpoint impacts grouped into three damage categories (i.e., human health, ecosystems, and resources) and differentiated by lifecycle stage (i.e., supply chain, use-phase, and end-of-life). Supply chain includes materials and manufacturing of all process equipment and consumables required to support a 10-batch mAb production campaign. Use-phase includes all impacts that occur during mAb production, including cleaning and sterilization of traditional durable equipment between batches. End-of-life includes the disposal of consumables and the disposal, re-use, or recycling of allocated portions of durable components. SSB impacts are normalized to 100% within each damage category, and SUB impacts are expressed relative to traditional impacts within each damage category. SUB exhibits lower endpoint impacts compared to traditional process technology within each damage category. The majority of impacts for both SUB and SSB occur during use-phase, predominantly due to environmental impacts associated with large amounts of energy used for steam generation, water purification, and equipment operation. Supply chain impacts contribute to 4-8% of total lifecycle impacts, and end-of-life impacts contribute less than 1%.

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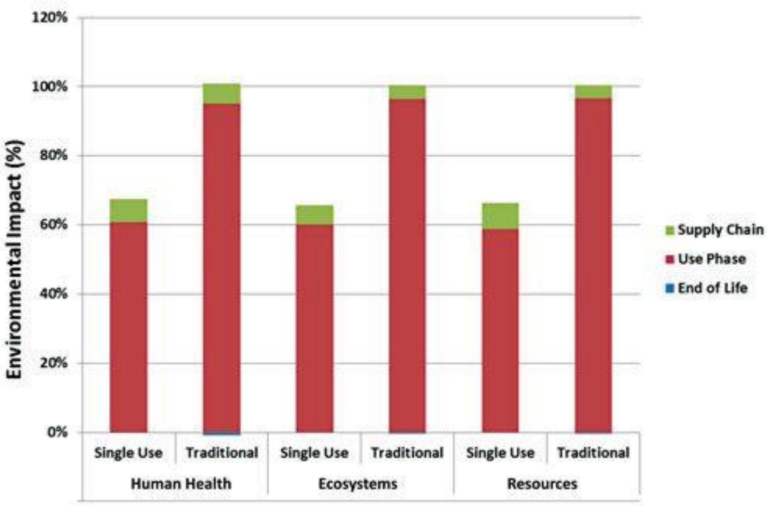
EXHIBIT 8: **Lifecycle endpoint impacts grouped into three damage categories**



Source: GE study and Bernstein analysis

Another study looked at the energy costs of SUBs vs. SSBs ([Environmental Impact of Single-Use and Reusable Bioprocess Systems)]() Exhibit 9 summarizes energy calculations for SUB vs. SSB. Materials production refers to energy cost of manufacturing components for the two solutions; sterilization refers to SIP between batches for stainless steel systems or pre-sterilizing components by irradiation for single-use systems; and cleaning refers to CIP for reusable skids, most often using a combination of pyrogen-free distilled water, sodium hydroxide, and phosphoric acid in standard, pre-determined quantities.

EXHIBIT 9: **Energy calculations for SSB vs. SUB**

	SUB (Megajoules)	SSB (Megajoules)
Materials production	4,100	1,100
Sterilization	30	200
Cleaning	-	4,900
Total	4,130	6,200

Source: BioProcess International and Bernstein analysis

While manufacturing stainless steel is significantly more energy intensive than manufacturing plastic, disposable plastic components must be replaced for each batch. This results in a cumulative energy expenditure to produce single-use components that is almost 4x greater than the energy expenditure to manufacture equivalent multiuse components. For sterilization and cleaning though, the energy costs for SSB were significant at ~6x the cost for SUBs. Both studies arrived at broadly the same conclusion that the environmental impact of SUBs is smaller than that of SSBs. This is an added advantage over the flexibility that SUBs already offer. Given Wuxi Biologics'100% investment in SUBs, the environmental impact of its manufacturing is the least compared to peers. Exhibit 10 shows the capacities of global peers, including a classification by SUB and SSB.

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EXHIBIT 10: **Global leading biologics CDMO's capacity expansion plans**

Biologics CDMO Capacity (kL)	2021	2025	Note for 2021 Capacity (kL)	Note for 2021-2025 Capacity Expansion (kL)	2021-25 CAGR
WuXi Biologics	154	430	Mammlian: ~150, Viral: 2, Microbial: 2.3, ADC: 0.5	SUB: +276 (Perfusion: +6.5, Fed-batch: +269.5)	29%
Samsung Biologics	364	620	CDO: 4, CMO: 360, SSB: 362, SUB: 2	SSB: +256	14%
Lonza	>364	>500	Mammlian: 330, Microbial: >32, Viral: 2; SSB: ~350, SUB: >14	Mammlian: +136 (SSB: +120, SUB: +16)	8%
Boehringer Ingelheim	375	560	Mammlian: >310, Microbial: >12		11%
Fujifilm	141	430	Mammalian: 132, Microbial: 5, SSB: ~136, SUB: ~5	Capacity increment for both CDMO and own business; Mammalian: +282.5 (SSB: +273.5, SUB: +9), Microbial: +4	32%
Total Above	>1398	>2540			16%

Note: Due to limited disclosure, there's a mixture of company disclosure and our estimates.

Source: Company reports, and Bernstein estimates and analysis

CDMO IS A SAFE HAVEN IN A RECESSIONARY ENVIRONMENT

That Pharma is a defensive sector is well known and we will not belabor the point. See Exhibit 11 for Healthcare's relative performance during previous recessionary periods. We borrow the exhibit from our Asia Quant team. See details here: Asia Quant Strategy: Learnings from previous stagflation periods in China and India - Implications for sector/style positioning.

The CDMO business model is even more resilient than Pharma. Depending on the services offered, CDMOs enjoy contracts that are two to three years long (early-stage products) to 10 years long (commercial-stage products). Commercial-stage contracts are typically "take-or-pay" in the sense that the CDMOs make their money irrespective of the end-market demand for the product. That risk is borne by the customer.

EXHIBIT 11: **China sector performance during stagflation**

Stagflation period (Asia)	Materials	Financial	Industrial	Healthcare	Information Technology	Consumer Discretionary	Consumer staples	Real Estate	Energy	Communications	Utilities
Apr 08 to Dec 08	-13%	3%	-8%	61%	5%	-11%	8%		-3%	4%	29%
Oct 11 to May 12	-18%	4%	6%	-19%	25%	-16%	0%		-9%	2%	32%
Apr 19 to Mar 20	-1%	-8%	-7%	16%	8%	13%	16%	-5%	-29%	-2%	-1%
Nov-21	20%	14%	63%	4%	22%	-22%	35%	10%	-10%	14%	11%
Avg	**-3%**	**3%**	**14%**	**16%**	**15%**	**-9%**	**15%**	**2%**	**-13%**	**4%**	**18%**

Stagflation period (China)	Materials	Financial	Industrials	Healthcare	Information Technology	Consumer Discretionary	Consumer staples	Real Estate	Energy	Communications	Utilities
Apr 08 to Oct 08	-14%	2%	-8%	79%	16%	-4%	8%		-1%	5%	16%
Jul 10 to May 12	-7%	-5%	-10%	-15%	18%	-8%	0%		10%	8%	8%
Feb-18	32%	-16%	12%	56%	5%	47%	59%	-22%	-8%	-22%	38%
May 19 to Mar 20	-6%	-14%	-16%	15%	16%	24%	7%	-10%	-39%	3%	-16%
Avg	**1%**	**-8%**	**-5%**	**34%**	**14%**	**15%**	**18%**	**-16%**	**-10%**	**-1%**	**11%**

Source: OECD, Bloomberg, and Bernstein Asia Quant team analysis

Wuxi Biologics' follow-the-molecule model allows it to accumulate a backlog of service, milestone, and royalty revenue streams. Exhibit 12 shows how its backlog has trended in the last five years. Even if Wuxi Biologics doesn't win a single new project starting today, the ~US$8Bn in backlog will still be realized over a 10-year period (subject, of course, to customers not pulling their projects and having enough cash to pay WuXi Biologics).

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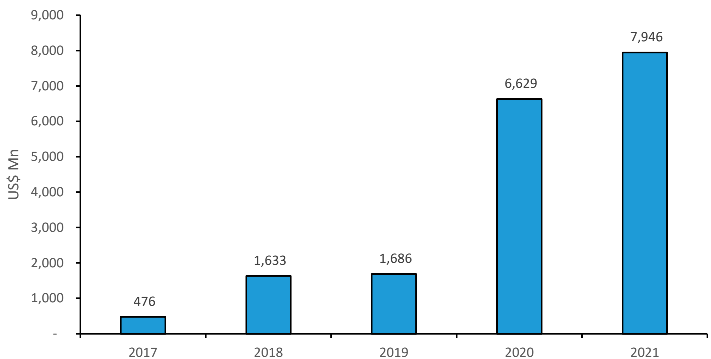
EXHIBIT 12: **Wuxi Biologics backlog (US$ Mn)**



Source: Wuxi Biologics and Bernstein analysis

EXHIBIT 13: **Share biotechnology (IBB) ETF weekly fund flows and top 10 holdings**

1Q22		2Q22	
Week Ending	IBB Fund Inflow (US$Mn)	Week Ending	IBB Fund Inflow (US$Mn)
07/01/2022	168.9	08/04/2022	13.3
14/01/2022	51.2	15/04/2022	(135.4)
21/01/2022	6.7	22/04/2022	(89.1)
28/01/2022	14.5	29/04/2022	(57.8)
04/02/2022	(196.4)	06/05/2022	(42.8)
11/02/2022	37.7	13/05/2022	105.4
18/02/2022	(50.9)	20/05/2022	5.2
25/02/2022	(98.4)	27/05/2022	(87.6)
04/03/2022	0.4	03/06/2022	(70.2)
11/03/2022	32.2	10/06/2022	86.6
18/03/2022	261.6	17/06/2022	(97.9)
25/03/2022	157.4	24/06/2022	338.6
01/04/2022	(194.9)	01/07/2022	(176.0)

Top 10 holdings	
Gilead	7.54%
Vertex	7.53%
Amgen	7.50%
Regeneron	6.47%
Moderna	5.10%
IQVIA	3.99%
Seagen	3.34%
Biogen	3.10%
BioNTech	2.99%
Illumina	2.99%
Top 10	**50.55%**

Source: Bloomberg and Bernstein analysis

Wuxi Biologics' customers are mostly small biotech companies. There is some concern about their cash runway and their ability to continue to pay CDMOs due to the recent funding downturn. We see some improvement in recent weeks in the public market fund flows into the biotech indices in the US (see Exhibit 13 and Exhibit 14) and our analysis of the index stocks point to more than two-thirds of biotechs having enough of a cash runway to support their existing pipeline (see our report Weekend Pulse: The Biotech funding cycle and the read through for CRDMOs).

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EXHIBIT 14: **SPDR S&P Biotech Index (XBI) ETF weekly fund flows and top 10 holdings**

1Q22		2Q22	
Week Ending	XBI Fund Inflow (US$Mn)	Week Ending	XBI Fund Inflow (US$Mn)
07/01/2022	(419.8)	08/04/2022	(374.8)
14/01/2022	332.6	15/04/2022	(51.5)
21/01/2022	(117.6)	22/04/2022	213.6
28/01/2022	708.7	29/04/2022	(21.9)
04/02/2022	80.0	06/05/2022	(187.5)
11/02/2022	83.5	13/05/2022	615.2
18/02/2022	(35.7)	20/05/2022	(168.0)
25/02/2022	400.9	27/05/2022	111.0
04/03/2022	29.8	03/06/2022	215.9
11/03/2022	209.3	10/06/2022	107.9
18/03/2022	68.6	17/06/2022	(107.0)
25/03/2022	213.1	24/06/2022	630.0
01/04/2022	(69.5)	01/07/2022	(101.1)

Top 10 holdings	
Global Blood Therapeutics	1.47%
Novavax	1.43%
Twist Bioscience	1.40%
Iovance Biotherapeutics	1.40%
PTC Therapeutics	1.31%
Amicus Therapeutics	1.31%
Seagen	1.31%
Intellia Therapeutics	1.29%
Fate Therapeutics	1.29%
Ultragenyx Pharmaceutical	1.27%
Top 10	**13.48%**

Source: Bloomberg and Bernstein analysis

Funding conditions are slightly less onerous for private biotech companies as they have the option of tapping the PE/VC industry that is still flush with funds. There have been ~120 private fund raisings worth US$9Bn this year, according to LifeSci, down roughly 30% from the comparable period last year. Exhibit 15 shows some of the largest Series A rounds by US biotechs YTD. While the optics look tough for biotech, given the large base in 2020 and 2021, we believe quality assets with near-term newsflow will be able to find the monies.

EXHIBIT 15: **Largest US biotech Series A Financing YTD**

Company	Technology	Indication	Location	Date (MM/DD/YY)	Amount (US$Mn)	Lead Investors
Upstream Bio	Anti-TSLP Receptor mAb	Asthma	Waltham, MA	06/02/2022	200	OrbiMed, Maruho
Triana	Molecular glue platform	Cancer	Waltham, MA	04/06/2022	110	Lightspeed, RA, Atlas
Seismic	Machine learning platform	Immunology	Watertown, MA	02/09/2022	101	Lightspeed
Dianthus	Complementary mAbs	Auto-immune	Waltham, MA	04/19/2022	100	5AM, Avidity, Fidelity
Septerna	GPCR discovery platform		San Francisco, CA	01/27/2022	100	Third Rock
Ambagon	Molecular glue platform	Oncology	San Francisco, CA	01/06/2022	85	Nextech Investment
Cellino	Scalable manufacturing of iPSC-derived cell therapies		Cambridge, MA	01/25/2022	80	Leaps by Bayer, 8VC, Humboldt Fund
Pheast	Macrophage checkpoint inhibitors	Oncology	Palo Alto, CA	04/26/2022	76	Catalio, Arch
Ceptur	Gene silencing via bivalent oligonucleotides	Oncology, CNS, Others	Hillsborough, NJ	01/19/2022	75	venBio, Qiming USA
Terremoto	Covalent drug discovery platform	Oncology	San Francisco, CA	05/25/2022	75	OrbiMed, Third Rock
Code	Non-viral gene therapies	DMD, diabetes	Hatfield, PA	06/07/2022	75	Northpond

Source: Biocentury and Bernstein analysis

We, therefore, estimate Wuxi Biologics' revenue growth to be quite healthy in the near term. We do model some impact of the recent funding downturn exacerbated by the recessionary environment to slow down new project additions into the funnel. However, despite our conservative assumptions, we believe revenue CAGR can be ~20% in the next 10 years (see Exhibit 16).

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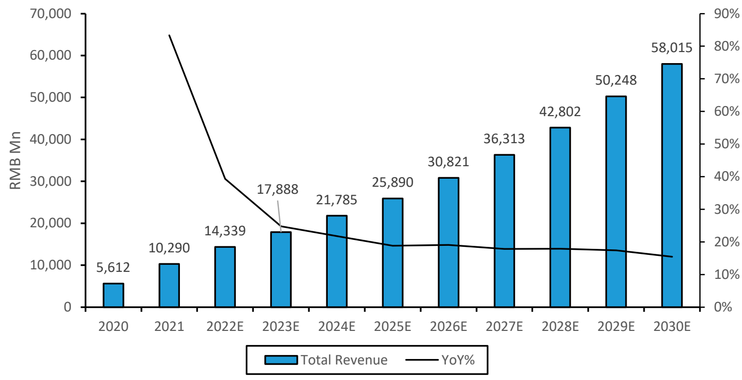
EXHIBIT 16: **Wuxi Biologics revenue and YoY%**



Source: Wuxi Biologics, and Bernstein estimates and analysis

VALUATION METHODOLOGY

Pan-Asia healthcare

We use a sum-of-the-parts valuation approach with DCF to value the specialty and biosimilar businesses, and one-year forward PE for the generics business.

Wuxi Biologics Cayman Inc

We set our price target using a blend of DCF and multiples-based approach (PE). We rate Wuxi (ticker: 2269.HK) Outperform with a target price of HK$80. It closed at HK$73.95 and is benchmarked against the MXAPJ that closed at 524.70. Closing prices as of August 8, 2022.

RISKS

Pan-Asia healthcare

Risks to the pharmaceutical industry include: (a) risk of pipeline products failing or getting delayed due to FDA actions, (b) possibility of adverse litigation outcomes delaying key generic launches, (c) cGMP non-compliance in manufacturing facilities leading to FDA actions like Warning Letters or Import Alerts to plants, (d) product recalls or other product safety issues, (e) pricing pressure from market factors or price control regulations, (f) supply and logistics disruptions, and (g) healthcare regulations and reforms.

Wuxi Biologics Cayman Inc

Downside risks to our rating include: (1) service quality deteriorating and higher dropout rate for integrated projects; (2) growth of the mAb market weakening, decreasing new project additions into the funnel; and (3) biospecific antibody having a higher failure rate than we anticipate.

Nithya Balasubramanian nithya.balasubramanian@bernstein.com +91 226 842 1433

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EDWARDS: UNIQUELY POSITIONED FOR RECESSION-PROOF GROWTH; A THESIS REVIEW IN SLIDE FORMAT

HIGHLIGHTS

- *We identify Edwards Lifesciences (EW) as a company that is actively improving ESG practices and is set to outperform in an environment of high inflation, slowing growth, and rising rates. Edwards is a recession-proof growth story that checks a lot of boxes in the current macro environment and has industry-leading ESG performance.*
- We include a brief summary of Edwards' ESG profile, including third-party scores, the company's stated sustainability goals, and our thoughts on the company's ability to improve access to high-quality structural heart care around the world.
- We synthesize our EW thesis in 10 exhibits. We recently held a Q&A session to address investors' key questions; see here[1] for notes on the session.

INVESTMENT IMPLICATIONS

We rate Edwards Lifesciences Outperform with a target price of US$130. Edwards is a rare growth story that can actually accelerate growth within the next five years as growth from the Transcatheter Mitral and Tricuspid Therapies (TMTT) business begins to kick in. The company is the leading innovator in structural heart, one of the most exciting growth markets in medical devices. The Transcatheter Aortic Valve Replacement (TAVR) business will grow with improving diagnosis and treatment rates and global indication expansion. For more on EW, see our 1Q22 recap,[2] our recent EW upgrade note,[3] our key takeaways[4] from Bernstein's SDC, and our take on how new AI-enabled diagnostics[5] could provide a tailwind to TAVR market growth. For more on ESG, see our ESG industry overview,[6] our affordability-innovation trade off[7] note, and our materiality[8] note (Model: EW).

ESG SUMMARY – EDWARDS LIFESCIENCES

When Edwards Lifesciences was established in 2000, the company was formed around a credo written to define Edwards' culture and guide decision-making. CEO Mike Mussallem talks about how Edwards is defined in large part by how the company serves others: patients, employees, customers, suppliers, communities, and shareholders. Edwards has taken ESG performance seriously for many years, and the company still leads the medtech

[1] Edwards: ESG in Action—Uniquely positioned for recession-proof growth; a thesis review in slide format
[2] Edwards 1Q22: Revenue beat despite omicron and FX; EPS beat by 10% on strong margins; guidance maintained
[3] U.S. Medtech: Glimpses of the elusive reopening trade; time to get long medtech; upgrading EW and SYK
[4] Edwards: Key Takeaways from the Bernstein Strategic Decisions Conference
[5] Weekend Pulse: Can artificial intelligence help us diagnose twice as many candidates for TAVR?
[6] ESG: Beyond ratings and scores - MedTech improves health and patients' lives, but each sub-sector has its ESG pitfalls
[7] Global ESG Research: The price of medical innovation - The affordability-innovation trade off in the U.S. healthcare system
[8] Global Medtech: Does ESG matter? What metrics are most material?

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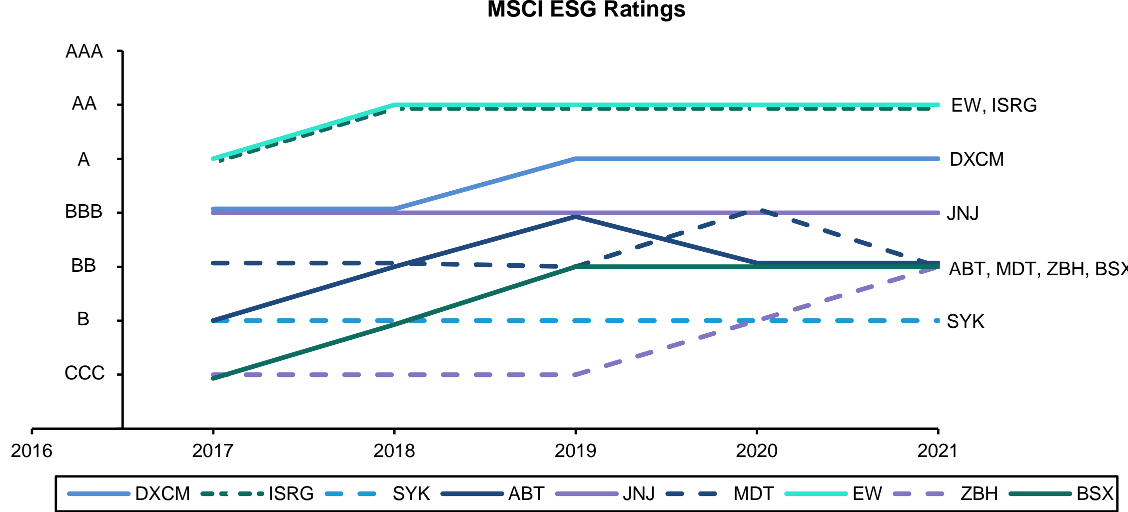
sector based on third-party ESG scores. Click here to download sustainability reports and other ESG content that Edwards has published over the years.

At a high level, we see Edwards as a strong ESG access story. The company is uniquely positioned to make important contributions to improving access to high-quality structural heart therapy around the world. Valvular heart disease (VHD) is a major cause of mortality and reduced quality of life for tens of millions of people worldwide. VHD deaths have grown faster than population growth rates and are projected to double over the next 25 years. Treatment for valvular heart diseases has improved dramatically with minimally invasive transcatheter valve replacement and repair technologies, and Edwards has been the leading innovator in the structural heart space.

EW sets the ESG bar

Edwards has a very strong track record, and management continues to make ESG a high priority. Third-party services consistently rank EW among the best Medtech companies in the US, and EW boasts the top MSCI rating and Sustainalytics scores in our coverage (see Exhibit 1 and Exhibit 2).

EXHIBIT 1: **US Medtech coverage MSCI ratings**



Source: MSCI and Bernstein analysis

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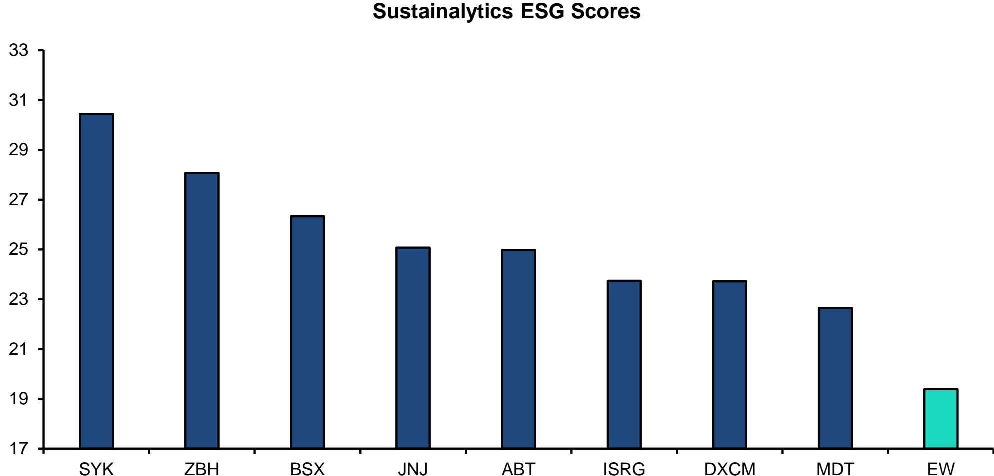
EXHIBIT 2: **US Medtech coverage Sustainalytics scores**



Source: Bloomberg and Bernstein analysis

In 2015, the United Nations adopted the 2030 Agenda for Sustainable Development that prescribes 17 Sustainable Development Goals (SDGs) (see Exhibit 3), of which EW emphasizes three:

- UNSDG 3: Good Health and Well-Being — Ensure healthy lives and promote well-being for all at all ages.
- UNSDG 8: Decent Work and Economic Growth — Promote sustained, inclusive, and sustainable economic growth, full and productive employment; decent work for all.
- UNSDG 12: Responsible Consumption and Production — Ensure sustainable consumption and production patterns.

EXHIBIT 3: **United Nation's 17 SDGs**

Source: UN.org

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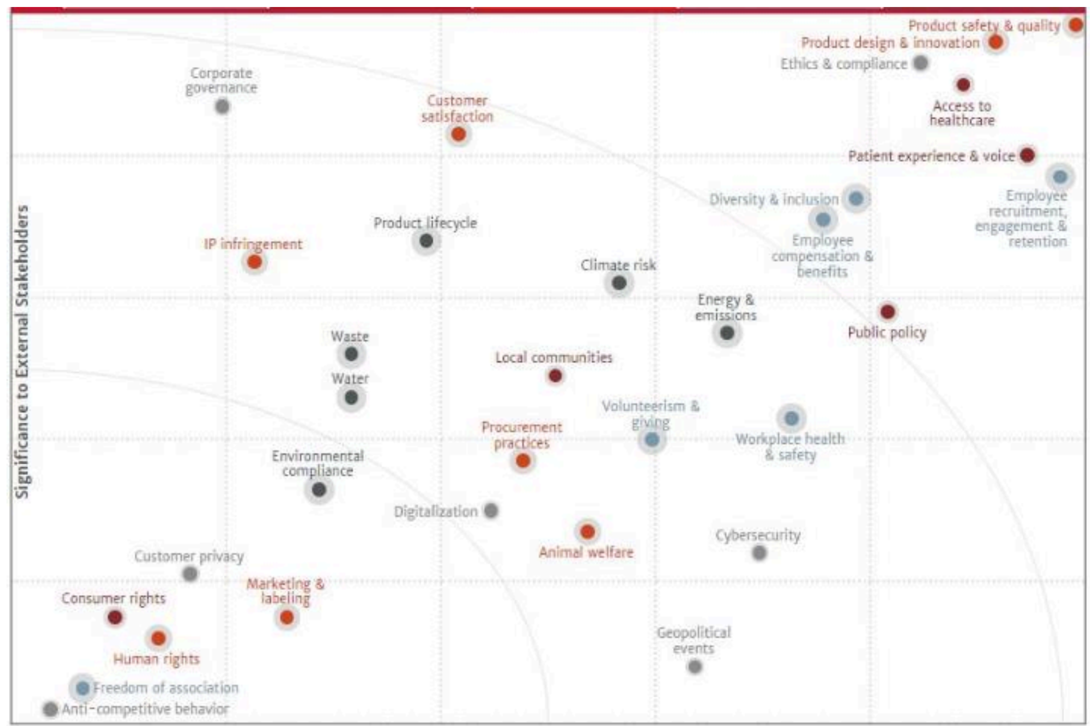
The materiality process and matrix in Exhibit 4 describes the framework that steered EW's focus toward SDGs 3, 8, and 12. Medtech companies are inherently limited in the scope of their ESG impact, so as usual, product safety and quality is most significant to EW as well as external stakeholders.

EXHIBIT 4: **EW's materiality process**

Source: Edwards' 2020 Sustainability Report

Other items of high significance in the upper-right-hand quadrant of Exhibit 5 include product design and innovation (SDG 3), ethics and compliance (SDG 8), and access to healthcare (SDG 3).

EXHIBIT 5: **EW's materiality matrix for ESG considerations**



Source: Edwards' 2020 Sustainability Report

For comparison, Exhibit 6 is Bernstein's proprietary medical device materiality matrix for ESG. We provide this aggregated view to give a snapshot of the relative importance of different ESG metrics across the medtech industry. However, we acknowledge that within different subsectors there can be significant variation as to the metrics that matter, and even similar issues can manifest themselves differently across different companies and

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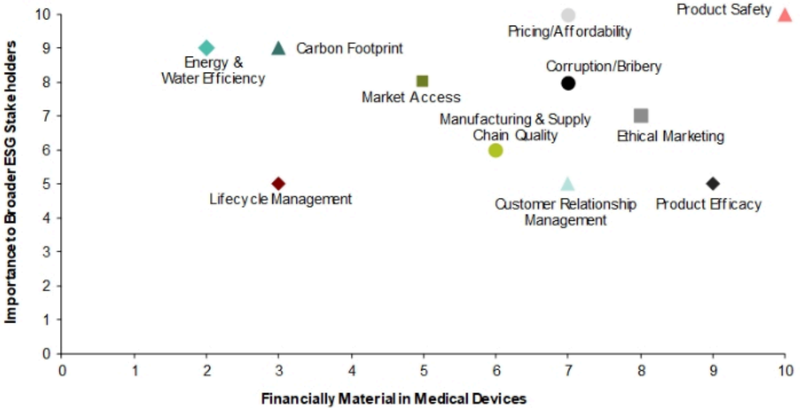
subsectors. For more on ESG, see our ESG industry overview, affordability-innovation trade off note, and our materiality note.

EXHIBIT 6: **Bernstein's medtech industry materiality matrix**



Source: Company reports and Bernstein analysis

In most cases, EW's ratings align with the greater medtech industry's. For instance, product safety is most important to both EW and the medtech industry. At Bernstein's Special Decisions Conference in June, Mr. Mussallem underscored the significance of product quality. When questioned about lower-priced competitors that offer a broad range of solutions and can potentially bundle services, Mr. Mussallem made a strong case that hospitals benefit from partnering with the leading technology player, particularly in medtech segments such as Structural Heart where the stakes are so high for patients and healthcare providers. Edwards is comfortable with the trade-offs inherent in the company's innovation-driven, premium-priced strategy:

"I mean **we're cool with the trade-offs**, like we're good with it. As you said, somebody that's able to bundle and say, hey, I can give you a much better deal on this. That's great. And if you want to buy your heart valve from the lowest possible [price] person, then we're certainly subject to that. But what we're **talking about are very serious important products**. So heart valves open and close a billion times over a 15-year period, and it better be right every time, and there is **an awful lot at stake**. And so if you're in a **commodity kind of product, yeah, the idea of having these great big portfolios and bundles are really powerful.** But when you're in a specialty space, and I learned this early on in my career at the Baxter, I don't know, I wanted to use the best one. I really feel like I owe it to my patient to use the best. And so we've been strong believers in that, and we think it's been borne out in our performance and in our market share and everything else."

In furtherance of SDG 12, EW announced plans this year to achieve carbon neutrality by 2030 and elected to participate in the 1.5°C science-based targets, a global coalition of businesses and UN agencies that promote aggressive emissions reduction targets. The announcement doubled down on EW's 2021 campaign to reduce total energy usage, water intake, hazardous waste generation, and greenhouse gas (GHG) emissions by 10% — EW also committed to a 35% renewable energy goal in 2021, but carbon neutrality by 2030 comes as the most aggressive target to date. The aggressive action comes even as EW's

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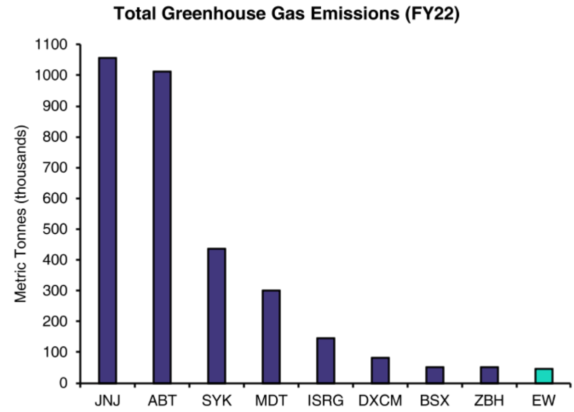
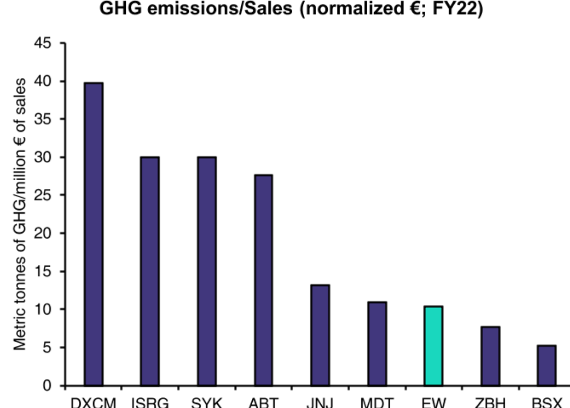
GHG emissions and emissions per sales ratio already rank among the US medtech industry's cleanest companies.

EXHIBIT 7: **US Medtech GHG emissions**



Source: MSCI and Bernstein analysis

EXHIBIT 8: **US Medtech emissions/sales**



Source: MSCI and Bernstein analysis

Last, EW formally checked the ESG box for a sixth year in a row in 2022, as it was honored among Ethisphere Institute's "2022 World's Most Ethical Companies." Of the 136 honorees, which hailed from 22 countries and 45 industries, EW was the only medtech company recognized.

THESIS REVIEW – EDWARDS LIFESCIENCES (EW)

Edwards is a quality medtech growth stock that can actually accelerate growth over the next five to 10 years. The following three points underpin our Outperform thesis:

(1) TAVR will likely grow double digits for another decade (plus!). OUS expansion, better rates of diagnosis, and new indications create a very long growth runway for EW's core business.

(2) Mitral and Tricuspid markets are 3x the size of TAVR. TMTT therapies are just starting to take off, and EW has a strong pipeline that will likely become a material driver of corporate growth within five years. What is a US$1Bn market today could be worth US$10Bn by 2030, and penetration in this market is still tiny (<2%).

(3) EW is recession-proof, and catalysts are coming. EW checks many boxes in the current macro environment. TAVR is a high-acuity procedure that cannot wait for long, and reopening tailwinds will benefit EW as procedure volumes recover. EW's supply chain is far simpler than most medtech companies, which protects EW somewhat from the gross margin pressures affecting medtech companies, and inflation impact is lower than other medtech segments, given somewhat better pricing power in the innovation-driven structural heart space. Finally, catalysts are coming with mitral and tricuspid products launching in Europe and a big mitral launch in the US (all later this year).

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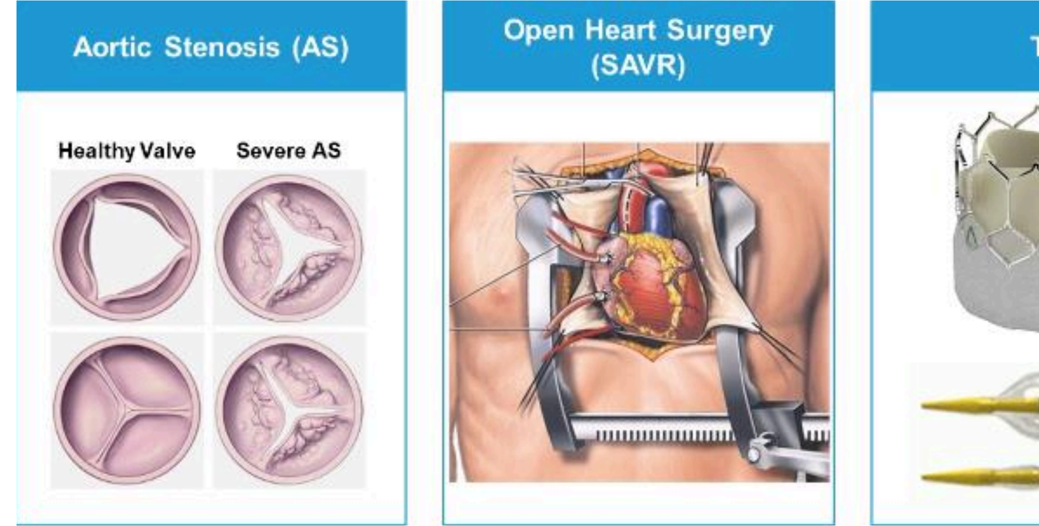
uge opportunity for Structural Heart, expect long-duration TAVR growth

TAVR, which generates 65% of EW revenues, has drastically reduced the burden of treating aortic stenosis (AS). AS affects more than one in eight people over the age of 75, and it is one of the deadliest forms of valve disease. For years, open-heart surgery has been the standard of care. The burdensome open-heart procedure takes three to five hours and begins with an eight-inch incision/cracked sternum. Next, the surgeon hooks the patient up to a heart-lung machine, cuts out the diseased valve, and sews in a new one. Open-heart surgery often requires a hospital stay of seven or more days and months of recovery. Alternatively, TAVR requires only a small incision in the patient's leg, which the interventional cardiologist uses to fish a catheter up to the heart and insert a new valve while it is still beating. The procedure does not require general anesthesia, takes only 45 minutes, and 80% of people return home the next day. It's a pretty remarkable improvement in the standard of care for severe symptomatic aortic stenosis.

EXHIBIT 9: **TAVR is a remarkable improvement in the standard of care for patients with severe aortic stenosis**



Source: Company website and Wikimedia Commons

Since TAVR launched in the US in 2011, the market has grown at close to 20%, swelling to over US$5Bn globally. TAVR is a two-player game, and EW has been a consistent leader with about 65% share.

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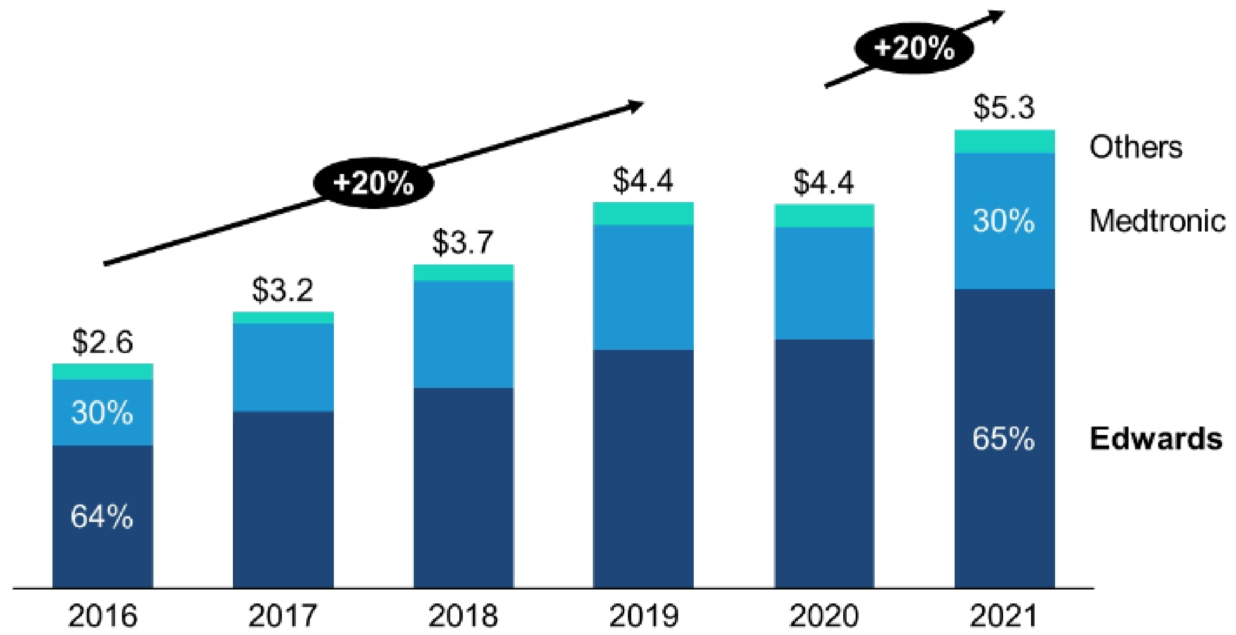
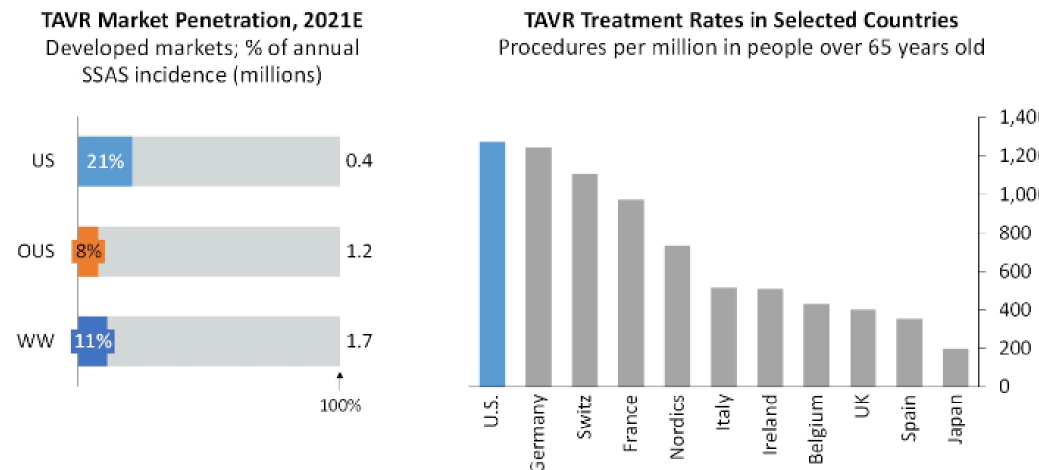
EXHIBIT 10: **TAVR market bookended the pandemic with a +20% CAGR**



Source: Company reports and Bernstein analysis

TAVR penetration is about 11% globally according to our analysis, 21% in the US, and only 8% in developed markets OUS. EW is investing quite a bit in training and awareness to develop these OUS markets, so while there is plenty of headroom for growth in the US, there is even more opportunity OUS.

EXHIBIT 11: **US vs. OUS TAVR market penetration**



Source: Pubmed; Company reports; Bernstein analysis

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Diagnosis is one of the biggest barriers to TAVR adoption. To get into the TAVR funnel, a primary care doctor must diagnose a valve problem and send the patient to a cardiologist — simple enough, but the symptoms are subtle, awareness is low, and due to the limitations of traditional auscultation (listening to the heart with a stethoscope), most eligible AS patients never get referred. Even when referred, echocardiograms — the gold standard diagnostic test — tend to miss the diagnosis in half of severe AS patients according to a 2017 EW study.

Better diagnostics will augment TAVR growth by helping doctors find more AS patients and diagnose them more accurately. Eko and Caption Health are two notable companies seeking to improve AS patient rates of diagnosis. Eko's digital stethoscopes use AI to automatically check for heart disease, and Caption Health uses AI to analyze echocardiograms and provide accurate diagnosis recommendations. We believe better diagnosis can really move the needle for TAVR over the next five years.

EXHIBIT 12: **The improbable path to diagnosis**

Patients with severe AS
Low awareness; most patients never referred
Referred to cardiologist
Echoes are the gold standard Dx, but they miss 50%
Severe AS confirmed by echocardiogram
Eko
Caption Health

Source: Company website and Bernstein analysis

Indication expansion is also core to the TAVR growth story. TAVR started with an approval for the sickest patients who were too frail to get open-heart surgery, and over time, the indication has expanded to include all people with severe symptomatic AS. Now, EW is working on two clinical trials to approve indication for patients earlier in valve disease progression. If successful, the new indications could quadruple the TAM for TAVR by 2030.

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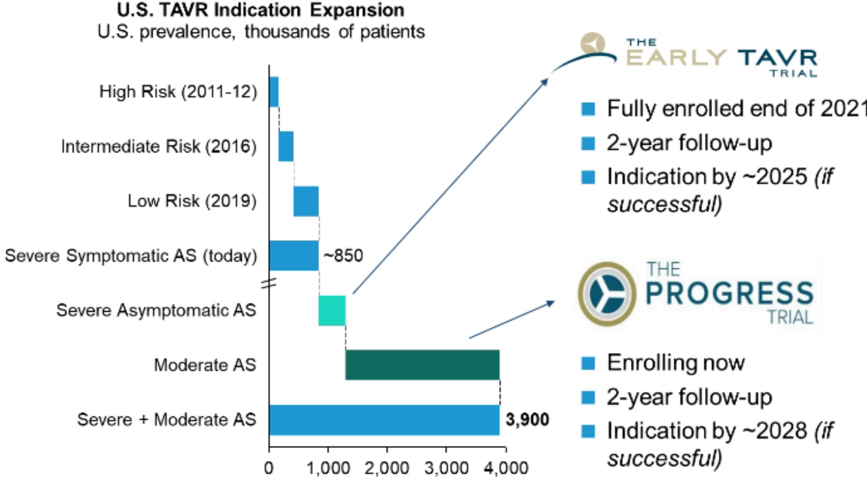
EXHIBIT 13: **New indications to drive TAVR growth**

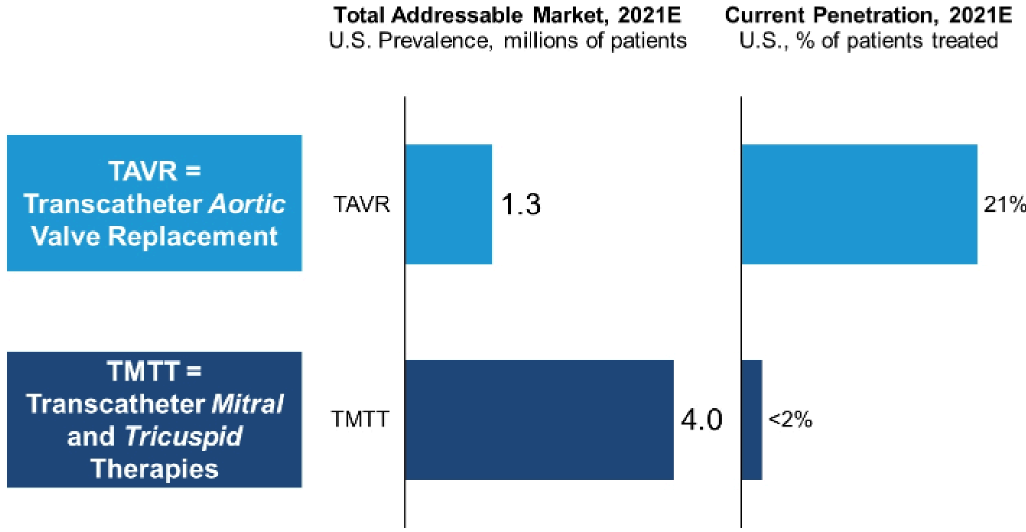


Source: Pubmed, company reports, and Bernstein estimates and analysis

TMTT could meaningfully contribute within five years

EW's Transcatheter Mitral and Tricuspid Therapies (TMTT) business, which treats the mitral and tricuspid valves, can become a material driver of growth within five years. Compared to aortic valve disease, there are at least three times as many people in the US with mitral and tricuspid disease, and TMTT penetration for this cohort is currently less than 2%.

EXHIBIT 14: **TAVR vs. TMTT addressable market and penetration**



Source: Pubmed, company reports, and Bernstein estimates and analysis

The market for mitral and tricuspid therapies is just taking off, so what is a US$1Bn market today could easily become US$10Bn by 2030. While Abbott is the TMTT incumbent, EW has built a formidable position with a very strong pipeline and multiple shots on goal for repair and replacement of the mitral and tricuspid valves. EW is the leading innovator in structural heart; the company knows how to support products with strong clinical evidence.

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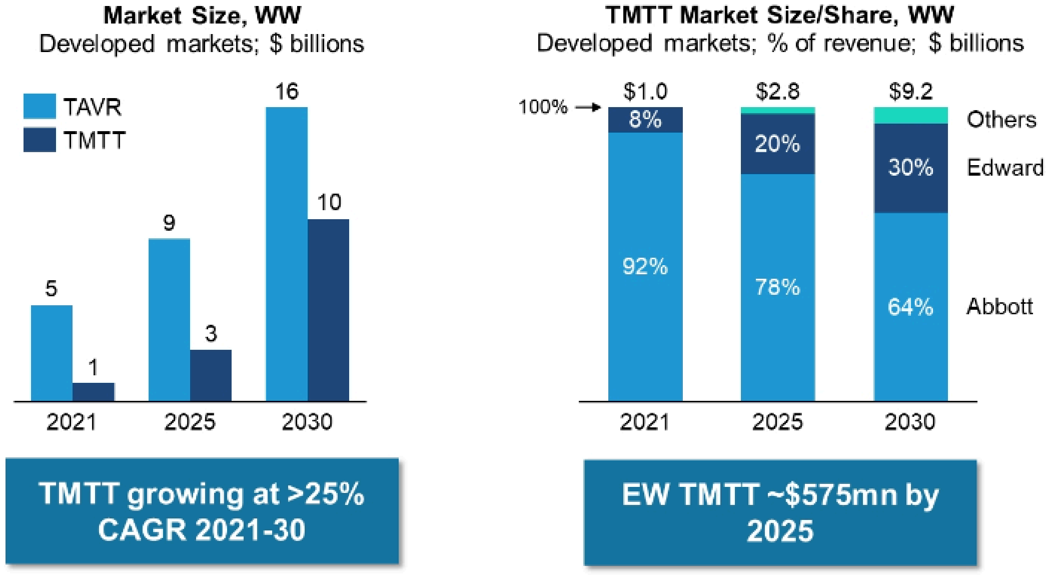
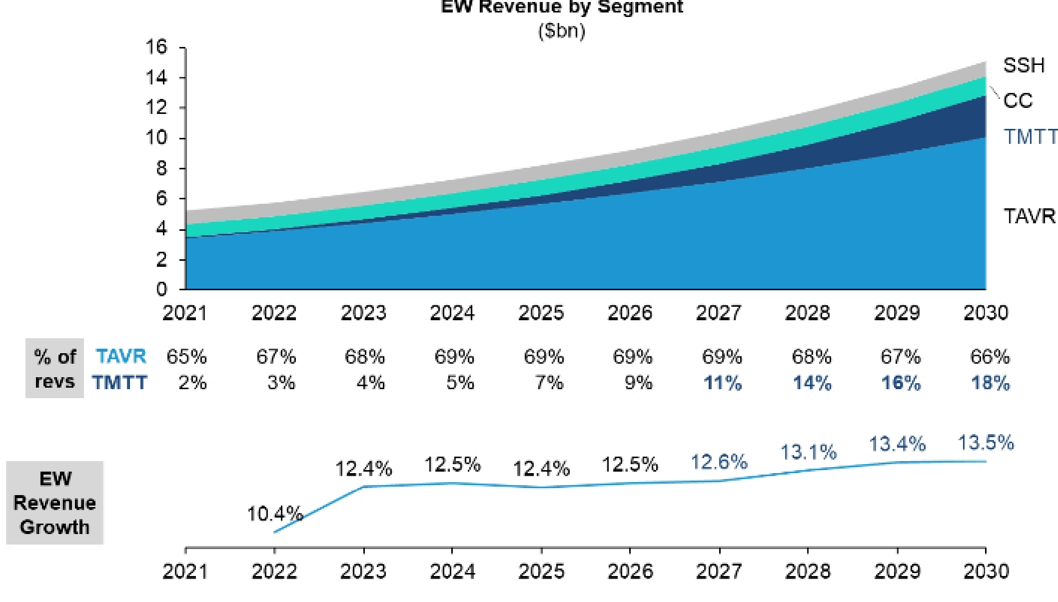
EXHIBIT 15: **TMTT market could grow 10x by 2030**



Source: Pubmed, company reports, and Bernstein estimates and analysis

Even with a conservative assumption of 30% share by 2030, EW's TMTT business will become a material driver of accelerated growth within approximately five years.

EXHIBIT 16: **TMTT revenue share at 18% by 2030E**



Source: Company financial reports, and Bernstein estimates and analysis

EW in this economy?

EW checks a lot of boxes in this tricky macro environment. TAVR is a high-acuity procedure that cannot be postponed for long, making EW's TAVR business recession-proof. EW is a

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reopening winner and will benefit from patients re-engaging with healthcare providers (the pandemic created a backlog of procedures, despite the lethality of AS). EW has limited exposure to input cost pressures, and its inflation impact will be lower than other areas of medtech, spurred by innovation and strong economic evidence for hospitals. Investors are wary of China impact, given Covid-19 pressures, but EW has no material exposure. Finally, exciting catalysts are coming; by late 2022 (possibly early 2023 for EVOQUE tricuspid valve approval in Europe), EW is set to launch mitral and tricuspid products in Europe and a big mitral product in the US.

EXHIBIT 17: **EW checks a lot of boxes**

Recession-Proof

Less Inflation Impact

Reopening Winner

No China Exposure

Simple Supply Chain

Catalysts Late-2022

Source: Bernstein analysis

EW has lagged the S&P YTD. This is a high-multiple stock, and most of its decline YTD has tracked the NASDAQ. EW now trades at a 2019 multiple despite the fact that the story has improved significantly over the past three years. In other words, the last time EW traded here was before the 2019 low-risk approval that doubled the addressable market for TAVR and before EW had any real TMTT business at all.

VALUATION METHODOLOGY

Our target price for EW is based on a 44x target PE multiple, applied to our next 12 months' estimates, 12 months hence. The PE target reflects observed absolute and relative historical multiples and our outlook for forward growth. We also use current EV/EBITDA vs. history and DCFs as secondary inputs to our valuation. The closing prices for EW and the S&P 500 on August 8, 2022 were US$105.46 and US$4140.06, respectively.

RISKS

Downside risks for EW include: greater-than-expected disruption to elective procedures due to Covid-19 and/or staffing shortages; slower-than-expected ramp of TMTT products; intensifying competitive pressure in the TAVR market; and inflation- and supply-chain-related pressure on margins.

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ELECTRONIC ARTS: A DEFENSIVE ESG IMPROVER

HIGHLIGHTS

- The cyclicality of the video games industry is not fully understood due to incomplete data from past recessions and the changing revenue mix. Available data suggests that bigger-ticket purchases are the most vulnerable part of entertainment spend. In our view, this puts Electronic Arts at a relative advantage, as 70% of the group's sales mix comes from live services, mostly microtransactions.

- If microtransactions make EA a solid video games defensive pick in a recession, we think they are also the company's main ESG risk. EA is a sector leader on standard ESG benchmark scores, but several of them do not materially "price in" the sustainability risk over microtransactions and loot boxes.

- While the risk is material, the company has made tangible efforts to reduce it, from making loot box purchases more transparent to offering better parental controls. We find that EA has also demonstrated improvement in managing other ESG issues, such as gamer community relations and executive compensation.

INVESTMENT IMPLICATIONS

In recent months, we've heard mixed investor views on the cyclicality of the video games sector. Based on the limited historical data available, we think video games might not be immune to a recession, but should be relatively resistant by media standards. We think EA's unique level of exposure to live services revenue should make the company outperform the sector should there be pressure on consumer discretionary spend.

VIDEO GAMES ARE NOT IMMUNE TO A RECESSION, BUT LIKELY RESISTANT

Video games are not recession-proof, but 2009 is a misleading benchmark for cyclicality

According to Newzoo estimates, the video games industry grew 20% in 2020, with increased leisure time and consumer stimulus more than offsetting any macro impact on consumer spend. With fears of a recession now growing among investors, it's worth considering what a real consumer recession would look like for video games.

In 2009, physical video game software sales declined by 11%, but given digital sales and subscription revenue were already material back then and gaining share, the real decline is likely to have been much smaller.[1]

As video games have pushed further into the mainstream since the GFC, we think it's instructive to look at changes in overall entertainment spend during the previous recession. In Exhibit 1, we compare the change in spending on various media-related categories in the US between 2007 and 2009. During the GFC, spend on bigger ticket items, such as video

[1] https://www.gamespot.com/articles/us-2009-game-retail-sales-total-1966-billion-npd/1100-6246425/

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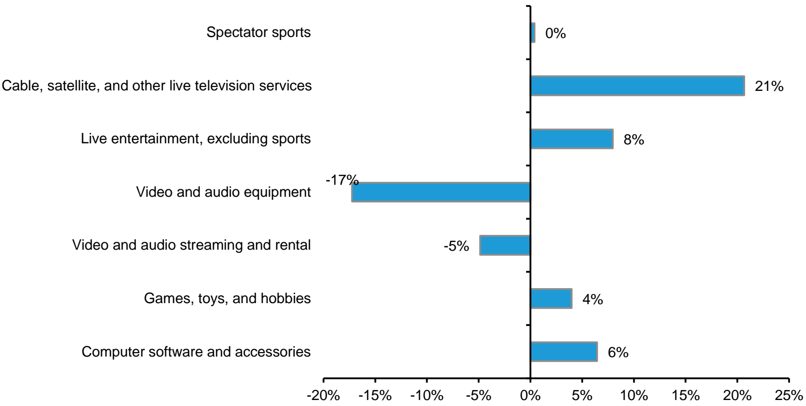
and audio equipment, declined considerably, by 17%. Video streaming and rental declined by 5%, but all other categories either grew or remained stable over the period.

EXHIBIT 1: **Spending change, 2007-09, selected categories**



Source: Bureau of Economic Analysis (BEA) of the US, and Bernstein analysis

- During the GFC, PC software sales stalled before rebounding, and cable TV grew considerably (although partly due to regulatory reasons when, in 2009, the US government shut down analog network TV broadcasts without doing much to publicize the low-cost DTT alternative, encouraging many consumers to subscribe to cable TV).
- Spectator sports remained relatively stable, encouragingly for EA as argued next.
- The fact that AV equipment suffered the most while content was stable or growing suggests to us that the most vulnerable parts of the industry revenue mix would be consoles and the high-sticker price AAA game units, in that order.
- The impact of the economic cycle on the industry's console cycle could be complex this time around. The sales of *PlayStation 5* and *Xbox Series X* have been hampered by supply chain issues, so the normal tailwind to the industry's software sales has not yet materialized. A recession's impact on sales of US$300-US$500 console units could offset the remaining pent-up demand in the short term, but we'd argue that this would only further delay the industry tailwind from the console cycle.
- As per our US video games initiation, we see the market for gaming becoming broader across age groups and there being decades of sustainable audience growth left. We'd therefore expect any decrease in spend/gamer to be offset by the continuing expansion of the core gamer audience, which we think should be 2% p.a. even in the most saturated game markets.

EA WAS HIT BY THE GFC, BUT IS A DIFFERENT COMPANY NOW

EA grew its revenue during the main financial crisis fiscal year (FY09) by 14.9% on top of 18.6% in the previous year (see Exhibit 2). EA did report a material impact on sales from the macro environment. However, this was offset by the strength of the pipeline, with games

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such as *Rock Band 2, Spore, FIFA, Madden NFL, Mirror's Edge, Warhammer Online, Dead Space,* and *NFS Undercover* contributing to net revenue during the FY, with three of the worst four quarters of the recession. Even while disappointing management expectations, they were able to keep the top line growing.

EA's operating margin took a hit in FY09, due to the releases underselling vs. expectations. Despite releases being successful, they carried high development fixed costs that were oversized compared to revenue.

EXHIBIT 2: **EA financial statements FY06-FY11**

FS row	FY06	FY07	FY08	FY09	FY10	FY11
Net Revenue ($ mn)	2,951	3,091	3,665	4,212	3,654	3,589
YoY%		4.7%	18.6%	14.9%	-13.2%	-1.8%
Gross profit ($ mn)	1,770	1,879	1,860	2,085	1,788	2,090
Gross margin	60%	61%	51%	50%	49%	58%
Operating profit ($ mn)	325	39	(487)	(827)	(686)	(312)
Operating margin	11%	1%	-13%	-20%	-19%	-9%

Source: Company financial reports and Bernstein analysis

There is more buffer for profitability this time around. EA reported a GAAP operating margin of 16.1% in FY22 (20% in Q4), far higher than the 1% reported leading into the GFC.

EA's business mix is very different than it was in 2007. 70% of revenues are made up of live service income in FY22 (microtransactions) vs. 28% in 2009, making EA the industry leader in microtransactions.

While the number of new releases in the pipeline might not be as big as it was before the GFC, we still see near-term potential EA Q4 and FY 2022: The best defense is a good offense.

We estimate the sports franchises FIFA and Madden bring in 40% of the live services revenue (see Exhibit 4). The fact that live sports spend was stable during the last recession suggests there could be some protection for the spend by the same audiences on virtual sport as well.

We also think that microtransactions overall will be the most resilient form of video game industry monetization after subscriptions (unlike most peers, EA does have a subscription service as well, EA Play, although it is not yet material to group sales).

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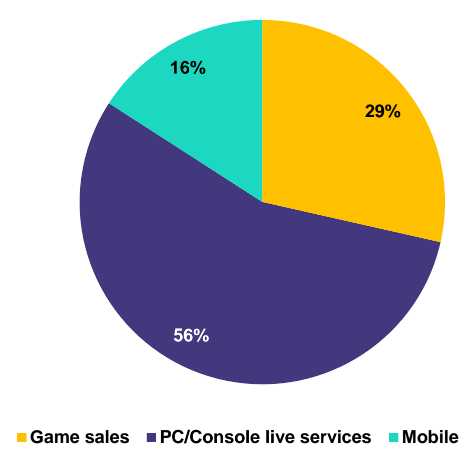
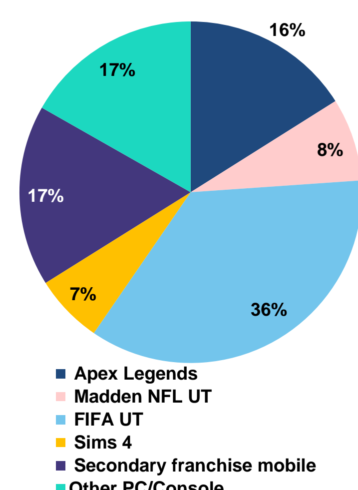
EXHIBIT 3: **FY22 bookings mix**



Source: Company reports, and Bernstein estimates and analysis

EXHIBIT 4: **FY22 live services mix**



Source: Company reports, and Bernstein estimates and analysis

MICROTRANSACTIONS AVOID STICKER SHOCK

If the US$60-US$70 unit price point seems like the area of the video game business most vulnerable to sticker shock, microtransactions (as the name suggests) are at least in theory less exposed to consumers cutting larger one-off purchases.

With a microtransaction model, publishers can appeal to a larger consumer base while extracting more cash from each consumer over time as they become "engaged."

While the percentages of paying customers are small, the lifetime value (LTV) of the top spenders (known as whales, similar to casino parlance) is high. Documents from a lawsuit between Apple and Epic Games in 2021 show that in 2017 on Apple's App Store, the top 1% of gamers generated 64% of game billings, spending US$2,694 p.a.[1]

If the LTV numbers are high and, therefore, sound like they could be vulnerable to sticker shock, individual transactions even for whales tend to be small. The exact distribution varies by game, but we find the 2016 numbers from deltaDNA illustrative even among whales, with average transaction size ~US$20.[2]

EA uses two types of models to generate microtransactions/live services revenue.

- Freemium games like *Apex Legends* (cross platform), and most of EA's mobile games, eschew the unit sales model altogether. Compared to the standard supply and demand curves for the unit sales model, freemium games may typically monetize less than the top decile of users by engagement, but they are very effective at capturing the unique propensity to pay for each of the players in that group, contributing to high LTVs near the top of the distribution. We'd consider this a type of effective price discrimination.

[1] https://regmedia.co.uk/2021/09/10/epic-v-apple.pdf
[2] https://www.gamedeveloper.com/business/new-insights-into-the-spending-patterns-of-whales

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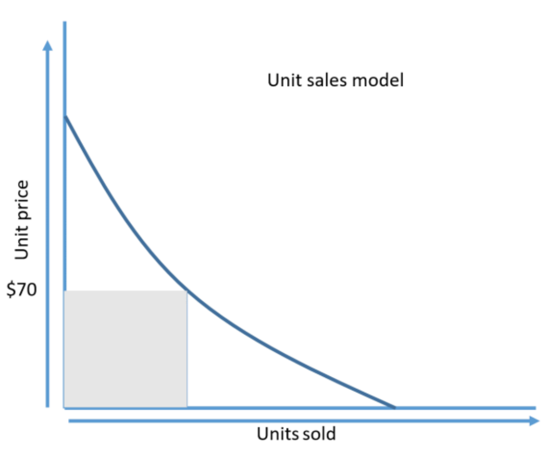
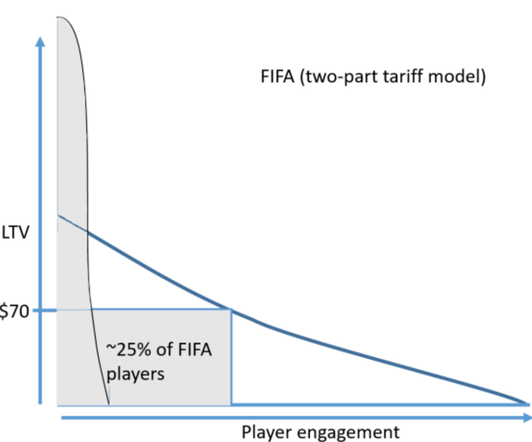
EXHIBIT 5: **Illustrated unit sales model demand curve**



Source: Bernstein analysis

EXHIBIT 6: **Illustrated freemium model demand curve**



Source: Bernstein analysis

- EA's mainline sports games such as *FIFA* use a rarer model combining both the unit sales and freemium models. Microtransactions make up a large part of revenue (we estimate 60%+), but the game must be purchased in order to undertake these transactions. This is effectively a two-part tariff model (see Exhibit 6). The hybrid captures revenue from a larger percent of players than a freemium model, while also effectively monetizing what would otherwise be consumer surplus for the players with the highest propensity to pay.

If the *FIFA* model sounds like unsustainable double dipping, we've previously found that players spending a large amount of time on the game, even a US$70 unit + microtransactions outlay can be cost competitive/hour vs. other media, and that for an immersive experience often shared with friends.

During the 2008-09 recession, aggregate working hours in the US fell by 7%, with half the extra time spent on leisure.[1] This effect should provide at least a marginal boost to time spent on video games, particularly benefiting microtransactions due to the spending pattern of small transactions occurring over the time spent playing the game.

Looking at the unit economics of *FIFA* Ultimate Team (the game mode generating the live services revenue), what strikes us is that an unusually high percentage of the audience engages in microtransactions. From our days at a mobile game publisher, we remember a Mid-Single Digit (MSD) percentage of paying users as being cause for celebration, but understand over 20% of *FIFA* UT players opt to spend on microtransactions (see Exhibit 7).

We think the unusually lucrative paying user numbers could have a lot to do with the football audience. This is a sport where fans invest a lot of their money across the board. For example, compared to many other football fan annual expenditures in the UK, the implied UT ARPU numbers look relatively small, even averaged for just paying users (see Exhibit 8).

[1] https://www.nber.org/system/files/working_papers/w17259/w17259.pdf

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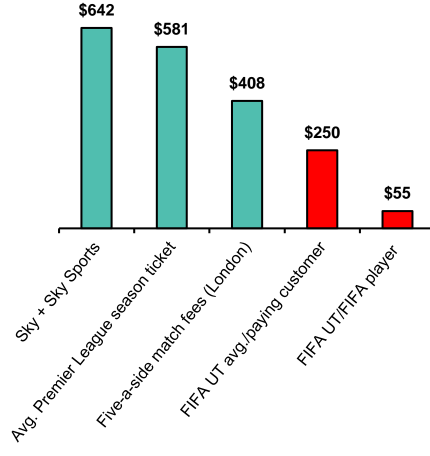
EXHIBIT 7: **FIFA Ultimate Team unit economics**

FIFA Ultimate team unit economics	
Players buying the latest FIFA	**25m**
Players trying out UT	**17m**
% attach rate	**66%**
Players making purchases	**6m**
% attach rate	**22%**
Annual ARPPU	**$250**
Live services revenue	**$1,375m**

Source: Company reports, and Bernstein estimates and analysis

EXHIBIT 8: **FIFA Ultimate Team is not eye-gouging by football standards**



Source: Company reports, and Bernstein estimates and analysis

As pointed out earlier, spend on live sports was resilient in the US during the previous recession, suggesting that the passionate spend on sports is also cyclically stable.

That any source of flexibility on tactical pricing (including price discrimination) is good to have in a recession is textbook stuff.[1]

Like other online businesses, video games have a big advantage when undertaking price discrimination: real-time return path data. Offers of in-game purchases can be optimized down to the level of very small cohorts of users based on changes in demand, which has particular value if the demand curve shifts during a recession. *FIFA*'s unusually broad paying user base should increase the scope of this kind of optimization.

Of course, video game publishers are able to undertake tactical discounting for back catalog unit sales, but not for new releases where the price is pretty much set at US$60-US$70 for AAA titles.

If the microtransactions model should prove resilient during a recession, it also poses important sustainability questions. Loyalty is a huge factor to microtransactions being successful, which critics say is just another word for addiction.

EA is seen as the major culprit behind the introduction of microtransactions to many consumers and has in the past made lists related to the companies most guilty of pushing in-game sales — in particular through its *FIFA* franchise.[2]

In fact, we think the live services model represents the main sustainability risk for EA, not always well captured by standard ESG sores but actively addressed by management.

[1] https://www.routledge.com/The-Strategy-and-Tactics-of-Pricing-A-Guide-to-Growing-More-Profitably/Nagle-Muller/p/
[2] https://www.looper.com/469902/the-most-hated-video-game-microtransactions-might-surprise-you/

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ESG: EA IS WELL ON THE ROAD FROM PARIAH TO PARAGON

ESG investors are used to the dilemma of many of the best defensive sectors (e.g., tobacco and energy) being some of the lowest scorers on ESG metrics. We argue that EA presents a similar dilemma within video games, one not visible in the standard ESG scores. However, the company shows clear improvement not just on addressing this key risk area, but others including its relationship with gamers and executive compensation.

EA both a top performer and an improver on standard ESG scores

EA has an ESG risk score of 10.4, just above "negligible," from Sustainalytics. This makes EA a top performer in the software industry (ranked 7th of 1,003 software companies) and puts it ahead of its peers (see Exhibit 9).

ESG ratings from MSCI similarly have EA ahead of peers such as AA vs. Take-Two and Ubisoft on A, and Embracer and Activison as BBB. On BBG, the company is in line with peers, scoring 5.20 on this metric. (Activison scores 6.3, interesting given the major governance scandal which recently occurred.)

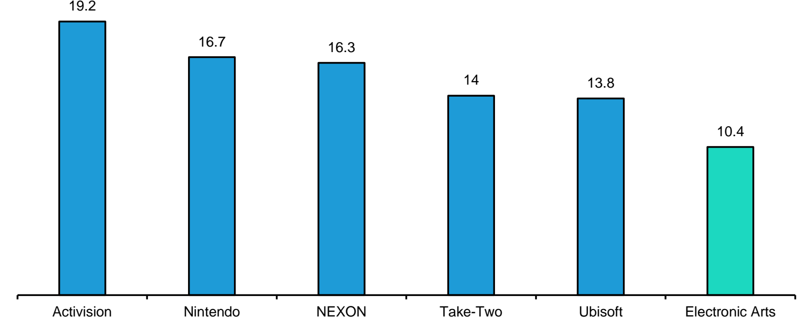
However, ESG benchmark scores for video games do not always sufficiently weigh what we consider the main ESG risks specific to EA, such as the sustainability of the microtransactions revenue stream and the company's sometimes fraught audience relationship.

For example, we understand Sustainalytics considers the legal risk to microtransactions under Business Ethics, but this broader category makes up only 11% of EA's ESG score.

Sustainalytics is not the only ESG benchmark underweighting the risk. Bloomberg, e.g., only ranks video games companies on a Governance score, therefore ignoring microtransactions by definition.

While these ESG issues are worth examining in detail (which we do later in this chapter), we agree with two of the core arguments of the Sustainalytics report: EA is an ESG improver and is working to address the remaining concerns. The company's ESG score has improved from 12.8 in 2021, and it outscores its peers on how well it's managing its risks.

EXHIBIT 9: **EA has a lower Sustainalytics risk score than peers**



Source: Sustainalytics and Bernstein analysis

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LOOT BOXES: THE CASE OF *FIFA ULTIMATE TEAM*

The most controversial part of EA's live services monetization are loot boxes, in-game purchases that contain a randomized selection of virtual items. To illustrate EA's loot box systems in practice, we look at *FIFA Ultimate Team*, which brought in roughly US$1.62Bn in net revenue in FY ending March 2021, 29% of EA's total.

- UT is a game mode in which players collect virtual versions of real-world footballers, attempting to build the ultimate team. The game has two currencies: (1) FIFA Coins, which can be earned by winning challenges in the game and used to buy randomized packs of players (loot boxes) or buy individual players from the in-game Transfer Market auction house; and (2) FIFA Points, which can be bought from EA with real money and used to buy packs of players and other virtual items.

- While the number of items in each loot box is constant, their rarity is not — do you finally get a golden-footed Kylian Mbappé or a more middling Jay Rodriguez? This effectively means the value of FIFA Points spent on packs in FIFA Coins is highly variable.

- EA has banned the transfer of Coins between players outside the Transfer Market and invests in enforcing the rule, but numerous websites offer Coins for cash.

Regulators mostly leaving loot boxes alone — so far

There have been a number of legal cases potentially impacting EA over the last few years.

- In Belgium, EA chose to suspend sales of FIFA Points in 2019 after the country's Gaming Commission had ruled loot boxes an "illegal game of chance."[1]

- In March this year, the Dutch Administrative Jurisdiction Division overturned an earlier ruling by the Court of The Hague, which had ruled that FIFA UT packs broke Dutch gambling law. The DAJD ruling stated that the packs were part of a wider game of skill, and that the black market was mostly focused on complete player profiles rather than Coins, meaning that players were selling more than just the "winnings" from loot boxes.[2]

- In the UK, the House of Commons Digital, Culture, Media and Sport Committee, a House of Lords Committee, and the Children's Commissioner have all recommended new legislation to regulate loot boxes as games of chance, something not possible under the current Gambling Act.

- In the US, a proposed "Protecting Children from Abusive Games Act" introduced in 2019 would have cracked down on loot boxes in games oriented toward minors, but the bill has not made much progress since.

EU takes a wait and see approach on loot boxes

In July 2020, the Internal Market and Consumer Protection committee of the European Parliament commissioned a report[3] on the effect of microtransactions, specifically loot boxes, on consumers, the existing regulatory framework in Europe, and the need for further

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[1] https://www.eurogamer.net/ea-buckles-in-belgium-stops-selling-fifa-points-following-loot-box-gambling-pressure
[2] https://www.eurogamer.net/eas-10m-dutch-fifa-loot-box-fine-has-been-overturned
[3] https://www.europarl.europa.eu/RegData/etudes/STUD/2020/652727/IPOL_STU(2020)652727_EN.pdf

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action. The concern was that loot boxes are a gateway from gaming into gambling, or a "systematic attempt to turn gamers (particularly children) into gamblers" as "virtual games of chance."

The report concluded that although there appears to be a link between loot boxes and gambling, the causation between the two cannot be proved. The analysis of Zendle and Cairns (2019) suggests the average spend on loot boxes is US$11.14 for non-problem gamblers and a higher amount at US$38.24 for problem gamblers, but little evidence of causation.

As for children, data points from ISFE show that only a minority of children use microtransactions, and the majority of children spend sensible amounts on them, with the vast majority of parents supervising that spend. A study by the UK Gambling Commission (2019) suggests 23% of a sample of 3,000 11-16 year-olds have paid money to open loot boxes.

The report viewed loot boxes as legal and not classed as gambling under existing EU law, but instead a normal contract where players pay a fee in return for a service. For minors, this fee must have parental approval and be below a reasonable price point.

The report recommends broadening horizons to consider gameplay design from a wider consumer protection standpoint, rather than considering loot boxes for regulation in isolation. Whether further regulation is needed should depend on the industry's voluntary adoption of limitations to the loot box model, such as increasing transparency and parental controls.

EA is responding to the loot box risk

Given the previously stated information, we are reassured that EA is already taking action to respond to concerns over loot boxes.

- We particularly welcome a recent move by EA to introduce preview packs, which give players daily refreshing opportunities to see which players would be inside the pack, increasing transparency of purchases.
- EA has also built an in-game tool called *FIFA Playtime* to allow players (and their parents) to monitor their gameplay and in-game purchases, as well as set limits on playtime.
- EA does not let "child accounts," specific accounts set up for under-13s, to purchase anything in any of its games or play any online modes on PC or Mac.
- The company has also redesigned progression systems in games, which were seen as too heavily monetized.[1]
- We also consider it positive that EA's mobile game business has no exposure to social casino games (in contrast to Zynga).

[1] https://gamedaily.biz/article/969/exclusive-a-candid-conversation-with-eas-andrew-wilson-at-e3-2019

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- EA's high percentage of paying players in its sports franchises seems to us more sustainable than the live services models that rely on much smaller pools of customers. We don't know the distribution within the 20%+ of *FIFA* players paying for UT, but the fact that it is so much bigger than for, say, most mobile freemium games, suggests that UT could be less reliant on a potentially abusive relationship with heavy-spending "whale" users.

- Until EA publishes more data on the distribution of live services revenue by decile of paying users, it is hard to assess the overall sustainability of the UT monetization model. However, the larger paying user base should give EA flexibility in devising new ways to ward off regulatory intervention.

COMMUNITY RELATIONS STILL AN ISSUE, BUT EA IS ADDRESSING PROBLEMS

The relationship between EA and its audience has not always been easy. Such was the animus of gamers toward the company that they made sure it became the first one to "win" the poll for America's worst company twice in a row in 2013.[1] The main gripes included buying studios only to close them down later after milking intellectual property, the earlier-discussed emphasis on microtransactions, blocking competition by making exclusive licensing deals on sports franchises, and poor execution on game releases. That was when the current CEO Andrew Wilson took over and we think the company has mostly moved in the right direction since then.

- EA has indeed shut down a long list of studios,[2] but it's worth noting that the group has lived through some turbulent times in the industry and it's natural for creative teams to split and move on. We also note that the last of the major shuttering happened in 2017 (Visceral and EA Salt Lake).

- If EA did once strongly nudge or incentivize studios to use Frostbite, this seems to no longer be the case. (A former Bioware GM has said the studio was never forced to use Frostbite.[3])

- We think allowing a major studio to switch to Unreal is a healthy sign of giving creative and operational independence to developers — something the old gamer caricature of EA as an out-of-touch behemoth would not have allowed. The 5% royalty cost to Epic is a small price to pay compared to the risk of the next *Mass Effect* disappointing fans (and flopping) because of technical hiccups.

- EA is not out of the woods when it comes to disastrous launches. *Battlefield 2042* from last year is a case in point (criticized for bugs, lacking features, and unsuccessful gameplay tweaks), but even in that case EA is committed to fixing the game in a way it might not have been before.

[1] https://www.forbes.com/sites/insertcoin/2013/04/09/ea-voted-worst-company-in-america-again/?sh=3b57adc7aebe
[2] https://heavy.com/games/2017/10/studios-ea-has-killed-visceral-games/
[3] https://www.pcgamesn.com/bioware-ea-frostbite-engine

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- For the most part, EA has held on to exclusive license agreements for its key franchises. The one with FIFA is ending, but at the initiative of FIFA rather than EA[1] and numerous exclusive agreements around clubs, leagues, and players remain. While this is a great moat around the franchises, it does reduce player choice.

- We think EA's franchises play a positive role in broadening the industry's audience beyond core gamer demographics. Despite the dominance of Sports franchises in EA output, in 2019 EA's audience was estimated to be 44% female[2] (with the Sims franchise no doubt playing a role).

REINING IN EXEC COMP

EA has also been historically criticized for its level of executive compensation. For example, in 2020 CtW successfully urged investors to vote no on Say-on-Pay[3] for the proposed FY21 compensation.

Like on the other ESG issues discussed earlier in this chapter, EA is showing recent improvement on this score. The company listened to activists, and EA's executive compensation rules were tightened after a shareholder dialogue in 2021. Among other changes, the TSR relative performance targets were raised and the company committed not to award special equity awards to the CEO in 2022 (a US$30Mn award was approved in 2020 and one worth US$18Mn in 2021).

The changes were material, as they reduced CEO Andrew Wilson's compensation by almost 50% from FY21 to FY22.

While CEO compensation is now well below peers such as Take-Two as a percentage of EBITDA (see Exhibit 10), we remain concerned about the 7% of revenues going to overall share-based compensation, adjusted for as it is in non-GAAP earnings.

Still, even on this metric, we did not see the same kind of growth in the FY23 guidance as we had in previous years.

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[1] https://www.gamesindustry.biz/articles/2021-10-15-fifa-doesnt-want-an-exclusive-license-deal
[2] https://media.contentapi.ea.com/content/dam/eacom/common/ea-csr-21.pdf
[3] https://www.gamesindustry.biz/articles/2020-07-23-meet-ctw-the-investors-taking-on-activision-blizzard-and-ea-over-exec-pay#:~:text=Their%20base%20salaries%20are%20%24850%2C000,attempt%20to%20retain%20top%20staff

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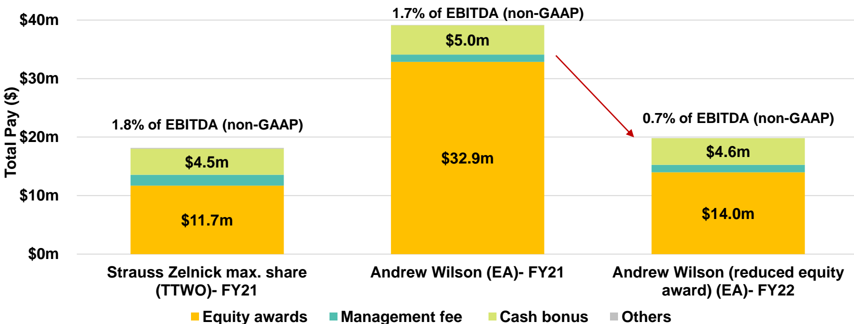
EXHIBIT 10: **2021 CEO compensation comparison**



Source: Company reports and Bernstein analysis

VALUATION METHODOLOGY

US/Europe video games

We rate EA Outperform with a price target of US$155 (current price US$131). The benchmark is the SPX that closed at 4,145. Closing prices as of August 8, 2022.

Electronic Arts Inc

Our valuation is calculated by applying equal weights to a five-year DCF and an equity price derived from market multiples.

Our DCF is based on a **WACC of 8.0% and a terminal growth rate of 4.0%**. We calculate the terminal value using the average of the last four years FCF to determine smoothed steady-state earnings.

The multiples implied equity price is a simple average of the equity price derived **by applying a PE ratio of 21x on NTM, NTM+1, and NTM+2 estimates**. We determine the relevant multiple based on historical and relative trading patterns

RISKS

Electronic Arts Inc

Downside risks to our rating and target price:

Execution risk for non-sports AAA franchises: EA has a history of botched releases — while addressed by management, this could threaten future estimates.

Regulation targeting loot boxes and other recurring revenue monetization: EA's business relies heavily on live services monetization from microtransactions, including loot boxes. This could be regulated in the future, especially in Europe.

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Technology

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INFOSYS: DEFENSIVE IN A RECESSION?

HIGHLIGHTS

- **Tech resilience:** The current tech spend cycle is more resilient than those seen in past recessions such as the GFC. IT services, led by cloud/digital, remains a core driver of transformation for clients. While there could be some moderation, we expect IT spending from enterprises to hold up well. Demand indicators — orderbook, pipeline, and hiring remain healthy.

- **Recovery from recession/defensive:** We expect a faster recovery from macro challenges for the sector. During the GFC, revenue decelerated by 10-15ppt over three to four quarters, while multiple compressed 40%+. In comparison, during Covid-19 growth declined by ~6-8ppt while multiples declined by ~30%, but recovered in one quarter. Stocks with high FCF yields are attractive and Infosys has committed 85% of its FCF as payout over the next five years.

- **Infosys best positioned:** Infosys is the top pick in our coverage. The company's business model is stronger today (60% digital) vs. earlier recessions. Infosys continues to gain market share (gain of 200bps over five years). The company is a leader in ESG indicators — leading corporate governance, strong diversity and inclusion (~38% women employees and 144 nationalities), and became carbon-neutral in 2020.

INVESTMENT IMPLICATIONS

We are Outperform on Infosys with a potential upside of 16%. We highlight Infosys as a company that is actively improving its ESG practices, and is a defensive play in an environment of recessionary and inflationary pressures.

GLOBAL IT SPENDING OUTLOOK

Historically, IT spending is correlated with global GDP and corporate earnings growth. While GDP forecasts have seen downward revisions, EPS forecasts are holding up well. We forecast global IT spending will grow ~3-4% this year, down from our prior forecast of 5%. Growth will likely remain higher than the historical 2011-16 average of 2.1% (see Exhibit 1). While there is worry about a potential economic slowdown, order backlogs remain elevated, which could mitigate any softness on growth.

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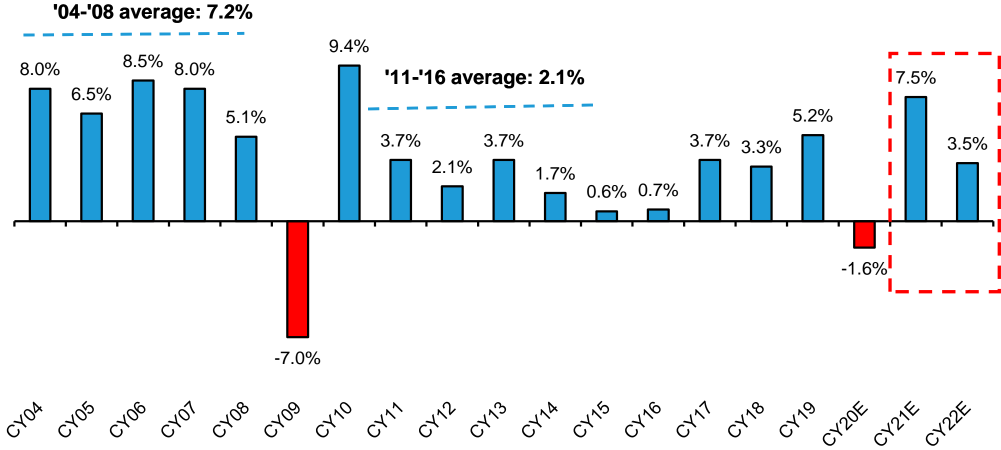
EXHIBIT 1: **Global IT spending growth constant currency (CC)**



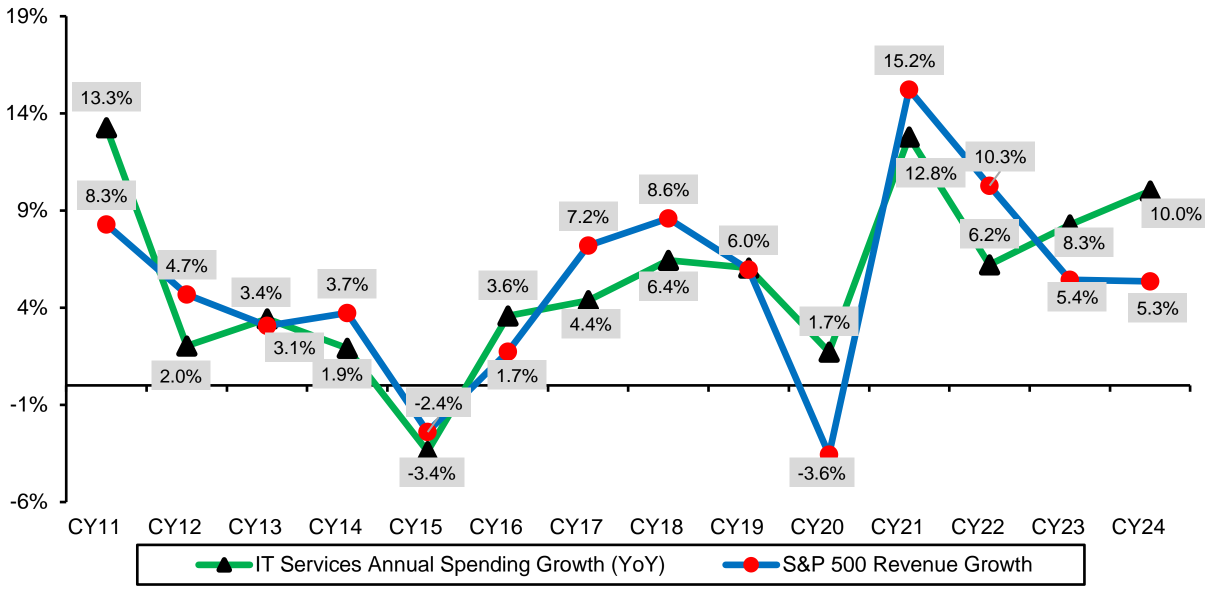
Note: Gartner Global IT Spend includes Devices (including PC, Phones, and Tablets), Data Center Systems (including Network hardware), Software, IT Services, and Communication Services (including enterprise and consumer mobile services)

Source: FactSet, Capital IQ, Gartner, company reports, and Bernstein estimates and analysis

IT SERVICES SPENDING

IT services spending holding up: IT services spending is expected to hold up in the 7-8% growth rate range. Demand environment is still healthy for Indian IT vendors based on order book, sales pipeline, and hiring metrics. The core segment for Indian IT services is enterprise (Fortune 1000) companies, which are more resilient (vs. SMBs). IT services spending is well correlated to S&P 500 revenue growth (~5.4%) (see Exhibit 2).

EXHIBIT 2: **IT Services spending growth vs. S&P 500 revenue growth (%)**



Source: Bloomberg estimates (S&P 500 revenue) and data, Gartner estimates (IT) and data, and Bernstein analysis

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US IT Services spending as a percentage of GDP: Historically, IT Services spend is at 5-6% of nominal US GDP, reflecting that there are no significant excesses in the system. IT Services was ~4.9% of US nominal GDP in CY21, lower than average due to strong growth in US GDP. Historically, the percentage has been ~5%+ during CY11-CY14 and tapered down to ~4.7-4.8% during CY16-CY20 (see Exhibit 3).

EXHIBIT 3: **IT Services spending as a percentage of US Nominal GDP**

	CY10	CY11	CY12	CY13	CY14	CY15	CY16	CY17	CY18	CY19	CY20	CY21	CY22	CY23	CY24
IT Services Annual Spending ($Bn)	784	888	906	937	955	866	897	933	993	1,053	1,071	1,208	1,283	1,389	1,528
IT Services Annual Spending as a % of Nominal US GDP	5.2%	5.7%	5.6%	5.6%	5.4%	4.8%	4.8%	4.8%	4.8%	4.9%	5.1%	5.3%	5.1%	5.2%	5.5%

Source: FRED estimates (US Nominal GDP) and data, Gartner estimates (IT) and data, and Bernstein analysis

CURRENT TECH CYCLE LED BY CLOUD

Tech resilience: The current tech cycle is more resilient than that seen in past recessions. This is driven by a strong tech transformation cycle and it is unlikely that clients will abandon strategic projects midway. Infosys continues to play strongly in the tech transformation cycle (~60% of revenues in digital) and has built strong capability through its localization effort and cloud capabilities (Cobalt platform).

Growth in cloud remains healthy at 40%+ YoY. In 1Q22, Microsoft Azure reported a 46% YoY growth, Amazon Web Services (AWS) registered a 37% YoY growth, and Google cloud a growth of 44% YoY, while Alibaba continued its slowdown in growth registering a 12% YoY increase in cloud (see Exhibit 4).

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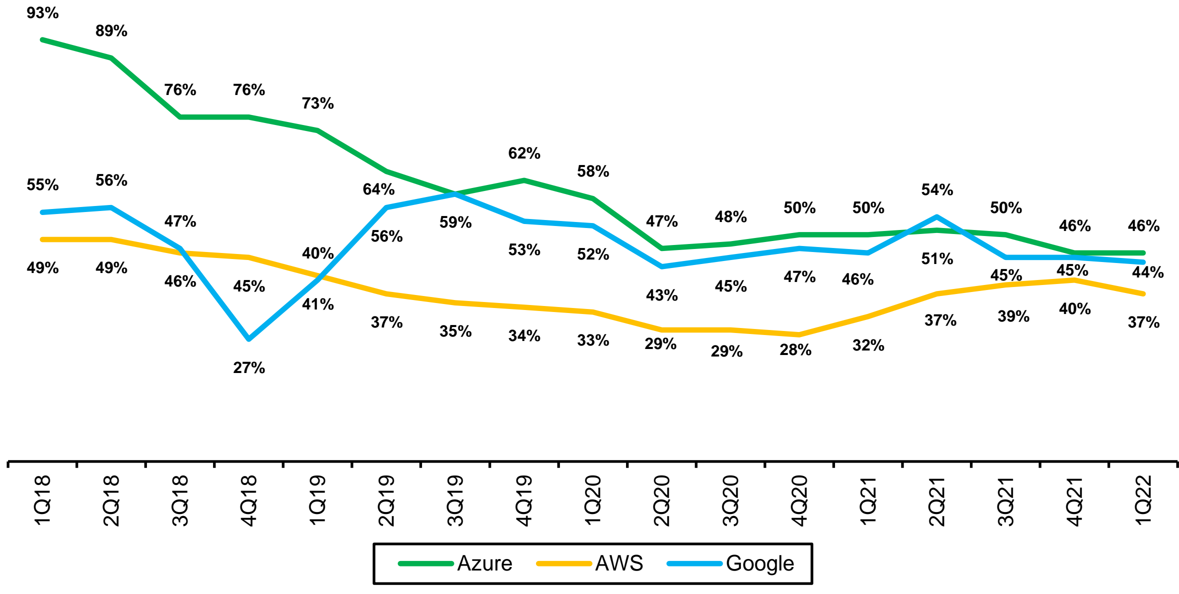
EXHIBIT 4: **Growth of major cloud service providers (YoY)**

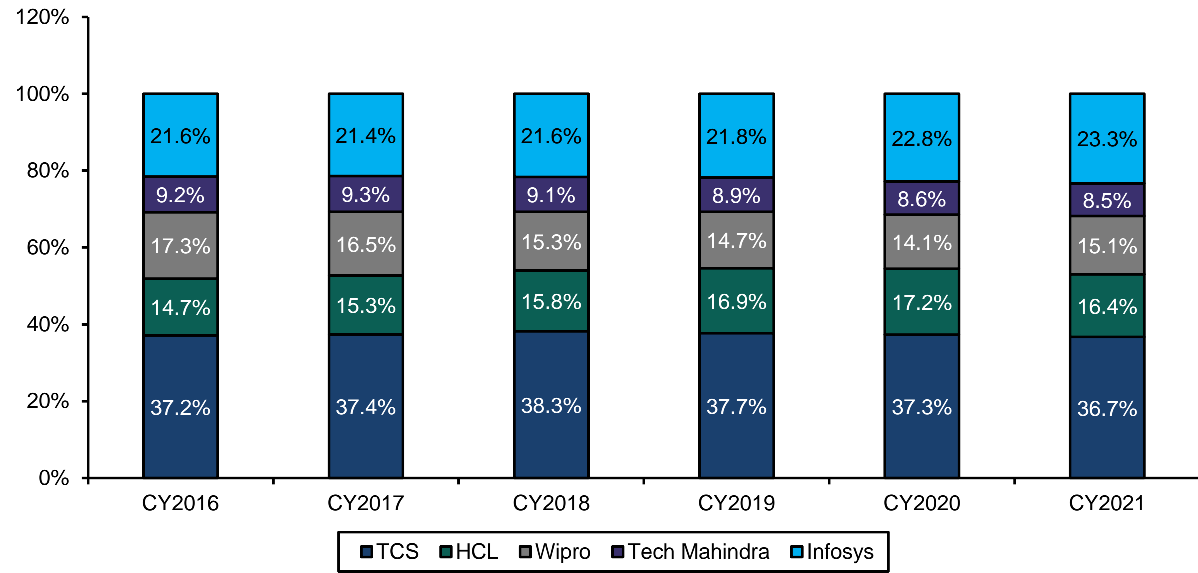


Source: Company reports and Bernstein analysis

MARKET SHARE GAINS FOR INFOSYS

The business models of Indian IT services have become stronger. Infosys's digital mix has expanded to 59.2% of revenues in Q4FY22, up from ~35.7% in Q1FY20. Infosys has the strongest growth; over the last eight quarters Infosys has gained the strongest market share from 21.6% in CY16 to 23.3% in CY21 (see Exhibit 5).

EXHIBIT 5: **Infosys gaining revenue market share within the top 5 Indian IT Services firms**



Source: Bloomberg and Bernstein analysis

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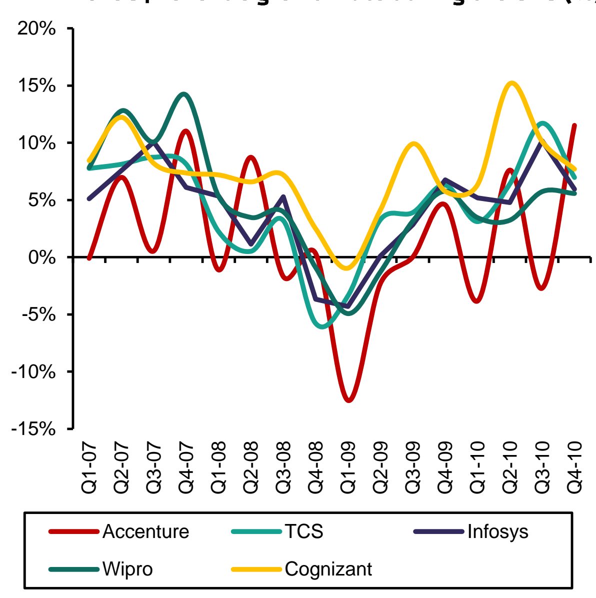
FASTER RECOVERY FROM MACRO CHALLENGES

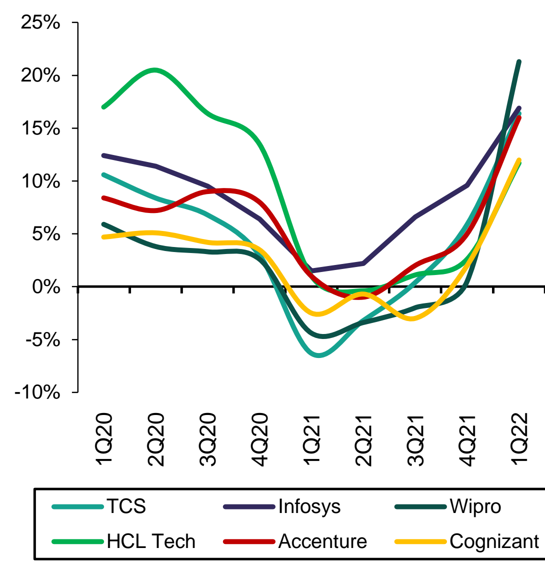
During the GFC, revenue growth decelerated by 15+ ppt for large IT Services firms. IT spends declined to -7%; however, they recovered quickly in a year to grow by 9.4% in CY10 (see Exhibit 6). IT saw a similar V-shaped recovery during the Covid-19 crisis; however, the response was more resilient. Revenues were more stable during the Covid-19 crisis, declining by an average of 5% from base quarter levels between Q4FY20 and Q1FY22, compared to an average decline of 8% from base quarter levels between Q3FY08 and Q3FY10 (see Exhibit 7). EBITDA margins were more stable, maintaining their levels to a greater extent.

EXHIBIT 6: **US$ revenue growth rate during the GFC (%)**



Source: Bloomberg, company reports, and Bernstein analysis

EXHIBIT 7: **CC revenue growth rate during Covid-19**



Source: Bloomberg, company reports, and Bernstein analysis

Operating margins: Operating margins, however, remained resilient (on balance, modestly expanded) as most of the cost base is variable and share buybacks accelerated. In CY09, Accenture margins expanded modestly (~35bps/quarter) in CY09, while Cognizant margins remained flat YoY in CY09. Offshore players continued to expand margins through a mix of higher utilization, productivity enhancements, operational efficiency (e.g., cost-cutting in travel, SG&A, and subcontractor costs), and lower wage increases. Infosys margins expanded by ~100bps in CY09-FY10. TCS margins expanded by >200bps in CY09-FY10 (see Exhibit 8).

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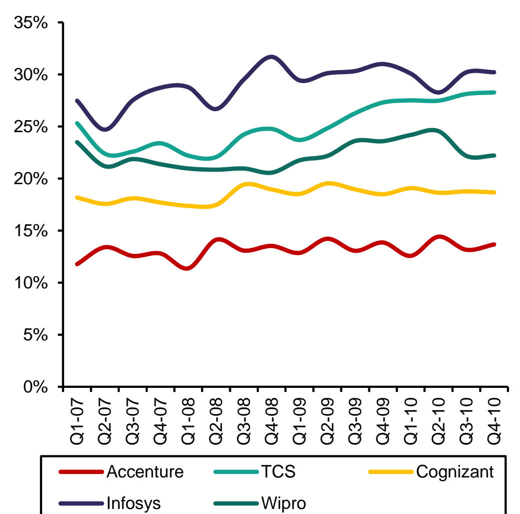
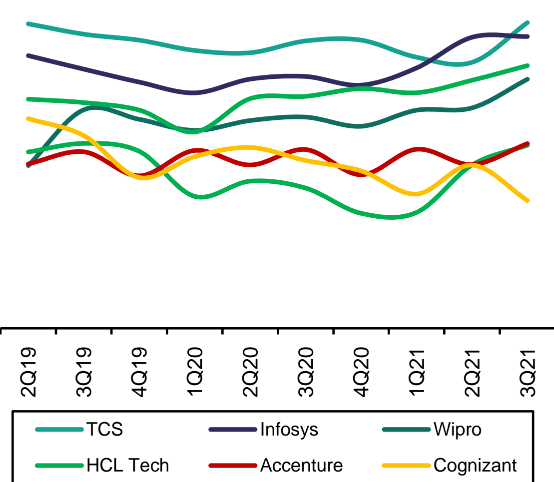
EXHIBIT 8: **EBITDA margins during the GFC (%)**



Source: Bloomberg, company reports, and Bernstein analysis

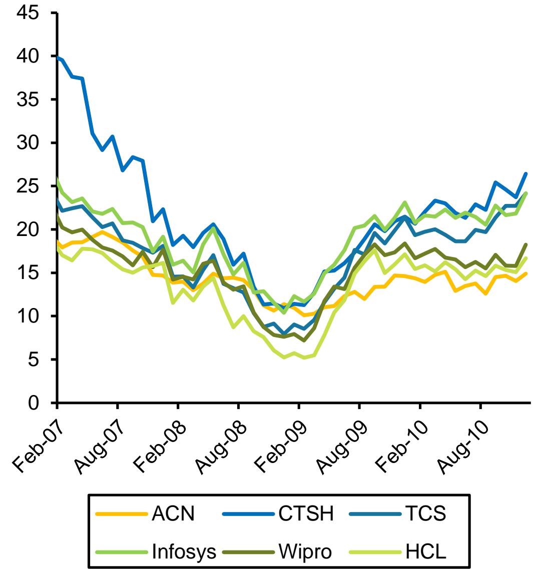
EXHIBIT 9: **EBITDA margins during Covid-19**



Source: Bloomberg, company reports, and Bernstein analysis

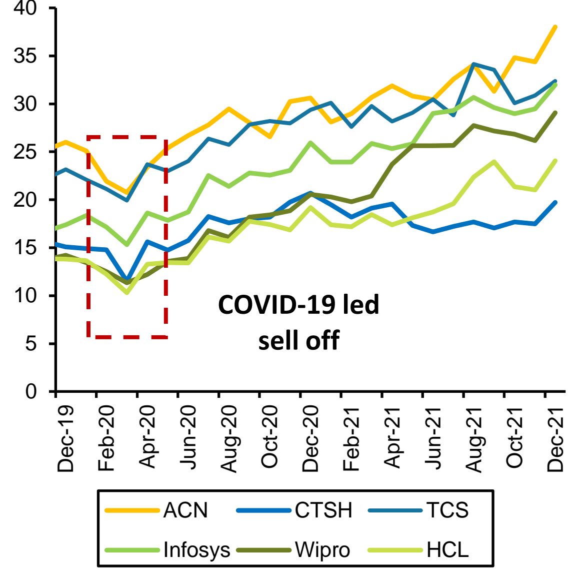
Multiples contraction was sharper than the market: Into the previous recession, all IT Services players were trading at a significant PE premium to the market (CTSH at ~40x, Indian IT Services ~25-30x, and ACN ~19x vs. ~15x market). Interestingly, nearly all IT Services players contracted to near the depressed market multiple (5-15x) toward the end of CY09; however, multiples of IT services firms bounced back to a significant premium to the market by the end of 2010. In 2008, multiples began contracting ~3-6 months prior to GDP growth slowing significantly, which was then followed by a slowdown in IT Services company growth after ~3-6 months (see Exhibit 10)

EXHIBIT 10: **Recovery in PE multiples post GFC (%)**



Source: Bloomberg, company reports, and Bernstein analysis

EXHIBIT 11: **Recovery in PE multiples post Covid-19**



Source: Bloomberg, company reports, and Bernstein analysis

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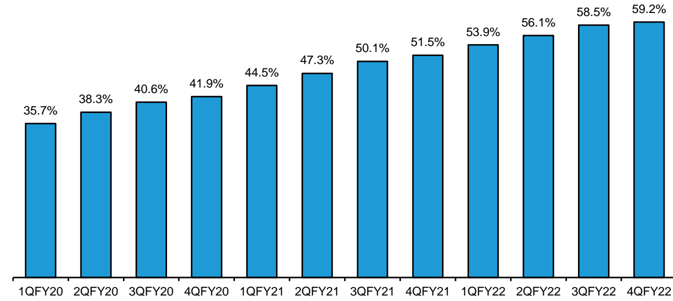
STRONGER BUSINESS MODEL FOR INFOSYS

Digital mix continues to expand: Infosys's digital mix has expanded to 59.2% (see Exhibit 12) of revenues in Q4FY22, up from ~35.7% in Q1FY20. In Q4FY22 digital revenues grew 39% YoY CC (see Exhibit 13). The company continues to see opportunities with demand accelerating in cloud migration and large digital transformation projects. All recent net new deals have 50%+ digital mix. Legacy growth is also stabilizing with moderate 1% growth vs. 10-12% decline in growth during 1QFY21-3QFY21 (see Exhibit 14).

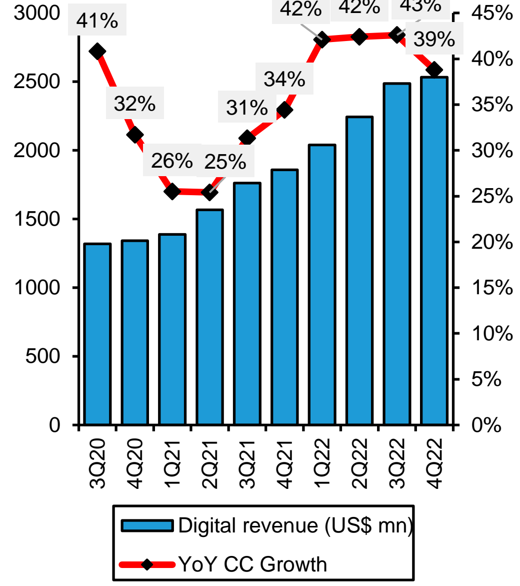
Infosys has a strong cloud practice (part of digital). The company launched Infosys Cobalt, a set of services, solutions, and platforms to accelerate enterprise cloud adoption across IaaS, PaaS, and SaaS in public, private, and hybrid clouds. It has over 15k cloud assets and 200+ industry solutions. Key deals in cloud for Infosys were Daimler, Vanguard, Kraft Heinz, and Siemens Gamesa.

EXHIBIT 12: **Infosys: Digital as percentage of total revenues**



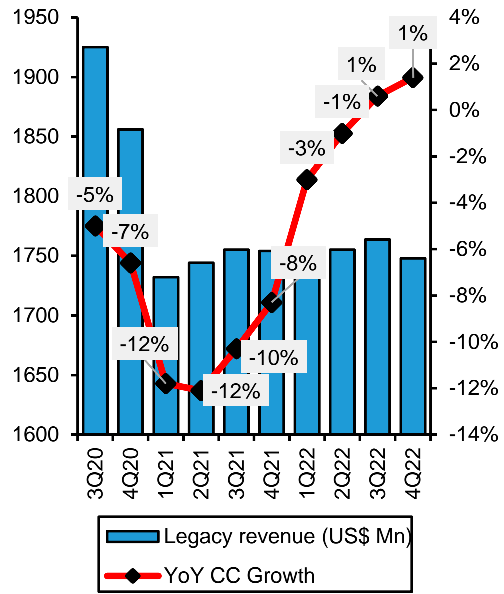
Source: Company reports and Bernstein analysis

EXHIBIT 13: **Infosys digital revenues**



Source: Company reports and Bernstein analysis

EXHIBIT 14: **Infosys core (legacy) revenues**



Source: Company reports and Bernstein analysis

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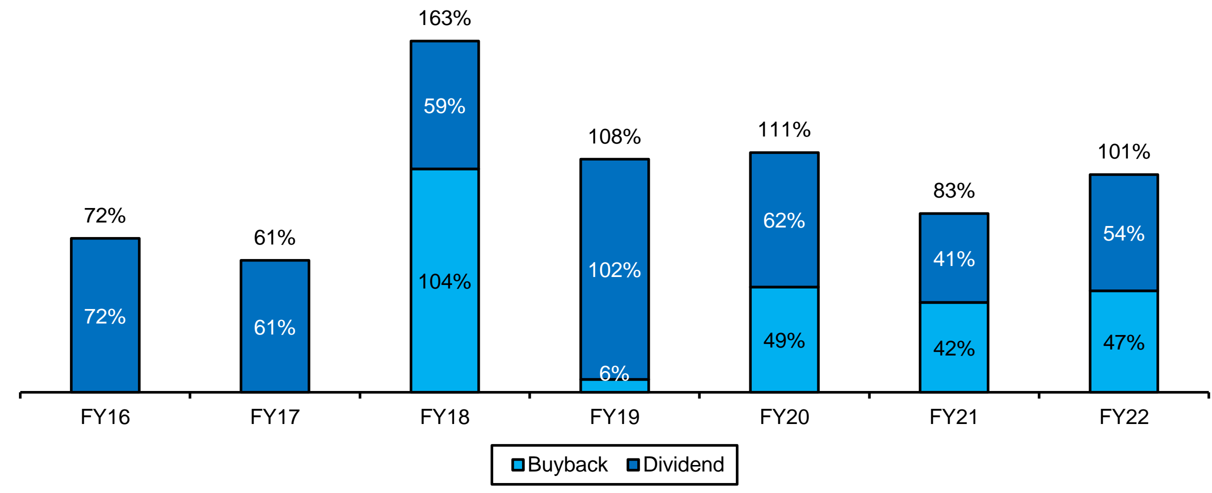
HIGH FCF/STRONG PAYOUT RATIO – INFOSYS

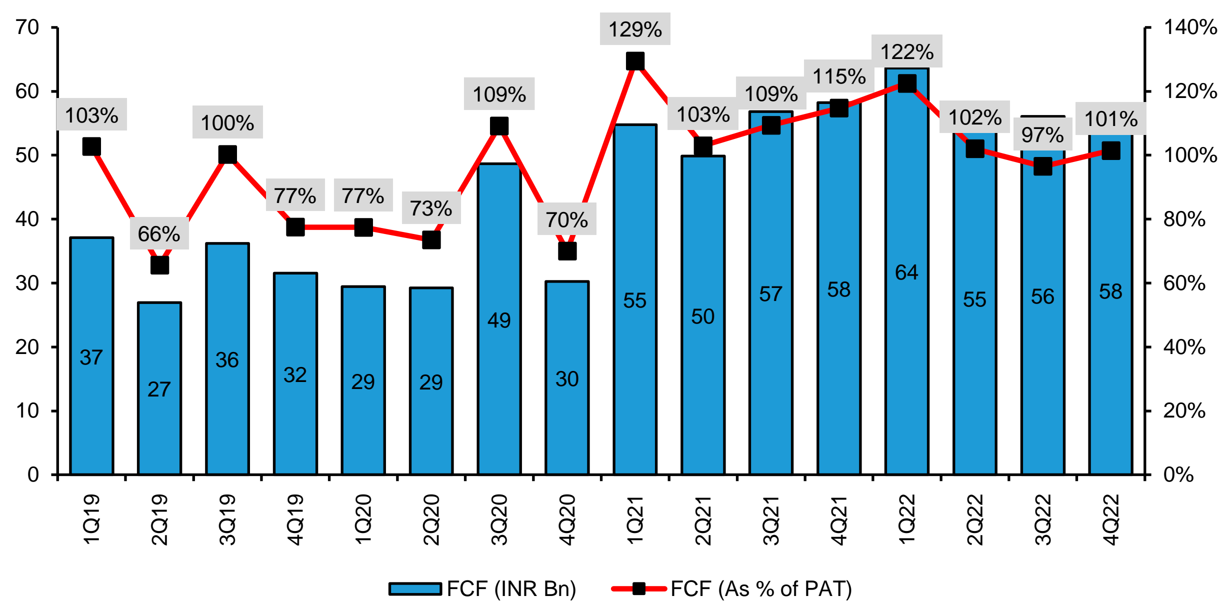
Stocks with high FCF yields are attractive as defensive plays. Infosys has a strong conversion of PAT to FCF (~100%), and also has a track record of strong payout to investors with a healthy mix of dividends and buybacks (see Exhibit 15). Indian IT Services have strong payout ratios. Infosys has committed 85% of FCF as payout over a period of five years. Other IT companies too have a strong payout ratio — TCS pays out ~80-100% of FCF; HCL pays out 75% of FCF in a five-year-block period. The high payout ratio provides stock yield protection.

EXHIBIT 15: **Cash payout to shareholders to FCF (%)**



Source: Company reports and Bernstein analysis

EXHIBIT 16: **FCF (INR Bn) and FCF (%) to PAT**



Source: Company reports and Bernstein analysis

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LEADING ESG PRACTICES

Infosys is a leader in ESG practices. The company became carbon neutral in FY20 and won the UN climate action award. On social, the company has strong diversity; 38% of employees are women (see Exhibit 17). The company was the third best-regarded company in corporate governance in the Forbes annual list in 2020.

EXHIBIT 17: **Infosys ESG practices**

		Achievements	Ambitions 2030
Enviroment	Climate Change	Carbon neutral for FY 2020, 30 years ahead of the timeline set by the Paris agreement Won UN Climate Action Award	Maintain carbon neutrality across scope 1,2 and 3 emissions every year Reduce absolute Scope 1 and 2 emissions by 75% Reduce absolute Scope 3 emissions by 30%
	Water	Reduced per capita water consumption by 64% between 2008 and 2020 100% water recycling	Maintain 100% water recycling every year
	Waste	17 biogas and composting plants with a treatment capacity of 6.2 Mn kg per annum established within India campuses. Automation has been implemented in biogas plants. Single use plastic at campuses reduced by 91% since 2018	Ensuring zero waste to landfill
Social	Digital talent	3600+ learning courses available to employees 700,000+ engineering students enrolled to Infosys's dedicated learning platform	Entending digital skills to 10Mn+ people by 2025
	Tech solutions	$ 69 Mn invested via Infosys Innovation Fund in early -stage start up companies and VC funds to drive innovation in Technology Awards worth $1.1 Mn to recignize innovations in the social sector	Empowering 80 Mn+ lives via tech for good programs in e-governance, healthcare and education
	Diversity and Inclusion	38% of employees are women 144 nationalities represented in workforce 22% of non-executive independent board are women 379 employees with disability	Creating a gender diverse workforce with 45% women
Governance	Corporate governance	3rd best regarded company in the Forbes annual list in 2020 Rated 'AA' on the MSCI ESG Ratings index Listed as an index component of the DSCI World and DJSI emerging markets indices Confirmed as an FTSE4Good Index Series Constituent Sustainable Business Unit launched	Making boards more empowered, diverse and inclusive and ensuring compliance and integrity practices Building sustainable and responsible supply chains
	Data Privacy	Personal Information Management System ISO 27701 certified and one of the key players in shaping standards of ISO 27701	Adopting leading data privacy standards across all global operations
	Information management	Team of 4,500+ cybersecurity experts and 7 Cyber Defense Centers	Being recognized as industry leader in information security practices

Source: Company reports and Bernstein analysis

STOCK PRICE AND VALUATION

Infosys was one of the best performers in the IT index in 2021, driven by growth leadership, margin expansion, and robust deal momentum. In 2021, the stock outperformed the BSE Sensex index and returned 53% (see Exhibit 18). Infosys share gain momentum remains ahead of peers and growth momentum is expected to sustain.

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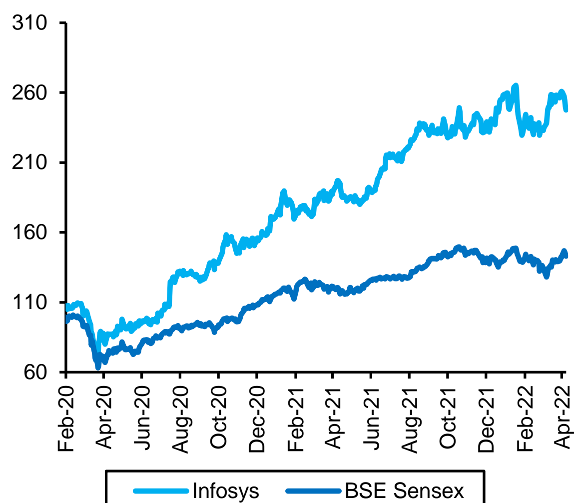
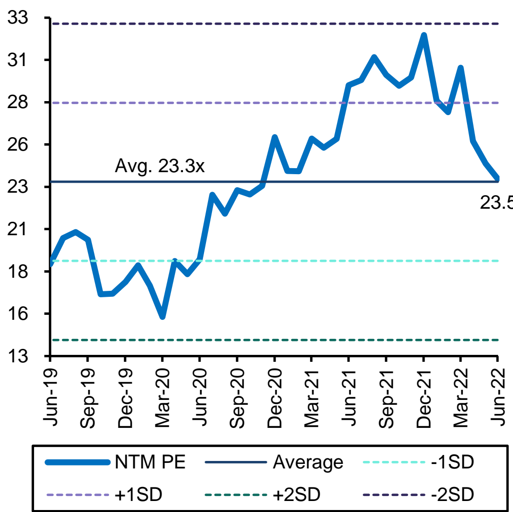
EXHIBIT 18: **Stock performance vs. BSE Sensex**



Source: Bloomberg and Bernstein analysis

EXHIBIT 19: **Infosys one-year forward PE**



Source: Bloomberg and Bernstein analysis

VALUATION METHODOLOGY

India technology, media, and internet

The India technology services business has multiple coverage companies with different characteristics — large-sized players with a complete portfolio and mid-sized players with focus on certain segments such as engineering services. We also include media and internet companies in this sector. To arrive at our price targets, we use a combination of discounted cash flow and PE multiples and benchmark PE to historical averages.

Infosys Ltd

We value Infosys on a NTM PE basis with a PE multiple of 29x on FY24 EPS. We rate Infosys (ticker: INFO.IN and INFY) Outperform with target prices INR1,880 (closing price: INR1,619) and US$23.70 (closing price US$20.27), respectively. They are benchmarked against the MXAPJ (closing price: 524.70) and SPX (closing price: 4,140.06), respectively. Closing prices as of August 8, 2022.

RISKS

India technology, media, and internet

The downside risks to the India Technology Services sector include any macroeconomic downturn that could impact the demand environment. Currency headwinds from rupee appreciation could impact margins. Immigration related issues or protectionist measures in the US or Europe could significantly increase operational complexities.

Infosys Ltd

Downside: Softer growth in digital revenues.

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VALUATION METHODOLOGY

Please see individual chapters for valuation methodology.

RISKS

See individual chapters for risks.

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- Outperform: Stock will outpace the market index by more than 15 pp
- Market-Perform: Stock will perform in line with the market index to within +/-15 pp
- Underperform: Stock will trail the performance of the market index by more than 15 pp

Not Rated: The stock Rating, Target Price and/or estimates (if any) have been suspended temporarily.

Autonomous brand

The Autonomous brand rates stocks as indicated below. As our benchmarks we use the SX7P and SXFP index for European banks, the SXIP for European insurers, the S&P 500 and S&P Financials for US banks coverage, S5LIFE for US Insurance, the SPSIINS for US Non-Life Insurers coverage, and IBOV for Brazil and H-FIN index for China banks and insurers. Ratings are stated relative to the sector (not the market).

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Underperform	SELL	122	15.60%	0	0.00%
Not Rated (Bernstein Brand) Coverage Suspended (Autonomous Brand)	NOT RATED	3	0.38%	0	0.00%

* These figures represent the number and percentage of companies in each category to whom Bernstein and Autonomous provided investment banking services.

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Nikhil Nigania maintains a long position in Reliance Industries.

Nithya Balasubramanian and her spouse maintain long positions in Cipla Ltd. and Lupin Ltd. Ms. Balasubramanian was employed by Cipla from September 2013 through August 2019.

Gautam Chhugani maintains long positions in various crypto currencies.

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Neil Beveridge maintains a long position in Ping An Insurance Group Co of China Ltd (601318.CH).

Nicholas J. Green maintains a long position in Mastercard Inc (MA).

Clementine Flinois maintains a long position in Hermes International (RMS.FP).

Eunice Lee maintains a long position in Galaxy Entertainment Group Ltd and Mastercard Inc (27.HK and MA).

Nikhil Nigania maintains a long position in Infosys Ltd and Kotak Mahindra Bank Ltd (INFO.IN, INFY and KMB.IN).

Richard J. Clarke maintains a long position in Mercedes-Benz Group AG, Nestle SA and SSE PLC (MBG.GR, NESN.SW and SSE.LN).

Callum Elliott maintains a long position in Mastercard Inc (MA).

Melinda Hu maintains a long position in Visa Inc (V).

Ran Yang maintains a long position in Visa Inc (V).

Yuhang Zhang maintains a long position in Li Auto Inc (LI and 2015.HK).

Harry Hall maintains a long position in Mercedes-Benz Group AG and Wizz Air Holdings Plc (MBG.GR and WIZZ.LN).

Nadine Sarwat maintains a long position in International Consolidated Airlines Group SA and Visa Inc (IAG.LN and V).

Trevor Stirling maintains a long position in Nestle SA (NESN.SW).

Luca Solca maintains a long position in Nestle SA (NESN.SW).

Maria Meita maintains a long position in Wizz Air Holdings Plc (WIZZ.LN).

Renny Shao maintains a long position in ZTO Express Cayman Inc (ZTO).

Vitaly Umansky maintains a long position in Altria Group Inc (MO).

Kevin Kwek maintains a long position in Mastercard Inc (MA).

Nithya Balasubramanian maintains a long position in Axis Bank Ltd, HDFC Bank Ltd, ICICI Bank Ltd and Kotak Mahindra Bank Ltd (AXSB.IN, HDFCB.IN, ICICIBC.IN and KMB.IN).

Lee Hambright maintains a long position in Mastercard Inc and Visa Inc (MA and V).

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