



CROCI Outlook: The pendulum's swing back to value?

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After more than a decade of travel, markets are potentially close to the end of their journey towards normalisation. That term is potentially ambiguous, but we understand it to mean returning to a global economy with normal rates combined with positive real GDP growth. Having been late to the party in tackling high inflation, central banks cannot afford to fall from the tightrope between economic growth and inflation today if they want to retain credibility. The extreme consensual market view at the end of 2023 about the likelihood of rate cuts¹ has weakened somewhat as inflation seems not quite as tamed as earlier indications suggested.

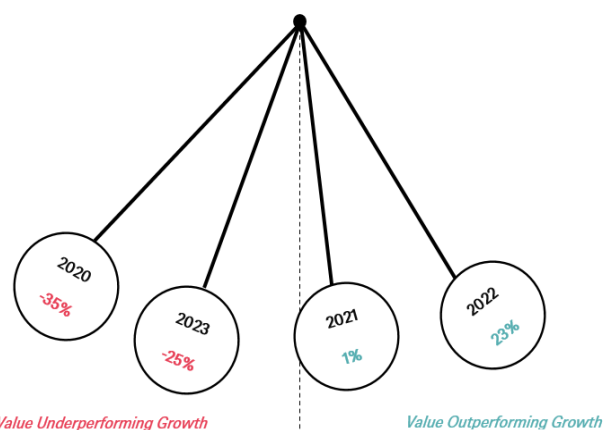
Equity valuations are actually a little higher than where they were before the pandemic when liquidity was superabundant. High levels of liquidity provide cheap capital for investment, which naturally increases risk appetite and reduces the cost of capital. But the latter is still close to 4.5% (real), materially below its long-term level of between 5.2% and 5.4%. Without the support of central bank liquidity, remaining at current lows seems anomalous given the strong mean reversion tendency historically. Such a move could of course happen either through sharp price declines or through a few years of low single-digit expected returns.

The good news for value investors is that CROCI strategies have always exhibited good downside capture meaning that they would be well positioned if such a mean reversion were to take place unexpectedly—similar to their behaviour in 2022. They have also been able to outperform in rising markets, typically helped by their exposure to quality as well as value.

2023's performance (and the start of 2024) was driven by a swing back of the pendulum to growth from 2022's value factor leadership. The swings that have happened in the past four years have been of an order unseen since the aftermath of the financial crisis. This rapid pendulum swing in style factors is often associated with the death throes of an old

market paradigm, as the market's typically short collective memory is reluctant to give up on a factor that has provided a decade or more of outperformance. Ultimately, however, positive real interest rates and moderate inflation should focus attention on current earnings rather than pricing in distant and less certain growth in earnings. In the context of the past century, the growth-led post-crisis decade has been something of an anomaly.

Our bubble analysis shows that, despite the explosive performance of the Magnificent 7 stocks last year (who now have a weight of around a fifth of MSCI World and nearly 30% of the S&P 500), there is not a particularly notable bubble in the markets compared to the past few years with under 30% of companies globally in bubble territory, close to the long-term median level. Instead, there is a much large standard deviation in global equity valuation, with the most expensive quartile much higher than before the financial crisis and the cheapest quartile nearly unchanged.



Source: DWS, MSCI. Performance reflects excess gross return of MSCI World Value Index over MSCI World Growth Index. Data as available on 31 December 2023.

¹ FT-Booth survey of 40 economists from December 1-4, 2023 where 85% of economists projected rate cut of at least 25bps

Important Information

This paper is intended for Professional Investors only, who understand the strategies and views introduced in this paper and can form an independent view of them. CROCI represents one of many possible ways to analyse and value stocks. Potential investors must form their own view of the CROCI methodology and evaluate whether CROCI and investments associated with CROCI are appropriate for them.

Please see Glossary A for a brief introduction to CROCI and for definitions of key terms used throughout this piece and for risk considerations. Please see Glossary B for the definition of Real Value.

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Simulated returns have many inherent limitations. No representation is made that actual returns will be similar to those shown. There are frequently significant material differences between simulated and actual returns. Simulated returns are developed with the benefit of hindsight and often do not take into account actual financial, economic, transaction or market risk. Simulated returns are therefore not necessarily a reliable guide to actual returns.

In the data and charts presented throughout this document, "E" refers to financial years that are not yet reported. Forecasts of accounting data for these years are based on market's consensus estimates as reported by Bloomberg Finance L.P. CROCI metrics for the forecast years are calculated by applying the CROCI model to these consensus estimates. The CROCI team does not make any forecasts or projections of accounting data. Data for historical years are derived from company reports and other publicly available sources.

This document contains forward looking statements. Forward looking statements include, but are not limited to assumptions, estimates, projections, opinions, models and hypothetical performance analysis. The forward looking statements expressed constitute the author's judgment as of the date of this material. Forward looking statements involve significant elements of subjective judgments and analyses and changes thereto and/or consideration of different or additional factors could have a material impact on the results indicated. Therefore, actual results may vary, perhaps materially, from the results contained herein. No representation or warranty is made by DWS as to the reasonableness or completeness of such forward looking statements or to any other financial information contained herein.

PAST PERFORMANCE DOES NOT PREDICT FUTURE RETURNS.

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13 February 2024

Summary View

Navigating the key topics across this paper

1.1 The top-down versus the bottom-up

During the volatile years since the start of the pandemic, the discount rate has been the primary driver of equity markets. Since 2012, its trend level has been on the decline thanks to the ultra-loose interest rate policies that have been in place along with quantitative easing. But the cost of capital hit its lowest level in our available history after the pandemic started to subside in 2021.

The arrival of inflation prompted the reversal of the high liquidity status quo after more than a decade, which should eventually lead to this reversal of ultra-loose monetary policy. On our numbers, the current cost of capital is 4.5% in real terms, suggesting that this process of mean reversion has not yet started; a rise to 5.0% could lead to a fall in the market cap of nearly 30% if the decline took place all at once. But there could equally be subdued returns for a few years instead.

Our analysis suggests that revenues kept up with inflation in 2023 and are forecast to do so in 2024. But earnings lagged inflation somewhat in 2023. They are forecast to beat inflation in 2024 but forecasts still have room to come down over the course of the year as they have in the past. Productivity of assets fell in the higher inflation environment of 2022 and 2023 but is expected to stabilise in 2024 – except in the physical-only asset companies.

Carbon intensive sectors are unable to absorb the costs of high carbon prices needed for a transition to a more sustainable economy. The necessity of passing these costs to the consumer means that inflation will struggle to go below the 2% mark.

1.2 Evolving capital intensity & economic life

There has been a structural change in capital intensity and economic life for our global coverage universe, driven by an increased reliance on intangible assets as the global economy continues its shift towards innovation.

2.1 Energy Sector

For the third consecutive year, we devote a separate chapter to the Energy sector in our Outlook report, primarily because it remains amongst the cheapest sectors

2.2 Magnificent Seven

We discuss in this section whether ultra-large cap names are overvalued or not, as well as whether there is any economic value within the wider technology sector.

2.3 Global Banks

We look at the problems inflation has caused for banks' profitability, as well as noting that European banks look the most attractive by region.

3.1 Inflation and Equities

CROCI's inclusion of inflation in its returns analysis allows better understanding of the impact of inflation on equity valuation.

3.2 Japan

Measures taken by the Tokyo stock exchange to enhance returns have not flowed through yet. The cheapest decile still looks very attractive, and is at a substantial discount to the broader market with a substantially higher profitability than the rest of Japan.

3.3 Value through the CROCI prism

We make three important points: 1) there is often a lag between economic characteristics changing and the market changing its factor focus; 2) operational characteristics are attractive for CROCI strategies and the dispersion of value is supportive; 3) high inflation has historically been supportive for CROCI strategies

3.4 The Case for Dividends

Dividends continue to account for a significant portion of total equity returns. A successful dividend strategy requires considering economic earnings as well as eliminating risks to minimise the chance of dividend cuts.

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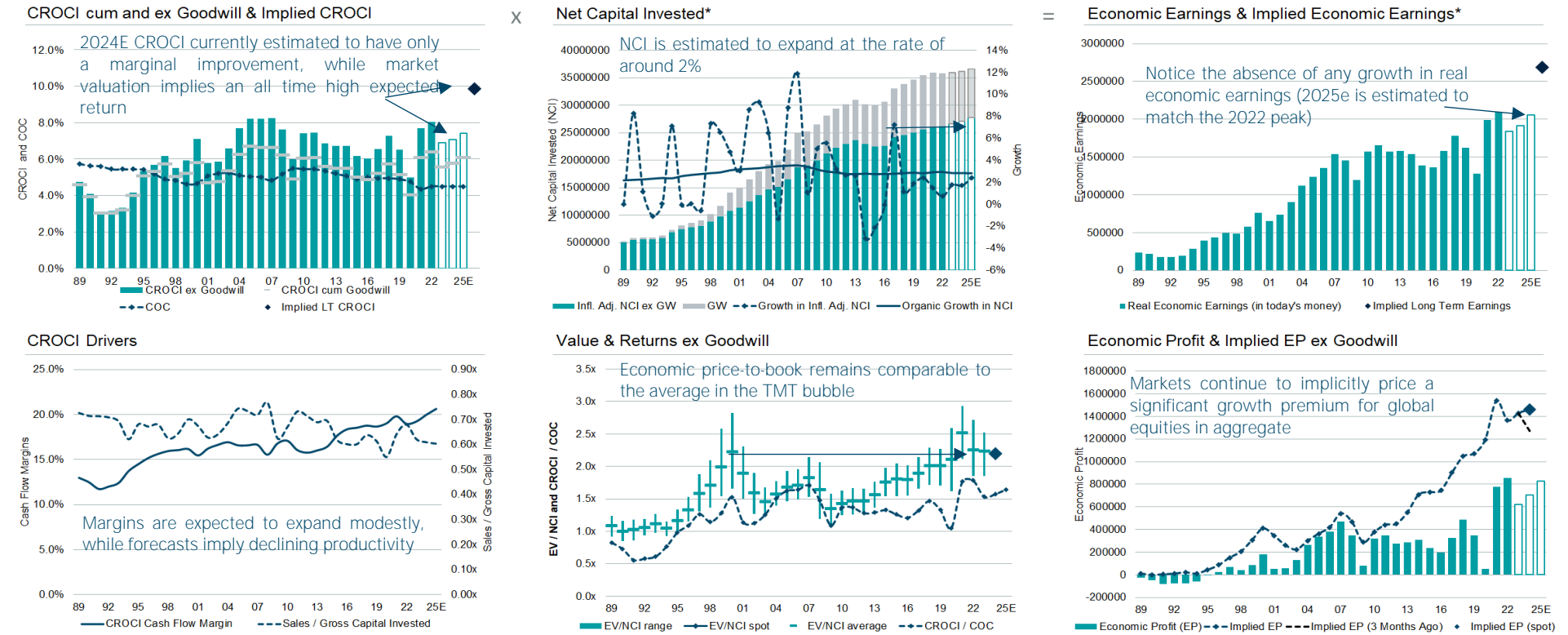
Figure 1: Global Equities P&L and Valuation

	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Economic P / E (x)	29.2	29.6	28.9	27.6	30.8	42.3	32.7	28.1	32.3	31.0	27.6
Accounting P / E (x)	19.3	18.9	18.4	17.5	19.2	24.7	20.1	16.8	19.0	18.5	16.8
Yield (%)	2.6	2.6	2.6	2.5	2.3	2.1	2.0	2.2	2.0	2.0	2.1
P / BV (x)	2.7	2.6	2.7	2.9	2.9	3.1	3.7	3.3	3.3	3.1	2.8
EV / Sales (%)	166.9	169.1	179.3	179.9	191.6	223.6	231.1	196.4	211.5	211.8	198.5
EV / Adj. EBDIT (x)	9.9	9.7	10.1	10.1	10.5	12.3	11.6	10.1	11.0	10.6	9.6
EV / Adj. EBIT (x)	15.1	14.9	14.9	14.7	16.2	20.2	16.9	14.3	15.8	15.1	13.5
EV / Free Cash Flow (x)	30.1	26.3	27.2	27.0	27.9	28.0	29.1	28.7	25.9	22.9	20.1
EV / Capital Employed (x)	1.8	1.7	1.8	1.9	1.8	1.9	2.3	2.1	2.2	2.2	2.1
Avg. Market Cap. (bn)	26,805	26,612	30,742	33,540	34,560	38,449	49,444	45,290	48,310	51,227	51,229
Enterprise Value (bn)	31,662	31,866	36,587	39,971	42,466	46,605	57,344	53,163	56,216	58,170	56,650
Key Ratios	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Revenue Growth	-10.8	-0.7	8.3	8.9	-0.2	-5.9	19.0	9.1	-1.8	3.3	3.9
Revenue Growth (Median, local ccy)	1.9	1.7	6.5	5.3	2.1	-2.7	13.1	11.3	2.3	3.6	4.4
Adj. Net Profit Pre-Min. Growth	-8.8	2.0	18.5	14.3	-5.9	-13.5	57.7	8.8	-5.4	9.1	9.8
Adj. EBDIT Mgn	16.8	17.4	17.8	17.7	18.3	18.2	20.0	19.4	19.3	20.0	20.6
Adj. EBIT Mgn	11.1	11.4	12.1	12.2	11.8	11.0	13.7	13.8	13.4	14.0	14.7
Adj. Net Prof. Pre-Min. Mgn	7.6	7.8	8.5	8.9	8.4	7.8	10.3	10.2	9.9	10.4	11.0
Tax Rate	35%	31%	30%	28%	28%	32%	26%	27%	26%	24%	24%
Depreciation / Sales	6.9	6.5	6.1	5.8	7.0	8.2	6.5	5.9	6.0	6.0	6.0
Capex / Sales	8.5	8.0	7.8	7.7	8.7	9.0	8.4	8.2	8.4	8.2	8.1
Free Cash-Flow / Sales (Post-Tax)	5.5	6.4	6.6	6.7	6.9	8.0	7.9	6.9	8.2	9.2	9.9
Dividends / Sales	4.2	3.9	4.0	4.3	4.3	4.0	4.2	3.9	4.0	3.6	3.6
Interest Cover (x)	10.2	9.6	10.5	10.9	8.7	7.3	11.0	12.3	10.8	11.9	13.7
Net Debt (-) Cash (+) / Equity	-44.8	-46.1	-44.6	-48.7	-59.4	-58.8	-53.7	-54.3	-49.8	-36.8	-24.3
Return on Stated Equity	12.2	12.5	13.6	14.2	13.1	9.7	17.2	17.4	16.0	16.7	16.5
Return on Cap. Employed (Post-Tax)	8.5	8.5	9.2	9.9	9.1	7.6	10.8	11.5	10.7	11.3	12.0
P&L (USD bn)	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Turnover	18,975	18,843	20,407	22,215	22,160	20,843	24,813	27,073	26,584	27,470	28,540
Adjusted EBDIT	3,193	3,272	3,635	3,943	4,060	3,800	4,952	5,242	5,127	5,498	5,893
Depreciation	1,302	1,230	1,243	1,288	1,550	1,706	1,614	1,591	1,596	1,644	1,712
Net Interest Result	-206	-223	-235	-249	-301	-316	-310	-303	-329	-324	-304
Pre-Tax Profit	1,476	1,643	1,962	2,141	1,935	1,395	2,848	3,053	2,965	3,404	3,768
Income Tax	513	515	594	595	546	447	729	819	766	827	895
Adj. Net Profit Pre-Min.	1,438	1,467	1,738	1,986	1,869	1,617	2,550	2,774	2,625	2,865	3,146
Cash Flow (USD bn)	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
EBIT before stock options	1,934	2,092	2,458	2,729	2,575	2,173	3,456	3,800	3,701	4,079	4,425
Depreciation	1,302	1,230	1,243	1,288	1,550	1,706	1,614	1,591	1,596	1,644	1,712
NWC and Provisions	-3	-32	-269	-243	-125	58	-279	-539	-83	4	-20
...Operating Cash Flow	3,233	3,290	3,432	3,775	3,999	3,937	4,790	4,852	5,214	5,727	6,117
Proceeds from Share Issues	-202	-100	-115	-355	-306	-140	-508	-711	-538	52	0
Dividends Paid	-792	-743	-808	-956	-948	-841	-1,049	-1,060	-1,068	-1,002	-1,029
Capex	-1,620	-1,515	-1,586	-1,712	-1,929	-1,868	-2,075	-2,219	-2,225	-2,256	-2,300
Net Other Investments	-494	-578	-481	-595	-1,529	-512	-386	-313	-108	-110	3
Change in Net Debt (-) Cash (+)	-405	-283	-435	-560	-1,508	-225	88	-265	267	1,344	1,648
Balance Sheet (USD bn)	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Net Working Capital	445	368	447	450	412	126	187	412	370	331	321
Net Financial Debt (-) Cash (+)	-4,670	-4,995	-5,430	-6,034	-7,545	-7,786	-7,698	-7,963	-7,696	-6,351	-4,703
Gross Tangible Fixed Assets	19,510	20,089	21,753	22,109	24,613	26,027	26,281	26,388	27,438	28,459	29,591
Net Tangible Fixed Assets	9,366	9,551	10,237	10,387	11,710	12,142	12,280	12,468	13,089	13,642	14,218
Other LT Assets	1,451	1,499	1,675	1,767	1,858	2,046	2,240	2,320	2,398	2,418	2,451
Stated Shareholder's Equity	9,883	10,235	11,504	11,706	11,979	12,458	13,551	13,855	14,663	16,469	18,560
Minorities	549	596	685	693	720	776	792	805	804	807	815

Source: Company reports, Bloomberg Finance L.P., DWS and CROCI. The table shows aggregate data of companies in CROCI's global coverage. Data in USD as on 03 January 2024. "E" after a year indicates that the numbers are based on consensus forecasts. Forecasts are based on assumptions, estimates, views and or analyses, which might prove inaccurate or incorrect."

- A. Valuation parameters for global equities in aggregate looking stretched for 2024e compared to history
- B. 2024e revenue growth is expected to pick-up both at aggregate and median levels, based on consensus
- C. 2024e free cash flow-to-sales at its highest level since 2015; 2025e ratio is expected to expand further based on current consensus numbers
- D. At the aggregate level, corporate balance sheets are not especially leveraged. Despite higher interest rates, interest coverage ratio appears favorable
- E. Operating cash flows are expected to touch new highs, while capex and dividends are expected to be consistent with 2023e

Figure 2: Global Equities CROCI



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Enterprise Value (USD bn)	17902	20253	24981	23300	20559	23323	25519	26625	29608	32591	33487	33743	38646	42162	43718	47873	58734	54560	57676	59694	58248
Market Cap (USD bn)	14508	16698	20788	17860	15070	17914	19617	20327	23407	26189	26805	26612	30742	33540	34560	38449	49444	45290	48310	51227	51229
EV/NCI Ex. GW	1.68x	1.71x	1.82x	1.63x	1.34x	1.42x	1.47x	1.46x	1.56x	1.75x	1.80x	1.79x	1.89x	2.00x	2.00x	2.11x	2.51x	2.25x	2.23x	2.19x	2.04x
Economic PE	20.4x	20.8x	22.1x	21.4x	22.4x	19.2x	19.7x	21.4x	23.3x	26.0x	29.2x	29.6x	28.9x	27.6x	30.8x	42.3x	32.7x	28.1x	32.3x	31.0x	27.6x
Accounting PE	15.1x	15.4x	16.5x	15.6x	15.7x	13.2x	13.1x	13.8x	15.7x	17.2x	19.3x	18.9x	18.4x	17.5x	19.2x	24.7x	20.1x	16.8x	19.0x	18.5x	16.8x
Cost of Capital	5.05%	5.00%	4.82%	5.18%	5.48%	5.45%	5.45%	5.35%	5.20%	5.07%	4.90%	5.00%	4.95%	4.95%	4.90%	4.75%	4.35%	4.50%	4.50%	4.50%	4.50%
CROCI Ex. GW	8.2%	8.2%	8.2%	7.6%	6.0%	7.4%	7.4%	6.8%	6.7%	6.7%	6.2%	6.0%	6.5%	7.3%	6.5%	5.0%	7.7%	8.0%	6.9%	7.1%	7.4%
Implied CROCI	8.5%	8.5%	8.8%	8.5%	7.4%	7.7%	8.0%	7.8%	8.1%	8.9%	8.8%	8.9%	9.4%	9.9%	9.8%	10.0%	10.9%	10.1%	10.0%	9.9%	9.2%
Implied Economic Earnings/ Economic Earnings	103%	104%	107%	111%	123%	105%	107%	114%	121%	132%	143%	148%	143%	136%	151%	201%	142%	126%	145%	139%	124%

Source: Company reports, Bloomberg Finance L.P., DWS and CROCI. The table shows aggregate data of companies in CROCI's global coverage. Data in USD as on 03 January 2024. Forecasts are based on assumptions, estimates, views and or analyses, which might prove inaccurate or incorrect. "E" after a year indicates that the numbers are based on consensus forecasts. *Displayed in today's money.

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Section 1:

A Bottom-Up View of Global Equities

1.1 The top-down versus the bottom-up

2023 – Defying gravity

“Interest rates act on financial valuations the way gravity acts on matter: The higher the rate, the greater the downward pull.” – Warren Buffet, Fortune Magazine, 1999.

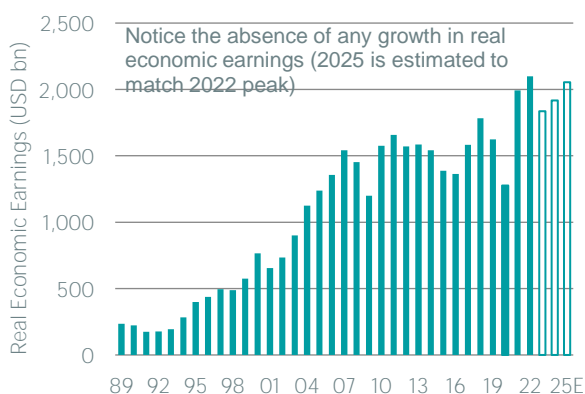
At least on the face of it, the interplay between rates and global equity valuations in 2023 appeared to challenge conventional wisdom. With most major central banks in tightening mode, global risk-free rates continued to climb. And yet global equities continued to scale new highs.

At the start of 2023, the consensus view² on the economy was that it was heading into a recession, with the only questions being when and how deep it would be. Perhaps the performance of equities in 2023 could be attributed to relief that the global economy has not yet fallen into recession. However, the central questions now facing equity investors are: 1) where inflation will end up in 2024 and 2) what will happen to economic growth in 2024. As regular readers of the CROCI Outlook will know, we don’t make macro forecasts and instead provide a complementary bottom-up picture based on 1) the evolving trends of the aggregate numbers of nearly 900 companies covered by CROCI and 2) what the market is actually pricing in for global equities.

Review of CROCI’s bottom-up numbers

2023e economic PE expanded from 28.2x (in the 2023 outlook) to 32.3x over the course of the year, a rise of about 15%. This took place while aggregate YoY real economic earnings declined by about 13%. Over the same period, 2024e economic PE rose by c.20% to 31.0x, with real economic earnings estimates up nearly 5% compared to 2023e.

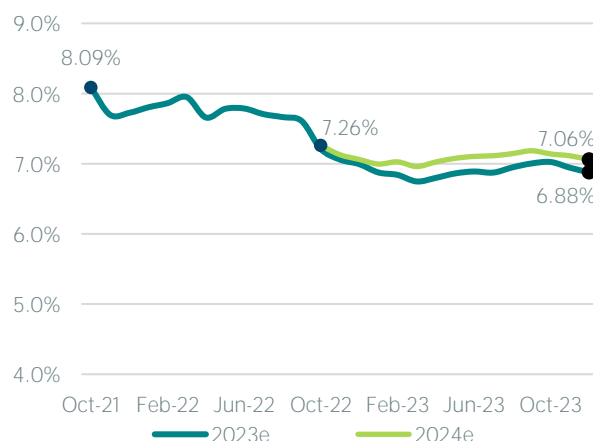
Figure 3: Real Economic Earnings (USD bn)



Source: DWS, CROCI. Aggregate data of companies in CROCI’s global coverage. Data as available on 03 January 2024. The real economic earnings in this exhibit are in today’s money.

One noticeable trend from Figure 3 is that the 2022 peak in aggregate real economic earnings is not expected to be matched for the next couple of years. While aggregate valuation may have its share of ups and downs, there is no real economic earnings growth currently expected in the medium term. Now when it comes to expectations, it is important to understand where the starting point is. For 2023e, the “expected” CROCI cash return (based on consensus estimates) started with 8.09%, around one percentage point higher than median annual CROCI between 2005-22. However, the heightened expectations (on the back of 2022 peak) eventually saw correction, to converge with the long term median of around 7%. The expectations for 2024e began at a more conservative level and have so far seen only modest revisions.

Figure 4: CROCI cash return estimates – convergence of expectations with reality



Source: DWS, CROCI. Aggregate data of companies in CROCI’s global coverage. Data as available on 03 January 2024.

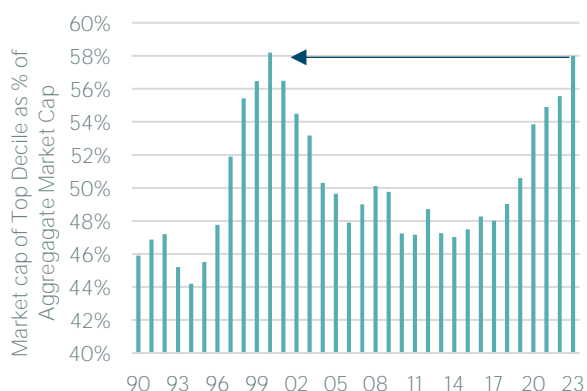
The strong outperformance of megcaps was one of the dominant equity phenomena in 2023—and this is clearly reflected in valuations. Compared to the 15% rise in aggregate valuation during 2023 which we covered above, the expansion in the 2023e median economic PE is more muted at 7.1% (29.3x). Part of the reason is the more benign decline in median earnings (median reading is -5% versus aggregate of -13%). But the numerator of the economic PE is also crucial (EV/NCI), especially the enterprise value component.

As Figure 5 shows, the share of the top decile (by market cap) of CROCI’s coverage universe is close to its three-decade peak (during the TMT bubble). While one cannot draw any solid conclusions based on one datapoint alone, section 2.2 provides some perspective on the topical **Magnificent Seven**.

² FT-IGM survey of 44 economists from December 2-5, 2022 where 85% of economists projected a recession in 2023

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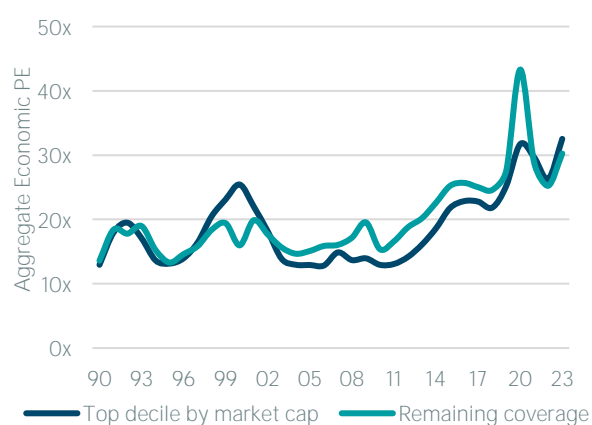
Figure 5: Megacap names punching above their weight



Source: DWS, CROCI. Aggregate data of companies in CROCI's global coverage. Data as available on 03 January 2024.

Figure 6 provides a perspective on the evolution of economic PE over time and also across the top decile by market cap and the overall CROCI coverage universe. Although no stark valuation divergence can be seen (the top decile of the biggest companies is more expensive by about a sixth), the overall valuation of the top decile is also at its highest levels since at least 1990.

Figure 6: Bipolarity in valuation not as stark

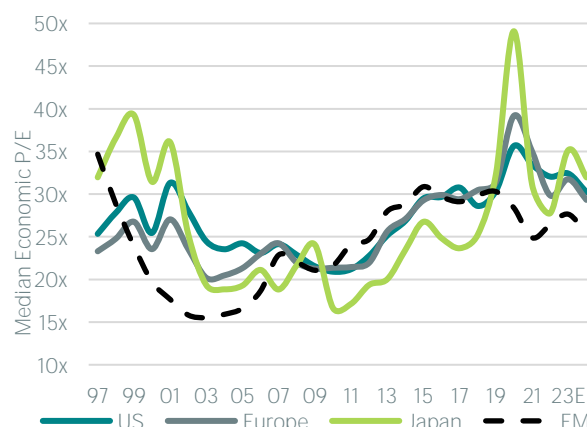


Source: DWS, CROCI. Aggregate data of companies in CROCI's global coverage. Data as available on 03 January 2024. The top decile is arrived at using the market cap of the entire CROCI non-financial coverage universe.

Bottom-up value investors should perhaps take more of an interest in median valuation than aggregate equity market valuation, given that as stock-pickers they are more likely to be investing in one or more businesses at attractive prices, rather than buying the entire market.

Figure 7 shows the median valuation by region, where Japan is of particular interest. Last year's CROCI Outlook highlighted Japan trading at a discount to the U.S., although more or less in line with Emerging Markets. Over 2023, Japan's economic PE has moved more or less into line with the U.S. and Europe, leaving very little difference between the median valuation of developed markets.

Figure 7: Median valuation across regions

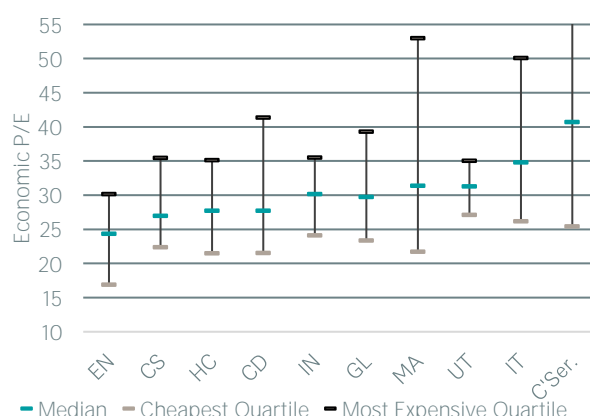


Source: DWS, CROCI. Median of companies in CROCI's global non-financial coverage. Data as available on 03 January 2024.

At the economic sector level (see Figure 8 Figure 9), Energy remains the cheapest sector on 2024e median economic PE, almost 20% below the global median. For the third year in a row, supportive oil prices have helped keep valuations attractive for the sector. We cover the evolving economic characteristics of the Energy sector in detail in section 2.1. By contrast, Communication Services appears the most expensive, more than a third higher than the global median economic PE, driven by a particularly expensive telecoms sector.

In last year's CROCI Outlook, the median valuation of the IT sector was at a discount to that of the broader coverage universe. That valuation discount has now disappeared and the sector trades at a premium of more than 10% to the broader market.

Figure 8: Median valuation across sectors



Source: DWS, CROCI. Median of companies in CROCI's global non-financial coverage. Data as available on 03 January 2024.

Continuing with the focus on the median trend, Figure 9 shows the median revenue growth across regions. While expectations for 2023 revenues saw some negative revisions over the past year, it may be important to note that median revenue growth is expected to pick up in 2024 based on current consensus forecasts.

This could be read in tandem with the top-down view from the IMF’s latest economic outlook³, which reads “*Global growth is projected at 3.1 per cent in 2024 and 3.2 per cent in 2025, with the 2024 forecast 0.2 percentage point higher than that in the October 2023 World Economic Outlook (WEO) on account of greater-than-expected resilience in the United States and several large emerging market and developing economies, as well as fiscal support in China.*”

Of course it is tricky to draw a relationship between revenue growth and overall economic growth in the short term, but it is noteworthy that estimated bottom-up revenue growth shows an acceleration in 2024e consistent with a more sanguine top-down economic growth forecast.

Figure 9: Real revenue growth by region (Median)

	2021	2022	2023E	2024E
US	9.4%	1.0%	-1.0%	1.4%
Europe	8.6%	9.7%	-3.0%	-0.5%
Japan	16.4%	16.2%	-1.5%	-0.1%
GEMs	7.6%	5.1%	-0.3%	2.4%
Global	9.5%	5.8%	-1.3%	0.9%

Source: DWS, CROCI. Median of companies in CROCI’s global non-financial coverage. Data as available on 03 January 2024.

The conversion of revenue growth into earnings growth remained poor during 2023e. However, 2024e consensus estimates expect all regions to post higher real earnings growth than revenue growth. This point has to be understood in the context of how expectations tend to translate into reality (refer to Figure 4).

Figure 10: Real earnings growth by region (Median)

	2021	2022	2023E	2024E
US	14.8%	-2.3%	-1.8%	4.4%
Europe	16.4%	6.8%	-4.3%	2.1%
Japan	41.4%	17.2%	-10.7%	4.0%
GEMs	5.2%	-0.1%	-3.0%	5.3%
Global	15.3%	0.9%	-3.4%	3.8%

Source: DWS and CROCI. The table shows median CROCI economic earnings growth forecasts of CROCI’s non-financial coverage. Data as available on 03 January 2024.

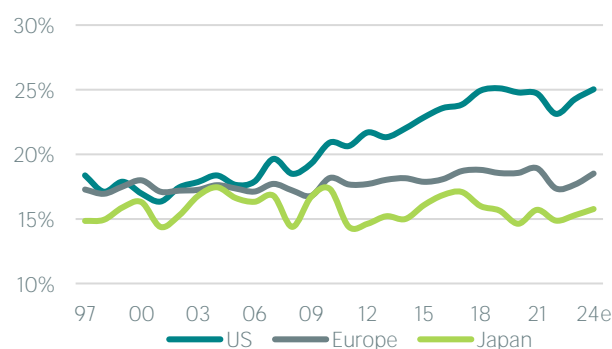
Between the start of 2022, the onset of the current inflationary period, and the end of 2023e, median real earnings growth lagged median revenue growth in the U.S., Europe and Japan. Even if inflation is apparently on the wane, it has already left its mark on the broader economic earnings of global equities.

Decomposition of economic earnings into its two key drivers

Economic earnings can be broken down into 1) CROCI cash flow margin (CROCI cash flow to sales) and 2) asset productivity (sales to gross capital invested).

Median CROCI cash flow margins (Figure 11) improved in the U.S., but remained stable in other regions over the years of low inflation since the financial crisis. Although rising inflation typically weighs on margins, this has not yet shown up in the numbers. Looking at the regional data, consensus currently expects modest margin expansion in 2024. So clearly margins are not the culprit for real earnings growth lagging behind revenue growth between 2021-23e.

Figure 11: Median CROCI cash flow margin



Source: DWS, CROCI. Median of companies in CROCI’s global non-financial coverage. Data as available on 08 December 2023.

Figure 12 shows the other major driver of economic earnings, median asset productivity, the ratio of sales to gross capital invested. This ratio has contracted across all regions. So even as the ability of companies to pass on higher operating costs (Figure 11) is perhaps more in focus, it is in fact asset productivity which has been responsible for the lag in the real earnings growth versus revenue growth between 2021-23e.

Figure 12: Sales to Gross Capital Invested for global equities



Source: DWS, CROCI. Median of companies in CROCI’s global non-financial coverage. Data as available on 08 December 2023.

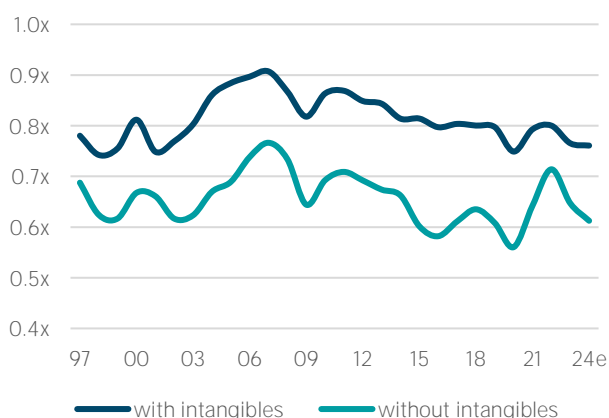
³ Dated January 2024

Past performance does not predict future returns. Forecasts are not a reliable indicator of future performance. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Market and index performance data is sourced from Bloomberg Finance L.P. Company data is from the CROCI database. Unless stated this data is as of December 2023. Forecasts are based on assumptions, estimates, views and or analyses, which might prove inaccurate or incorrect.

Intangibles – secret sauce to ensure resilient real earnings

Any unleveraged business that needs tangible assets to operate is naturally hurt by inflation as it increases its maintenance capex. Businesses needing little in the way of tangible assets are naturally hurt the least. The CROCI process is hard-wired to monitor the capital intensity of businesses, as well as capitalising expenses where associated benefits are expected to accrue over multiple years. As a result, we can make a distinction between companies which have intangibles as part of their overall capital employed versus the ones which do not.

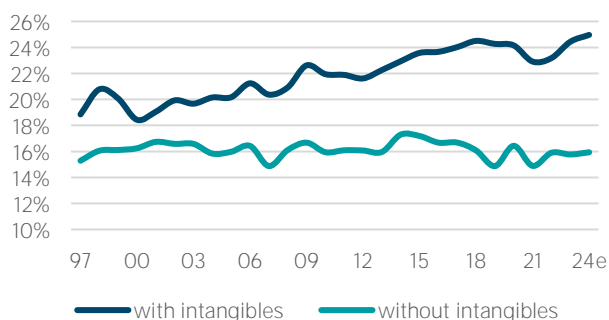
Figure 13: Median Sales to Gross Capital Invested for global equities



Source: DWS, CROCI. Median of companies in CROCI's global non-financial coverage. "Companies with/without intangibles" refers to those companies where the CROCI process capitalises investments in intangibles (such as R&D or brand building) because they are deemed to be economic assets. Data as available on 08 December 2023.

In Figure 13, we compare the productivity of companies with intangibles and those that do not. On average companies with intangibles have productivity that is almost 25 per cent higher than companies without intangibles. During the pandemic, companies with intangibles didn't suffer as much as other companies. Consistent with their higher productivity, companies with intangibles also have a better margin profile than companies with only physical assets (and in fact the spread has widened recently).

Figure 14: Median CROCI cash flow margin



Source: DWS, CROCI. Median of companies in CROCI's global non-financial coverage. "Companies with/without intangibles" refers to those companies where the CROCI process capitalises investments in intangibles (such as R&D or brand building) because they are deemed to be economic assets. Data as available on 08 December 2023.

A great deal of intangible capital is employed in such businesses, the result of investment in R&D or, in some cases, brands. Analysis based on accounting data tends not to see these as assets, but CROCI has recognised them since 1996.

Implied cost of capital – what is the market pricing in?

At the beginning of this section, we laid out two focus areas: 1) evolving trends of the bottom-up economic numbers of around 900 companies in CROCI's coverage and 2) what is actually priced in by global equity markets. We now look at this second topic, i.e. what does the current valuation of global equities tell us about market expectations?

Before we address this, we examine CROCI's cost of capital, a market-implied *ex ante* measure in line with the overall capital structure of global equities.

To get a sense of the long-term trend of the capital structure of global equities, Figure 15 shows global financial leverage, i.e. net financial liabilities (including those brought back onto the balance sheet by CROCI company analysis) as a percentage of market capitalisation over time. Given the sharp acceleration in market capitalisation, this ratio is close to its lowest levels since we started tracking it, currently standing at around 21%.

Figure 15: Capital structure evolution of the CROCI's non-financial coverage universe

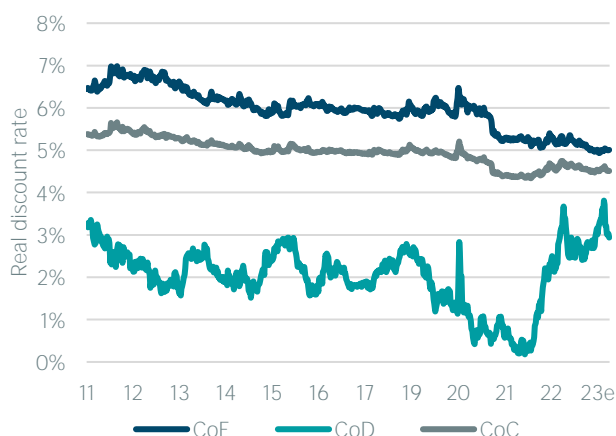


Source: DWS, CROCI. Aggregate of companies in CROCI's global non-financial coverage. Gearing refers to the ratio of net financial liabilities to market cap. Data as available on 26 December 2023.

Thus while the cost of capital is influenced by rising of cost of debt, such low financial leverage means that it does not significantly move the overall cost of capital in aggregate.

On the other hand, the real implied cost of equity stands at 4.8%, close to its historical low. This gets reflected in a low overall cost of capital of 4.5%.

Figure 16: Influence of cost of Equity/Debt on the overall cost of Capital



Source: DWS, CROCI. Aggregate of companies in CROCI's global non-financial coverage. Data as available on 26 December 2023. CoD is measured as a pre tax cost of Debt for BBB rated companies by Moody's and is adjusted for long-term inflation

Lollapalooza effect & cost of capital

Charlie Munger, a pioneer of behavioural finance, coined the term "Lollapalooza effect" to refer to the tendency for emotions and cognitive biases to reinforce each other and drive herd mentality.

When it comes to cost of capital, such biases have a significant role to play. As we saw above (Figure 16), despite the rise in cost of debt, the cost of capital has barely changed. This implies that the equity risk premium remains tight. In Figure 18 below, we plot the cost of capital on a weekly basis, which is at around the 7th percentile of its range since 2011.

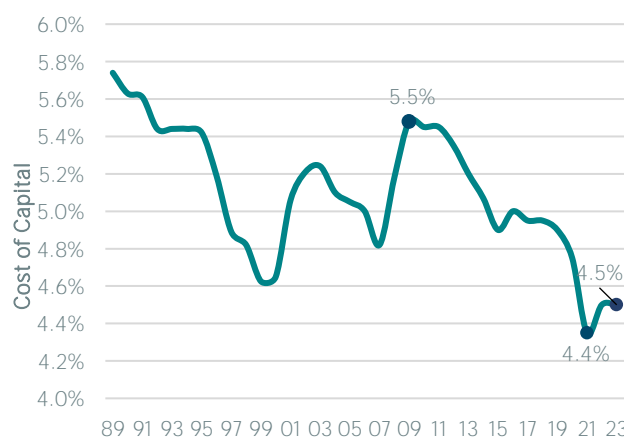
Figure 17: Cost of capital over the past two decades



Source: DWS, CROCI. Aggregate of companies in CROCI's global non-financial coverage. Data as available on 03 January 2024.

The cost of capital is influenced by behavioural aspects, or what Mr. Munger would refer to as the emotional and cognitive biases of market participants at large. Such a low cost of capital suggests that the market is pricing continued softening of inflation along with a soft landing of the global economy.

Figure 18: Long-term annual market-implied cost of capital



Source: DWS, CROCI. Aggregate of companies in CROCI's global non-financial coverage. Data as available on 03 January 2024.

To conclude, the current implied cost of capital (4.48%) remains low relative to its long term range. The academic literature, based on more than a century of data, suggests that over the very long term there is very strong mean reversion tendency for the market-implied cost of capital to between 5.2% and 5.4% in real terms.

The period of high liquidity following the financial crisis unsurprisingly lowered the cost of capital for a prolonged period, leaving it at today's low levels. Mean reversion would therefore imply greater downside risk than upside risk to global equities. We can map out the effects of any change in cost of capital to the overall valuation (Figure 19), but it is far harder to explain what might prompt any mean reversion, or whether it will be slow and earnings-led (i.e. a prolonged period of muted total returns lagging earnings growth, restoring valuations) or a faster price-led move (as seen after the TMT bubble or the financial crisis).

So long as market participants remain sanguine about the trajectory of inflation deceleration and economic growth in general, the cost of capital may continue to remain close to its three decade lows. However, any increase in uncertainty and greater risk aversion could have a significant impact on the overall valuation of global equities, given the current starting point of high valuation / low cost of capital.

Figure 19: Sensitivity of global equity values to the changes in cost of capital (COC)

COC	EV/NCI	EV move	MV move
5.40%	1.05	-36.2%	-42.1%
5.25%	1.12	-32.0%	-37.3%
5.00%	1.25	-23.8%	-27.8%
4.75%	1.42	-13.4%	-15.6%
4.50%	1.64	0.0%	0.0%
4.35%	1.81	+10.1%	+11.7%
4.25%	1.93	+17.9%	+20.8%
4.10%	2.16	+31.5%	+36.7%

Source: DWS, CROCI. Sensitivity is calculated using agglomerated data of companies in CROCI's coverage globally. EV is Enterprise Value; MV is Market Value. The EV/NCI values refer to the 2024E cum Goodwill NCI. Data as available on 03 January 2024.

Carbon price impact on listed equities

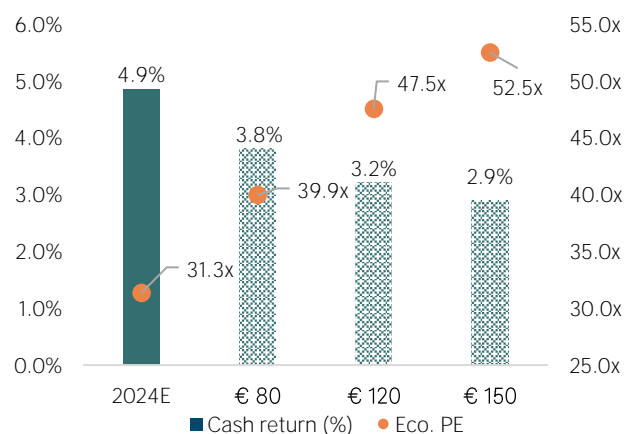
We have covered this topic in the past two Outlook reports, underlining the need for equity investors to: 1) be aware of the carbon emissions of their investments and 2) get an idea of the potential impact of carbon prices on the underlying cash returns of the companies they have invested in.

Since 2005, emissions within the scope of the Emissions Trading Scheme (ETS) have declined by about two-fifths, showing the effectiveness of the emissions cap. In 2022, the EU ETS emissions from stationary installations accounted for 37% of total GHG emissions from the European Economic Area. Starting in 2024, carbon emissions from maritime transport will be included in the ETS: 100% of emissions are covered for voyages between EU ports and 50% of emissions for voyages starting or ending outside of the EU. Clearly, the scope of the EU ETS is expanding. For the sake of simplicity (and to provide a longer term view of the impact) we assume the EU ETS covers 100% of GHG emissions of the companies in the EU region⁴ as a starting point for unravelling the potential impact of the carbon prices on the underlying cash returns (especially should the companies not be able to pass on the carbon costs to the end customer).

In the following figure, we show the sensitivity for CROCI's coverage universe of non-financial companies within the EU.

When we assume a global carbon cost of €80 (the median of 14 forecasts sourced from Bloomberg), the base case 2024E aggregate cash return shrinks from 4.9% to 3.8%. Incremental impact on cash return and Economic PE can be seen in the following exhibit.

Figure 20: Sensitivity of 2024E EU CROCI and Economic PE to carbon prices, assuming full internalization of carbon cost



Source: DWS CROCI. Data as of 03 January 2024, includes CROCI's non-financial coverage universe of EU companies

The long-term direction of the EU carbon price will depend on the speed and cost of decarbonising industry. Most technologies to capture carbon only become viable at €150 or more; thus (in the absence of government intervention) companies face a choice of 1) increasing capex for the transition to lower carbon operating models, 2) internalising higher carbon costs (which as the figure above indicates for EU companies could be significantly detrimental to profitability), or 3) passing on a large chunk of rising carbon costs to the end customer (which would be putting structural upward pressure on inflation). While it is too early to predict which mix of these three responses will happen on balance, all three channels would put further pressure on already high market valuations: 1 & 2 through lower profitability, 3 through potentially higher interest rates and higher risk premia.

⁴ We restrict ourselves to scope 1 and 2 emissions only, i.e. the emissions directly attributable to companies' operations and their energy consumption, but not to their suppliers or to their customers using their products and services. Past performance does not predict future returns. Forecasts are not a reliable indicator of future performance. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Market and index performance data is sourced from Bloomberg Finance L.P. Company data is from the CROCI database. Unless stated this data is as of December 2023. Forecasts are based on assumptions, estimates, views and or analyses, which might prove inaccurate or incorrect.

1.2 Evolving capital intensity & economic life

The increasing reliance on intangible assets in modern business models

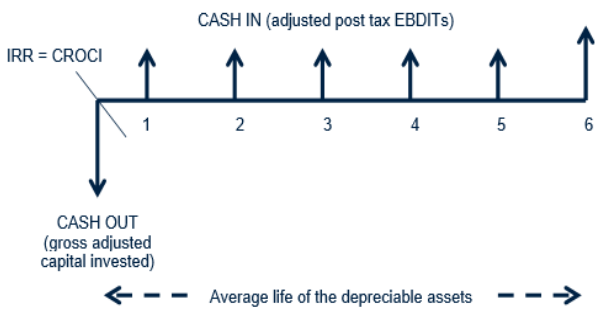
Over the past decade, economic growth and equity returns have been driven by companies with apparently little capital and labour. This is a function of technological change. One can observe an evolution in the structure and nature of the operating assets of many companies as a consequence. How this evolution impacts the economics, the capital intensity, the capex cycle or the useful lives of assets is central to the calculation of the return on capital and an understanding of how economic value is created.

In this section, we look at how the increased reliance on intangibles impacts 1) asset productivity and longevity of asset lives and 2) economic returns.

Longevity of asset lives

Regular readers may recognise [Figure 21](#) which shows how CROCI cash return is determined. The calculation uses an internal rate of return comparing gross capital with cash flows over the economic life of depreciable assets.

Figure 21: CROCI IRR Calculation

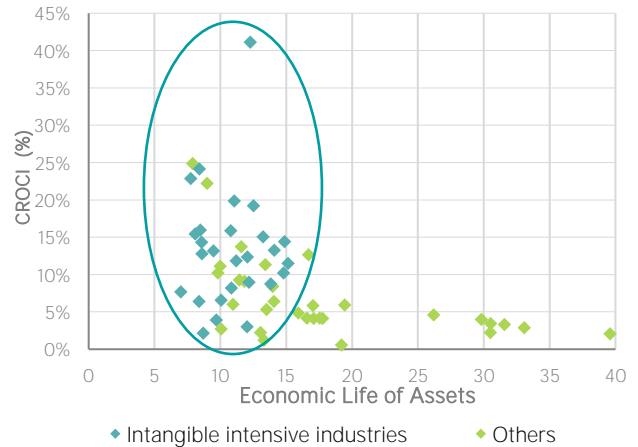


Source: DWS, CROCI.

The longer the asset life, the higher the cash returns, all other things being constant. But of course longer life assets often tend to come with higher asset intensity. In [Figure 22](#), we show 2024e CROCI and Economic Life grouped by various industries. We have divided these industries into two groups: those whose intangibles (as capitalized by CROCI) are greater than ten per cent of their gross capital invested (“Intangible intensive industries”); the remainder being “Others”.

Clearly, industries with low reliance on intangible assets have lower cash returns despite having longer life for tangible assets. High asset intensity industries like Utilities, Transportation, Infrastructure, etc. have long economic lives and are dispersed to the right of [Figure 22](#).

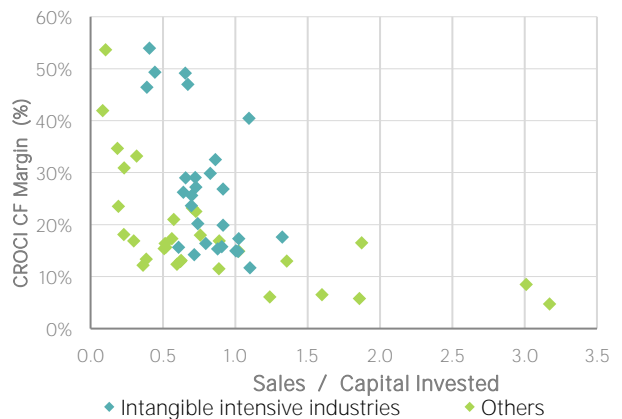
Figure 22: CROCI and economic life of aggregations by industry group



Source: DWS, CROCI. Aggregate 2024E CROCI and economic asset life of companies grouped by Industry. “Intangible intensive industries” refers to industries where intangibles capitalized by CROCI account for at least 10% of total gross assets. Data as on 3-Jan-2024.

On the other hand, industries where intangible assets make up more than ten per cent of capital invested generally generate higher CROCI, despite having a lower economic life of assets. This is driven by better combination of asset productivity and cash flow margins (as against “Others” skewed to either one of the cash return drivers).

Figure 23: CROCI cash return drivers of aggregations by industry group

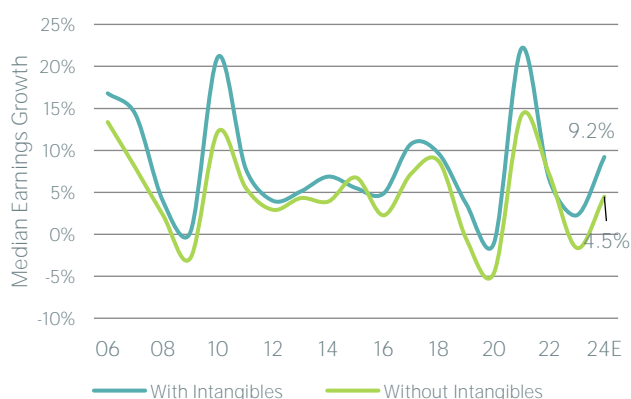


Source: DWS, CROCI. Aggregate 2024E CROCI CF Margin and Saels / Capital Invested grouped by Industry. “Intangible intensive industries” refers to industries where intangibles capitalized by CROCI account for at least 10% of total gross assets. Data as on 3-Jan-2024.

Economic returns

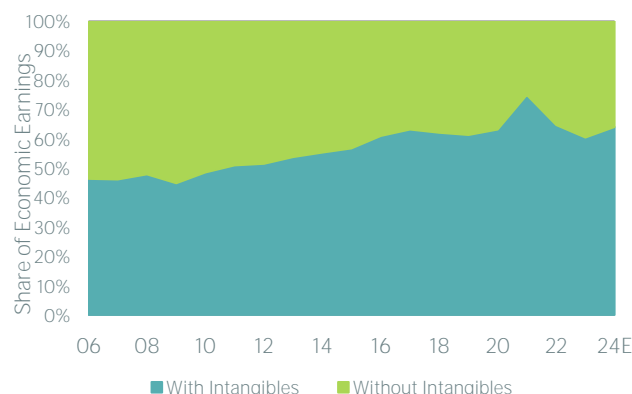
We have been highlighting the increasing relevance and reach of intellectual capital across all listed companies for some time. In a 2019 paper⁵ we showed how companies with intangible assets (Research & Development or R&D as well as Brands) have managed to generate higher returns and grow at a much faster pace than the rest of the economy. CROCI systematically capitalizes expenditure on the development of such assets and our research suggests that, since 2007, earnings growth among listed large cap equities has mainly accrued to companies that have such assets while the rest of the market has lagged. Following two figures show the breakdown of CROCI economic earnings for companies where we capitalize R&D or Brands against those without any meaningful intellectual capital. It is evident that the share of overall earnings from the former group has been steadily increasing over the past decade or more.

Figure 24: Median Earnings Growth for Companies With Intangibles and Without Intangibles



Source: DWS, CROCI. Median growth in CROCI Economic Earnings for companies with Capitalised Intangibles and companies without Capitalised Intangibles. "Companies with/without intangibles" refers to those companies where the CROCI process capitalises investments in intangibles (such as R&D or brand building) because they are deemed to be economic assets. Data as on 3-Jan-2024

Figure 25: Share of Real Earnings for Companies With Intangibles and Without Intangibles



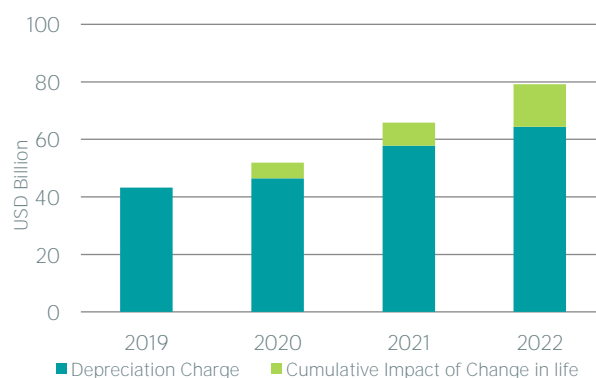
Source: DWS, CROCI. Aggregate CROCI Economic Earnings for companies with Capitalised Intangibles and companies without Capitalised Intangibles. "Companies with/without intangibles" refers to those companies where the CROCI process capitalises investments in intangibles (such as R&D or brand building) because they are deemed to be economic assets. Data as on 3-Jan-2024

Live examples

1) Tech companies

Technology companies (including the wider consumer tech, internet retail and interactive media space) already have a high intangible intensity. The fast rate of technological change and quick adoption of innovation comes with changes in the nature of assets and sometimes changes in the useful life of those assets. Take companies like Microsoft or Alphabet that run large cloud platforms and have recently extended the depreciable life of their assets, particularly servers. Amazon also revised its useful life twice in the past four years, with management citing continuous improvements to hardware, software and data centre designs.

Figure 26: Depreciation and cumulative impact on change in life for Alphabet, Amazon and Microsoft



Source: DWS, CROCI. Aggregate data for Alphabet, Amazon and Microsoft for depreciation charge and cumulative impact of lower depreciation for change in the life of assets since 2019. Data as on 3-Jan-2024

⁵ CROCI Focus – Intellectual Capital (April 2019)

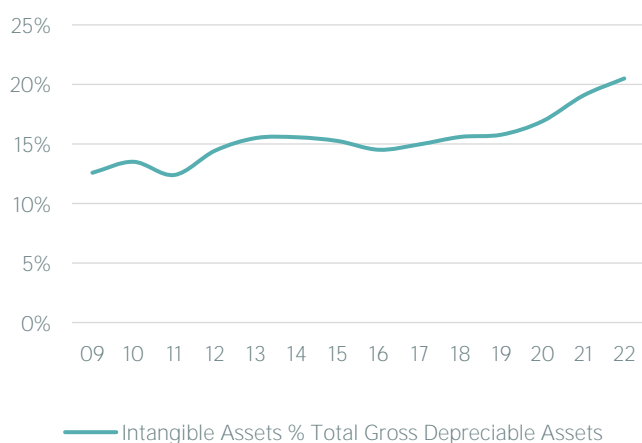
Past performance does not predict future returns. Forecasts are not a reliable indicator of future performance. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Market and index performance data is sourced from Bloomberg Finance L.P. Company data is from the CROCI database. Unless stated this data is as of December 2023. Forecasts are based on assumptions, estimates, views and or analyses, which might prove inaccurate or incorrect.

Aggregate depreciation for three companies would have been higher by 23 per cent in 2022 had the life of assets not been revised up (Figure 26). CROCI calculates cash returns using gross capital invested, and uses a measure of asset life which is generally more consistent and more stable across companies. This allows our measure of return to be somewhat more stable than one based on reported financial statements.

2) Automobile industry

Software-driven change is also revolutionizing the automobile industry, transforming every stage from design to production. Automation includes robots for welding and assembly tasks. Increasingly, the industry also employs big data analytics and AI to enable real-time monitoring of manufacturing processes, enabling faster identification of issues, and enhancing safety and efficiency across the industry. Figure 27 highlights the rising proportion of cash-generative intangible assets for European automobiles. These are mostly made up of capitalized development costs including investments made in electromobility, software and autonomous driving which have accelerated in recent years.

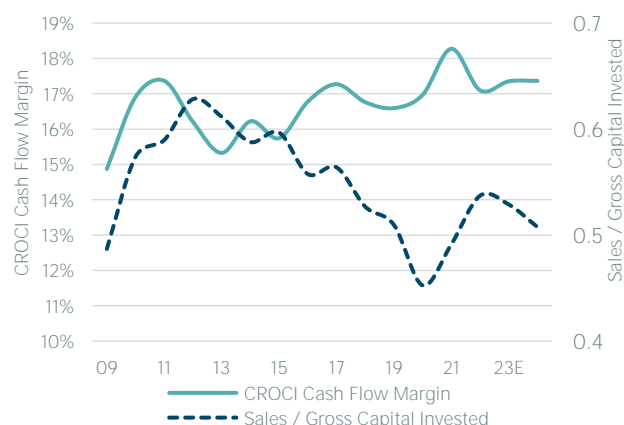
Figure 27: European Automobiles: intangible assets as percentage of Gross Depreciable Assets



Source: DWS, CROCI. Aggregate data for European Automobiles. Data as on 3-Jan-2024

However, higher spending on intangible assets tells only half the story. A real investor should feel excited only when such investments actually lead to higher productivity or higher margins or both. In the case of European automobiles, this has not really happened yet. Even ignoring the COVID-related decline, asset productivity (sales / gross capital invested) is down about 20 per cent from its 2012 peak. For a more holistic CROCI picture of the European Automobiles industry, refer to Figure 95.

Figure 28: European Automobiles: Drivers of CROCI cash return

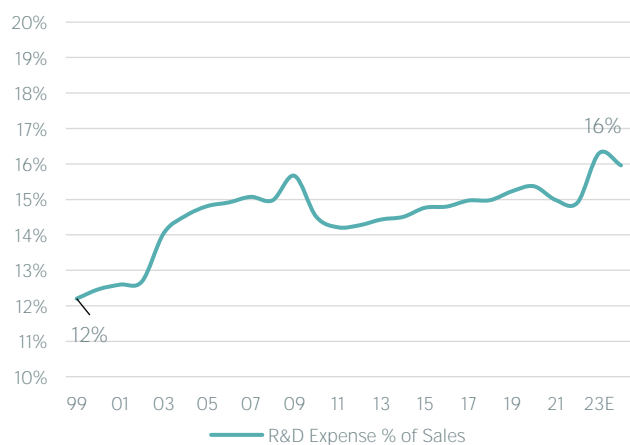


Source: DWS, CROCI. Aggregate data for European Automobiles. Data as on 3-Jan-2024

3) Healthcare

Healthcare is another sector where the rationale behind intangible assets is very clear. Pharma companies have the discovery and development of medical drugs at the heart of their business model. The drug discovery period (often 12 years or more) are the initial investment years before the rewards come in the patent-protected marketing period.

Figure 29: Global Pharmaceuticals Biotechnology & Life Sciences: R&D expense as percentage of sales



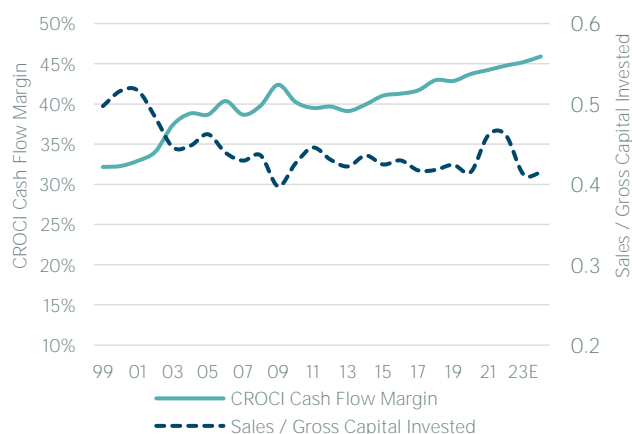
Source: DWS, CROCI. Aggregate data for Global Pharmaceuticals Biotechnology & Life Sciences. Data as on 3-Jan-2024

There is a clear trend of rising R&D spend by global pharmaceuticals and biotech companies. R&D as percentage of sales has gradually increased from 12% to around 16% over the past couple of decades (Figure 29). This is boosted by the increasing adoption of biopharmaceutical products relative to chemical drugs in last few years. At the aggregate level, we

estimate that biopharmaceutical products contribute over 50% of total revenue for these companies.

inconsistently considered as part of goodwill when acquired rather than organically created) by accounting rules.

Figure 30: Global Pharmaceuticals Biotechnology & Life Sciences: Drivers of CROCI cash return



Source: DWS, CROCI. Aggregate data for Global Pharmaceuticals Biotechnology & Life Sciences. Data as on 3-Jan-2024

Unlike European automobiles, global pharma exhibits a clear trend of improving profitability without any damage to asset productivity despite an increase in the capital base (Figure 30). As a result, the overall CROCI cash return for the industry has remained fairly stable and earnings have consistently improved (Figure 100).

Tying it all together

Technological advancement can have lasting impact on the key components of return on capital across industries. For some companies it may impact the overall intensity of capital or margins; for others it can even impact the life of tangible assets (such as the life extension of servers mentioned above). Accounting rules and assumptions do not always best reflect economic reality. For example: accounting rules generally overlook investments in intangibles by treating them as (sunk) operating costs rather than capitalizing them as (productive) assets on the balance sheet. The only meaningful way to ensure that a real investor pays close attention to the impact of "increasing reliance on intangible assets" is by looking beyond accounting conventions. CROCI addresses these shortfalls through two critical adjustments:

- i) Looking at companies' assets at the gross level, thereby making the specific depreciation policies adopted by companies less relevant. Capital intensity is best measured at the gross level.
- ii) Include all cash-generative assets (in particular intangible assets that contribute to long-term cash returns), whether or not they are on the pro-forma balance sheet, ensuring that the primary drivers of profitability are considered, even though they are otherwise ignored (or at best

Ultimately the ability of companies to generate economic value is a function of their competitive advantage and pricing power as the economic law goes. This can only be fairly reflected in the calculation of real return on capital employed if we factor in impact of evolving aspects of operating assets on the margins, asset productivity and useful lives all together.

Section 2: Sector Insights

2.1 Energy Sector

Discipline in capital allocation prevails (for now)

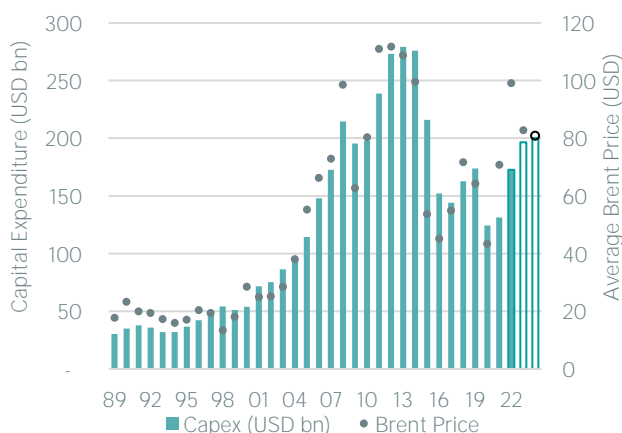
“Commodity-cyclical names—and the energy sector in particular—have shown a strong correlation between their capital investment and commodity or energy prices, which tends to result in a supply glut. Viewed individually, each company’s capital investment decision could potentially be justified; but viewed collectively, the spending often seems irrational. After each round of investment, all the players have more money in the game and returns turn more pale.” – CROCI Outlook 2022.

For the third consecutive year, we devote a separate chapter to the Energy sector in our Outlook report, primarily because it remains such a cheap sector (as we saw in Figure 8). Supportive oil & gas prices have certainly played a role in the improved economics of the sector. Just as important, however, has been that the sector as a whole has so far not succumbed to its traditional overinvestment behaviour, highlighted in our 2022 edition above.

Capex trend: historical strong correlation with oil prices absent for now

The energy sector has so far continued to demonstrate capital discipline. Despite record high oil and gas prices in 2022 and continued strong price levels in 2023, there was no substantial expansion in investment by companies. In 2022, capex of USD 170bn was similar to the levels seen in 2018 and 2019. In 2023, the sector saw a moderate 15% increase in capex to about USD 194bn level, and it is expected to remain stable at about USD 198bn in 2024.

Figure 31: Capex of the Energy sector along with Brent oil price



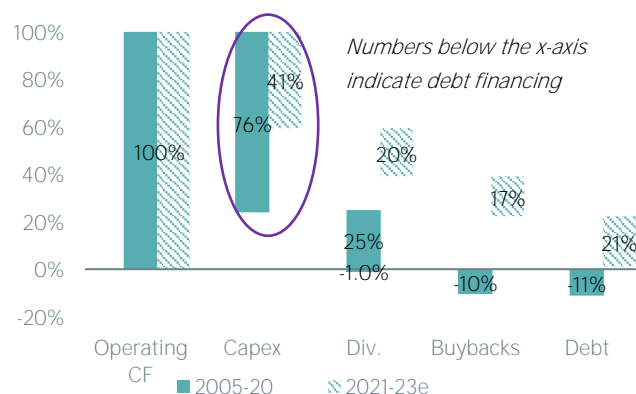
Source: Company and CROCI data for 27 Oil and Gas companies from developed markets in the CROCI’s company coverage universe. Bloomberg data for Brent oil prices. Data as on 30–Nov-2023.

Past performance does not predict future returns. Forecasts are not a reliable indicator of future performance. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Market and index performance data is sourced from Bloomberg Finance L.P. Company data is from the CROCI database. Unless stated this data is as of December 2023. Forecasts are based on assumptions, estimates, views and or analyses, which might prove inaccurate or incorrect.

Capital redistribution takes priority

Figure 32 shows a comparison of capital allocation trends over the past three years versus long term history (2005-20). Around three-quarters of operating cash flow between 2005-20 was used for capex. Also, around a third of dividends and buybacks during the period was financed through debt.

Figure 32: Allocation of Operating Cash Flow (CF)



Source: Company and CROCI data for 27 Oil and Gas companies from developed markets in CROCI’s coverage universe. Data as on 30–Nov-2023.

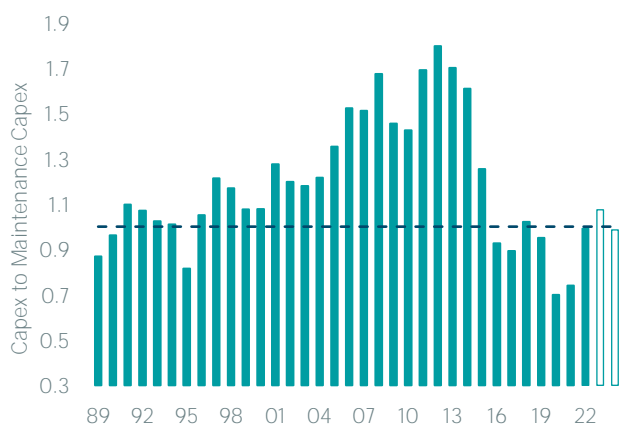
Understandably, the bulk of the capex was front-loaded during the fifteen years period (see Figure 31), with the median energy price at USD 79 between 2005-15, versus a median price of USD 55 between 2016-20. Nevertheless, the aggregate picture of the entire time period shows the sector was in a debt spiral of sorts, especially as energy prices began to cool off.

So far the contrast in the current decade could not be much starker. Despite a solid recovery in the median energy price (USD 80 over the past three years), capex-to-operating cash flow stood at around 40%, nearly half the level of the previous 15 years

The aggregate capex to inflation-adjusted maintenance capex gives a real sense of how the capex cycle has turned a corner. The lower energy prices between 2015 and 2020 brought capex significantly below maintenance levels. But despite the recovery in energy prices over the past three years capex continues to trend very close to maintenance level. Thus whilst a 15% year-on-year increase in capex during 2023 might suggest a revival of the capex cycle (and thus the risk of diluting profitability further down the line), the comparison with inflation-adjusted maintenance capex paints a different picture. Overall capital expenditure remains disciplined and

the industry is now focusing more on returning cash to shareholders and deleveraging balance sheets than it did in the last couple of decades.

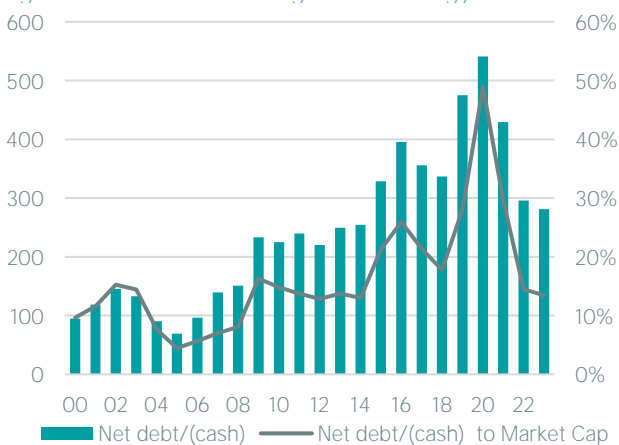
Figure 33: Capex to inflation adj. maintenance capex



Source: Company and CROCI data for 27 Oil and Gas companies from developed markets in CROCI's coverage universe. Data as on 30-Nov-2023.

Not surprisingly then, the balance sheet of the sector is significantly more robust now, relative to the second half of the previous decade.

Figure 34: Financial leverage of the Energy sector



Source: Company and CROCI data for 27 Oil and Gas companies from developed markets in CROCI's coverage universe. Data as on 30-Nov-2023. Net debt (in USD bn) on LH axis; net debt as a % of market cap on RH axis.

Bottom-up outlook for the sector

Due to the highly cyclical nature of its earnings, the market rarely prices the sector's upcycle profitability, which started in 2021 led by the COVID recovery and the slow pace of climate transition. In the long term, the sector's profitability has averaged about the cost of capital, which is reflected in the asset multiple at which investors price the sector, i.e. an EV/NCI (economic price-to-book) of 1x.

In 2022, despite the median CROCI cash return almost tripling, median EV/NCI remained at 1.1x, translating into an

Economic PE of 10.8x. Similarly, while CROCI cash return fell to 4.1% in 2023, EV/NCI remained at 1.0x, resulting in Economic PE expanding to over 20x (still significantly below median global valuation levels). However, in the wake of disciplined capex, the resulting free cash flow (FCF) is what investors are likely to focus on. The sector offers a significant FCF yield pick-up relative to the rest of the market (7.8% versus 4.8%).

In summary, for an equity investor, the sector continues to remain a self-help story, with upside likely to be driven by stable cash returns, led by good capital discipline and supported by healthy shareholder distribution. Should energy prices rise from current levels there may well be short term benefits, but capital allocation decisions for the wider sector will ultimately determine whether higher energy prices will translate into higher profitability longer term.

Figure 35: Median valuation of the Energy sector

	2021	2022	2023e	2024e
Median EV/NCI	0.9x	1.1x	1.0x	0.9x
Median CROCI	3.4%	9.9%	4.1%	4.1%
Median Economic PE	25.7x	10.8x	24.7x	25.7x
Global Median Ec. PE	33.4x	30.0x	32.0x	29.7x
Median FCF Yield	9.5%	12.2%	7.2%	7.8%
Global Median FCF Yield	3.5%	3.2%	4.2%	4.8%

Source: Company and CROCI data for 27 Oil and Gas companies from developed markets. Global Median values refer to those of CROCI's non financial coverage universe, comprising of over 800 stocks. Data as on 03-Jan-2024.

Top-down outlook for the sector

Of course, there are other factors beyond the control of the sector. Amongst these, 1) Net Zero is likely to lead to structurally declining demand eventually and 2) regulatory risks are likely to have a far-reaching impact on the sustainable economic characteristics of the sector. Should any of these scenarios materialise, there will be implications for the relative value attractiveness of the sector.

Set against this, though, are other factors including the significantly heightened geopolitical risks in the Red Sea and Gulf region which is associated with high levels of oil production. This is likely to increase the oil price volatility, and could also push up the oil price if there are supply concerns.

2.2 Magnificent Seven

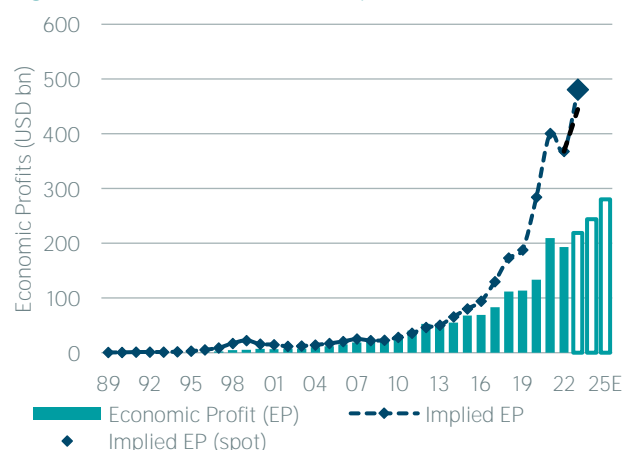
Checking for economic value

Taking a leaf out of the playbook of Figure 5 which looks at the performance of large-cap companies, in this section we discuss: 1) whether ultra large cap names, more specifically the Magnificent Seven (MAG7⁶), are overvalued and 2) whether there is any economic value within the technology sector beyond the MAG7.

The newly coined Magnificent Seven (MAG7) dominated headlines for much of 2023 on the back of strong share price performance. The aggregate market cap of the S&P 500 recorded gains of 25% in 2023. However, without MAG7, those gains drop to a much more modest 12%. The aggregate market cap of MAG7 ballooned by close to three-quarters over 2023 driven both by: a) relatively less challenging valuations following the steep declines of 2022 and b) the euphoria over Artificial Intelligence after the launch of ChatGPT.

MAG7 trades at 39.1x 2024 economic earnings in aggregate, almost a third more expensive than the remainder of CROCI's US coverage (31.1x). For value-focused investors who give more weight to current earnings than future growth, obviously the MAG7 pack looks somewhat more expensive than the rest of the US universe. But if the total value of an asset is the present value of all the cashflows it is expected to generate, it is essential to bring growth in to evaluate the market's behaviour.

Figure 36: Economic Profit & Implied EP – MAG7

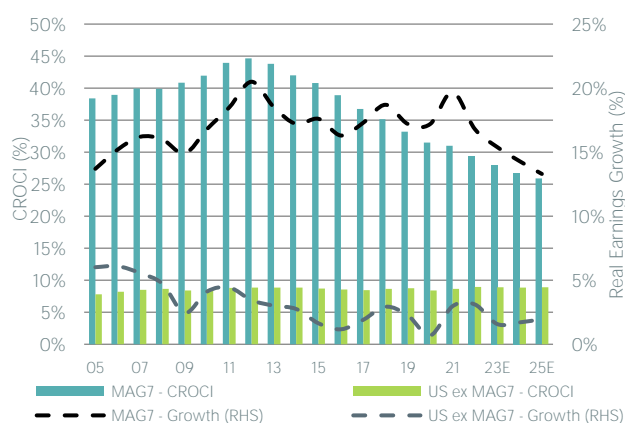


Source: DWS, CROCI. Data as available on 08 December 2023. Aggregate data of MAG7 or Magnificent Seven includes 7 largest companies by market capitalisation in the US – Apple, Microsoft, Alphabet, Amazon, Nvidia, Meta Platforms and Tesla

How to “value” growth

Our preferred approach to comparable inclusion of growth is to use an excess economic earnings method. This method assumes that *the current cycle-adjusted rate of growth* in real terms will be sustained for an initial period of five years before linearly fading over the following ten years to a constant terminal real growth rate (we use 1%). Long-term real interest rates of the country are often used as a proxy for terminal growth rates. Going by this logic, our assumed terminal growth rate is not unreasonable.

Figure 37: Cycle Adj. CROCI (cash return) and growth (real)



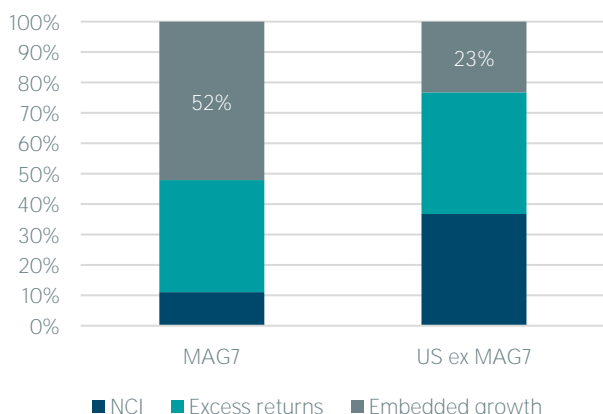
Source: DWS, CROCI. Data as available on 08 December 2023. Aggregate data of MAG7 or Magnificent Seven includes seven largest companies by market capitalisation in the US – Apple, Microsoft, Alphabet, Amazon, Nvidia, Meta Platforms and Tesla. US ex MAG7 represents U.S. non-financial CROCI coverage universe excluding MAG7.

As Figure 37 shows, MAG7 are significantly more profitable (based on CROCI cash returns) than the rest of our non-financial US coverage universe while growing faster, driven by dominant positions in areas like eCommerce, the cloud, digital advertising, enterprise software, EV, AI and 5G. The returns of MAG7 have been falling consistently due to aggressive investments in some of these growth areas, but consensus expectations expect returns to stabilise at around 22% whilst capex as a proportion of sales is expected to fall to 11% by 2025, having peaked at 14.3% in 2021. Using 22% as a proxy for sustainable CROCI, current valuations of MAG7 imply a real earnings growth of 10% (for the next 5 years before fading to a terminal rate of 1% over the following 10 years). By contrast, the cash returns of the rest of our non-

financial US coverage have been stable at around 9%. Using 9% as a proxy for sustainable CROCI cash return, current valuations imply a real earnings growth of 3.5% (for the next 5 years before fading to a terminal rate of 1% over the following 10 years).

As Figure 38 shows, more than half of MAG7's current valuation is attributable to implied future growth, whereas only a fifth of the current valuation of our non-financial US companies coverage is based on implied growth expectations. In short, growth expectations are undoubtedly demanding for MAG7, but are presumably based on the fact that they have been broadly growing at or above that level (10%) over the past decade. Current valuations implicitly assume that this growth rate could be sustained for the next five years before it fades. If MAG7 are able to deliver economic earnings growth in line with 2024 forecasts (10% compared to the 3.5% of the rest of the universe), then that could lead to a potential real return of 12.5% if there is no change in multiples, a combination of real growth and FCF yield (although sceptics will note that this requires three conditionals to hold: that growth expectations do not disappoint; that high valuations are sustained; and that there is no material compression in cash returns).

Figure 38: Decomposition of current valuation



Source: DWS, CROCI. Data as available on 08 December 2023. Aggregate data of MAG7 or Magnificent Seven includes 7 largest companies by market capitalisation in the US – Apple, Microsoft, Alphabet, Amazon, Nvidia, Meta Platforms and Tesla. US ex MAG7 represents U.S. non-financial coverage universe excluding MAG7.

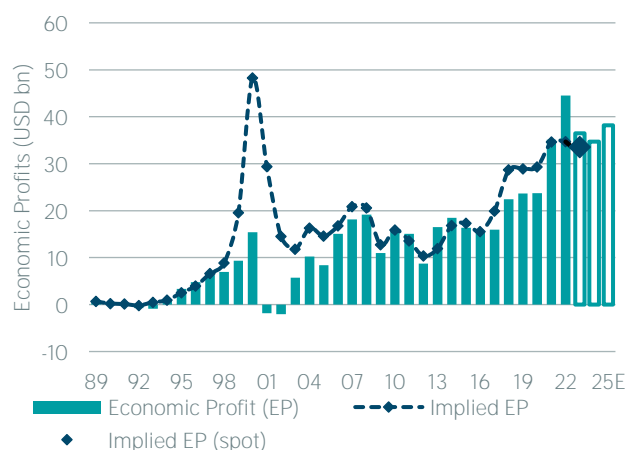
The biggest risks to MAG7 valuations, in our view, are a severe economic downturn (given high exposure to cyclical revenue

streams such as advertising, semiconductors and automotive) and regulatory and heightened competition risk, geopolitical friction between the U.S. and China.

Looking beyond the MAG7 within the IT sector

The IT sector has undoubtedly been one of the biggest value creators over the past decade and is expected to continue its run in the coming years owing to secular trends such as generative AI, cloud computing, autonomous vehicles, 5G and the internet of things. So, for many companies in the sector, current market valuations embed a significant premium for future growth prospects. However, for more value-focused investors CROCI does offer an attractive value proposition – a basket of overlooked stocks from the IT sector which offer genuinely attractive economic value.

Figure 39: Economic Profit & Implied EP – Cheapest Quartile (in DM IT Sector)



Source: DWS, CROCI. Data as available on 08 December 2023. Aggregate data of the cheapest quartile (based on 2024E economic PE) of the CROCI's Developed Market IT sector.

The basket trades at 21.7x FY24 Economic PE, almost half the IT sector multiple of 41.3x within Developed Markets, while generating a CROCI cash return of 16.3%, only slightly below the sector returns of 18.7%. Current market valuations imply close to zero expected future growth. Consequently, the basket offers an attractive FCF yield of 5.4%, considerably higher than the 3.0% offered by the broader sector.

Figure 40: Putting DM IT sector's cheapest quartile into perspective

	EV/NCI	CROCI cash return	Ec. PE	FCF Yield	Div. Yield	Growth Premium
Cheapest quartile in DM IT	3.5x	16.3%	21.7x	5.4%	2.0%	0%
Overall CROCI coverage (DM non-financials)	2.4x	7.5%	32.1x	3.8%	1.8%	30%
DM IT sector	7.7x	18.7%	41.3x	3.0%	0.9%	50%
MAG7	8.5x	21.8%	39.1x	2.6%	0.3%	50%

Source: DWS, CROCI. Data as available on 08 December 2023. Cheapest quartile represents data of the cheapest quartile (based on 2024E economic PE) of the CROCI's Developed Market IT sector

2.3 Global Banks

Geography matters

The 2023 banking mini-crisis in the U.S., prompted by rising interest rates and a maturity mismatch between deposits and treasury holdings, made it clear how important a uniform treatment of financials, beyond the accounting or regulatory rules, is for the consistent evaluation of companies. This focus on the comparability of companies across regions and sectors is at the heart of CROCI.

In 2023, US banks suffered large mark-to-market losses on their fixed income securities due to rising rates. Many US banks decided to transfer their “Available for Sale” portfolio to “Held to Maturity” to escape recording the associated losses in the shareholder’s equity. Such losses can be ignored under US rules for reporting regulatory capital, except in the case of some large banks. CROCI avoids this situation by including AOCI or Accumulated Other Comprehensive Income losses (and gains) in the capital levels of banks (even if they have exemptions) to make them comparable across different regions. For several mid-sized US banks, this impact was large enough to take regulatory capital to around six per cent, a level not seen since the financial crisis. As a result, we suspended coverage of a few US mid-sized banks.

The need to focus on real returns instead of nominal returns became greater as inflation spiked. CROCI adjusts for the impact of higher inflation on banks’ financial performance by reducing their earnings by an amount equal to the Tier 1 Capital times the inflation rate. Further, we have consistently argued that the higher leverage of banks (around 10 times capital) means that they need to be adjusted for a differential cost of capital in order to compare them with non-banks.

Once these adjustments are taken into account, it becomes much more relevant to compare an adjusted bank’s P/E with an Economic P/E for non-financials. Global non-financials trade on an Economic P/E of 31.0x whereas banks trade on a COC Adj. PE of 17.7 times. On the face of it, Banks appear to be trading at a significant discount to the non-Financials, even after adjusting for differential cost of capital. But...

...The devil is in the detail

Without the four Chinese state-owned banks in our coverage, the P/E of global banks rises from 17.7 to 20.9, almost 20 per cent more expensive and in line with its ten-year average (Figure 41). EV/Adj. Tier 1 Capital (CROCI’s price-to-book ratio for banks) rises from 0.95x to 1.19x times. So are Chinese banks too cheap to be true? How else to describe an asset that is trading at half its book value, generating more than the

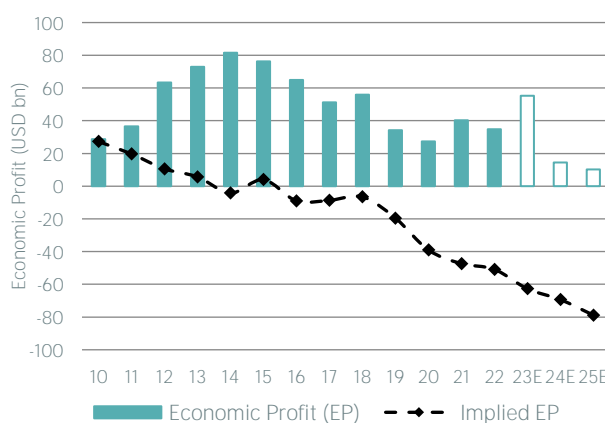
real cost of capital and yielding over nine per cent dividend yield? Their cost-to-income ratio is less than 30%, loan-to-deposit around 75%, core-Tier1-capital above 13%, and their non-performing loans are at 1.4%, with a coverage rate of over 200%.

Figure 41: Banks Valuation Global and Global-ex China

2024E	Global	China	Global-ex China
Enterprise Value (USD Bn)	5,020	907	4,112
Market Cap (USD Bn)	4,411	697	3,715
Adj. Tier 1 Capital (USD Bn)	5,247	1,806	3,441
Infl. Adj. Earnings (USD Bn)	497	155	341
EV/Adj. Tier 1 Capital	0.95	0.50	1.19
Inf. Adj. ROC (ex GW) (%)	9.5%	8.6%	9.9%
Adj. P/E ratio	10.1x	5.9x	12.1x
COC Adj. P/E ratio	17.7x	10.3x	20.9x
Dividend Yield (%)	4.7%	9.4%	3.8%

Source: DWS, CROCI. Aggregate values for Banks under CROCI Coverage. Data on 3 Jan 24

Figure 42: Economic Profit & Implied EP – Chinese Banks



Source: DWS, CROCI. Aggregate values for Chinese Banks under CROCI Coverage. Data as on 3 Jan 2024

It is not that Chinese banks have suddenly become cheap. They have traded significantly below their economic profits for over a decade (Figure 42). This could possibly be a reflection of risks due to state interference in these banks or potential future losses due to the weakness in the underlying economic growth, which has been a hard puzzle to crack for

investors and economists alike. From a CROCI investment strategy perspective, we have always considered Chinese banks as non-eligible for selection purpose for these reasons. However, China isn't the only regional variation of interest.

Banks within Developed Markets

In the developed world, the rising interest rate scenario was expected to be supportive for the sector. And the story has played out quite well, with the underlying return on capital for banks' expanding from 8.6% in 2022 to 10.1% in 2023e. Despite this, Developed Market Financials underperformed the global benchmark.

This underperformance isn't entirely without foundation. Banks tend to raise the rates that they charge on loans faster than the rates they pay for deposits. Thus the effects of higher central bank rates are front-loaded for banks, i.e. their margins tend to expand during the early phase of the rates cycle but this effect fades away as the cycle peaks. Consensus estimates point to a peaking of central bank rates this year, if not a reduction—so banks are likely to suffer from margin compression. At the same time, banks have had to draw up headcount reduction plans to deal with high costs. Add to this the possible macroeconomic effects of a tighter monetary policy, i.e. weaker growth and higher unemployment. These risks might seem to be discouraging for investors considering this sector. However, a discerning investor may be able to uncover some attractive opportunities.

Figure 43: Regional Banks Valuation

	US		Europe		Japan	
	2024E	5Y Avg	2024E	5Y Avg	2024E	5Y Avg
EV/Adj. Tier 1 Cap.	1.44	1.54	0.90	0.84	0.78	0.63
Inf. Adj. ROC	10.9%	11.3%	9.7%	7.5%	4.8%	5.5%
Adj. P/E ratio	13.2x	14.1x	9.2x	12.6x	16.1x	11.8x
COC Adj. P/E ratio	23.3x	22.8x	16.3x	20.3x	28.3x	19.3x
Dividend Yield	3.2%	3.0%	6.7%	5.5%	3.8%	4.7%
Core Tier 1 Ratio	13.1%	12.0%	14.6%	13.9%	13.0%	12.8%

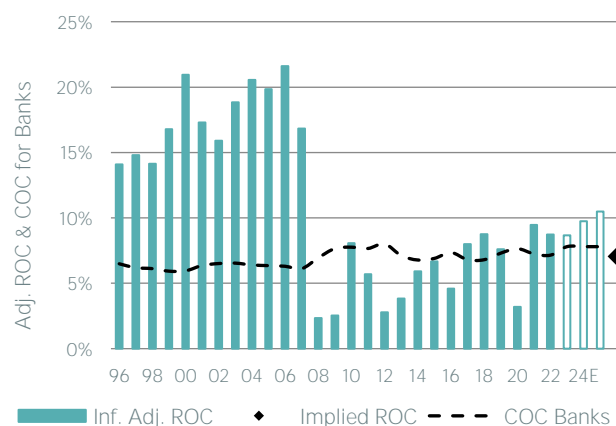
Source: DWS, CROCI. Aggregate values for Banks under CROCI Coverage. Data as on 2nd Jan 2024

Relative to their own history, European banks seem best placed to outperform their U.S. and Japanese counterparts in 2024, with their inflation-adj. RoC of 9.7% being well ahead of its five-year average of 7.5%. Yet markets seem to be disregarding their better performance as implied by their CoC Adj. P/E of 16.3x, which is well below its five-year average of 20.3x. (Figure 43). Contrast this with the U.S. banks whose 2024E RoC of 10.9% is below its five-year average of 11.3% but whose P/E of 23.3x is higher than the five-year average of

Past performance does not predict future returns. Forecasts are not a reliable indicator of future performance. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Market and index performance data is sourced from Bloomberg Finance L.P. Company data is from the CROCI database. Unless stated this data is as of December 2023. Forecasts are based on assumptions, estimates, views and or analyses, which might prove inaccurate or incorrect.

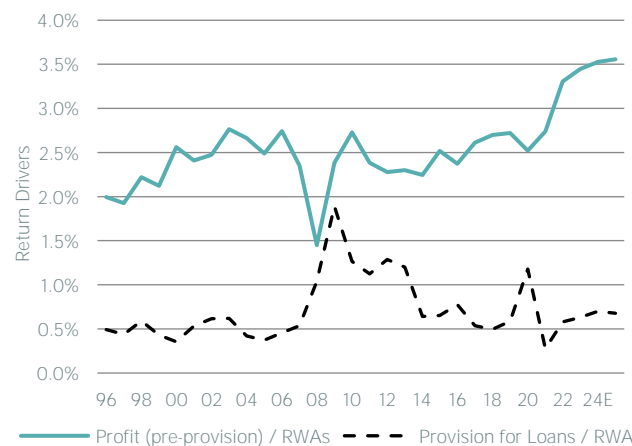
22.8x. In Japan too we see a similar pairing of lower RoC with higher P/E with respect to five-year averages. More significantly, Japanese banks continue be sub-cost of capital businesses, making their fundamentals less attractive for investors. Digging into the trend of economic returns, European banks are on an upward performance trajectory. This improving performance is driven by stronger pre-provision profits as well as controlled provisioning.

Figure 44: European Banks' ROC vs Cost of Capital



Source: DWS, CROCI. Aggregate values for European Banks under CROCI Coverage. Data as on 2nd Jan 2024

Figure 45: European Banks' return drivers



Source: DWS, CROCI. Aggregate values for European Banks under CROCI Coverage. Data as on 2nd Jan 2024.

European banks' performance has the potential to improve even further if smaller regional banks consolidate into larger ones. However, the euro area has a multitude of regulations and regulators which limits formation of a truly unified financial market. Should regulators move towards a true capital markets union, European banks may see structural re-rating. While this is unlikely to happen in 2024, European banks still offer better value compared to their developed market peers.

Section 3: Investment Insights

3.1 Inflation and Equities

Not an open book

Inflation was once again front and centre for investors during 2023. While disagreements still exist over the extent to which it has now been tamed, there is no suggestion it will return to ultra-low pre-COVID levels. The question is whether:

- A) inflation will continue to fall to central bank target levels of two per cent or
- B) whether there are further inflationary pressures that will cause it to rise again.

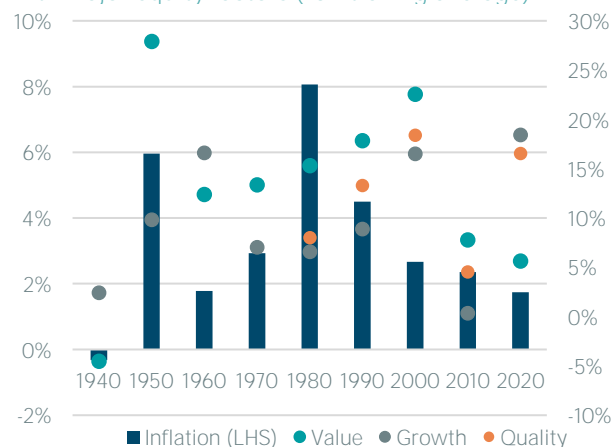
There is no monolithic global answer, of course. Each of the U.S., the Eurozone, the U.K. and Japan seem likely to have different outcomes.

Value and growth in the backdrop of inflation

We start with a recap on the long term behaviour of factors in different inflation environments. Here we use longer term data based on Fama-French factors in order to allow analysis back to the 1940s. Of the nine decades for which we have data, value outperformed in six and underperformed in three, and specifically outperformed in each decade between 1970 and 2010. The only decades in which value underperformed were the decades in which inflation was less than two per cent over the decade.

The received wisdom is that value tends to outperform during periods where inflation is moderate to high, but quality has also tended to outperform growth during such periods. This suggests that value (and quality) should outperform over the decade provided inflation on average remains at or above current central bank targets of 2%.

Figure 46: U.S. Consumer Price Inflation by each decade with major equity factors (10Y trailing average)



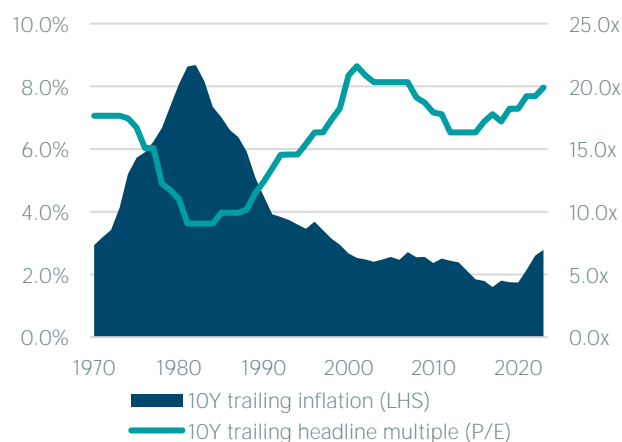
Source: DWS, Federal Reserve Economic Data, Fama French Three Factor Asset Pricing Method. Value is the bottom decile and growth is the top decile in price to book ratios, of U.S. stocks. Quality is the top decile in terms of ROE. Period on the x axis refers to the preceding decade. 1940 refers to 1931 to 1940 and so on. Years covered 1930 to 2020.

The impact of inflation on equity returns and valuation

Notions of how inflation affects equities are many and varied. We have simplified these into two main schools of thought (both of which miss the main point, in our opinion). The positive view is that equities provide investors with exposure to 'real assets'. and the price of real assets will go up in line with inflation. Based on this theory, equities are a hedge against inflation. But this implicitly assumes that companies can maintain a constant real return on real capital invested with changing inflation. Historical evidence suggests that this is not the case.

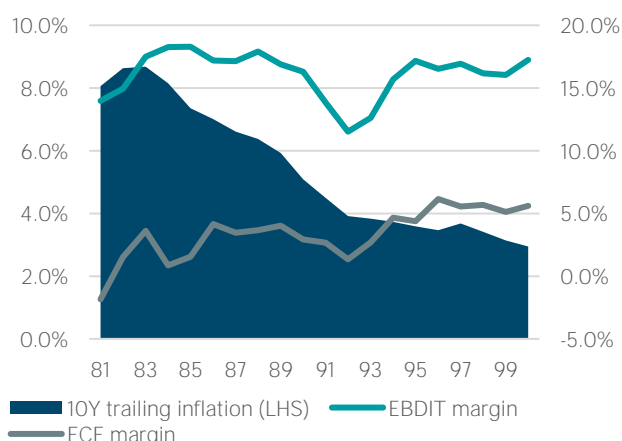
The other school argues that equities, like bonds, suffer in an inflationary environment. It is hard for companies to keep up with the hidden costs of inflation. Remember the 'investor misery index' that came out of the 1979 Berkshire Hathaway shareholder letter, i.e. the inflation rate plus the ratio of capital that must be paid to transfer annual earnings delivered by companies into your own pocket when inflation is running high. Higher inflation has very rarely translated into higher real rates of return. So the argument goes that, measured over long periods of time, equities suffer during periods of high inflation. Equities become cheap in a period of higher inflation as investors discount real cash flows at nominal rates, hence suggesting that the stock market suffers from money illusion (see Modigliani and Cohn, 1979). We disagree with this argument too. Markets are not cheap when inflation is elevated; they merely appear to be (on conventional valuation metrics) because of the depressed level of PE.

Figure 47: Headline P/E multiple versus inflation



Source: DWS, Federal Reserve Economic Data, Aswath Damodaran. Multiple is the median reading for the 10 trailing years. P/E multiple arrived at using end of the year S&P 500 close as a ratio of the estimated earnings as of the end of the year. 1970 refers to 1961 to 1970 and so on. Years covered 1960 to 2023.

Figure 48: EBITDA & FCF margins in periods of high inflation



Source: DWS, Federal Reserve Economic Data CROCI. The margins are aggregations of 20 U.S. companies for which we have data from 1981. Data as on 3rd Jan 2024

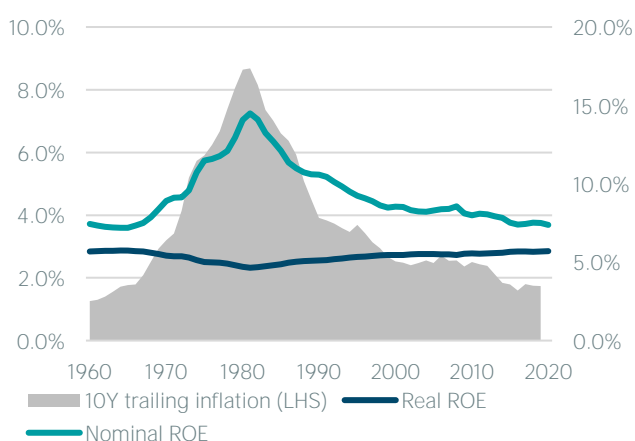
Earnings can be very misleading when inflation is about

In an inflationary environment, headline earnings can be even more misleading than usual. When inflation is elevated, reported earnings push up nominal return on equity, which brings the price-earnings ratio down, creating the illusion that a stock is cheap. In fact, all nominal measures can become potentially dangerous during inflationary periods.

The chart above shows how the gap between EBITDA margins and FCF margins widens thanks to inflation. The peak difference is in the year 1981 when inflation is at its highest, but it remains high even as inflation normalises.

In a rising inflation environment nominal returns go up, whereas real returns come down; the opposite is true when inflation is falling. We call this “the smile effect” of inflation on returns.

Figure 49: Contrasting effect of inflation on real and nominal ROE



Source: DWS, Federal Reserve Economic Data, real and nominal ROE based on the following set of assumptions. The company has a constant capex-to-sales ratio of 9% with capex having an economic life of 16 years, manages to maintain an EBITDA margin of 15%, tax rate of 27%, is financed wholly by equity that is represented by tangible fixed assets, distributes all cash that is available (free cash flow) to investors at the end of the year.

Status quo of inflation

Given that we refrain from taking a view on future levels of inflation, instead we examine the consequences of both rising and falling inflation.

The consensus view in the US is that core inflation will hit the 2% Fed target this year. The dovish end-of-year commentary from Jay Powell at the Fed initially reinforced the extremely high conviction that there will be multiple rate cuts in 2024, but the Fed has since become more cautious. The consensus view at the end of 2023 had a market-implied probability of a rate cut by March at over 80% (CME FedWatch Tool – WSJ, James Mackintosh), but that has now fallen to 9% (based on a CNBC Fed survey⁷) with the majority view being that the first cut will now be pushed back to June. But with certain inflation indicators still giving policy makers concern and with the US economic growth still looking fine, it is not a *fait accompli* that US inflation is tamed.

The picture from the ECB is similar, with no sign of any forthcoming cuts at the January meeting: signs of slightly lower inflation in France and Germany can be set against continued concerns about wage growth. Meanwhile the Bank of England is under pressure from stubborn service inflation and the Bank of Japan is not yet budging from negative rates.

Falling inflation especially benefits higher capital intensity companies

The best period for equities as an asset class is when inflation starts to fall in a structural manner; at which point growth in free cash flow should outpace inflation and earnings growth. The PE ratio should rise as the differential between earnings and free cash flow comes down. Then companies with the highest levels of capital intensity and lowest profitability such as Utilities will, everything else being equal, be the greatest beneficiaries.

Rising inflation is still a risk

This is not on the mind of most investors admittedly, where there is a fairly strong consensus about inflation being close to targets. But there are a number of reasons to suggest that inflation could easily rise again. A soft landing is a rare beast, of course, something that the Fed has arguably only engineered once in the past 60 years over 11 attempts. There are still a variety of problems in the US suggesting it may still be difficult: inverted yield curves, declining credit flows and persistent inflation on the service side to name but a few. The push for re-industrialisation and energy security in the wake of the pandemic and Russia’s war on Ukraine is inherently inflationary, not to mention fresh geopolitical risks this year spanning the eastern Mediterranean to the Gulf. On top of that there are the existing tensions in

⁷ <https://www.cnbc.com/2024/01/30/the-fed-will-cut-rates-fewer-times-and-start-them-later-than-market-hopes-according-to-cnbc-fed-survey.html>

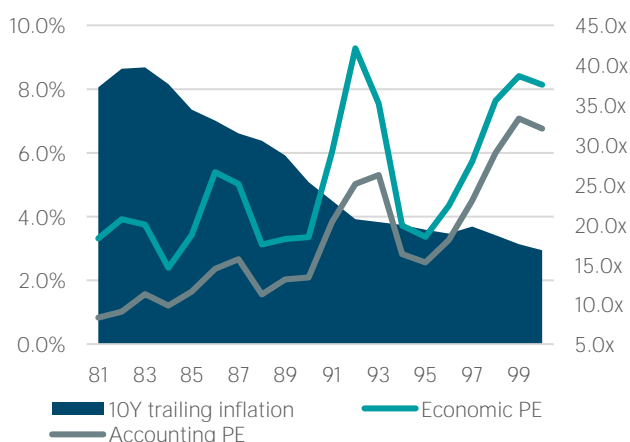
international trade between the US, Europe and China. Additionally, potential pricing of carbon emissions is likely to be punitive on sectors such as Utilities, Energy and Materials. Given the businesses of these sectors become part of the upstream supply chain of the overall global economy, passing on these costs can potentially generate material inflation. To sum-up, greenflation, deglobalisation and the associated desire to produce more goods locally together make a case for inflation to remain sticky at best.

Inflation and its impact on earnings and free cash flow

The reason that inflation hurts equities is that real returns come down as inflation rises and free cash flow (FCF) fails to grow in line with inflation. Investors as a whole do not get fooled by high inflation, & instead put a low (conventional) PE ratio on investments because earnings overstate the real FCF.

The chart below shows how the discount of the accounting PE to the economic PE is highest when inflation is at its peak; in other words, conventional metrics tend to overstate cheapness when there is inflation in the system. There is a structural mismatch between earnings and free cash flow at the best of times, and this is only exacerbated when inflation is higher.

Figure 50: P/E multiple versus inflation (1981-2000)



Source: DWS, Federal Reserve Economic Data CROCI. The valuations are aggregations of 20 U.S. companies for which we have data from 1981. Period covered 1981-2000.

For a company that is growing earnings in line with inflation and free cash flow below inflation, it is normal to observe a rise in nominal ROE, while the real ROE will in fact come down (the smile effect, see Figure 49).

1. Profits and revenues growing in line with inflation will not protect investors against (rising) inflation as the pace of growth in free cash flow will be below inflation. It is normal to think that in a situation where the revenues and profits grow in line with inflation, investors will be protected. But this is wrong: an investor in a stock that grows its earnings in line with inflation will not be protected as free cash flow will grow below inflation.

2. Earnings become an even poorer proxy for free cash flow, whilst nominal book underestimates the real value of the equity. As inflation rises, the gap between profit margins and free cash flow margins widens, the opposite is true as inflation comes down. Whilst to adjust the capital into today's money, a cumulative trailing inflation ratio (a function of the age of the assets) needs to be applied.
3. Companies with higher capital intensity will suffer most as inflation is rising, but they will benefit the most as inflation starts falling in a structural manner. Companies with a higher level of profitability will suffer the least as inflation rises, but they will not benefit as much from falling inflation.
4. The growth in free cash flow will outpace earnings growth during periods of falling inflation. When inflation is falling, free cash flow will grow at a faster pace than earnings as the differential between capex and depreciation comes down.
5. Companies need to increase EBITDA margins to offset the effects of inflation, as well as net profit growth outpacing inflation. Free cash flow will need to grow in line with inflation. This is primarily due to an increase in real taxation and the impact of inflation on the value of goods sold. Taxation tends to increase in real terms as inflation rises. A constant reported EBITDA margin will be overstating the real EBITDA margin when inflation rises, as some of the costs will be booked in nominal term.

Capital intensive sectors with low free cash flow generation are most at risk from rising inflation

Autos, Energy, Food and Staples Retailing, Transportation and Utilities are likely to suffer the most in a rising inflation environment. Not only are these companies capital intensive, but in many cases, the margins are not high enough to offset this, so free cash flow generation is poor.

Technology, Pharmaceuticals, Food Beverage & Tobacco and Household & Personal Products are best placed for a rising inflation environment with low tangible asset intensity and business models dependent on intangible assets.

At the company level, two characteristics are particularly valuable in an inflationary environment:

- (i) an ability to increase prices easily (even when product demand is flat and capacity is not fully utilized) without fear of significant loss of either market share or unit volume, and
- (ii) an ability to accommodate large dollar volume increases in business (often produced more by inflation than by real growth) with only minor additional investment of capital.

Those companies that can achieve both clearly become particularly prized against an inflationary backdrop.

3.2 Japan

Back in fashion

2023 was a year in which Japan came squarely back into fashion for equity investors. There was a sense of transformation not seen since the time of Abenomics, and which drove Japanese equities to very strong performance, and may well continue to boost them in 2024. The Japanese equity market returned 30.3% in local currency terms, the highest return of any of the developed markets. (There was a 6.8% decline in JPY versus the dollar over the year.)

After many years of low and even negative inflation, Japan ended up importing the supply side inflation affecting the rest of the world. Domestic inflation hit around 3% for the full year, with GDP growth approaching 2%. If this persists, it may well mean a fundamental reassessment of how to invest in Japanese equities, potentially driven by a revival in Japanese consumer spending as shoppers no longer feel they need to wait for price falls before spending on big-ticket items. If inflation remains at a long-term level of 2%, then that could further favour higher quality equities as well as value. It would also be surprising if it didn't herald an eventual rise in interest rates. Notwithstanding these peak levels of inflation, however, the Bank of Japan has continued to hold its rates at negative, watching the next steps of the Fed in particular.

Figure 51: Japan GDP and CPI (3 year trailing average)

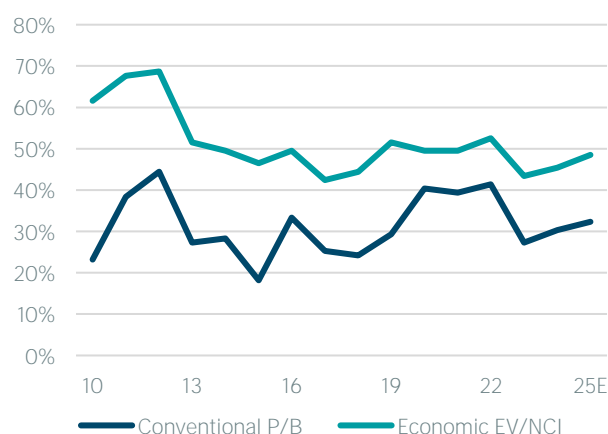


Source: DWS, Bloomberg Finance L.P., data as of January 03, 2024.

The other big news for Japanese investors was the corporate reform agenda being pushed by the Tokyo Stock Exchange. Once again, the last time something like this was attempted was during the Abenomics era. In 2013, net foreign fund flows to Japanese stocks totalled USD 153bn. This time around it has been under USD 40bn, as investors question whether this

time will turn out to be any different to 2013. But determination and pressure seem high this time around and policy makers seem committed. Threats to delist companies, to name-and-shame offenders and to prevent shareholder-unfriendly measures from continuing are intended to show that the Japanese authorities are in earnest. The TSE has not only targeted companies with price-to-book ratios of below one, but has also instigated a broader campaign against companies with low returns on capital. At the moment, we calculate that a third of the companies in our coverage universe still trade below 1x conventional book value. When we include total cash-generative assets and total liabilities, we find that nearly half trade below our economic version of book value.

Figure 52: Proportion of companies with P/BV below 1x



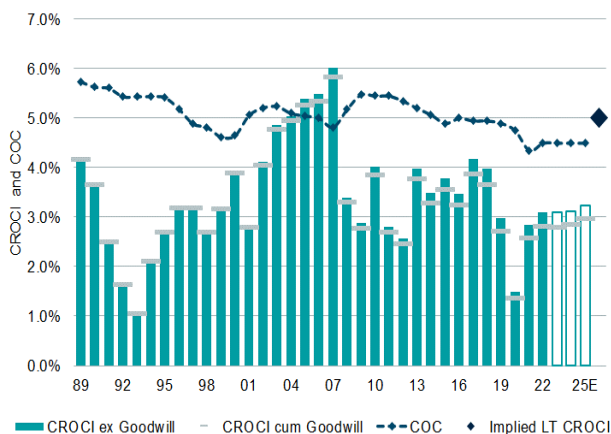
Source: DWS, CROCI. The number looks at the proportion amongst Japanese companies under CROCI Coverage. Data as on 3rd Jan 2024.

As of the end of 2023, disclosures regarding “action to implement management that is conscious of cost of capital and stock price” have significantly improved. This is especially true for companies with conventional price-to-book of less than 0.5x, where the disclosure rate is nearly 70%. Hopefully improvements in those metrics will follow in due course, even if returns have not yet been materially enhanced at the company level.

In aggregate, profitability has lagged the rest of the developed market. Real return on capital has not exceeded 4% since 2017, and has not exceeded 5% since the financial crisis. There have been some tentative signs of improvement in the median and in the top quartile by profitability, but if the measures are successful then median returns should rise

materially from here. By way of comparison, Europe's aggregate returns are 5.6%, whereas the US is in double figures.

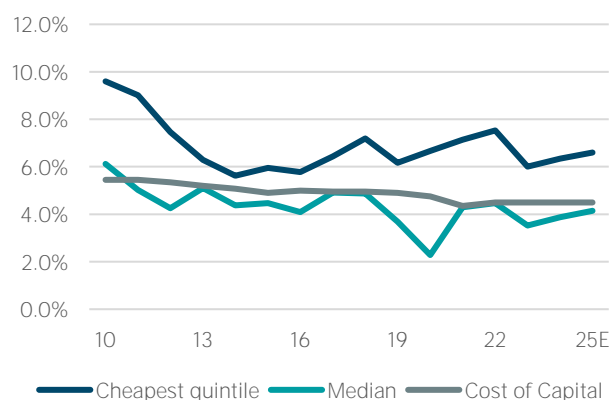
Figure 53: Japan CROCI cash return vs Cost of Capital



Source: DWS, CROCI. Aggregate values for Japanese companies under CROCI Coverage. Data as on 3rd Jan 2024.

In good news for value investors, though, the cheapest quintile of companies already have a materially higher profitability and have done so for over a decade, particularly since the high liquidity period of Abenomics which encouraged the performance of low price-to-book, low profitability companies. On 2023 numbers, the returns were over 70% higher than the market median, for example. Returns have consistently been over 6% since 2017.

Figure 54: Cheapest quintile, Median vs Cost of Capital

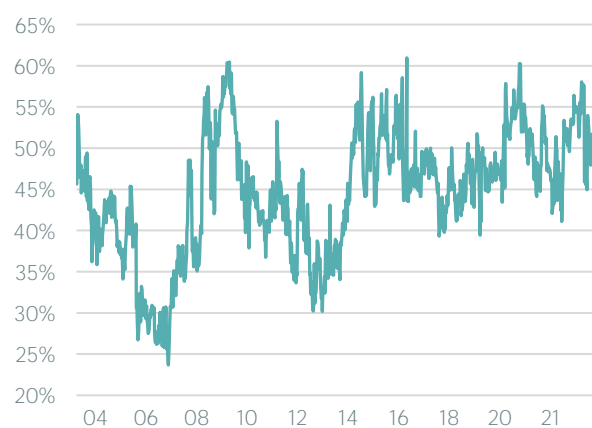


Source: DWS, CROCI. Cheapest quintile and median values correspond to Japanese companies under CROCI Coverage. Cost of capital is global cost of capital. Data as on 3rd Jan 2024.

Because of this historical undervaluation of higher quality equities, there has long been a high level dispersion in Japanese equities between the cheapest companies and the market median. Whilst some of that dispersion has been given back as a result of the 2023 rally, the cheapest decile of

companies still look attractive relative to the broader market (in the cheapest quartile since 2004).

Figure 55: Dispersion of economic valuation: Japan

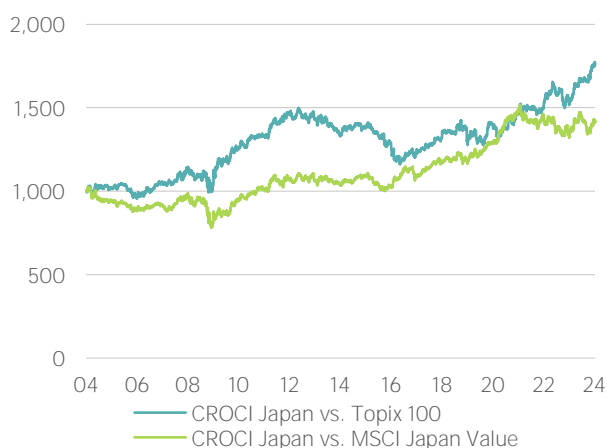


Source: DWS and CROCI. Charts show the percentage difference between the median valuation for the region and cheapest fifth percentile based on CROCI Economic PE, based on CROCI's coverage universe in the region. Data as available on November 23, 2023.

CROCI Japan has benefited from these trends and has managed to outperform consistently since its launch in 2004, generating an annualised return of 8.6% and outperforming the TOPIX 100 by 2.7%. It has had a particularly strong run since 2016, over which period it has outperformed in every calendar year. The strategy looks for the cheapest 30 companies in the country, based on CROCI's economic PE metric. It has had a much higher quality exposure than the median stock in the Japan coverage universe.

Figure 56: Relative performance of CROCI Japan

	CROCI Japan	Topix 100	MSCI Japan
2022	-0.3%	-3.2%	+8.6%
2023	+40.3%	+30.3%	+31.5%



Source: DWS, CROCI, Bloomberg Finance L.P., Factset Research Systems Inc. Data as of 29 Dec, 2023.

3.3 Value through the CROCI prism

We make three important observations in this section, which examines the current market environment:

1. There is often a lag between economic characteristics changing and the market changing its factor focus (we discuss the recent leadership of value and growth below)
2. Operational characteristics for CROCI strategies are attractive, and dispersion of value is supportive
3. Inflation of at least 2% has historically been positive for CROCI strategies

Performance of Value

2023 was a mixed year for value strategies, thanks to two periods of strong performance of stocks which have been dubbed the Magnificent Seven (discussed in Section 2.2). First, in April and May, there was very strong performance from stocks associated with artificial intelligence after the

launch of ChatGPT, which eclipsed the rest of the market especially in the US.

Second, in the final quarter of the year, there was a move away from the value-led performance of the third quarter towards growth and momentum factors, thanks to a growing market consensus that inflation was falling faster than expected with the potential upshot of cuts in base interest rates.

The CROCI valuation strategies in the table below are exposed to value and quality, and generally have negative exposure to growth. So the result for CROCI strategies was that, with only a couple of exceptions, they outperformed the value (or dividend) benchmarks but underperformed the broad benchmarks.

Figure 57: Annualised returns for selected CROCI strategies over various periods

	<i>Pre-Crisis Market</i> 2004-2007	<i>Financial Crisis</i> 2008-2009	<i>Rising Liquidity</i> 2010-2017	<i>Growth/ Momentum</i> 2018-2021	<i>Inflationary period</i> 2022-2023	<i>Entire time period</i> 2004-2023
CROCI US	14.6%	-6.0%	12.8%	11.6%	5.8%	10.0%
S&P 500	8.6%	-11.4%	13.2%	17.0%	1.2%	9.0%
Relative Performance	6.1%	5.3%	-0.4%	-5.4%	4.6%	1.2%
CROCI Euro	19.7%	-12.1%	10.4%	6.5%	1.2%	8.0%
Euro STOXX 50	15.2%	-14.9%	5.2%	7.7%	5.2%	5.4%
Relative Performance	4.6%	2.8%	5.2%	-1.2%	-3.9%	2.6%
CROCI Japan	13.3%	-18.0%	12.3%	7.9%	18.3%	8.6%
TOPIX 100	9.9%	-21.8%	10.1%	6.5%	12.3%	5.9%
Relative Performance	3.3%	3.8%	2.2%	1.4%	6.0%	2.7%
CROCI World	21.6%	-0.8%	10.4%	11.0%	5.2%	11.0%
MSCI World	13.2%	-12.2%	9.8%	13.3%	0.7%	7.8%
Relative Performance	8.4%	11.4%	0.6%	-2.3%	4.6%	3.2%
CROCI US Dividends	15.2%	0.9%	16.4%	13.0%	3.5%	12.5%
S&P HYD Aristocrats	6.2%	-5.6%	13.3%	10.6%	0.4%	8.0%
Relative Performance	9.0%	6.6%	3.0%	2.4%	3.1%	4.5%
CROCI Global Dividends	20.3%	-2.0%	11.2%	4.9%	6.4%	9.8%
MSCI World HDY	15.0%	-13.1%	8.6%	7.1%	2.0%	6.5%
Relative Performance	5.4%	11.1%	2.6%	-2.3%	4.4%	3.3%
CROCI Sectors Plus*	23.4%	-4.0%	12.5%	13.7%	8.0%	11.9%
MSCI World*	14.4%	-12.2%	9.8%	13.3%	0.7%	7.6%
Relative Performance	9.0%	8.2%	2.7%	0.4%	7.4%	4.3%

Source: DWS CROCI, Bloomberg Finance LP; Data as of 31 December 2023. The returns for CROCI World, CROCI Global Dividends and Global Sector Plus strategies are in USD terms. For other strategies, returns are in respective region's local currency. The Live Date for each of the strategies: CROCI US, CROCI Euro, CROCI Japan - 02 February 2004; CROCI World - 29 November 2010; CROCI US Dividends - 13 March 2012; CROCI Global Dividends - 15 March 2012; CROCI Sectors Plus - 18 November 2015.

*From 31 March 2005 for CROCI Sectors Plus;

Past performance does not predict future returns. Performance before the live date of strategies is simulated. The simulations apply an investment strategy retrospectively to data that was in part reconstructed and not necessarily available at the time. As a consequence, there may be instances when realised returns would have shown variation from those simulated and the latter may have had the advantage of hindsight. HYD stands for High Yield Dividend and HDY stands for High Dividend Yield.

Past performance does not predict future returns. Forecasts are not a reliable indicator of future performance. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Market and index performance data is sourced from Bloomberg Finance L.P. Company data is from the CROCI database. Unless stated this data is as of December 2023. Forecasts are based on assumptions, estimates, views and or analyses, which might prove inaccurate or incorrect.

The most notable exception was CROCI Japan, which beat the TOPIX 100 by 10% during 2023. We have discussed Japan in Section 3.2.

The table above shows the effect of the 2023 market when combined with 2022 (effectively the post-COVID performance), with overall outperformance relative to the broad benchmarks in all strategies except for CROCI Euro. On that basis, CROCI strategies continue to look very solid in terms of performance over all time periods except the 2018-2021 growth/momentum environment. CROCI strategies have managed to perform in many difficult environments, provided there has been enough of a focus on fundamentals.

Looking behind the numbers, there was a sharp swing back in the value/growth pendulum which has moved so dramatically since the onset of the COVID pandemic. The chart below illustrates the extreme behaviour of factor leadership in the past few years. There has been outperformance of growth by value or the reverse by at least 20% in three of the past four years. It is our contention that the economic environment should be well suited to a swing back towards value, given the post-pandemic reversal of the long-standing ultra-loose monetary policy.

Figure 58: Value versus growth



Source: DWS, CROCI, MSCI. Performance reflects gross returns in USD. Data as available on 31 December 2023.

We can see how factor leadership moved back and forth around the time of the financial crisis too, by way of comparison. This is an understandable behavioural finance phenomenon. If investors have been used to one factor for a decade or more (as they have with growth in recent times during the high liquidity environment), then it is difficult to move away from it even if the economic environment shifts. Take the financial crisis for a reverse example. Although the higher liquidity environment created by quantitative easing after the financial crisis made for a strong environment for growth, the market had been used to multiple decades where value was in the ascendancy. Similar pendulum swings

between value and growth can be seen in the couple of years during and after the financial crisis.

Figure 59: Value relative to performance of Growth (2003-2010)



Source: DWS, CROCI, MSCI. Performance reflects gross returns in USD. Data as available on 10 September 2010.

In fact value has been the dominant factor over the long term, with interspersed periods where growth has outperformed. The high liquidity period between the financial crisis and 2022 stands out as an exception, especially from around 2017 onwards when real rates turned negative. For example, looking at the behaviour of value vs growth from 1980 until the financial crisis, value has been the driving factor with the exception of the build up to the TMT bubble in the late 1990s. Quality has outperformed broadly in line with value's outperformance up until the financial crisis, with the brief exception of the TMT bubble.

Figure 60: Value relative to performance of Growth and Quality (1980 – 2010)



Source: DWS, CROCI, MSCI. Performance reflects gross returns in USD. Data as available on 10 September 2010.

Value and quality have both been more likely to outperform in falling markets too. The up- and downside capture ratios paint a versatile picture for the CROCI strategies. The downside

capture ratios in the table below have been especially impressive before and during the financial crisis. Over the long term, both sides of the capture ratio have performed strongly –if anything the strong downside capture has helped provide extra comfort for investors in times of elevated market volatility.

Figure 61: Capture ratios for selected CROCI Strategies (across time period)

Strategy	Benchmark	2004-2009			Past 10 years			2004-2023		
		Upside	Downside	Overall	Upside	Downside	Overall	Upside	Downside	Overall
CROCI US	S&P 500	121.9%	92.9%	131.1%	105.7%	117.6%	89.8%	108.6%	106.8%	101.7%
CROCI Euro	Euro Stoxx 50	108.5%	92.2%	117.7%	96.2%	88.9%	108.3%	96.8%	84.7%	114.2%
CROCI Japan	Topix 100	98.5%	87.0%	113.3%	104.9%	93.1%	112.7%	100.0%	87.8%	113.8%
CROCI World	MSCI World	131.1%	89.6%	146.3%	104.6%	107.9%	96.9%	112.1%	100.5%	111.5%
CROCI US Div.	S&P HYD Arist.	106.0%	60.7%	174.7%	99.8%	89.1%	112.0%	106.0%	80.7%	131.4%
CROCI Global Div.	MSCI World HDY	108.5%	75.6%	143.5%	111.3%	112.7%	98.8%	107.9%	92.4%	116.8%
CROCI Sectors Plus	MSCI World	117.5%	81.2%	144.6%	100.5%	88.4%	113.7%	103.4%	82.2%	125.8%

Source: DWS CROCI, Bloomberg Finance LP; Data as of 29 December 2023. The Live Date for each of the strategies: CROCI US, CROCI Euro, CROCI Japan - 02 February 2004; CROCI World - 29 November 2010; CROCI US Dividends - 13 March 2012; CROCI Global Dividends - 15 March 2012; CROCI Sectors Plus - 18 November 2015. Past performance does not predict future returns. Performance before the live date of strategies is simulated. The simulations apply an investment strategy retrospectively to data that was in part reconstructed and not necessarily available at the time. As a consequence, there may be instances when realised returns would have shown variation from those simulated and the latter may have had the advantage of hindsight. HYD stands for High Yield Dividend and HDY stands for High Dividend Yield.

Operational characteristics for CROCI strategies are attractive, and dispersion of value is supportive

To assess the intrinsic appeal of quality value, we focus on the current valuation and the free cash flow generation of the concentrated CROCI strategies. The Economic PE for each of the strategies is on average around 40% cheaper than the relevant market (and in some cases cheaper than that). For example, for each of the global strategies, free cash flow yield is over 6.9% with very low associated financial leverage, while global equities have a FCF yield of 4.1%. CROCI Sectors Plus has the highest free cash flow yield of all the strategies at the moment, at 7.5%. While not at its 2023 peak, it remains high in comparison to the past few years where it ranged between 4.9% and 5.8%

Figure 62: CROCI strategy oper. characteristics

2024E	Econ. PE	Discount to market	FCF Yield	Fin. Lev.
CROCI US	18.3	-45%	7.1%	21.9%
CROCI US Dividends	20.3	-39%	6.6%	20.5%
CROCI Euro	17.5	-43%	6.2%	34.6%
CROCI Japan	21.3	-41%	4.3%	12.5%
CROCI World	20.1	-36%	6.3%	20.8%
CROCI Sectors Plus	18.6	-41%	7.5%	18.8%
CROCI Global Dividends	18.5	-41%	6.9%	19.9%

Source: DWS CROCI; Data as available on 03 January 2024. Financial leverage is defined as Net Financial Liabilities to Market Capitalisation

Attractive dispersion of value

Since 2003 we have monitored the cheapness of the most attractive companies, based on CROCI's economic valuation. Despite the relatively demanding valuation at the market level, there remains a substantial discount for the valuation of the cheapest companies on economic valuation compared to the market median. This of course means that there are large pockets of value in global and regional equities. The discount has narrowed a bit from the all-time wides that we saw in 2022 where earnings recovered dramatically after the pandemic, but are still a long way ahead of pre-pandemic highs.

Europe's dispersion is only two percentage points below its historical high (if the 2022 spike related is excluded) at 57%, the theoretical upside if the cheapest decile were to mean revert to the market median. The US and Japan are at 50% and 55% respectively. All three regions have long-term average dispersions in the low 40s, so at their current levels dispersion remain compelling. Above average dispersion tends to be a good leading indicator for performance of the CROCI strategies, assuming the market is focusing on fundamentals.

Figure 63: Dispersion of economic valuation: US



Source: DWS CROCI, Bloomberg. Charts show the percentage difference between the median valuation for the region and cheapest fifth percentile based on CROCI Economic PE, based on CROCI's coverage universe in the region. Data as available on 17 November 2023.

Figure 64: Dispersion of economic valuation: Europe



Source: DWS CROCI, Bloomberg. Charts show the percentage difference between the median valuation for the region and cheapest fifth percentile based on CROCI Economic PE, based on CROCI's coverage universe in the region. Data as available on 17 November 2023.

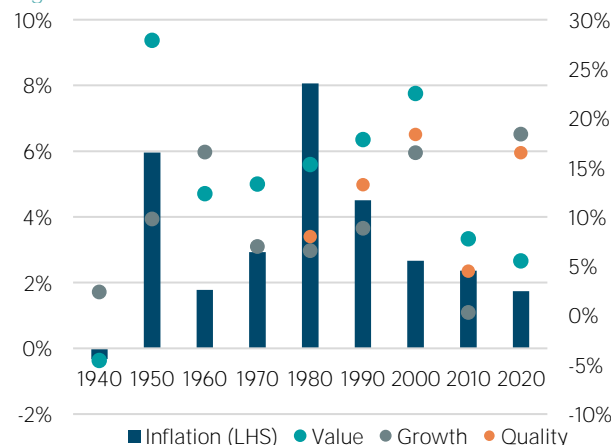
Figure 65: Dispersion of economic valuation: Japan



Source: DWS CROCI, Bloomberg. Charts show the percentage difference between the median valuation for the region and cheapest fifth percentile based on CROCI Economic PE, based on CROCI's coverage universe in the region. Data as available on 17 November 2023.

1930s, we use Fama-French data in the chart below as a proxy for CROCI's value metrics). Refer to Section 3.1 for further commentary on the impact of inflation on quality and value factors.

Figure 66: US CPI overlaid with Value vs Growth factors



Source: DWS, Federal Reserve Economic Data, Fama French Three Factor Asset Pricing Method. Value is the bottom decile and growth is the top decile in price to book ratios, of U.S. stocks. Quality is the top decile in terms of ROE. Period on the x axis refers to the preceding decade. 1940 refers to 1931 to 1940 and so on. Years covered 1930 to 2020.

2% inflation or more normally supportive for quality value

The advent of high inflation in 2022 was a strong fillip for the renewed performance of CROCI strategies. The data shows that inflationary environments have always tended to provide support for value, along with quality.

Inflation that averages 2% or more over a decade has tended to aid the performance of value over the long term, as the chart below indicates. (In order to look as far back as the

Past performance does not predict future returns. Forecasts are not a reliable indicator of future performance. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Market and index performance data is sourced from Bloomberg Finance L.P. Company data is from the CROCI database. Unless stated this data is as of December 2023. Forecasts are based on assumptions, estimates, views and or analyses, which might prove inaccurate or incorrect.

Appendix: an update on bubbles

A final comment on our bubble analysis, which we have calculated since 2003 by looking for those stocks priced at over 1.5x their five year average return on capital. As of the end of December, around 30% of global stocks were still in bubble territory, which is a bit higher than the pre-financial crisis level.

This is an interesting phenomenon given that we reckon equity markets to be trading on an economic PE of 32.4x whilst they traded on around 22x before the financial crisis. Consensus forecasts tend to be optimistic at the start of the year for FY1 let alone FY2. But assuming that the 2025 forecasts are accurate, then economic valuations would fall to 28.8x—a 30% premium to the pre-crisis levels.

Figure 67: Global bubble analysis since 1999 (% in bubbles)



Source: DWS CROCI, Data as of 31 December 2023. Numbers represent the proportion of coverage in bubble territory (determined as Implied CROCI > (Median CROCI for 5 years * 1.5x). Forecasts are not a reliable indicator of future performance. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.

Figure 68: Global bubble analysis by sectors (% in bubbles)



Source: DWS CROCI, Data as of 31 December 2023. Numbers represent the proportion of coverage in bubble territory (determined as Implied CROCI > (Median CROCI for 5 years * 1.5x). Forecasts are not a reliable indicator of future performance. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.

The number of bubbles may be similar, but the inter-quartile range of valuations as well as their standard deviation globally has substantially increased. This again suggests that the expensive stocks are priced more aggressively than they were before the financial crisis. But it is good news for value investors as the cheapest end of the market is further from the market average, and allows more scope for stock picking. The IQR and standard deviation have increased for the underlying returns but not by as much as the valuations.

Figure 69: Dispersion of Bottom-up Economic PE

Economic PE	2007	2022	2023e	2024e
First Quartile (Q1)	19.0x	19.4x	23.0x	20.9x
Median	23.4x	28.5x	30.7x	29.2x
Third Quartile (Q3)	28.0x	38.1x	39.5x	37.5x
Interquartile Range	9.0x	18.7x	16.5x	14.6x
Standard deviation	10.8x	15.5x	15.3x	14.6x

Source: DWS, CROCI. Data covers non-financial stocks within CROCI's coverage universe. Data on 3 Jan 24

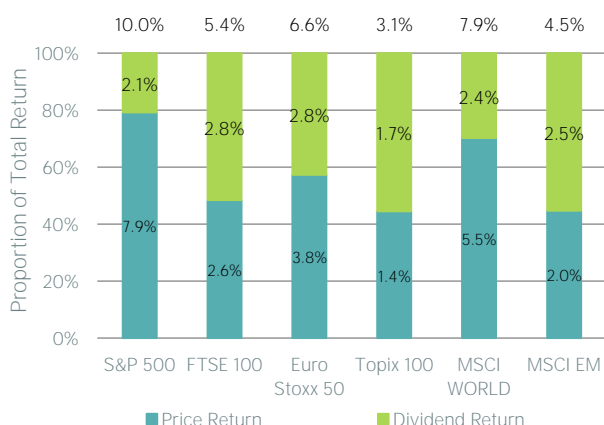
3.4 The Case for Dividends

Dividends continue to account for a significant portion of total equity returns:

We do not think that dividends (as a factor) will ever outlive their usefulness. For a long period, prices and dividends have both contributed significantly to total returns. However, the share of contribution has been different in different regions or at different point of times during the market cycles.

Figure 70 shows the contribution to annualized total return for past three decades across various regional benchmarks between price return and dividend return (including reinvestments of dividend). Clearly, in the US, the share of dividend has been relatively low (~20%) compared to Japan or Emerging Markets where dividend contributed over 50% of the total return. Regardless, there is no escaping the fact that dividends make up a material portion of shareholder returns across all equity benchmarks.

Figure 70: Price Return, Dividend Return & Total Return



Source: DWS, Bloomberg Finance LP. Annualized price return, dividend return and total return from 31st December 1993 to 30th November 2023

The use of cash (for paying dividends or for financing growth) is at the heart of corporate and investor behavior. So it is essential to try to understand the importance of dividends for investors in the future. There has been no shortage of academic literature around dividend policy for corporates. Two extreme theories were proposed more than half-a-century ago.

Modigliani and Miller’s 1961 theory of Dividend Irrelevance, which maintains that the choice of what to do with cash should not matter to investors. The flaw in this theory is that it assumes that reinvestment in businesses can always yield the same return to shareholders as the dividend re-invested.

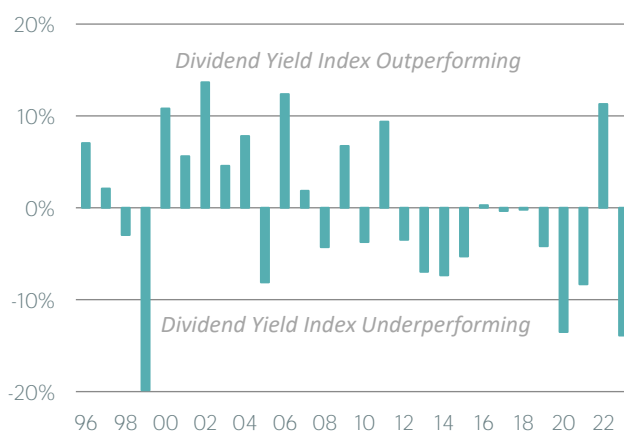
At the other end, **the bird-in-the-hand theory** was developed by **Myron Gordon and John Lintner in the early 1960s**. They

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argue that investors prefer dividends (a bird in the hand) to potential future capital gains (two in the bush).

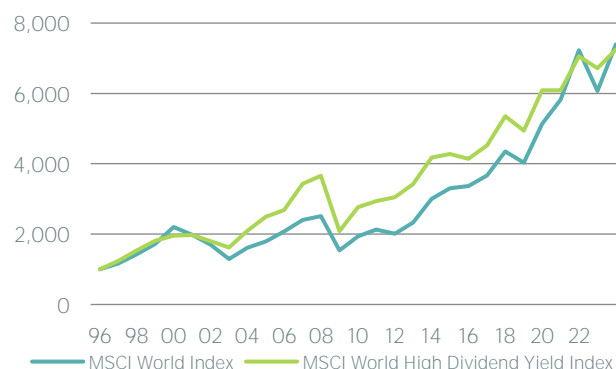
The reality has further evolved over past few decades as many companies prefer to do share-buyback in lieu of dividends due to differential tax treatments and investor preferences. In the bottom-up world of CROCI, we stay away from these divergent views. The question we want answer is whether selecting stocks on dividend yield delivers higher return or not.

Figure 71: Annualized performance difference between MSCI World High Dividend Yield Index and MSCI World Index



Source: DWS, Bloomberg Finance LP. Annualized price return, dividend return and total return from 31st December 1995 to 30th November 2023

Figure 72: Relative performance of MSCI World Index and MSCI World High Dividend Yield Index



Source: DWS, Bloomberg Finance LP. Annualized price return, dividend return and total return from 31st December 1995 to 30th November 2023

Figure 71 shows the annual performance difference between MSCI World High Dividend Yield Index and its parent MSCI World Index. Looking at the chart, clearly a younger investor

who entered the profession after the global financial crisis might not prefer dividend paying companies. A more veteran investor who has been around since before the technology bubble may be more reluctant to ignore dividend paying companies. Over the entire period though, both the benchmarks have resulted in remarkably similar returns (Figure 72).

Does a higher dividend yield mean better value?

The following section analyses a Dividend Yield strategy within the context of value-based investment approaches. **Our conclusion is that there are significant operational risks involved in investing in the highest dividend-yielding stocks.** A high yield portfolio today typically has lower profitability and higher financial gearing. However, the risks can be controlled by focusing on companies with a reasonable pay-out. Ultimately the key is to focus on real 'economic' rather than reported 'accounting' metrics.

To illustrate the different portfolios picked by different value strategies, the following table summarizes the overlap from picking the 50 cheapest/highest yielding stocks out of our developed markets coverage (~700 companies) using Dividend Yield, Economic PE and Accounting PE

Figure 73: Little overlap exists between earnings and dividend based value strategies

	Overlap Percentage	
Economic P/E with Accounting P/E	16	32%
Economic P/E with Dividend Yield	6	12%
Accounting P/E with Dividend Yield	12	24%

Source: Source: DWS, CROCI. Data as on 30th November 2023

As reflected in Figure 74 companies with a higher dividend yield have the following characteristics:

- A lower level of profitability as indicated by cash returns (CROCI) and net profit margins.
- Higher capital intensity, as indicated by the Sales-to-Gross-Capital-Invested ratio (asset turnover), which means that the higher capex-to-sales ratio is structural.
- Higher pay-out of their free cash flow (FCF) out as dividends.
- Higher financial leverage: the net-financial-liabilities-to-market-cap ratio is close to zero for the Economic PE portfolio.
- Apparently cheap based on accounting PE metrics and dividend yield, but much more expensive using Economic or FCF metrics.

Companies with lower Accounting P/E have the following characteristics:

- Lower levels of profitability as indicated by cash returns (CROCI), EBITDA margin and net profit margins.
- Very higher financial leverage: the median net-financial-liabilities-to-market-cap ratio is above 150%.

The Economic P/E portfolio, at the other extreme, offers similar dividend yield to an Accounting P/E portfolio (3.5%) but much higher cash return (11.7%) and much lower leverage (net-financial-liabilities-to-market-cap ratio of 16.6%).

Figure 74: Valuation, Operational and Financial Characteristics of Dividend Yield, Economic PE and Accounting PE Portfolios

	Div. Yield	Eco. P/E	Acc. P/E
Profitability			
EBITDA Margin	22.6%	25.5%	16.4%
Net Profit Margin	8.4%	15.1%	6.5%
CROCI	2.9%	11.7%	2.9%
Sales to Gross Capital Invested	0.44x	0.58x	0.61x
Free Cash Flow			
Depreciation / Sales	7.2%	4.1%	5.3%
Capex / Sales	10.3%	5.2%	6.7%
FCF / Sales	8.1%	13.5%	4.7%
Dividend / Sales	5.5%	3.5%	1.2%
FCF after paying Divs	2.6%	10.0%	3.4%
Financial Leverage			
EBITDA / Net Interests	7.8x	13.4x	7.4x
Net Fin. Liabilities / Mkt Cap	88.3%	16.6%	154.6%
Valuation			
EV/NCI	1.0x	1.5x	0.8x
Economic PE	30.4x	13.8x	22.4x
Accounting PE	10.6x	9.3x	5.9x
EV/FCF	15.1x	10.3x	12.0x
Div. Yield	7.0%	3.5%	3.5%

Source: DWS, CROCI. Data as on 30th November 2023. Median values for 50 developed marked companies ranked based on lowest Eco P/E and Acc. P/E and highest dividend yield

Building an economic approach to a dividend yield strategy

Thus a value strategy based on dividends needs to reconnect the links between the operating side and financing side of a company. A dividend yield strategy taking only dividends or

nominal earnings into consideration is potentially misleading. It hides the potential risk to the sustainability of the dividends. Instead, investors should be aware of the risks to dividends if low levels of profitability, high financial gearing or external shocks pose further risks to those looking for a steady stream of income.

Mindful of the above, we developed the CROCI Dividends Strategies in 2012 (Global & US). Here we use a quantitative approach based on the CROCI database to select good dividend-yielding stocks that trade on low Economic PE ratios (rather than Accounting), while also removing the risks associated with high financial gearing and low profitability.

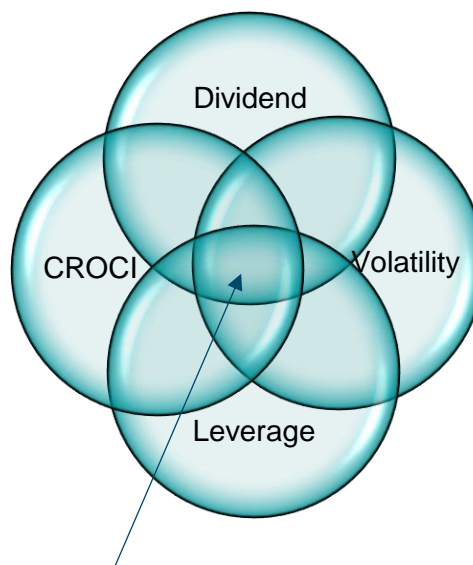
To that end, we select the CROCI Global Dividend strategy as follows: from the developed market CROCI coverage, we screen out poor companies from an ESG and liquidity perspective and companies not paying a dividend. For the remaining companies, simultaneously apply following filters and then select companies that trade on low Economic PE.

Figure 75: CROCI Dividend Strategies Filter

Filter	Criteria	Reason
Dividend	Screen out companies that are in the bottom-half of based on current year dividend yield	Companies that are not paying meaningful dividend should be excluded from a dividend strategy
Cash Returns (CROCI%)	Screen out companies in the lowest decile of cash returns or CROCI (%)	The logic is that as capital has been provided by third parties, if a company cannot get a return on that capital, it will not be able to sustain a dividend to shareholders
Financial Leverage	Screen out companies that are in the top decile of financial leverage	While leverage may not normally be a problem, it could become one in a crisis, and this could endanger dividends.
Volatility	Screen out companies in the top decile of share price volatility	High volatility relative to the market may indicate significant changes ahead for the company in terms of its risk profile or its level of earnings, which will not be captured by current financial metrics such as earnings or financial leverage.

Source: DWS, CROCI. Data as on 30th November 2023

Figure 76: Sustainability Filters in CROCI Dividend Strategies



As of November 2023, out of 422 dividend paying companies that are eligible after ESG and Market Cap filter, only 147 companies pass all the dividend sustainability filters

Source: DWS, CROCI. Data from CROCI Global Dividend Strategy rebalanced on 22nd November 2023

Filter Effectiveness

To assess the effectiveness of the sustainability filters, Figure 77 shows the characteristics of companies from our actual rebalanced portfolio in November 2023. Out of 422 dividend paying companies that clear our ESG and market capitalization filter, if we select 50 companies based on each of the sustainability filter, one at a time, the overlap that we get with the final actual portfolio simultaneously applying all four filters is very low. For example:

- 50 **highest dividend yield** companies also select companies that are high leverage and low CROCI. 18% of the portfolio gets allocated to Utilities sector.
- 50 **lowest volatility** companies give higher CROCI and low leverage but 60% of the exposure is to Consumer Staples and Industrial.
- Companies simply selected based on **higher cash returns or lower leverage**, has much lower dividend yield and they tend to be more expensive on Economic PE. These filters also lead to a concentrated portfolio with very high exposure to IT sector.

A portfolio of the stocks selected after simultaneously applying all the sustainability filters and then selecting based

on Economic PE offers higher dividend yield and higher CROCI but also lower volatility and lower leverage. It offers

much higher value (low Economic PE) and higher sector diversification.

Figure 77: Little overlap exists between earnings and dividend based value strategies

Equally weighted 50 stock portfolio based on:	Div. Yield	Vol.	CROCI	Leverage	Eco. PE	Top two sectors	Overlap with final Selection
Highest Dividend Yield	5.8%	1.47	3.6%	77.9%	25.3x	EN (26%) UT (18%)	13
Lowest Volatility	3.1%	0.99	9.6%	24.7%	32.3x	CS (40%) IN (20%)	4
Highest CROCI	1.6%	1.50	32.1%	8.7%	35.8x	IT (32%) IN (30%)	3
Lowest Leverage	1.5%	1.51	16.7%	-4.7%	30.2x	IT (36%) HC (18%)	3
Lowest Eco. PE after Sustainability Filters	3.9%	1.47	8.7%	21.2%	17.7x	EN (22%) HC (22%)	-

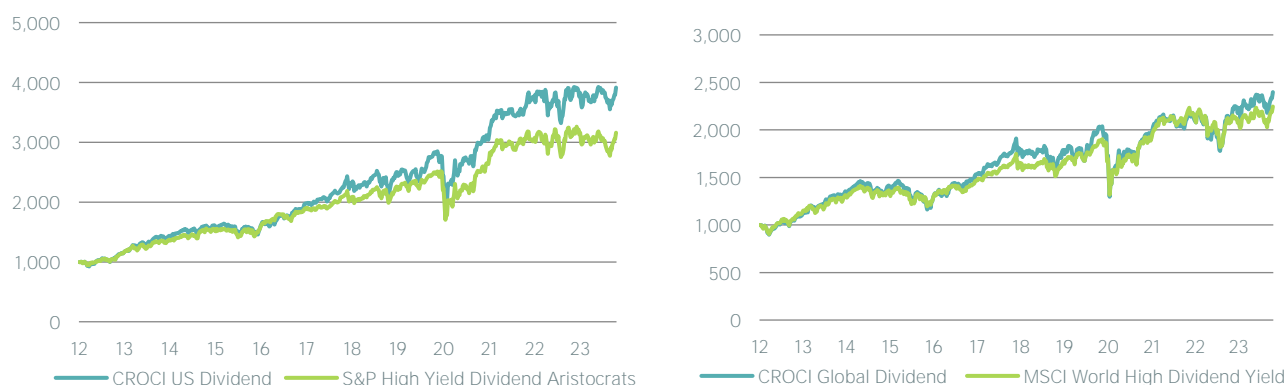
Source: DWS, CROCI. Data from CROCI Global Dividend Strategy rebalanced on 22nd November 2023

Strategy Return

The CROCI Investment product suite includes two dividend strategies (**CROCI US Dividend** and **CROCI Global Dividend**) that have been live since **March 2012**. Figure 78 shows the relative performance of CROCI US Dividend strategy (against S&P 500 High Yield Dividend Aristocrat Net Return Index) and

CROCI Global Dividend strategy (against MSCI World High Dividend Yield Net Return Index). CROCI US Dividend Strategy has outperformed the market benchmark by nearly 200 bps per annum since its inception in March 2012. Similarly, CROCI Global dividend Strategy has outperformed by 60 bps annually since its inception.

Figure 78: Relative performance of CROCI US Dividend Strategy with S&P High Yield Dividend Aristocrats Index and CROCI Global Dividend Strategy with MSCI World High Dividend Yield Index



Source: Bloomberg Finance LP, DWS, CROCI. Data from Weekly performance data from March 2012 to December 2023. Data as on 16th December 2023

Conclusion

Whether an investor is in the camp of **Modigliani and Miller** and consider dividend policy irrelevant or a follower of **Myron Gordon and John Lintner** that promotes dividend payout, it is clear that simply selecting companies based on higher dividend yield is not the optimum approach. It tends to lead to a portfolio of companies that is highly leveraged, with low

margins and economically very expensive. To run a successful dividend strategy it is important to consider real economic earnings over reported accounting numbers and should eliminate certain risk that minimizes the chance of a dividend cut.

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Section 4:

Market Valuation

4.1 Regional & Sector Valuations

At the global level, the Pharma & Energy industry groups continue to feature amongst the cheapest three for the second year in a row⁸. Amongst the two industry groups, Pharma holds the pole position in Europe & Japan, while being the 5th cheapest in the U.S. Of course this partly reflects the significantly higher relative profitability of U.S. Pharma.

The low dispersion of Economic PE amongst the cheapest three industry groups is quite evident, in sharp contrast to the most expensive three. At the expensive end of the spectrum, Software stands head and shoulders above the global average in terms of profitability (more than 3x global median) and its economic PE premium is about a third.

Figure 79: Global equity valuations by industry group (GICS Level 2)

	Economic PE				CROCI			
	2022	2023E	2024E	2025E	2022	2023E	2024E	2025E
Global	30.1	32.1	29.7	26.8	8.7%	7.4%	7.7%	8.2%
Pharma Biotech & Life Sci.	20.8	22.6	23.4	19.2	15.2%	15.9%	14.8%	16.1%
Consumer Durables & Apparel	24.4	31.7	24.2	19.9	8.2%	6.2%	7.0%	7.9%
Energy	12.9	21.4	24.3	22.9	6.9%	4.5%	4.4%	4.2%
Food Beverage & Tobacco	28.1	28.2	24.8	23.2	14.1%	13.1%	12.9%	13.1%
Media & Entertainment	27.5	26.7	25.4	22.5	14.5%	14.5%	16.1%	17.8%
Automobiles & Components	49.6	33.3	27.7	21.9	2.1%	2.4%	2.5%	2.2%
Consumer Services	38.8	31.1	28.0	25.0	14.4%	12.9%	12.8%	13.4%
Capital Goods	29.2	29.8	29.2	24.9	8.3%	8.8%	9.1%	9.0%
Semis & Semi Equipment	19.0	28.2	29.9	24.8	24.7%	16.1%	17.6%	19.2%
Utilities	33.5	30.8	31.3	30.9	3.3%	3.1%	3.1%	3.0%
Materials	23.2	34.3	31.4	27.5	7.1%	4.9%	5.1%	5.4%
Transportation	29.3	32.0	31.4	28.1	4.7%	4.5%	4.4%	4.1%
Food & Staples Retailing	32.4	33.0	31.6	31.4	7.3%	5.8%	5.5%	5.6%
Health Care Equip. & Services	37.4	36.5	32.1	27.5	16.3%	14.0%	15.5%	15.4%
Household & Personal Products	36.3	34.0	32.3	28.5	10.3%	9.5%	9.6%	10.1%
Retailing	28.2	35.1	32.7	30.1	10.9%	9.3%	9.3%	9.5%
Com. & Professional Services	37.6	35.3	32.8	30.0	20.2%	18.8%	19.8%	20.6%
Tech. Hardware & Equipment	27.6	32.0	33.3	27.6	9.1%	6.5%	7.4%	9.4%
Software & Services	40.1	43.8	40.8	36.2	24.4%	25.0%	25.7%	27.2%
Telecommunication Services	54.9	59.7	67.0	66.1	1.8%	1.3%	1.4%	1.4%

Source: DWS, CROCI. The table shows the median numbers by sector.
Data as available on 03 January 2024. Past performance is not a reliable indicator of future results.

⁸ Last year reference in this section is relative to estimates in CROCI 2023 Outlook
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On median valuation, Japan has moved from the cheapest developed market region overall last year⁹ to now being broadly in line with US and Europe (at the median level).

Amongst the cheapest five industry groups for each regions, there are three overlaps– Pharma, Consumer Durables & Apparels and Energy¹⁰. At the other end, Telecommunication Services continue as the most expensive industry group within U.S. and Japan, while being second most expensive in Europe (a reflection of its poor profitability).

Figure 80: US equity valuations by industry group (GICS Level 2)

	Economic PE				CROCI			
	2022	2023E	2024E	2025E	2022	2023E	2024E	2025E
US Equities	32.1	32.4	30.2	27.0	14.5%	12.3%	11.8%	12.4%
Food Beverage & Tobacco	28.9	26.7	24.9	24.5	17.8%	17.0%	16.3%	15.7%
Media & Entertainment	29.5	26.2	25.4	22.7	14.5%	15.8%	17.1%	17.8%
Energy	20.7	25.4	26.1	23.0	7.5%	5.6%	6.3%	5.7%
Consumer Durables & Apparel	26.0	34.1	27.2	21.8	9.8%	6.8%	8.4%	8.8%
Pharma., Biotech. & Life Sci.	24.0	33.4	27.6	23.1	24.7%	20.0%	19.3%	20.0%
Automobiles & Components	61.6	41.6	27.9	27.7	2.0%	2.5%	3.3%	4.0%
Consumer Services	39.2	34.2	28.0	26.1	13.7%	12.3%	11.8%	12.4%
Capital Goods	31.6	31.2	29.6	26.4	18.8%	19.2%	19.1%	19.9%
Retailing	27.5	30.3	29.7	28.5	15.4%	12.8%	11.7%	11.5%
Semis & Semi Equipment	20.3	29.0	30.3	25.6	28.5%	21.0%	21.9%	24.2%
Health Care Equip. & Services	37.9	32.7	30.3	27.1	19.1%	18.2%	19.2%	19.8%
Food & Staples Retailing	32.3	32.4	31.1	29.2	8.0%	7.6%	7.1%	7.3%
Materials	31.8	33.2	31.1	27.4	9.9%	7.8%	7.9%	8.5%
Utilities	35.4	32.3	31.3	30.4	3.3%	3.1%	3.1%	3.2%
Household & Personal Products	36.6	34.0	32.6	29.6	13.3%	13.2%	13.2%	13.8%
Com. & Professional Services	38.9	37.6	32.9	30.6	27.9%	22.6%	24.4%	26.8%
Tech. Hardware & Equipment	31.5	31.8	33.0	27.4	15.7%	12.3%	13.7%	15.0%
Transportation	28.7	36.0	33.0	29.0	7.4%	6.9%	7.1%	7.4%
Software & Services	45.7	48.2	49.6	40.8	25.5%	25.0%	25.7%	27.4%
Telecommunication Services	54.2	52.1	55.1	54.6	1.8%	1.6%	1.5%	1.5%

Source: DWS, CROCI. The table shows the median numbers by sector.
Data as available on 03 January 2024. Past performance is not a reliable indicator of future results.

⁹ Last year reference in this section is relative to estimates in CROCI 2023 Outlook

¹⁰ Only one company covered in Japan within the Energy sector and hence will not appear within the Japan Equity valuation table
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Figure 81: European equity valuations by industry group (GICS Level 2)

	Economic PE				CROCI			
	2022	2023E	2024E	2025E	2022	2023E	2024E	2025E
Europe Equities	29.8	31.7	29.3	26.9	8.6%	7.0%	7.1%	7.5%
Pharma., Biotech. & Life Sci.	20.0	20.0	19.4	17.4	12.3%	12.9%	12.4%	13.0%
Semis & Semi Equipment	20.3	16.6	19.8	16.6	19.0%	17.1%	13.6%	13.7%
Energy	8.6	18.1	20.7	27.1	10.2%	3.4%	2.5%	2.5%
Transportation	23.5	19.7	23.4	22.8	8.1%	6.5%	5.7%	5.0%
Consumer Durables & Apparel	22.6	31.7	24.2	21.2	10.0%	6.8%	7.8%	8.3%
Food Beverage & Tobacco	27.9	27.9	25.3	23.2	15.1%	13.3%	13.5%	14.0%
Media & Entertainment	30.6	26.9	26.2	23.7	14.0%	11.5%	15.5%	15.3%
Household & Personal Products	28.5	28.2	27.0	24.7	13.6%	12.5%	12.3%	12.4%
Consumer Services	34.9	28.2	27.9	26.5	16.4%	21.7%	20.5%	21.4%
Com. & Professional Services	36.2	34.7	27.9	25.4	19.9%	18.7%	19.5%	20.6%
Utilities	30.4	28.1	30.9	31.7	3.9%	4.0%	3.5%	3.2%
Capital Goods	30.2	30.1	31.1	24.4	9.4%	9.4%	9.4%	9.9%
Tech. Hardware & Equipment	15.8	30.3	32.9	25.2	11.7%	6.5%	4.7%	6.1%
Health Care Equip. & Services	39.4	46.9	34.4	28.7	11.0%	10.4%	11.2%	11.9%
Retailing	35.4	46.2	37.3	34.9	3.6%	2.9%	4.3%	5.2%
Materials	21.9	38.7	38.9	34.1	7.1%	4.3%	3.8%	4.3%
Software & Services	37.1	40.3	40.3	30.9	29.3%	27.6%	27.0%	27.7%
Automobiles & Components	49.6	44.8	60.4	37.0	1.5%	1.6%	1.4%	1.9%
Telecommunication Services	62.4	147.8	nm	nm	1.4%	0.6%	0.5%	0.0%
Food & Staples Retailing	35.7	129.3	nm	nm	1.9%	0.6%	-0.1%	0.0%

Source: DWS, CROCI. The table shows the median numbers by sector.
Data as available on 03 January 2024. Past performance is not a reliable indicator of future results.

Figure 82: Japanese equity valuations by industry group (GICS Level 2)

	Economic PE				CROCI			
	2022	2023E	2024E	2025E	2022	2023E	2024E	2025E
Japan Equities	27.8	35.2	32.0	27.2	4.5%	3.8%	4.1%	4.3%
Pharma., Biotech. & Life Sci.	27.3	17.2	17.9	15.3	11.9%	9.6%	10.2%	10.9%
Consumer Durables & Apparel	35.5	29.6	22.9	20.0	2.2%	3.0%	3.5%	4.3%
Automobiles & Components	131.8	45.2	23.1	21.6	1.7%	2.8%	2.9%	2.6%
Software & Services	26.5	21.6	29.6	25.5	5.8%	5.6%	6.0%	6.4%
Utilities	249.7	nm	33.2	39.7	-0.6%	1.9%	1.5%	1.3%
Capital Goods	22.7	19.3	33.9	29.1	5.5%	5.3%	5.2%	5.0%
Transportation	nm	43.7	33.9	36.3	2.1%	3.0%	2.6%	2.5%
Food Beverage & Tobacco	39.8	31.7	35.2	34.8	5.4%	5.8%	6.0%	6.4%
Media & Entertainment	26.0	22.9	37.4	23.5	32.3%	27.3%	28.9%	27.6%
Semis & Semi Equipment	22.4	13.7	42.5	33.9	25.7%	16.1%	18.8%	20.0%
Tech. Hardware & Equipment	28.0	25.6	47.7	56.4	4.4%	1.8%	1.9%	2.1%
Materials	19.7	23.6	56.3	35.3	3.2%	1.1%	1.3%	2.3%
Household & Personal Products	46.4	45.1	64.2	37.1	4.1%	2.6%	4.4%	5.3%
Telecommunication Services	nm	nm	nm	nm	1.7%	1.0%	0.9%	0.7%

Source: DWS, CROCI. The table shows the median numbers by sector. Data as available on 03 January 2024. Past performance is not a reliable indicator of future results.

Section 5:

Markets and Sectors

Figure 83: Global Sector Valuation 2024E

		EV/NCI	CROCI	Ec PE
Communication Services (7.2% weight in MSCI World)	Current	1.69x	5.5%	30.9x
	5Y	1.87x	5.5%	30.5x
	10Y	1.85x	5.5%	30.9x
	20Y	1.66x	5.8%	28.8x
Consumer Discretionary (10.9%)	Current	1.84x	5.0%	37.2x
	5Y	1.91x	4.1%	44.8x
	10Y	1.75x	4.8%	38.3x
	20Y	1.49x	4.8%	38.5x
Consumer Staples (6.8%)	Current	3.22x	11.3%	28.6x
	5Y	3.76x	12.2%	26.3x
	10Y	3.62x	11.9%	27.0x
	20Y	3.08x	11.6%	27.7x
Energy (4.5%)	Current	0.90x	4.3%	21.1x
	5Y	0.88x	3.5%	25.8x
	10Y	0.93x	3.0%	30.5x
	19Y	1.13x	5.4%	16.7x
Financials* (15.2%)	Current	1.18x	10.1%	11.7x (20.2x)
	5Y	1.20x	9.3%	12.7x (20.6x)
	10Y	1.30x	9.5%	12.4x (18.6x)
	20Y	1.59x	10.6%	11.2x (15.9x)
Health Care (12.1%)	Current	3.75x	15.5%	24.2x
	5Y	3.94x	15.8%	23.7x
	10Y	3.69x	15.1%	24.8x
	20Y	3.04x	14.9%	25.2x
Industrials (11.1%)	Current	2.14x	7.1%	30.2x
	5Y	2.14x	6.2%	34.3x
	10Y	2.04x	6.7%	32.2x
	20Y	1.85x	7.0%	30.6x
Information Technology (23.0%)	Current	5.62x	14.6%	38.4x
	5Y	5.17x	15.4%	36.6x
	10Y	4.20x	15.3%	36.8x
	20Y	3.43x	14.3%	39.2x
Materials (4.1%)	Current	1.40x	4.7%	29.6x
	5Y	1.46x	6.0%	23.3x
	10Y	1.39x	5.4%	26.1x
	20Y	1.35x	6.0%	23.4x
Utilities (2.6%)	Current	0.94x	3.0%	31.5x
	5Y	1.02x	2.8%	33.7x
	10Y	0.99x	3.1%	30.3x
	20Y	0.94x	3.5%	27.1x
COC	4.50%		Banks COE	7.80%

Glossary:

EV/NCI: An economically adjusted measure of the price-to-book. Similar to Tobin's Q, this is a ratio of market value of assets to replacement value of assets. An EV/NCI greater than 1 implies that the market expects value creation (in equilibrium, EV/NCI = CROCI/COC).

*Financials: The Financial sector excludes Insurance but includes Banks and Diversified Financials (excluding Chinese banks). Note that the PE of Financials is not comparable to Industrials as we estimate that they have a different Cost of Equity due to the higher leverage.

Numbers in brackets are risk adjusted Economic PE.

Source: DWS CROCI, MSCI. Data as on 03 January 2024. MSCI index weights do not add upto to 100% because 1) rounding-off and 2) Real Estate is not covered.

Past performance does not predict future returns. Forecasts are not a reliable indicator of future performance. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Market and index performance data is sourced from Bloomberg Finance L.P. Company data is from the CROCI database. Unless stated this data is as of December 2023. Forecasts are based on assumptions, estimates, views and or analyses, which might prove inaccurate or incorrect.

Figure 84: Regional Sector Valuation 2024E

		US	Europe	Japan	A-Pac	GEMs	Value
Communication Services	EV/NCI	2.33	0.96	1.10	1.13	1.14	US
	CROCI	8.6%	1.5%	1.0%	4.0%	3.5%	
	Ec PE	27.1	64.6	116.1	28.0	32.6	
Consumer Discretionary	EV/NCI	3.30	1.24	0.82	1.02	0.96	A-Pac
	CROCI	8.0%	3.4%	2.6%	5.8%	4.8%	
	Ec PE	41.3	36.4	32.2	17.4	19.9	
Consumer Staples	EV/NCI	3.59	3.11	1.68	2.74	3.36	Europe
	CROCI	11.8%	11.8%	6.2%	9.1%	12.0%	
	Ec PE	30.5	26.4	26.9	30.2	28.0	
Energy‡	EV/NCI	1.25	0.69	0.55	0.64	0.62	A-Pac
	CROCI	5.3%	3.4%	0.8%	4.0%	3.2%	
	Ec PE	23.8	20.3	71.5	16.1	19.0	
Financials*	P/B	1.35	0.87	0.82	1.59	NA	Europe
	Inf. Adj. ROC	11.6%	9.5%	4.6%	12.4%	NA	
	PE	12.5	9.3	17.8	13.0	NA	
	PE (risk adj)†	21.6	16.1	30.8	22.5	NA	
Health Care	EV/NCI	4.55	2.97	2.15	4.22	1.39	GEMs
	CROCI	17.6%	13.8%	10.2%	12.5%	7.9%	
	Ec PE	25.8	21.5	21.2	33.8	17.5	
Industrials	EV/NCI	3.18	2.45	1.14	0.85	0.81	A-Pac
	CROCI	10.0%	8.1%	3.8%	4.0%	3.8%	
	Ec PE	31.9	30.0	30.4	21.4	21.4	
Information Technology	EV/NCI	8.66	4.75	1.58	1.68	1.53	GEMs
	CROCI	21.5%	14.9%	4.2%	5.7%	5.9%	
	Ec PE	40.4	31.9	37.3	29.3	25.7	
Materials	EV/NCI	2.22	1.15	0.76	1.29	1.01	GEMs
	CROCI	6.7%	3.5%	2.6%	5.6%	5.0%	
	Ec PE	33.0	33.1	29.2	22.9	20.4	
Utilities	EV/NCI	1.02	0.97	0.61	0.72	0.67	Europe
	CROCI	3.3%	3.3%	0.6%	2.3%	2.2%	
	Ec PE	30.9	29.0	97.3	31.5	30.4	

Source: DWS CROCI. Data as on 03 January 2024.

* Financials: Asia Pacific Financials data as on 30 January 2024.

† Reflects PE adjusted for relative differential in cost of capital.

‡ Japan Energy Sector consists of one company

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Figure 85: Regional Valuations

		2023E	2024E	2025E
USA	Sales Growth	-0.1%	4.0%	4.9%
	CROCI	10.0%	10.1%	10.7%
	EV/FCF	26.8	24.8	21.5
	Economic PE	33.7	32.8	28.9
	Accounting PE	21.9	21.6	19.5
Europe	Sales Growth	-5.8%	0.9%	2.2%
	CROCI	5.8%	5.5%	5.6%
	EV/FCF	22.1	20.2	18.6
	Economic PE	28.7	28.7	26.5
	Accounting PE	15.1	14.9	13.9
Japan	Sales Growth	3.2%	1.9%	2.1%
	CROCI	3.0%	3.1%	3.2%
	EV/FCF	37.7	22.3	19.9
	Economic PE	36.0	33.7	30.3
	Accounting PE	14.1	13.4	12.5
Emerging Markets	Sales Growth	-3.8%	5.4%	5.1%
	CROCI	3.7%	4.6%	5.0%
	EV/FCF	25.4	17.1	14.3
	Economic PE	30.0	23.1	19.8
	Accounting PE	15.4	12.8	11.3

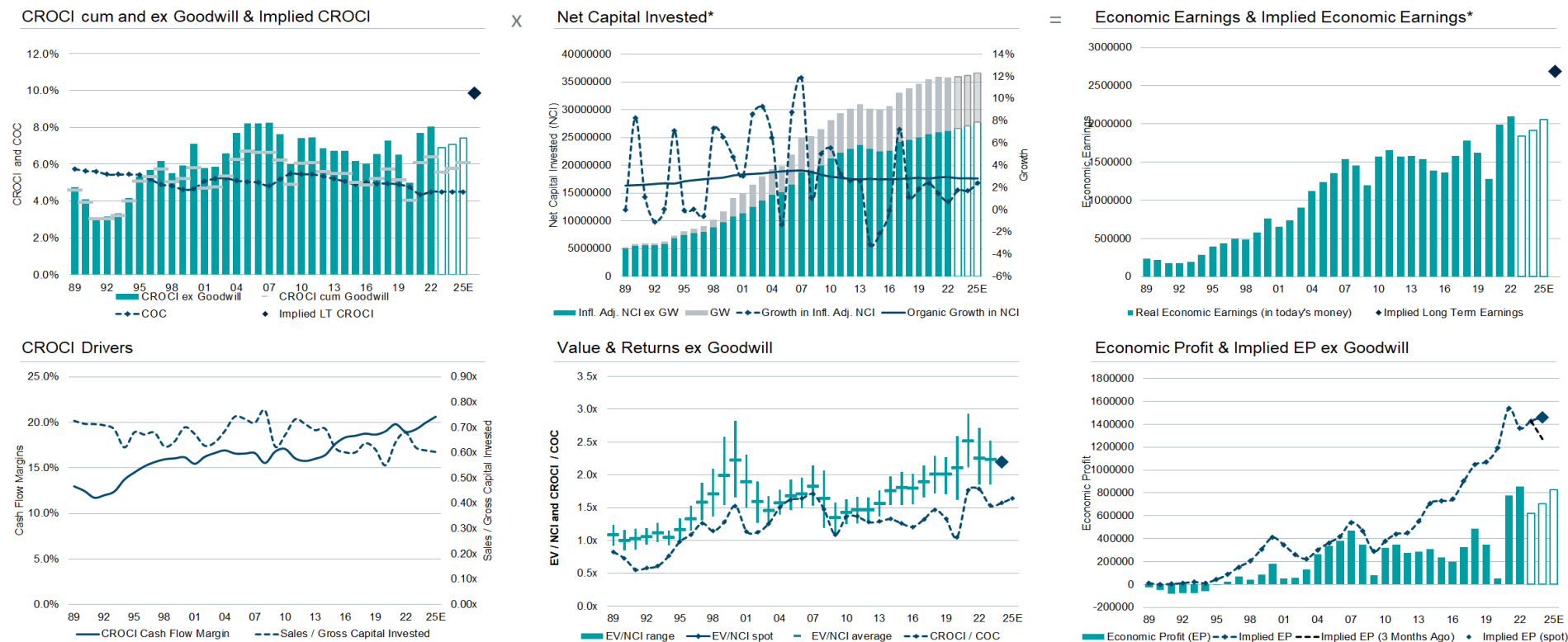
Source: DWS CROCI. Data as on 03 January 2024. Regional Aggregates excluding Financial Companies

Figure 86: Benchmark Indices Valuation

	Acct. PE	Ec. PE	Div. Yield	FCF Yield	EV/NCI	CROCI	CROCI	CROCI	NCI Growth	Earnings Growth	Market Cap/EV
	2024E	2024E	2024E	2024E	2024E	2024E	5YA	Implied	2013-2023E		2024E
Benchmarks											
DJ Global Titans	23.0	32.9	1.3%	4.0%	4.4	13.4%	13.3%	19.8%	48.9%	75.4%	97.4%
S&P 500	21.7	32.7	1.4%	4.0%	3.4	10.5%	10.5%	15.4%	35.5%	47.4%	89.0%
NASDAQ-100 Index	26.8	36.4	0.8%	3.7%	5.7	15.7%	17.4%	25.8%	146.7%	130.0%	96.6%
DJ Industrial Average	23.4	36.6	1.4%	4.0%	4.7	12.8%	13.1%	21.1%	22.3%	23.2%	94.4%
TOPIX 100	13.6	32.3	2.2%	4.8%	1.1	3.5%	3.0%	5.1%	43.8%	28.8%	87.2%
STOXX 600	15.3	28.8	3.0%	4.8%	1.6	5.6%	5.8%	7.3%	18.2%	18.9%	77.8%
Euro STOXX	14.7	30.6	2.9%	4.7%	1.4	4.7%	4.6%	6.5%	25.8%	26.7%	73.4%
Germany DAX	13.0	32.4	2.9%	5.0%	1.2	3.6%	3.6%	5.2%	33.4%	-1.6%	62.8%
France CAC 40	16.8	28.1	2.5%	4.9%	2.1	7.4%	6.7%	9.4%	25.0%	76.5%	85.0%
FTSE 100	12.3	25.5	3.8%	5.9%	1.5	5.8%	6.3%	6.6%	-2.6%	1.2%	77.7%
Switzerland SMI	17.8	22.5	3.0%	5.1%	3.0	13.2%	13.1%	13.4%	7.8%	23.1%	92.8%
China & Hong Kong	10.2	17.9	4.9%	7.7%	0.9	4.9%	4.0%	3.9%	18.6%	51.3%	85.9%
CROCI Global	18.5	31.0	2.0%	4.4%	2.2	7.1%	6.8%	9.9%	18.2%	24.3%	85.8%
CROCI Emerging Markets	13.3	24.4	3.5%	5.9%	1.1	4.3%	4.0%	4.8%	8.7%	0.4%	87.6%

Source: DWS CROCI: represents a bottom-up aggregation of the CROCI coverage of the stated benchmark. Data as on 03 January 2024.

Figure 87: Global Equities CROCI



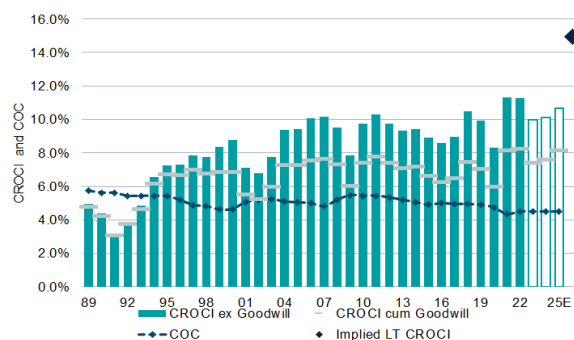
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Enterprise Value (USD bn)	17902	20253	24981	23300	20559	23323	25519	26625	29608	32591	33487	33743	38646	42162	43718	47873	58734	54560	57676	59694	58248
Market Cap (USD bn)	14508	16698	20788	17860	15070	17914	19617	20327	23407	26189	26805	26612	30742	33540	34560	38449	49444	45290	48310	51227	51229
EV/NCI Ex. GW	1.68x	1.71x	1.82x	1.63x	1.34x	1.42x	1.47x	1.46x	1.56x	1.75x	1.80x	1.79x	1.89x	2.00x	2.00x	2.11x	2.51x	2.25x	2.23x	2.19x	2.04x
Economic PE	20.4x	20.8x	22.1x	21.4x	22.4x	19.2x	19.7x	21.4x	23.3x	26.0x	29.2x	29.6x	28.9x	27.6x	30.8x	42.3x	32.7x	28.1x	32.3x	31.0x	27.6x
Accounting PE	15.1x	15.4x	16.5x	15.6x	15.7x	13.2x	13.1x	13.8x	15.7x	17.2x	19.3x	18.9x	18.4x	17.5x	19.2x	24.7x	20.1x	16.8x	19.0x	18.5x	16.8x
Cost of Capital	5.05%	5.00%	4.82%	5.18%	5.48%	5.45%	5.45%	5.35%	5.20%	5.07%	4.90%	5.00%	4.95%	4.95%	4.90%	4.75%	4.35%	4.50%	4.50%	4.50%	4.50%
CROCI Ex. GW	8.2%	8.2%	8.2%	7.6%	6.0%	7.4%	7.4%	6.8%	6.7%	6.7%	6.2%	6.0%	6.5%	7.3%	6.5%	5.0%	7.7%	8.0%	6.9%	7.1%	7.4%
Implied CROCI	8.5%	8.5%	8.8%	8.5%	7.4%	7.7%	8.0%	7.8%	8.1%	8.9%	8.8%	8.9%	9.4%	9.9%	9.8%	10.0%	10.9%	10.1%	10.0%	9.9%	9.2%
Implied Economic Earnings/ Economic Earnings	103%	104%	107%	111%	123%	105%	107%	114%	121%	132%	143%	148%	143%	136%	151%	201%	142%	126%	145%	139%	124%

Source: Company reports, Bloomberg Finance L.P., DWS and CROCI. The table shows aggregate data of companies in CROCI's global coverage. Data in USD as on 03 January 2024. * Displayed in today's money

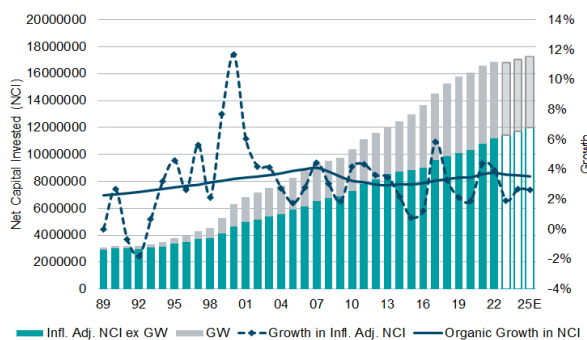
Past performance does not predict future returns. Forecasts are not a reliable indicator of future performance. EV/NCI forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Market and index performance data is sourced from Bloomberg Finance

Figure 88: US Equities CROCI

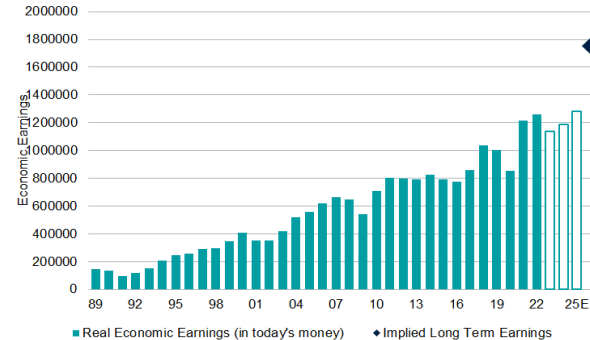
CROCI cum and ex Goodwill & Implied CROCI



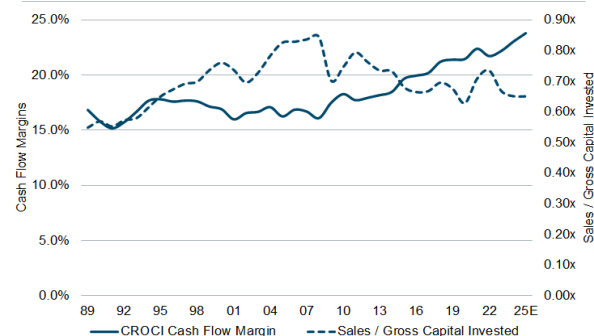
Net Capital Invested*



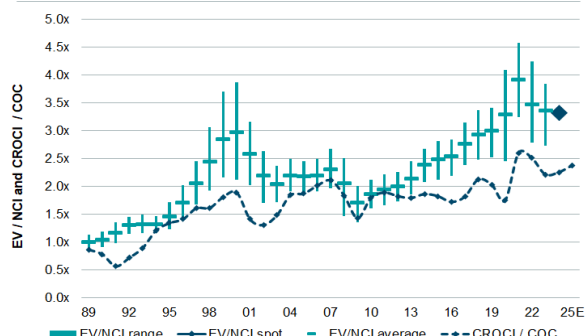
Economic Earnings & Implied Economic Earnings*



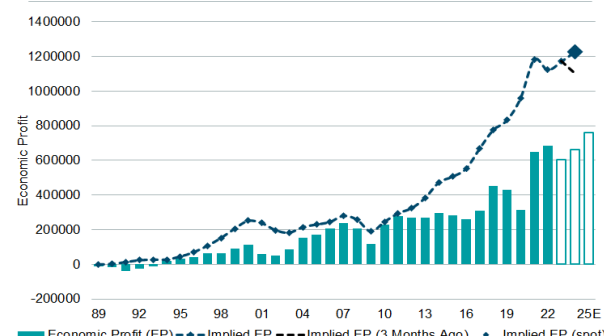
CROCI Drivers



Value & Returns ex Goodwill



Economic Profit & Implied EP ex Goodwill

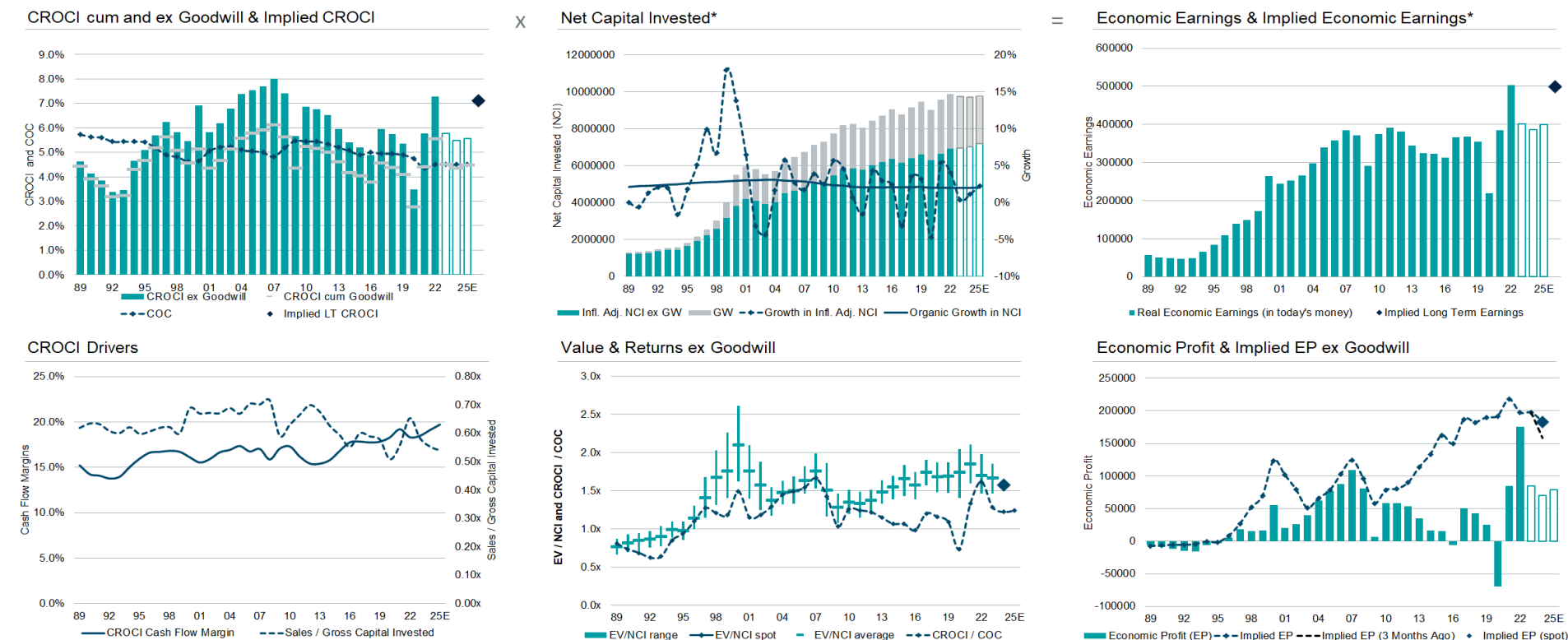


	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Enterprise Value (USD bn)	8455	9025	10294	9756	8443	9808	11160	12212	13937	16115	17308	18257	21235	23825	25495	29041	36530	35070	37074	39014	38011
Market Cap (USD bn)	7183	7816	8994	7967	6670	8095	9143	10063	11804	13740	14558	15067	17427	19480	20830	24184	31726	30135	31971	34501	34502
EV/NCI Ex. GW	2.17x	2.19x	2.30x	2.04x	1.70x	1.85x	1.94x	1.99x	2.13x	2.37x	2.48x	2.54x	2.75x	2.92x	2.99x	3.28x	3.91x	3.46x	3.35x	3.32x	3.09x
Economic PE	23.0x	21.7x	22.6x	21.5x	21.7x	18.9x	18.9x	20.4x	22.9x	25.2x	27.8x	29.5x	30.6x	27.8x	30.1x	39.6x	34.6x	30.7x	33.7x	32.8x	28.9x
Accounting PE	17.7x	16.7x	17.2x	15.7x	16.2x	13.9x	13.3x	14.3x	16.5x	18.0x	19.6x	20.3x	20.7x	19.1x	20.6x	26.7x	23.8x	20.2x	21.9x	21.6x	19.5x
Cost of Capital	5.05%	5.00%	4.82%	5.18%	5.48%	5.45%	5.45%	5.35%	5.20%	5.07%	4.90%	5.00%	4.95%	4.95%	4.90%	4.75%	4.35%	4.50%	4.50%	4.50%	4.50%
CROCI Ex. GW	9.4%	10.1%	10.2%	9.5%	7.8%	9.8%	10.3%	9.8%	9.3%	9.4%	8.9%	8.6%	9.0%	10.5%	9.9%	8.3%	11.3%	11.3%	10.0%	10.1%	10.7%
Implied CROCI	11.0%	10.9%	11.1%	10.6%	9.3%	10.1%	10.6%	10.6%	11.1%	12.0%	12.2%	12.7%	13.6%	14.5%	14.7%	15.6%	17.0%	15.6%	15.1%	15.0%	13.9%
Implied Economic Earnings/ Economic Earnings	116%	109%	109%	111%	119%	103%	103%	109%	119%	128%	136%	147%	152%	138%	147%	188%	150%	138%	152%	148%	130%

Source: Company reports, Bloomberg Finance L.P., DWS and CROCI. The table shows aggregate data of companies in CROCI's global coverage. Data in USD as on 03 January 2024. * Displayed in today's money

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Figure 89: Europe Equities CROCI

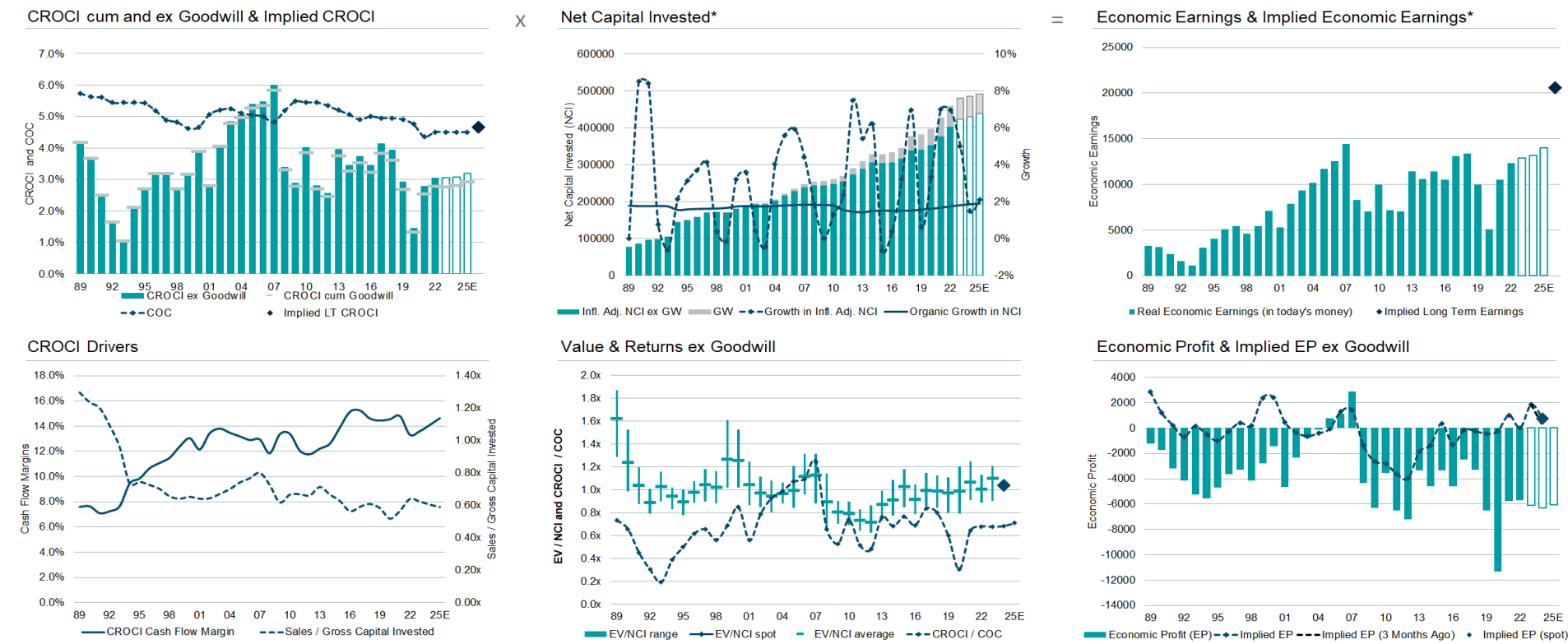


	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Enterprise Value (EUR bn)	4639	5318	6012	5519	4911	5578	5928	6248	6751	7467	8375	8250	8916	9087	9541	9540	10916	10685	11027	11110	10894
Market Cap (EUR bn)	3511	4058	4670	3799	3159	3830	4059	4282	4872	5449	6188	5873	6502	6595	6825	6730	8170	7982	8375	8636	8637
EV/NCI Ex. GW	1.50x	1.63x	1.75x	1.51x	1.28x	1.35x	1.33x	1.37x	1.48x	1.54x	1.66x	1.57x	1.73x	1.68x	1.68x	1.74x	1.85x	1.69x	1.66x	1.58x	1.48x
Economic PE	19.9x	21.2x	21.9x	20.4x	22.6x	19.6x	19.7x	21.0x	24.8x	28.6x	31.8x	32.1x	29.2x	29.3x	31.5x	49.8x	31.9x	23.3x	28.7x	28.7x	26.5x
Accounting PE	13.4x	14.5x	14.8x	13.2x	13.9x	12.2x	11.7x	12.7x	15.8x	18.1x	20.2x	18.9x	17.4x	17.1x	17.9x	26.0x	17.0x	12.4x	15.1x	14.9x	13.9x
Cost of Capital	5.05%	5.00%	4.82%	5.18%	5.48%	5.45%	5.45%	5.35%	5.20%	5.07%	4.90%	5.00%	4.95%	4.95%	4.90%	4.75%	4.35%	4.50%	4.50%	4.50%	4.50%
CROCI Ex. GW	7.5%	7.7%	8.0%	7.4%	5.7%	6.9%	6.8%	6.5%	6.0%	5.4%	5.2%	4.9%	5.9%	5.7%	5.3%	3.5%	5.8%	7.3%	5.8%	5.5%	5.6%
Implied CROCI	7.6%	8.1%	8.4%	7.8%	7.0%	7.3%	7.2%	7.3%	7.7%	7.8%	8.1%	7.8%	8.6%	8.3%	8.2%	8.2%	8.0%	7.6%	7.5%	7.1%	6.6%
Implied Economic Earnings/ Economic Earnings	100%	106%	105%	105%	124%	107%	107%	112%	129%	145%	156%	160%	145%	145%	154%	236%	139%	105%	129%	129%	119%

Source: Company reports, Bloomberg Finance L.P., DWS and CROCI. The table shows aggregate data of companies in CROCI's global coverage. Data in EUR as on 03 January 2024. * Displayed in today's money

Past performance does not predict future returns. Forecasts are not a reliable indicator of future performance. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Market and index performance data is sourced from Bloomberg Finance

Figure 90: Japan Equities CROCI

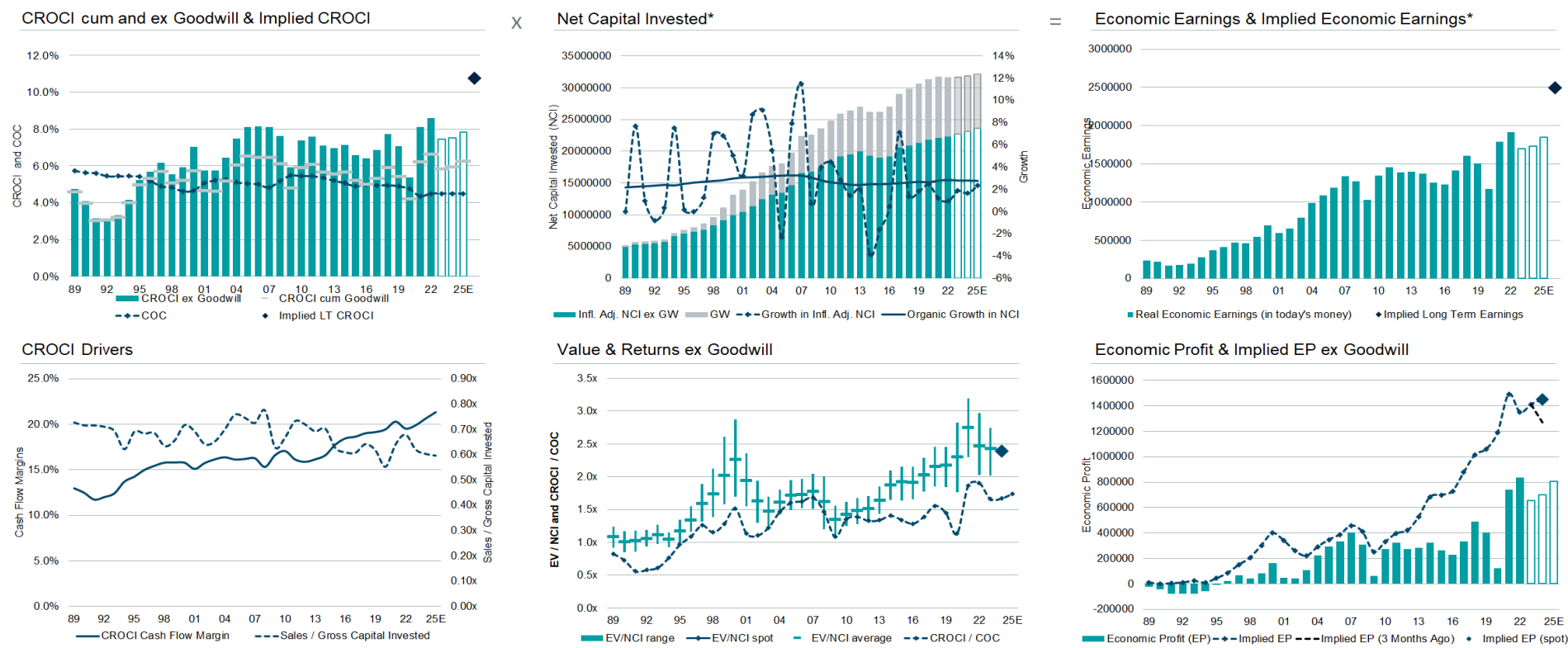


	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Enterprise Value (JPY tn)	221	259	272	219	195	193	179	185	235	258	296	269	303	321	320	338	394	397	463	458	445
Market Cap (JPY tn)	169	210	217	150	128	132	117	118	171	195	228	206	244	255	248	267	323	317	383	384	384
EV/NCI Ex. GW	0.99x	1.11x	1.12x	0.89x	0.80x	0.79x	0.73x	0.71x	0.87x	0.91x	1.03x	0.91x	0.99x	0.98x	0.97x	0.98x	1.06x	1.00x	1.10x	1.04x	0.96x
Economic PE	18.4x	20.3x	18.7x	26.3x	27.9x	19.7x	25.9x	27.7x	21.9x	26.2x	27.4x	26.4x	24.0x	24.9x	33.1x	68.0x	38.0x	32.7x	36.0x	33.7x	30.3x
Accounting PE	15.5x	17.1x	16.5x	29.4x	21.5x	13.4x	16.2x	14.2x	13.7x	13.8x	15.6x	13.7x	13.1x	13.3x	15.1x	18.6x	13.7x	12.5x	14.1x	13.4x	12.5x
Cost of Capital	5.05%	5.00%	4.82%	5.18%	5.48%	5.45%	5.45%	5.35%	5.20%	5.07%	4.90%	5.00%	4.95%	4.95%	4.90%	4.75%	4.35%	4.50%	4.50%	4.50%	4.50%
CROCI Ex. GW	5.4%	5.5%	6.0%	3.4%	2.9%	4.0%	2.8%	2.6%	4.0%	3.5%	3.7%	3.4%	4.1%	3.9%	2.9%	1.4%	2.8%	3.1%	3.0%	3.1%	3.2%
Implied CROCI	5.0%	5.6%	5.4%	4.6%	4.4%	4.3%	4.0%	3.8%	4.5%	4.6%	5.0%	4.6%	4.9%	4.9%	4.8%	4.7%	4.6%	4.5%	4.9%	4.7%	4.3%
Implied Economic Earnings/ Economic Earnings	93%	101%	90%	136%	153%	107%	141%	148%	114%	133%	134%	132%	119%	123%	162%	323%	165%	147%	162%	152%	136%

Source: Company reports, Bloomberg Finance L.P., DWS and CROCI. The table shows aggregate data of companies in CROCI's global coverage. Data in JPY as on 03 January 2024. * Displayed in today's money

Past performance does not predict future returns. Forecasts are not a reliable indicator of future performance. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Market and index performance data is sourced from Bloomberg Finance

Figure 91: Developed Markets Equities CROCI

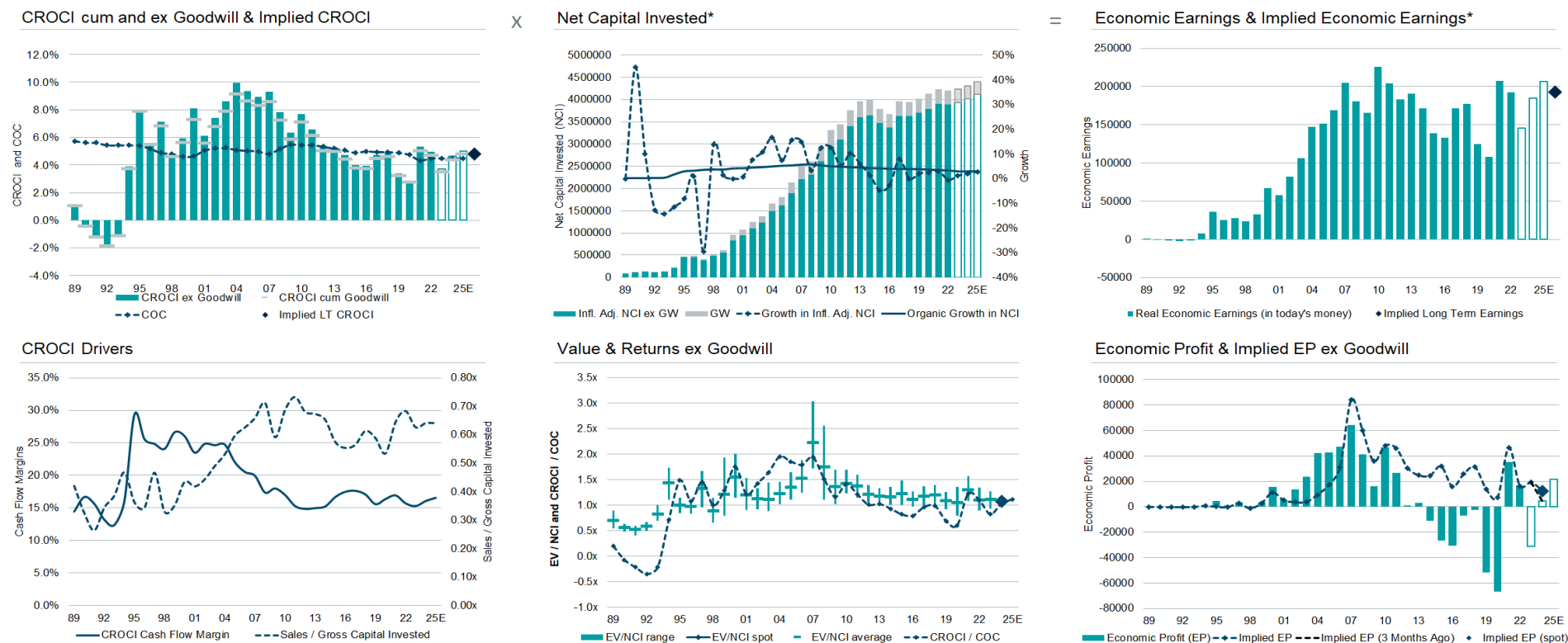


	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Enterprise Value (USD bn)	16566	18442	21812	20594	18072	20365	22361	23354	26201	29060	29878	30521	34947	38274	40054	44211	53991	50441	53342	55400	54058
Market Cap (USD bn)	13409	15173	17955	15551	13003	15428	16971	17695	20705	23387	23896	24041	27655	30270	31505	35220	45185	41746	44589	47491	47492
EV/NCI Ex. GW	1.71x	1.73x	1.77x	1.62x	1.34x	1.42x	1.48x	1.51x	1.63x	1.87x	1.91x	1.91x	2.02x	2.15x	2.17x	2.30x	2.74x	2.46x	2.43x	2.39x	2.23x
Economic PE	21.1x	21.3x	21.9x	21.3x	22.6x	19.3x	19.6x	21.2x	23.5x	26.2x	29.1x	29.8x	29.5x	27.9x	30.7x	42.8x	33.8x	28.7x	32.5x	31.8x	28.4x
Accounting PE	15.6x	15.8x	16.1x	15.3x	15.7x	13.2x	12.9x	13.8x	16.0x	17.6x	19.4x	19.1x	18.8x	17.9x	19.4x	25.5x	20.8x	17.3x	19.4x	19.1x	17.5x
Cost of Capital	5.05%	5.00%	4.82%	5.18%	5.48%	5.45%	5.45%	5.35%	5.20%	5.07%	4.90%	5.00%	4.95%	4.95%	4.90%	4.75%	4.35%	4.50%	4.50%	4.50%	4.50%
CROCI Ex. GW	8.1%	8.1%	8.1%	7.6%	5.9%	7.4%	7.6%	7.1%	7.0%	7.1%	6.6%	6.4%	6.9%	7.7%	7.1%	5.4%	8.1%	8.6%	7.5%	7.5%	7.8%
Implied CROCI	8.6%	8.6%	8.5%	8.4%	7.4%	7.7%	8.1%	8.1%	8.5%	9.5%	9.4%	9.6%	10.0%	10.7%	10.6%	10.9%	11.9%	11.1%	10.9%	10.7%	10.0%
Implied Economic Earnings/ Economic Earnings	107%	106%	105%	110%	124%	105%	107%	113%	122%	133%	142%	149%	146%	138%	150%	203%	147%	129%	146%	143%	128%

Source: Company reports, Bloomberg Finance L.P., DWS and CROCI. The table shows aggregate data of companies in CROCI's global coverage. Data in USD as on 03 January 2024. * Displayed in today's money

Past performance does not predict future returns. Forecasts are not a reliable indicator of future performance. EV/NCI forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Market and index performance data is sourced from Bloomberg Finance

Figure 92: Emerging Markets Equities CROCI

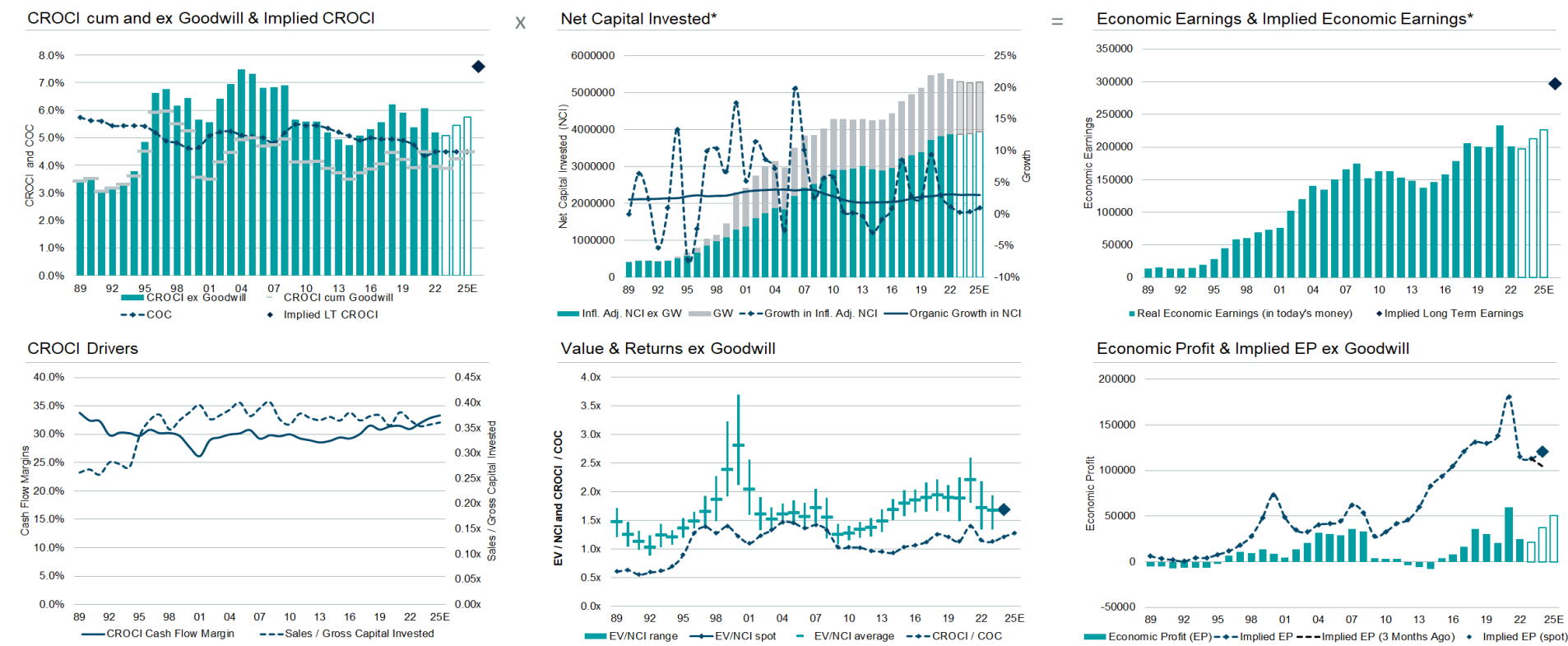


	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Enterprise Value (USD bn)	1336	1811	3169	2706	2487	2958	3157	3271	3407	3531	3609	3222	3699	3888	3665	3661	4743	4120	4335	4294	4191
Market Cap (USD bn)	1099	1524	2833	2309	2067	2486	2646	2633	2702	2801	2909	2571	3087	3270	3055	3229	4259	3545	3721	3736	3736
EV/NCI Ex. GW	1.34x	1.52x	2.22x	1.75x	1.35x	1.42x	1.36x	1.21x	1.16x	1.16x	1.22x	1.11x	1.16x	1.19x	1.08x	1.04x	1.29x	1.10x	1.11x	1.07x	0.99x
Economic PE	14.3x	17.0x	23.8x	22.3x	21.3x	18.5x	20.7x	22.5x	21.9x	24.6x	30.4x	28.1x	24.6x	24.5x	32.1x	36.5x	24.3x	22.2x	30.0x	23.1x	19.8x
Accounting PE	10.7x	12.7x	19.5x	18.6x	15.4x	13.4x	14.1x	14.1x	13.7x	14.9x	18.3x	16.8x	15.6x	14.6x	17.5x	18.5x	14.7x	12.7x	15.4x	12.8x	11.3x
Cost of Capital	5.05%	5.00%	4.82%	5.18%	5.48%	5.45%	5.45%	5.35%	5.20%	5.07%	4.90%	5.00%	4.95%	4.95%	4.90%	4.75%	4.35%	4.50%	4.50%	4.50%	4.50%
CROCI Ex. GW	9.3%	8.9%	9.3%	7.8%	6.4%	7.7%	6.6%	5.4%	5.3%	4.7%	4.0%	3.9%	4.7%	4.9%	3.4%	2.9%	5.3%	4.9%	3.7%	4.6%	5.0%
Implied CROCI	6.8%	7.6%	10.7%	9.0%	7.4%	7.8%	7.4%	6.5%	6.0%	5.9%	6.0%	5.5%	5.8%	5.9%	5.3%	4.9%	5.6%	4.9%	5.0%	4.8%	4.5%
Implied Economic Earnings/ Economic Earnings	72%	85%	115%	115%	117%	101%	113%	120%	114%	125%	149%	140%	122%	121%	157%	173%	106%	100%	135%	104%	89%

Source: Company reports, Bloomberg Finance L.P., DWS and CROCI. The table shows aggregate data of companies in CROCI's global coverage. Data in USD as on 03 January 2024. * Displayed in today's money

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Figure 93: Communication Services CROCI

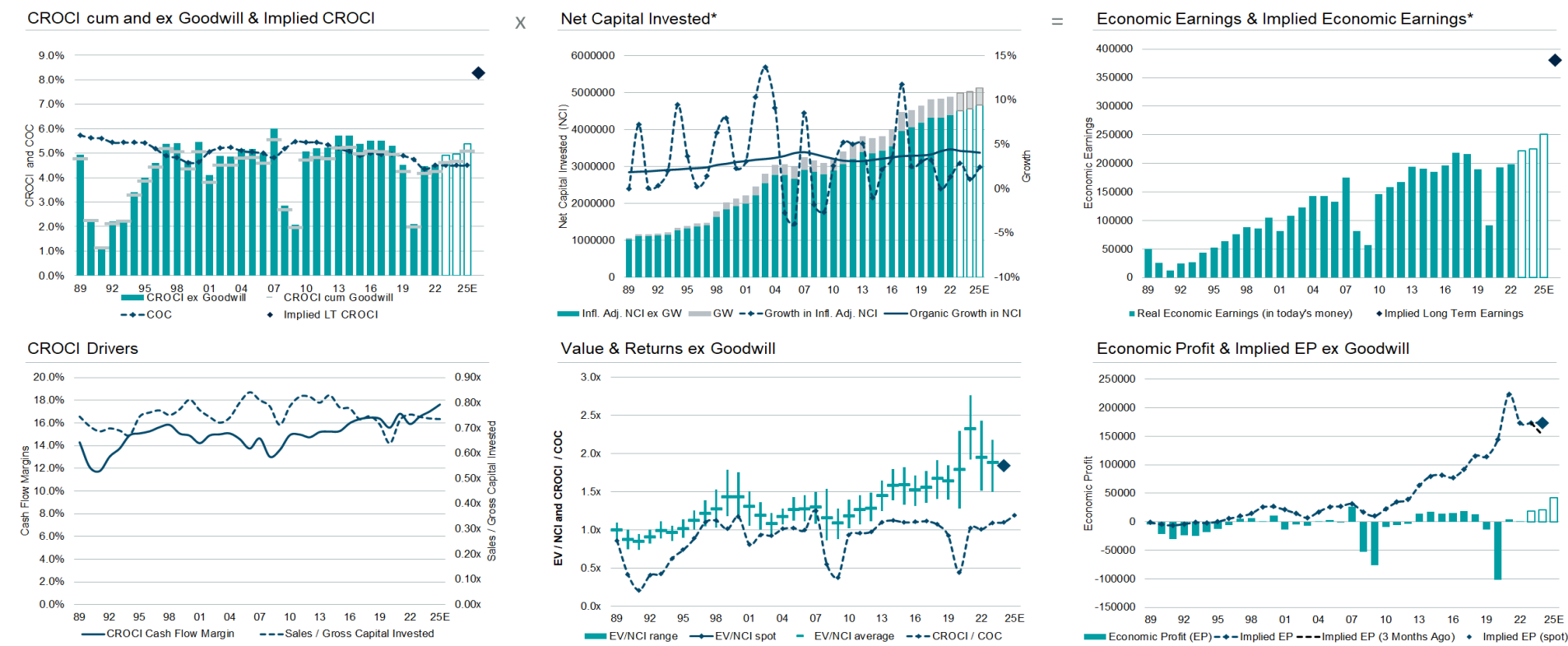


	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Enterprise Value (USD bn)	2140	2479	3069	2938	2575	2838	3044	3205	3576	4009	4307	4576	5159	5484	5610	6190	7576	6133	6280	6598	6338
Market Cap (USD bn)	1572	1744	2350	2046	1702	1958	2123	2248	2564	3051	3299	3472	3992	4181	4323	4875	6243	4797	4944	5431	5431
EV/NCI Ex. GW	1.63x	1.56x	1.72x	1.55x	1.25x	1.27x	1.34x	1.37x	1.48x	1.69x	1.80x	1.85x	1.90x	1.93x	1.90x	1.88x	2.21x	1.72x	1.67x	1.69x	1.57x
Economic PE	22.2x	22.9x	25.2x	22.4x	22.0x	22.7x	23.9x	26.3x	29.8x	35.6x	35.4x	34.7x	34.1x	31.1x	32.1x	35.0x	36.3x	33.0x	32.8x	30.9x	27.3x
Accounting PE	15.6x	15.9x	17.8x	14.5x	12.1x	12.9x	13.3x	13.7x	16.2x	19.5x	20.6x	19.4x	20.0x	18.7x	19.0x	20.1x	20.9x	17.8x	16.7x	16.2x	14.8x
Cost of Capital	5.05%	5.00%	4.82%	5.18%	5.48%	5.45%	5.45%	5.35%	5.20%	5.07%	4.90%	5.00%	4.95%	4.95%	4.90%	4.75%	4.35%	4.50%	4.50%	4.50%	4.50%
CROCI Ex. GW	7.3%	6.8%	6.8%	6.9%	5.7%	5.6%	5.6%	5.2%	5.0%	4.7%	5.1%	5.3%	5.6%	6.2%	5.9%	5.4%	6.1%	5.2%	5.1%	5.5%	5.7%
Implied CROCI	8.2%	7.8%	8.3%	8.0%	6.8%	6.9%	7.3%	7.3%	7.7%	8.6%	8.8%	9.2%	9.4%	9.6%	9.3%	8.9%	9.6%	7.7%	7.5%	7.6%	7.1%
Implied Economic Earnings/ Economic Earnings	112%	115%	121%	116%	120%	124%	130%	141%	155%	181%	174%	174%	169%	154%	157%	166%	158%	149%	148%	139%	123%

Source: Company reports, Bloomberg Finance L.P., DWS and CROCI. The table shows aggregate data of companies in CROCI's global coverage. Data in USD as on 03 January 2024. * Displayed in today's money

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Figure 94: Consumer Discretionary CROCI



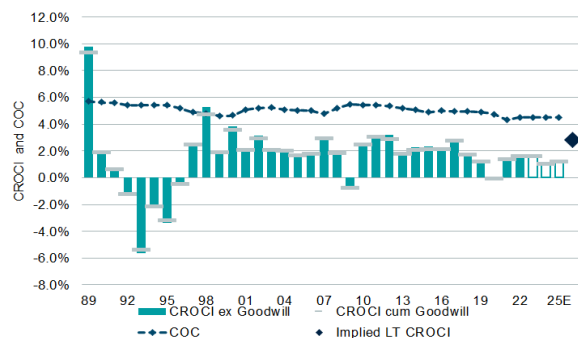
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Enterprise Value (USD bn)	2557	2564	2900	2575	2407	2748	3101	3321	3968	4323	4518	4550	5243	5840	6006	6880	9042	7912	8227	8459	8242
Market Cap (USD bn)	1547	1772	2025	1521	1409	1879	2186	2344	2970	3271	3405	3341	3878	4371	4406	5242	7512	6312	6616	6985	6985
EV/NCI Ex. GW	1.26x	1.27x	1.29x	1.15x	1.09x	1.18x	1.26x	1.28x	1.44x	1.57x	1.59x	1.52x	1.55x	1.67x	1.64x	1.79x	2.32x	1.95x	1.88x	1.84x	1.71x
Economic PE	24.3x	25.5x	21.5x	40.4x	52.6x	23.2x	24.2x	24.5x	25.2x	27.6x	29.4x	27.5x	28.1x	31.4x	36.1x	84.7x	52.0x	43.0x	38.2x	37.2x	31.8x
Accounting PE	16.0x	18.9x	16.6x	43.3x	40.9x	13.9x	14.4x	14.3x	15.7x	16.4x	17.1x	15.8x	16.6x	18.3x	20.7x	37.5x	25.9x	21.1x	18.9x	18.6x	16.7x
Cost of Capital	5.05%	5.00%	4.82%	5.18%	5.48%	5.45%	5.45%	5.35%	5.20%	5.07%	4.90%	5.00%	4.95%	4.95%	4.90%	4.75%	4.35%	4.50%	4.50%	4.50%	4.50%
CROCI Ex. GW	5.2%	5.0%	6.0%	2.8%	2.1%	5.1%	5.2%	5.2%	5.7%	5.7%	5.4%	5.5%	5.5%	5.3%	4.5%	2.1%	4.5%	4.5%	4.9%	5.0%	5.4%
Implied CROCI	6.4%	6.4%	6.2%	6.0%	6.0%	6.4%	6.9%	6.9%	7.5%	8.0%	7.8%	7.6%	7.7%	8.2%	8.0%	8.5%	10.1%	8.8%	8.5%	8.3%	7.7%
Implied Economic Earnings/ Economic Earnings	123%	128%	104%	209%	288%	127%	132%	131%	131%	140%	144%	138%	139%	155%	177%	402%	226%	193%	172%	167%	143%

Source: Company reports, Bloomberg Finance L.P., DWS and CROCI. The table shows aggregate data of companies in CROCI's global coverage. Data in USD as on 03 January 2024. * Displayed in today's money

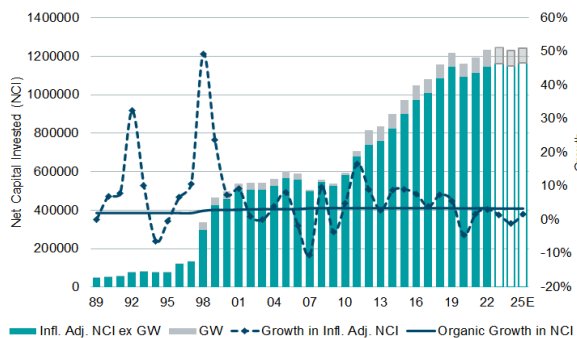
Past performance does not predict future returns. Forecasts are not a reliable indicator of future performance. EV/NCI forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Market and index performance data is sourced from Bloomberg Finance

Figure 95: Europe Automobiles CROCI

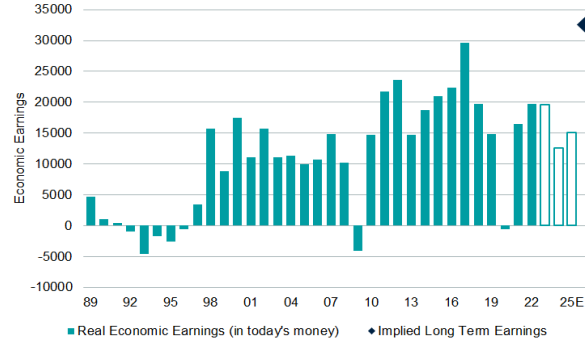
CROCI cum and ex Goodwill & Implied CROCI



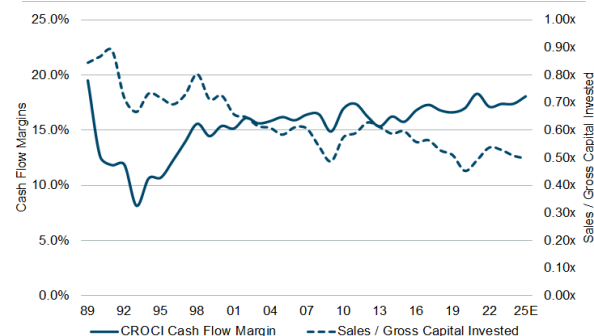
Net Capital Invested*



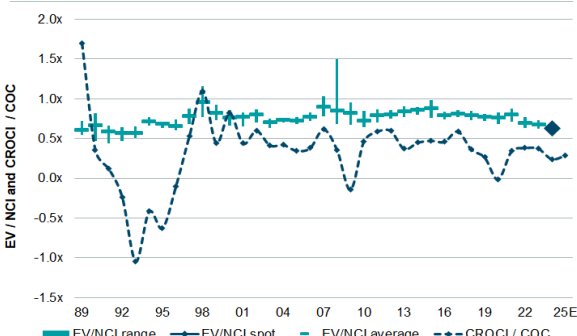
Economic Earnings & Implied Economic Earnings*



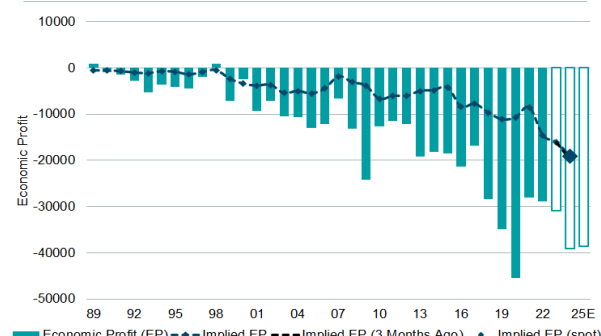
CROCI Drivers



Value & Returns ex Goodwill



Economic Profit & Implied EP ex Goodwill

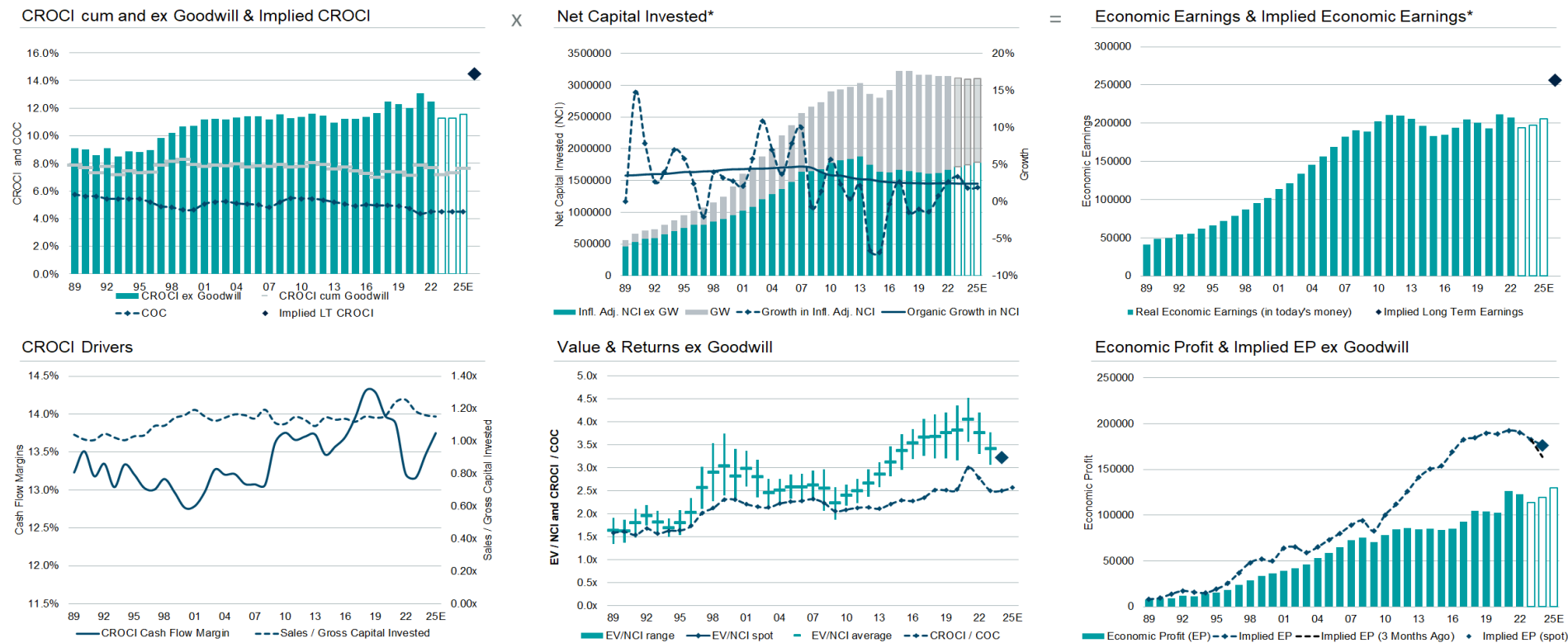


	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Enterprise Value (EUR bn)	286	302	318	337	318	313	402	449	490	554	632	625	677	711	743	720	783	712	743	723	704
Market Cap (EUR bn)	94	116	165	148	115	123	155	160	206	246	277	219	256	264	234	209	333	287	317	317	317
EV/NCI Ex. GW	0.72x	0.77x	0.89x	0.85x	0.82x	0.72x	0.78x	0.80x	0.84x	0.85x	0.88x	0.79x	0.81x	0.78x	0.77x	0.76x	0.80x	0.69x	0.67x	0.63x	0.59x
Economic PE	41.0x	40.4x	30.1x	45.5x	nm	28.3x	24.4x	25.0x	43.2x	37.5x	37.8x	34.2x	27.7x	43.3x	59.1x	nm	53.9x	40.0x	39.9x	57.3x	45.2x
Accounting PE	10.3x	13.3x	11.1x	15.5x	nm	7.9x	6.8x	7.5x	9.2x	9.2x	8.9x	7.1x	6.7x	7.7x	8.0x	16.7x	6.4x	4.7x	5.1x	5.6x	5.4x
Cost of Capital	5.05%	5.00%	4.82%	5.18%	5.48%	5.45%	5.45%	5.35%	5.20%	5.07%	4.90%	5.00%	4.95%	4.95%	4.90%	4.75%	4.35%	4.50%	4.50%	4.50%	4.50%
CROCI Ex. GW	1.8%	1.9%	3.0%	1.9%	-0.8%	2.5%	3.2%	3.2%	1.9%	2.3%	2.3%	2.3%	2.9%	1.8%	1.3%	-0.1%	1.5%	1.7%	1.7%	1.1%	1.3%
Implied CROCI	3.7%	3.9%	4.3%	4.4%	4.5%	3.9%	4.3%	4.3%	4.4%	4.3%	4.3%	3.9%	4.0%	3.9%	3.8%	3.6%	3.5%	3.1%	3.0%	2.8%	2.6%
Implied Economic Earnings/ Economic Earnings	207%	202%	145%	236%	nm	154%	133%	134%	225%	190%	185%	171%	137%	214%	289%	nm	234%	180%	179%	258%	204%

Source: Company reports, Bloomberg Finance L.P., DWS and CROCI. The table shows aggregate data of companies in CROCI's global coverage. Data in USD as on 03 January 2024. * Displayed in today's money

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Figure 96: Consumer Staples CROCI

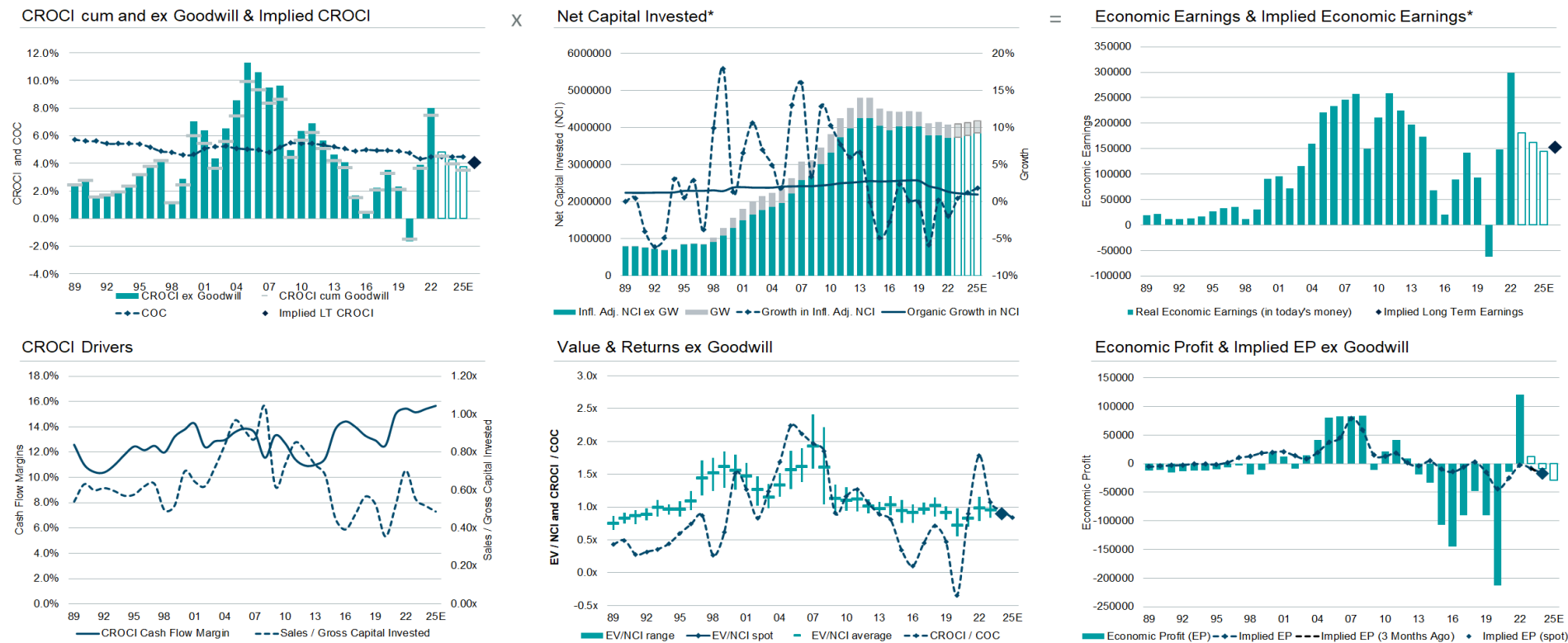


	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Enterprise Value (USD bn)	2367	2618	2987	2992	2732	3151	3425	3768	4183	4356	4463	4711	5073	5122	5280	5382	5876	5769	5734	5691	5592
Market Cap (USD bn)	1942	2194	2518	2328	2131	2541	2751	3077	3483	3638	3765	3949	4185	4166	4347	4481	4992	4830	4796	4829	4829
EV/NCI Ex. GW	2.57x	2.58x	2.62x	2.54x	2.23x	2.40x	2.50x	2.66x	2.85x	3.12x	3.37x	3.54x	3.66x	3.68x	3.75x	3.81x	4.05x	3.75x	3.41x	3.22x	3.04x
Economic PE	22.5x	22.6x	23.4x	22.0x	19.8x	21.1x	21.5x	23.3x	26.0x	27.9x	30.1x	31.1x	31.4x	29.5x	30.5x	31.7x	31.0x	30.1x	30.3x	28.6x	26.3x
Accounting PE	17.9x	18.3x	18.7x	17.0x	14.7x	15.7x	15.6x	17.0x	19.1x	20.7x	22.1x	22.4x	22.2x	20.4x	21.3x	21.9x	21.6x	21.2x	20.5x	19.0x	17.5x
Cost of Capital	5.05%	5.00%	4.82%	5.18%	5.48%	5.45%	5.45%	5.35%	5.20%	5.07%	4.90%	5.00%	4.95%	4.95%	4.90%	4.75%	4.35%	4.50%	4.50%	4.50%	4.50%
CROCI Ex. GW	11.4%	11.4%	11.2%	11.6%	11.3%	11.4%	11.6%	11.4%	10.9%	11.2%	11.2%	11.4%	11.6%	12.5%	12.3%	12.0%	13.1%	12.5%	11.3%	11.3%	11.5%
Implied CROCI	13.0%	12.9%	12.6%	13.2%	12.2%	13.1%	13.6%	14.3%	14.8%	15.8%	16.5%	17.7%	18.1%	18.2%	18.4%	18.1%	17.6%	16.9%	15.4%	14.5%	13.7%
Implied Economic Earnings/ Economic Earnings	114%	113%	113%	114%	109%	115%	117%	125%	135%	141%	147%	155%	156%	146%	149%	151%	135%	135%	136%	129%	118%

Source: Company reports, Bloomberg Finance L.P., DWS and CROCI. The table shows aggregate data of companies in CROCI's global coverage. Data in USD as on 03 January 2024. * Displayed in today's money

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Figure 97: Energy CROCI

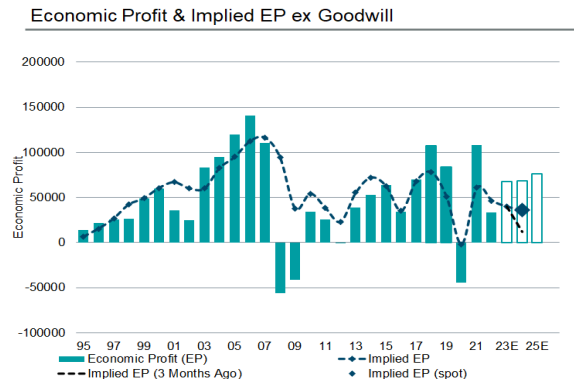
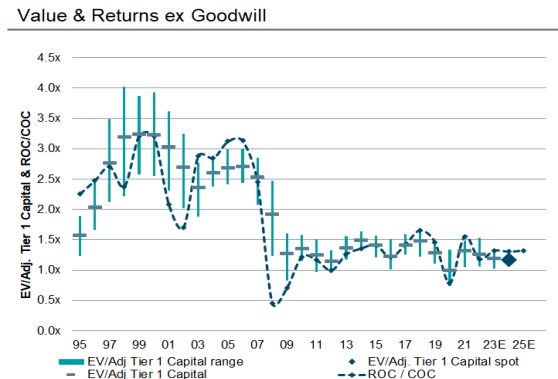
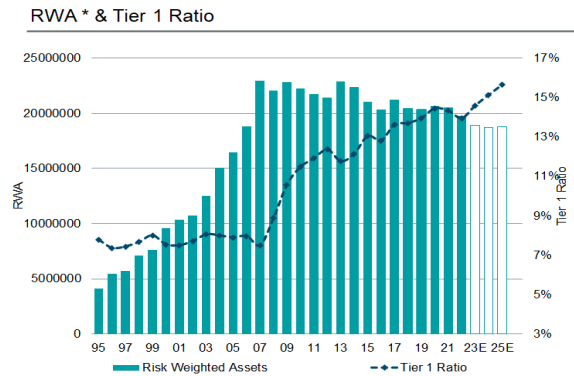
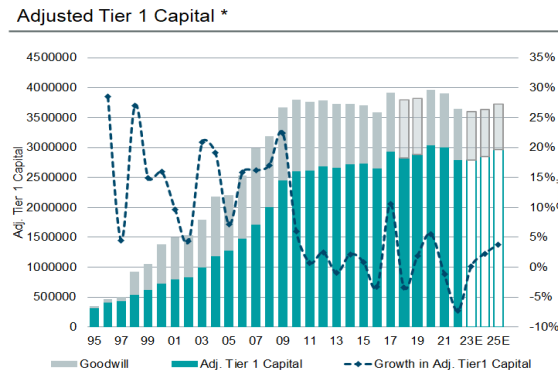
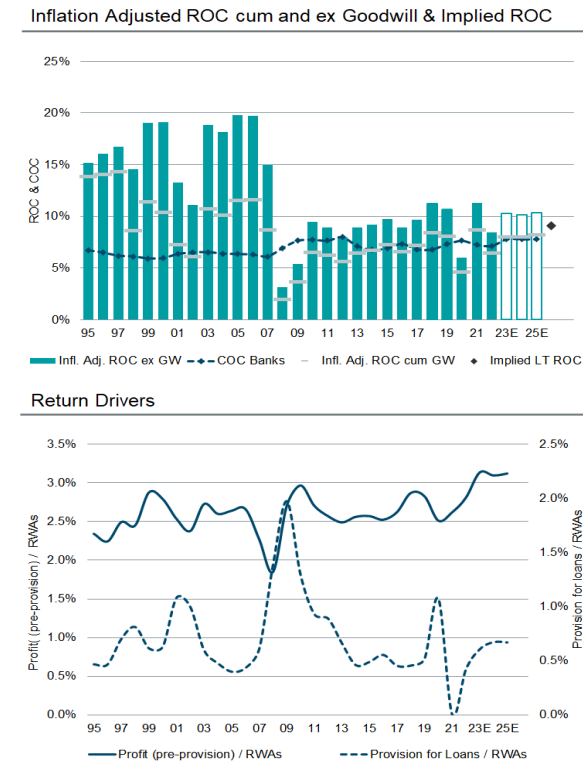


	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Enterprise Value (USD bn)	2018	2382	3392	3022	2482	2677	3139	3116	3278	3517	3119	2945	3219	3460	3179	2409	2796	3377	3472	3409	3289
Market Cap (USD bn)	1938	2274	3287	2805	2189	2337	2697	2606	2732	2916	2503	2293	2563	2829	2491	1693	2129	2809	2946	2992	2992
EV/NCI Ex. GW	1.57x	1.61x	1.93x	1.61x	1.13x	1.10x	1.12x	1.01x	0.98x	1.03x	0.94x	0.91x	0.97x	1.02x	0.91x	0.72x	0.83x	0.98x	0.95x	0.90x	0.84x
Economic PE	13.9x	15.2x	20.3x	16.7x	22.7x	17.4x	16.2x	17.8x	21.1x	25.1x	56.3x	nm	43.2x	28.7x	39.5x	nm	21.1x	12.3x	19.7x	21.1x	22.2x
Accounting PE	9.4x	9.9x	13.1x	11.1x	14.5x	11.3x	9.7x	10.5x	12.5x	14.8x	29.6x	50.3x	20.8x	14.8x	16.6x	nm	9.5x	6.2x	9.3x	9.9x	10.1x
Cost of Capital	5.05%	5.00%	4.82%	5.18%	5.48%	5.45%	5.45%	5.35%	5.20%	5.07%	4.90%	5.00%	4.95%	4.95%	4.90%	4.75%	4.35%	4.50%	4.50%	4.50%	4.50%
CROCI Ex. GW	11.3%	10.6%	9.5%	9.6%	5.0%	6.3%	6.9%	5.7%	4.6%	4.1%	1.7%	0.5%	2.2%	3.5%	2.3%	-1.6%	3.9%	8.0%	4.8%	4.3%	3.8%
Implied CROCI	7.9%	8.0%	9.3%	8.3%	6.2%	6.0%	6.1%	5.4%	5.1%	5.2%	4.6%	4.6%	4.8%	5.0%	4.5%	3.4%	3.6%	4.4%	4.3%	4.1%	3.8%
Implied Economic Earnings/ Economic Earnings	70%	76%	98%	87%	124%	95%	88%	95%	109%	127%	276%	862%	214%	142%	193%	nm	92%	55%	88%	95%	100%

Source: Company reports, Bloomberg Finance L.P., DWS and CROCI. The table shows aggregate data of companies in CROCI's global coverage. Data in USD as on 03 January 2024. * Displayed in today's money

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Figure 98: Financials CROCI

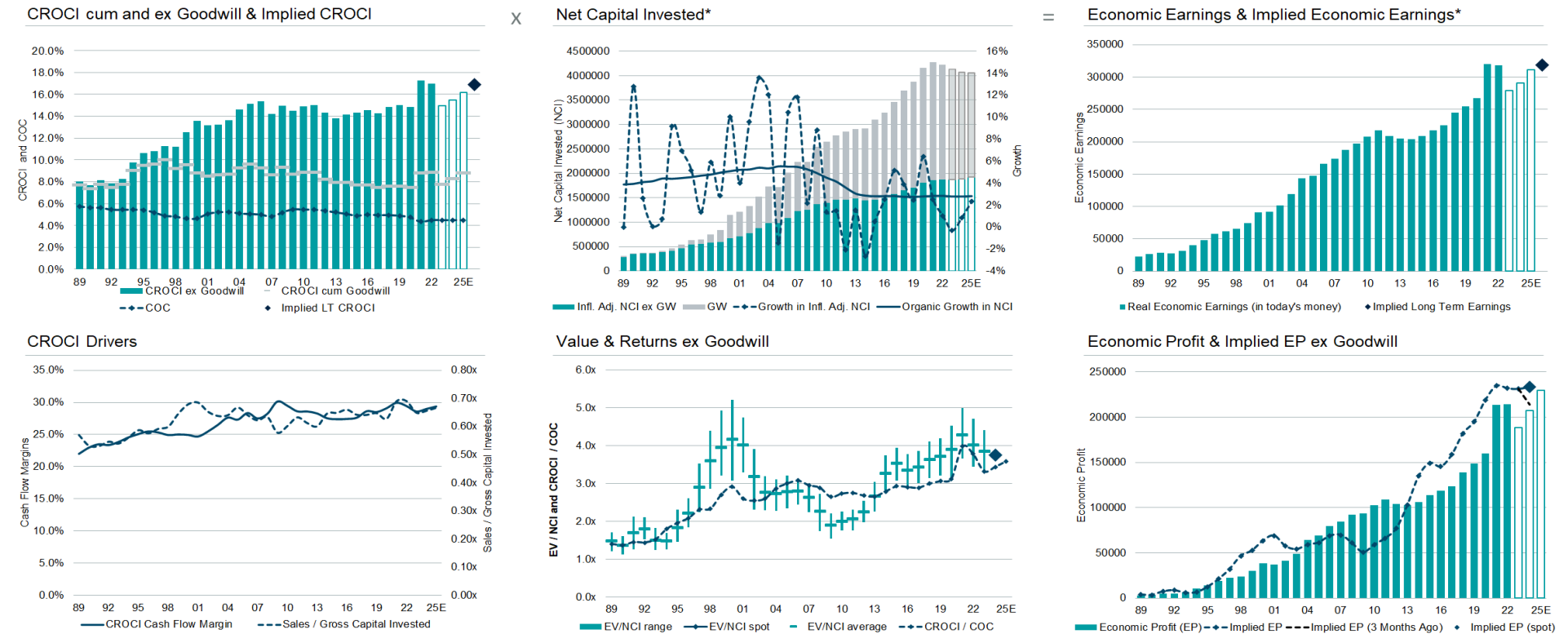


	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Enterprise Value (USD bn)	2385	2828	3148	2838	2345	2687	2532	2401	2897	3251	3149	2658	3451	3550	3183	2642	3513	3204	3207	3328	3305
Market Cap (USD bn)	2065	2525	2785	2121	1634	2204	2075	2000	2591	2922	2790	2383	3122	3210	2846	2289	3156	2881	2870	2995	2974
EV/Adjusted Tier 1 Capital	2.68x	2.70x	2.53x	1.92x	1.26x	1.35x	1.25x	1.14x	1.36x	1.49x	1.41x	1.22x	1.41x	1.48x	1.28x	0.99x	1.31x	1.25x	1.19x	1.16x	1.09x
Adjusted PE	13.5x	13.7x	16.9x	61.2x	23.3x	14.3x	14.0x	14.2x	15.2x	16.2x	14.4x	13.7x	14.6x	13.1x	12.0x	16.5x	11.6x	14.8x	11.5x	11.4x	10.6x
COC Adjusted PE	17.0x	17.3x	21.4x	82.0x	32.6x	20.3x	19.7x	21.3x	20.9x	21.6x	20.3x	20.1x	20.1x	18.0x	17.9x	26.6x	19.4x	23.6x	20.0x	19.8x	18.3x
Accounting PE	12.4x	13.0x	15.0x	45.9x	25.5x	11.9x	10.6x	11.1x	12.5x	12.0x	11.9x	11.4x	12.2x	11.0x	9.9x	12.7x	9.3x	9.1x	8.5x	9.1x	8.7x
Cost of Capital (COC) - Financials	6.35%	6.30%	6.12%	6.94%	7.66%	7.76%	7.66%	8.01%	7.12%	6.78%	6.90%	7.35%	6.80%	6.80%	7.30%	7.65%	7.25%	7.15%	7.80%	7.80%	7.80%
Inflation Adjusted ROC ex Goodwill	19.8%	19.7%	15.0%	3.1%	5.4%	9.5%	8.9%	8.0%	9.0%	9.2%	9.7%	8.9%	9.7%	11.3%	10.7%	6.0%	11.3%	8.5%	10.3%	10.2%	10.3%
Implied ROC	17.0%	17.0%	15.5%	13.3%	9.7%	10.5%	9.5%	9.1%	9.7%	10.1%	9.7%	9.0%	9.6%	10.1%	9.3%	7.6%	9.5%	9.0%	9.3%	9.1%	8.5%
Implied Economic Earnings/ Economic Earnings	86%	86%	103%	425%	179%	111%	107%	114%	108%	110%	100%	100%	99%	89%	88%	126%	84%	106%	90%	89%	82%
Adjusted Tier 1 Capital Ex. GW (USD bn)	891	1046	1245	1478	1854	1988	2033	2115	2123	2188	2238	2181	2449	2402	2490	2670	2678	2554	2697	2862	3035
Adjusted Tier 1 Capital Cum. GW (USD bn)	1528	1777	2157	2348	2769	2897	2911	2981	2965	2995	3018	2953	3272	3217	3294	3476	3474	3335	3482	3645	3818
Inflation Adjusted Earnings (USD bn)	176	206	187	46	100	188	181	169	190	201	218	194	236	270	266	160	302	216	278	291	313

Source: Company reports, Bloomberg Finance L.P., DWS and CROCI. The table shows aggregate data of companies in CROCI's global coverage. Data in USD as on 16 January 2024. * Displayed in today's money

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Figure 99: Healthcare CROCI

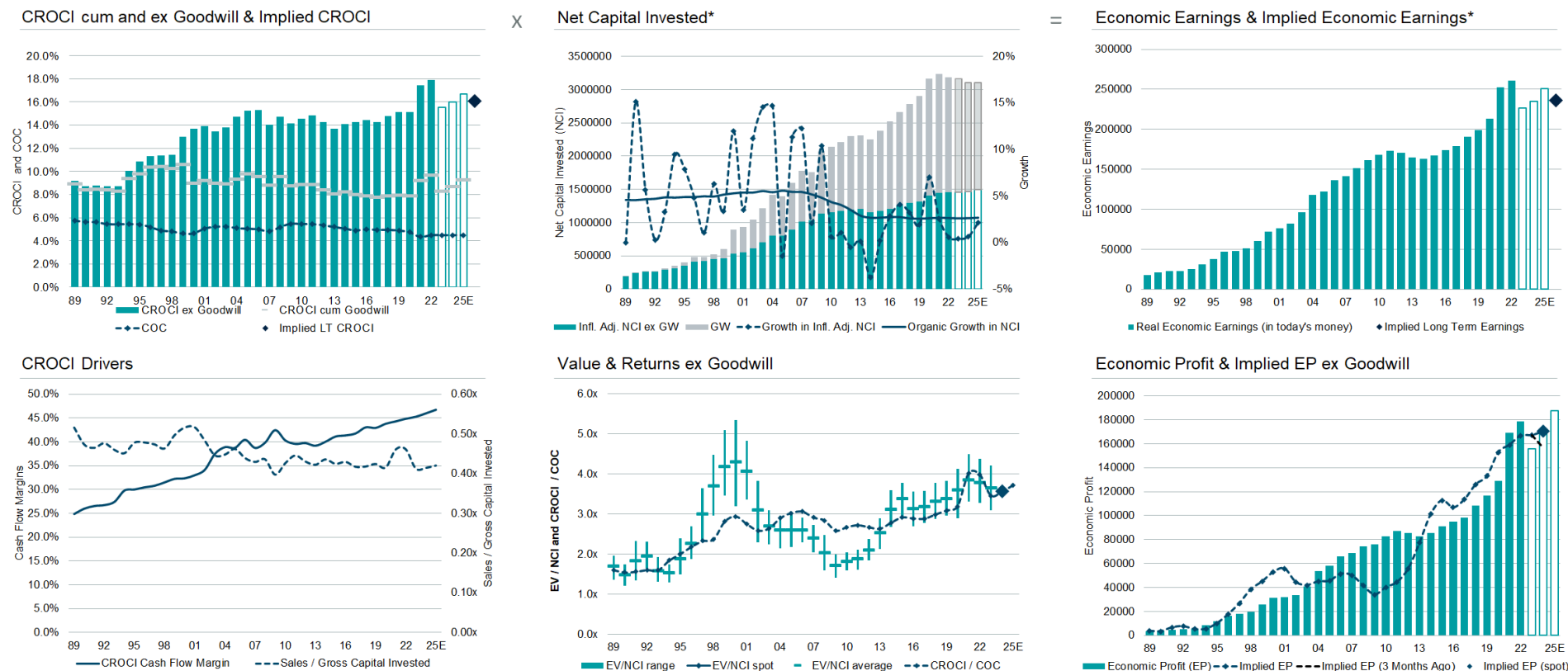


	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Enterprise Value (USD bn)	1902	2147	2344	2116	1964	2168	2358	2602	3178	3832	4252	4152	4528	5084	5446	6190	7041	6863	6937	7076	6850
Market Cap (USD bn)	1872	2048	2232	1950	1747	1934	2068	2282	2885	3457	3780	3584	3859	4277	4559	5207	6027	5947	6052	6380	6380
EV/NCI Ex. GW	2.77x	2.78x	2.62x	2.25x	1.89x	2.00x	2.06x	2.24x	2.66x	3.26x	3.53x	3.33x	3.42x	3.62x	3.70x	3.90x	4.27x	4.00x	3.85x	3.75x	3.47x
Economic PE	18.3x	18.1x	18.4x	15.1x	13.0x	13.4x	13.8x	15.7x	19.3x	23.1x	24.6x	23.0x	24.0x	24.4x	24.7x	26.3x	24.7x	23.6x	25.7x	24.2x	21.5x
Accounting PE	18.5x	17.8x	17.7x	14.2x	12.7x	12.3x	12.3x	13.7x	16.9x	19.3x	20.3x	18.0x	18.4x	18.5x	18.5x	19.9x	18.3x	17.6x	19.6x	18.6x	16.7x
Cost of Capital	5.05%	5.00%	4.82%	5.18%	5.48%	5.45%	5.45%	5.35%	5.20%	5.07%	4.90%	5.00%	4.95%	4.95%	4.90%	4.75%	4.35%	4.50%	4.50%	4.50%	4.50%
CROCI Ex. GW	15.1%	15.4%	14.2%	15.0%	14.5%	14.9%	15.0%	14.3%	13.8%	14.1%	14.3%	14.5%	14.3%	14.8%	15.0%	14.8%	17.3%	17.0%	14.9%	15.5%	16.1%
Implied CROCI	14.0%	13.9%	12.6%	11.7%	10.3%	10.9%	11.2%	12.0%	13.8%	16.5%	17.3%	16.7%	16.9%	17.9%	18.1%	18.5%	18.6%	18.0%	17.3%	16.9%	15.6%
Implied Economic Earnings/ Economic Earnings	92%	91%	89%	78%	71%	73%	75%	84%	100%	117%	121%	115%	119%	121%	121%	125%	107%	106%	116%	109%	97%

Source: Company reports, Bloomberg Finance L.P., DWS and CROCI. The table shows aggregate data of companies in CROCI's global coverage. Data in USD as on 03 January 2024. * Displayed in today's money

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Figure 100: Pharmaceuticals Biotechnology & Life Sciences CROCI

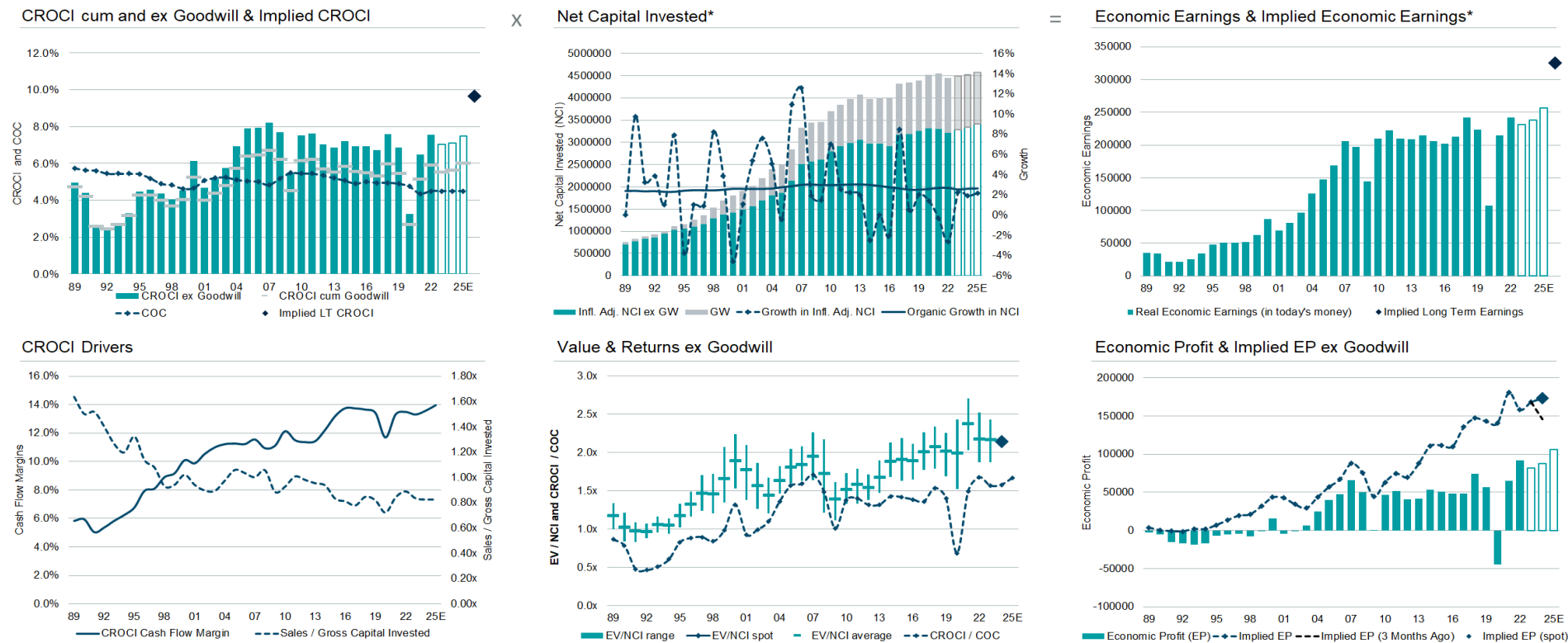


	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Enterprise Value (USD bn)	1468	1672	1782	1582	1497	1643	1745	2000	2462	2944	3271	3142	3351	3652	3859	4457	4948	5037	5125	5258	5082
Market Cap (USD bn)	1467	1628	1731	1498	1361	1500	1594	1825	2324	2786	3021	2798	2951	3139	3277	3771	4257	4440	4514	4799	4799
EV/NCI Ex. GW	2.58x	2.60x	2.39x	2.02x	1.71x	1.81x	1.88x	2.09x	2.52x	3.10x	3.37x	3.12x	3.17x	3.30x	3.37x	3.59x	3.83x	3.78x	3.63x	3.57x	3.31x
Economic PE	16.9x	17.0x	17.0x	13.8x	12.1x	12.4x	12.7x	14.6x	18.4x	22.0x	23.6x	21.6x	22.2x	22.4x	22.3x	23.7x	22.0x	21.1x	23.4x	22.3x	19.8x
Accounting PE	17.7x	17.1x	16.9x	13.3x	12.2x	11.6x	11.8x	13.2x	16.7x	18.9x	19.9x	17.4x	17.5x	17.3x	17.0x	18.1x	16.5x	16.2x	18.3x	17.7x	15.9x
Cost of Capital	5.05%	5.00%	4.82%	5.18%	5.48%	5.45%	5.45%	5.35%	5.20%	5.07%	4.90%	5.00%	4.95%	4.95%	4.90%	4.75%	4.35%	4.50%	4.50%	4.50%	4.50%
CROCI Ex. GW	15.3%	15.3%	14.0%	14.7%	14.2%	14.5%	14.8%	14.3%	13.7%	14.1%	14.3%	14.4%	14.3%	14.8%	15.1%	15.1%	17.5%	17.9%	15.6%	16.0%	16.7%
Implied CROCI	13.0%	13.0%	11.5%	10.5%	9.4%	9.8%	10.2%	11.2%	13.1%	15.7%	16.5%	15.6%	15.7%	16.3%	16.5%	17.1%	16.7%	17.0%	16.4%	16.1%	14.9%
Implied Economic Earnings/ Economic Earnings	85%	85%	82%	71%	66%	68%	69%	78%	96%	112%	116%	108%	110%	111%	109%	113%	96%	95%	105%	101%	89%

Source: Company reports, Bloomberg Finance L.P., DWS and CROCI. The table shows aggregate data of companies in CROCI's global coverage. Data in USD as on 03 January 2024. * Displayed in today's money

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Figure 101: Industrials CROCI

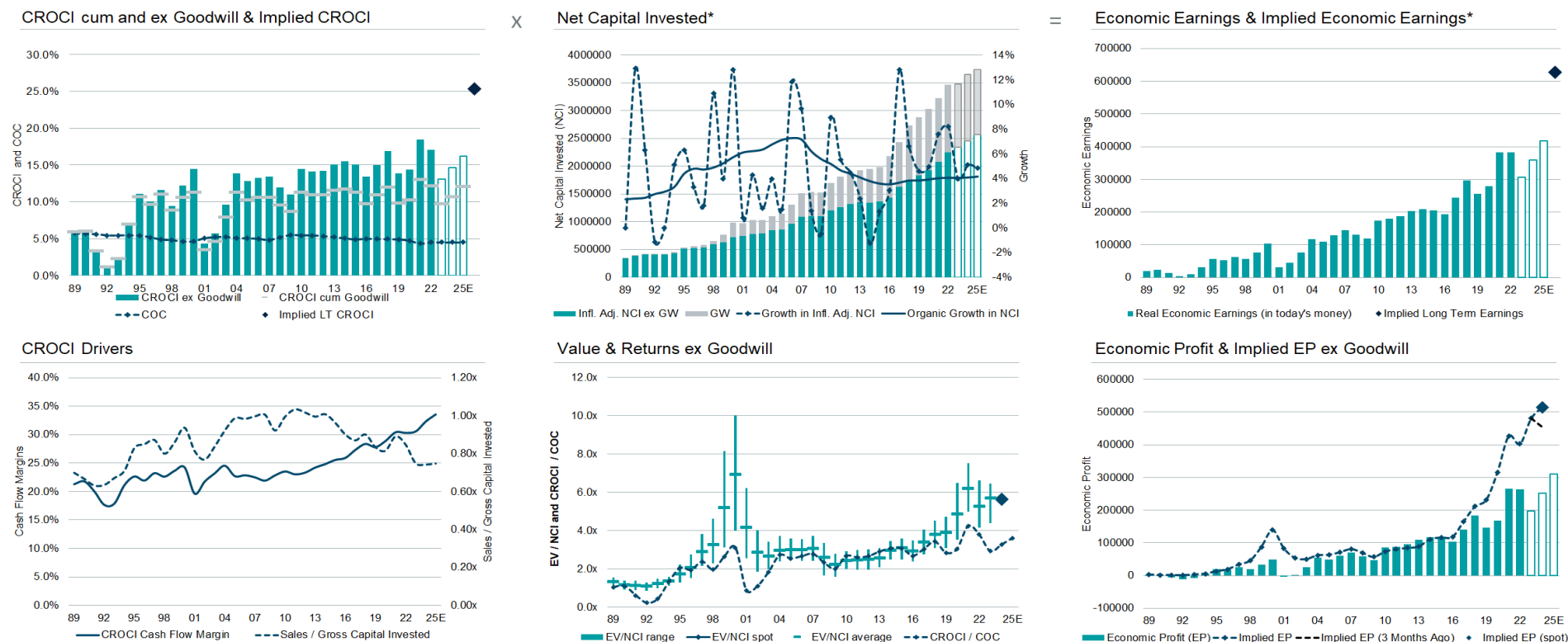


	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Enterprise Value (USD bn)	2526	2956	3750	3475	2897	3420	3737	3749	4211	4660	4794	4697	5463	5759	5812	5955	7185	6531	6954	7226	7072
Market Cap (USD bn)	1972	2322	2949	2416	1849	2366	2621	2565	3098	3514	3575	3440	4062	4257	4270	4347	5626	5033	5450	5790	5790
EV/NCI Ex. GW	1.80x	1.83x	1.94x	1.72x	1.39x	1.51x	1.58x	1.53x	1.67x	1.88x	1.91x	1.88x	2.00x	2.07x	2.01x	1.99x	2.37x	2.17x	2.17x	2.14x	2.01x
Economic PE	22.9x	23.1x	23.6x	22.4x	25.1x	20.2x	20.7x	21.8x	24.4x	26.1x	27.5x	27.2x	29.8x	27.2x	29.3x	61.2x	36.5x	28.8x	30.7x	30.2x	26.8x
Accounting PE	16.7x	16.6x	17.2x	16.0x	18.5x	13.9x	13.4x	13.4x	15.9x	16.6x	17.6x	16.9x	18.4x	16.8x	17.4x	31.6x	19.5x	15.0x	17.6x	17.3x	15.6x
Cost of Capital	5.05%	5.00%	4.82%	5.18%	5.48%	5.45%	5.45%	5.35%	5.20%	5.07%	4.90%	5.00%	4.95%	4.95%	4.90%	4.75%	4.35%	4.50%	4.50%	4.50%	4.50%
CROCI Ex. GW	7.9%	7.9%	8.2%	7.7%	5.5%	7.5%	7.6%	7.0%	6.8%	7.2%	6.9%	6.9%	6.7%	7.6%	6.9%	3.3%	6.5%	7.5%	7.0%	7.1%	7.5%
Implied CROCI	9.1%	9.2%	9.4%	8.9%	7.6%	8.3%	8.6%	8.2%	8.7%	9.5%	9.3%	9.4%	9.9%	10.2%	9.8%	9.4%	10.3%	9.8%	9.7%	9.6%	9.0%
Implied Economic Earnings/ Economic Earnings	115%	115%	114%	116%	138%	110%	113%	117%	127%	132%	135%	136%	148%	135%	144%	291%	159%	129%	138%	136%	120%

Source: Company reports, Bloomberg Finance L.P., DWS and CROCI. The table shows aggregate data of companies in CROCI's global coverage. Data in USD as on 03 January 2024. * Displayed in today's money

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Figure 102: Information Technology CROCI

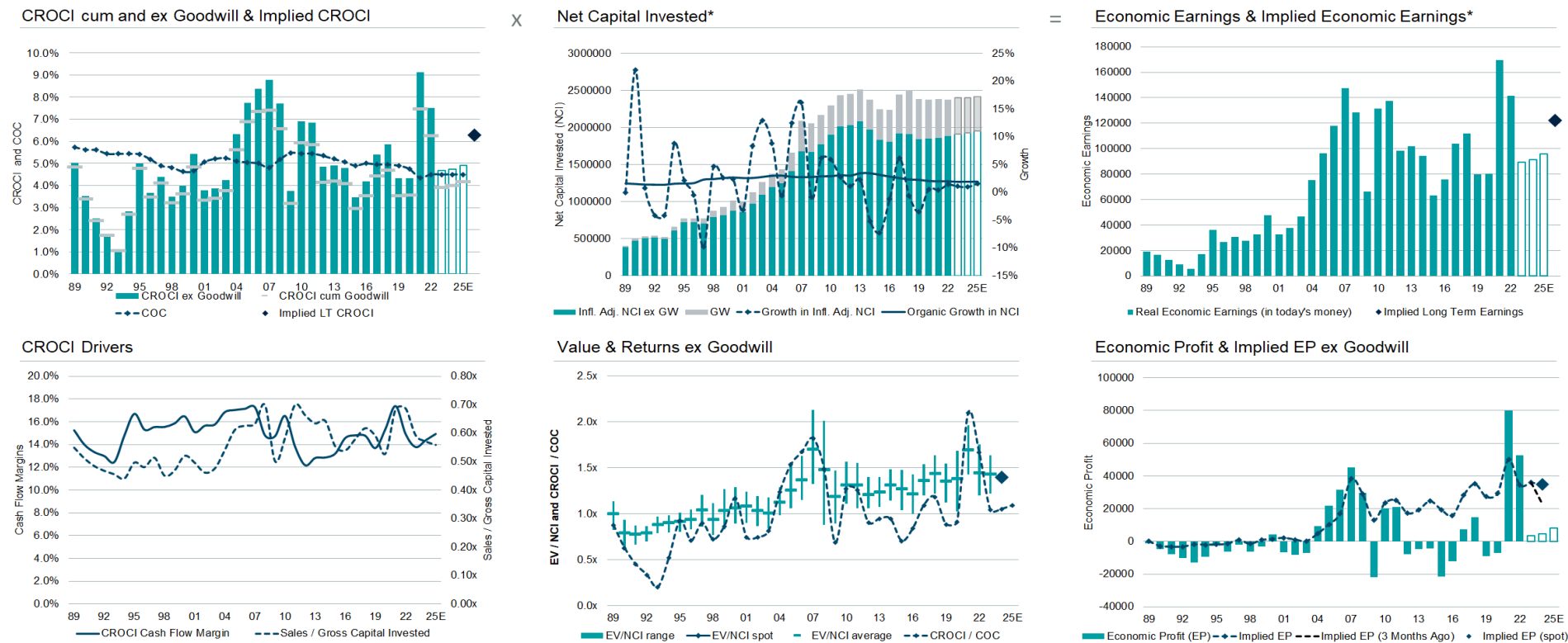


	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Enterprise Value (USD bn)	1890	2150	2510	2192	1901	2302	2491	2657	2817	3300	3524	3591	4750	5807	6355	8385	11697	11047	12978	13916	13538
Market Cap (USD bn)	1975	2206	2526	2131	1899	2342	2510	2687	2929	3391	3597	3623	4705	5578	6021	8058	11364	10648	12540	13652	13652
EV/NCI Ex. GW	2.98x	2.97x	3.03x	2.57x	2.20x	2.40x	2.44x	2.47x	2.53x	2.96x	3.08x	2.93x	3.39x	3.77x	3.89x	4.84x	6.20x	5.24x	5.67x	5.62x	5.11x
Economic PE	23.2x	22.4x	22.6x	21.4x	20.0x	16.6x	17.3x	17.4x	16.8x	19.1x	20.5x	21.9x	22.6x	22.3x	28.0x	33.6x	33.6x	30.8x	43.2x	38.4x	31.5x
Accounting PE	21.5x	19.9x	19.3x	19.2x	16.5x	13.3x	13.7x	13.8x	13.9x	15.1x	15.6x	16.0x	16.5x	16.3x	19.6x	23.5x	24.4x	22.6x	28.3x	25.9x	22.2x
Cost of Capital	5.05%	5.00%	4.82%	5.18%	5.48%	5.45%	5.45%	5.35%	5.20%	5.07%	4.90%	5.00%	4.95%	4.95%	4.90%	4.75%	4.35%	4.50%	4.50%	4.50%	4.50%
CROCI Ex. GW	12.8%	13.3%	13.4%	12.0%	11.0%	14.5%	14.1%	14.2%	15.0%	15.5%	15.0%	13.4%	15.0%	16.9%	13.9%	14.4%	18.4%	17.0%	13.1%	14.6%	16.2%
Implied CROCI	15.0%	14.8%	14.6%	13.3%	12.0%	13.1%	13.3%	13.2%	13.2%	15.0%	15.1%	14.6%	16.8%	18.7%	19.1%	23.0%	27.0%	23.6%	25.5%	25.3%	23.0%
Implied Economic Earnings/ Economic Earnings	117%	112%	109%	111%	110%	90%	94%	93%	88%	97%	100%	109%	112%	110%	137%	159%	146%	139%	194%	173%	142%

Source: Company reports, Bloomberg Finance L.P., DWS and CROCI. The table shows aggregate data of companies in CROCI's global coverage. Data in USD as on 03 January 2024. * Displayed in today's money

Past performance does not predict future returns. Forecasts are not a reliable indicator of future performance. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Market and index performance data is sourced from Bloomberg Finance

Figure 103: Materials CROCI

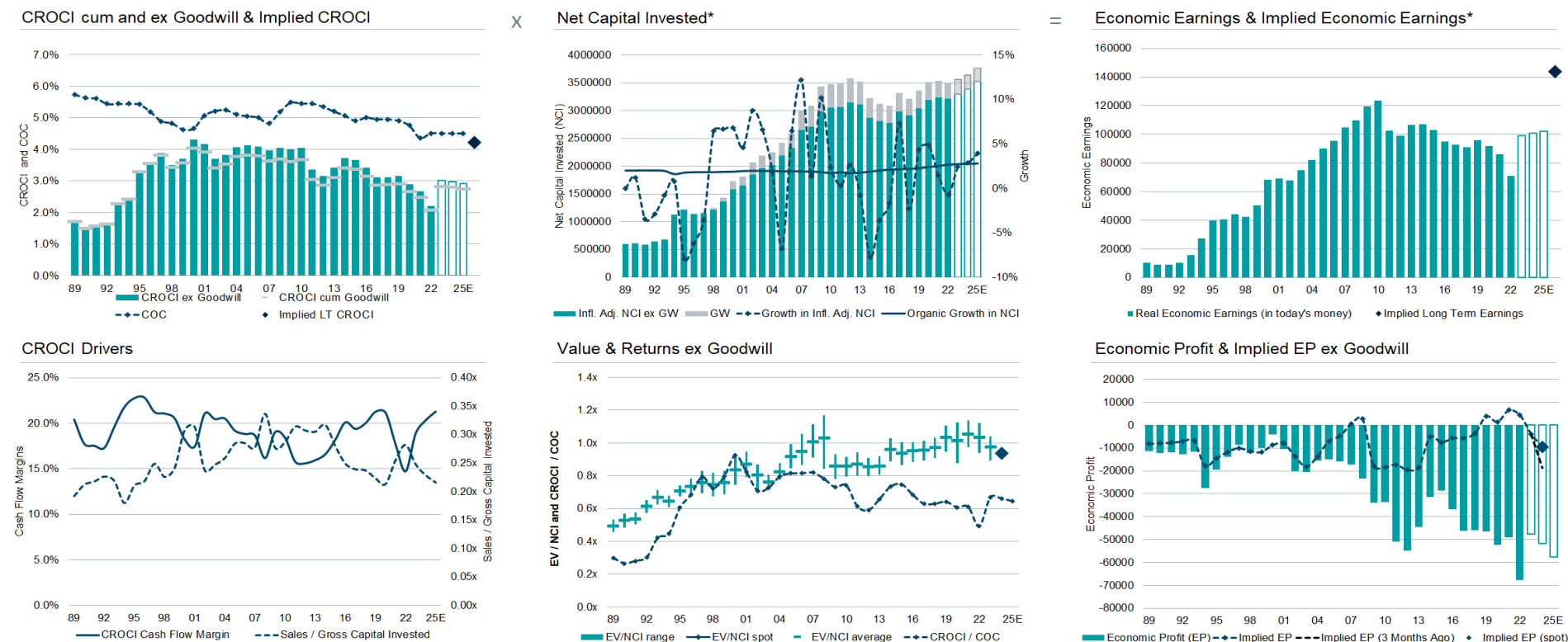


	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Enterprise Value (USD bn)	1008	1275	1936	1733	1508	1817	1963	1882	1991	2054	1882	1806	2183	2341	2162	2259	2828	2518	2655	2710	2667
Market Cap (USD bn)	837	1081	1574	1328	1095	1430	1526	1382	1473	1516	1346	1307	1709	1831	1635	1749	2326	2041	2150	2240	2240
EV/NCI Ex. GW	1.25x	1.36x	1.69x	1.48x	1.19x	1.31x	1.31x	1.21x	1.23x	1.31x	1.27x	1.21x	1.36x	1.44x	1.35x	1.37x	1.69x	1.44x	1.43x	1.40x	1.32x
Economic PE	16.2x	16.3x	19.3x	19.2x	31.6x	19.0x	19.1x	25.0x	25.0x	27.4x	36.7x	28.9x	25.1x	24.5x	31.1x	31.8x	18.5x	19.2x	30.5x	29.6x	26.9x
Accounting PE	10.9x	11.1x	13.2x	13.5x	19.2x	12.9x	12.5x	15.6x	16.2x	16.7x	21.2x	16.3x	14.9x	14.2x	16.8x	17.1x	10.7x	10.9x	15.7x	15.5x	14.5x
Cost of Capital	5.05%	5.00%	4.82%	5.18%	5.48%	5.45%	5.45%	5.35%	5.20%	5.07%	4.90%	5.00%	4.95%	4.95%	4.90%	4.75%	4.35%	4.50%	4.50%	4.50%	4.50%
CROCI Ex. GW	7.7%	8.4%	8.8%	7.7%	3.8%	6.9%	6.8%	4.8%	4.9%	4.8%	3.5%	4.2%	5.4%	5.8%	4.3%	4.3%	9.1%	7.5%	4.7%	4.7%	4.9%
Implied CROCI	6.3%	6.8%	8.2%	7.7%	6.5%	7.1%	7.1%	6.5%	6.4%	6.6%	6.2%	6.1%	6.7%	7.1%	6.6%	6.5%	7.3%	6.5%	6.4%	6.3%	5.9%
Implied Economic Earnings/ Economic Earnings	82%	82%	93%	99%	173%	103%	104%	133%	130%	139%	180%	145%	124%	121%	152%	151%	81%	86%	137%	133%	121%

Source: Company reports, Bloomberg Finance L.P., DWS and CROCI. The table shows aggregate data of companies in CROCI's global coverage. Data in USD as on 03 January 2024. * Displayed in today's money

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Figure 104: Utilities CROCI



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Enterprise Value (USD bn)	1457	1617	1997	2115	1976	2053	2104	2133	2149	2227	2161	2206	2411	2431	2730	2848	3050	3057	3099	3191	3290
Market Cap (USD bn)	817	998	1243	1201	943	992	989	954	1024	1131	1090	1119	1197	1248	1436	1486	1649	1604	1547	1547	1547
EV/NCI Ex. GW	0.91x	0.95x	1.01x	1.03x	0.86x	0.86x	0.87x	0.85x	0.86x	0.96x	0.93x	0.95x	0.96x	0.97x	1.03x	1.01x	1.05x	1.03x	0.97x	0.94x	0.91x
Economic PE	22.2x	23.2x	25.5x	25.3x	21.4x	21.2x	26.0x	27.0x	25.1x	25.7x	25.5x	27.8x	30.7x	31.2x	32.8x	35.0x	39.6x	46.7x	32.4x	31.5x	31.4x
Accounting PE	14.7x	16.1x	17.5x	16.8x	12.6x	12.8x	17.3x	16.0x	15.5x	15.9x	14.8x	15.5x	16.5x	17.5x	18.4x	19.1x	21.5x	23.5x	15.7x	14.9x	14.3x
Cost of Capital	5.05%	5.00%	4.82%	5.18%	5.48%	5.45%	5.45%	5.35%	5.20%	5.07%	4.90%	5.00%	4.95%	4.95%	4.90%	4.75%	4.35%	4.50%	4.50%	4.50%	4.50%
CROCI Ex. GW	4.1%	4.1%	4.0%	4.1%	4.0%	4.0%	3.3%	3.2%	3.4%	3.7%	3.7%	3.4%	3.1%	3.1%	3.1%	2.9%	2.7%	2.2%	3.0%	3.0%	2.9%
Implied CROCI	4.6%	4.7%	4.9%	5.3%	4.7%	4.7%	4.7%	4.6%	4.5%	4.9%	4.6%	4.8%	4.7%	4.8%	5.1%	4.8%	4.6%	4.7%	4.4%	4.2%	4.1%
Implied Economic Earnings/ Economic Earnings	112%	116%	123%	131%	117%	116%	142%	145%	131%	130%	125%	139%	152%	154%	161%	166%	172%	210%	146%	142%	141%

Source: Company reports, Bloomberg Finance L.P., DWS and CROCI. The table shows aggregate data of companies in CROCI's global coverage. Data in USD as on 03 January 2024. * Displayed in today's money

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Glossary A: Introduction to CROCI

Cash Return on Capital Invested (CROCI) is a cash-flow-based analysis which, by making a series of economic adjustments to traditional accounting data, aims to make non-financial companies comparable - regardless of industry or domicile. The main areas where the “economic data” differ from accounting data are as follows:

- Accounting for “hidden” liabilities – CROCI Enterprise Value (EV) includes not only financial liabilities (such as debt) but also operational liabilities (such as operating lease commitments, warranties, pension funding, specific provisions etc).
- Depreciating similar assets in a similar manner - Adjusting depreciation to reflect “economic depreciation” and effective useful economic life.
- Replacement value of assets – Inflating the value of net assets using the relevant inflator (based on the real age of assets).
- Unreported assets – Systematically capitalizing real cash-generative assets that are left off the balance sheet. Research and development costs and advertising are examples of such assets. In the data and charts presented throughout this document, “E” refers to financial years that are not yet reported. Data for these years are calculated by applying the CROCI model to market’s consensus estimates of accounting data. The CROCI Group does not make any forecasts or projections of accounting data.

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Risk Considerations

The CROCI Model: The analysis above has been built on the CROCI premise that stocks with lower CROCI Economic P/E ratios may outperform stocks with higher CROCI Economic P/E ratios over time. This premise may not be correct and prospective investors should evaluate this assumption prior to investing based on CROCI analysis. CROCI represents one of many possible ways to analyze and value stocks. Potential investors must form their own view of the CROCI methodology and evaluate whether CROCI and investment associated with CROCI are appropriate for them. The CROCI Group does not provide investment advice.

CROCI analysis: The discussion above is based on analysis of agglomerations of the companies in the CROCI universe, which consists of over 850 companies globally. These agglomerations of companies may not be representative of the countries, regions, and sectors which they are intended to reflect.

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Glossary B: CROCI & Real Value

Real Investor:

Definition: An investor whose investments are driven principally by the careful analysis of company fundamentals, including their economic cash returns and their economic valuation. Specifically, a Real Investor has two characteristics:

1. **Fundamental:** any investment is informed or driven by the interplay between the cash flow generation, the capital intensity and the valuation of that company;
2. **Skeptical of reported financial statements as a guide to investing:** Real Investors believe that the income statement and balance sheet in a company's accounts are not necessarily designed to be helpful to equity investors, and that a synthesis of all the notes to the accounts and diligent restatement of the accounts must happen in order to render valuations comparable and meaningful; and

Real Investors look to economic value to inform investment, and believe that the reported financial statement data may not be representative of the economic reality of a company.

Since CROCI makes adjustments to financial statements in order to include all relevant information in the notes to the accounts, and to restate the accounts in order to render economic valuations, which are meaningful and comparable, CROCI may be one valuable approach for the Real Investor.

Real Value:

Definition: Economic value as calculated by the CROCI process via the adjustments to and normalisations of reported financial statements, conducted by CROCI's team of company analysts.

Notes: The CROCI process seeks to make company financial data more consistent, comparable and economically meaningful through a series of reviews and adjustments. This contrasts with more conventional definitions of "Value" that tend to be based on accounting measures such as equity or profits.

The principal indicator of Real Value is CROCI's Economic P/E. An attractive Economic P/E ratio suggests that the market is undervaluing the cash flow being produced by the operating assets, all other things being equal. The term Real Value can therefore be used attributively to refer to companies with the lowest CROCI Economic P/E.

Rolling 12 months performance as of 29 December 2023

Name	Currency	Live Date	12/22 - 12/23	12/21 - 12/22	12/20 - 12/21	12/19 - 12/20	12/18 - 12/19	12/17 - 12/18	12/16 - 12/17	12/15 - 12/16	12/14 - 12/15	12/13 - 12/14
CROCI US Strategy	USD	2 Feb. 2004	17.4%	-4.6%	29.2%	0.7%	32.6%	-10.0%	27.8%	13.5%	-7.4%	11.9%
CROCI US Dividends Strategy	USD	13 Mar. 2012	4.2%	2.8%	22.5%	5.7%	29.0%	-2.3%	20.8%	20.2%	-2.3%	9.7%
CROCI Euro Strategy	EUR	2 Feb. 2004	17.4%	-12.7%	19.7%	-0.4%	26.5%	-14.8%	19.3%	11.3%	12.1%	9.6%
CROCI Japan Strategy	JPY	2 Feb. 2004	40.3%	-0.3%	15.8%	10.4%	24.5%	-14.7%	23.2%	7.6%	5.9%	12.8%
CROCI World EUR Strategy	EUR	29 Nov. 2010	11.9%	1.9%	31.3%	0.1%	32.4%	-8.0%	10.3%	12.4%	2.1%	22.7%
CROCI World USD Strategy	USD	29 Nov. 2010	15.8%	-4.4%	22.0%	9.2%	30.0%	-12.4%	25.6%	9.1%	-8.3%	7.7%
CROCI Sectors Plus EUR Strategy	EUR	18 Nov. 2015	12.9%	6.4%	37.7%	18.6%	23.9%	-12.8%	11.9%	24.0%	-2.5%	22.7%
CROCI Sectors Plus USD Strategy	USD	18 Nov. 2015	16.8%	-0.1%	28.0%	29.3%	21.7%	-17.0%	27.4%	20.4%	-12.5%	7.7%
CROCI Global Dividends EUR Strategy	EUR	15 Mar. 2012	11.2%	4.8%	21.3%	-14.1%	28.7%	-4.8%	7.0%	17.6%	5.4%	16.9%
CROCI Global Dividends USD Strategy	USD	15 Mar. 2012	15.0%	-1.7%	12.8%	-6.4%	26.3%	-9.3%	21.9%	14.2%	-5.4%	1.3%
CROCI Intellectual Capital EUR Strategy	EUR	15 Apr. 2019	22.6%	-17.8%	29.4%	14.5%	35.9%	-0.4%	14.9%	10.6%	14.5%	25.0%
CROCI Intellectual Capital USD Strategy	USD	15 Apr. 2019	26.9%	-22.9%	20.2%	24.8%	33.4%	-5.2%	30.9%	7.3%	2.8%	9.7%

Source: DWS, Bloomberg, Factset, Performance data before live date is simulated and was calculated by means of retroactive application of the Strategy/Index model. All returns in respective currency, include reinvested dividends (net of withholding tax) but do not include fees that might be charged on an investment product. It is not possible to invest directly in a strategy. The performance shown here is for model portfolios. The performance of any actual investment products may differ significantly. The CROCI team does not provide investment advice, stock recommendations or act in any other fiduciary capacity. This information is intended for informational purposes only and does not constitute investment advice, a recommendation, an offer or solicitation. No distribution is allowed into the USA.

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CRC 099688 / February 2024

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