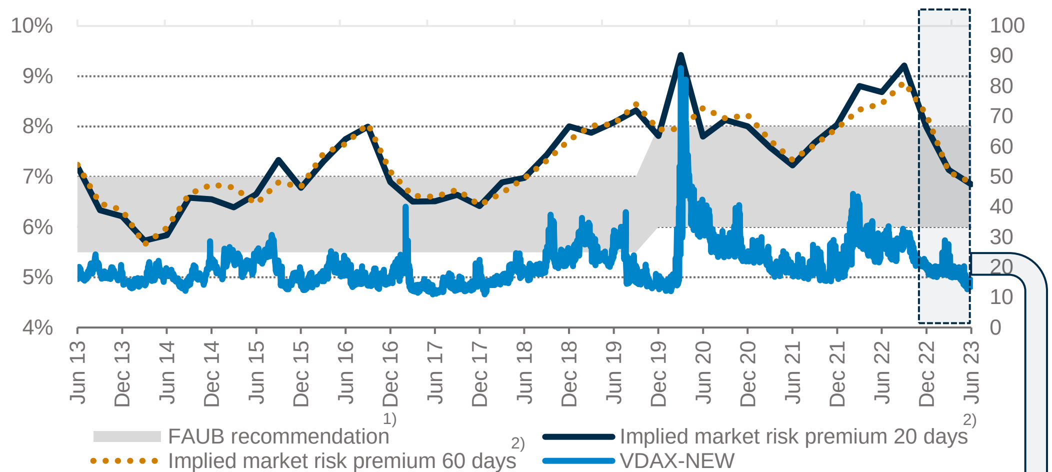
A&M Valuation Insights

August 2023

The price for taking equity risk in Germany continues its downward trend in the rising interest rate environment

The price for taking the risk of equity investments in Germany

The calculated German market risk premium (MRP) represents investors' current risk appetite based on German capital market data and analyst forecasts.[3)]

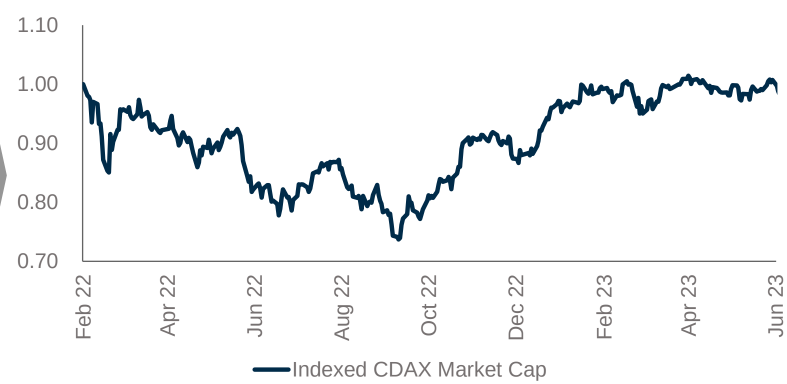


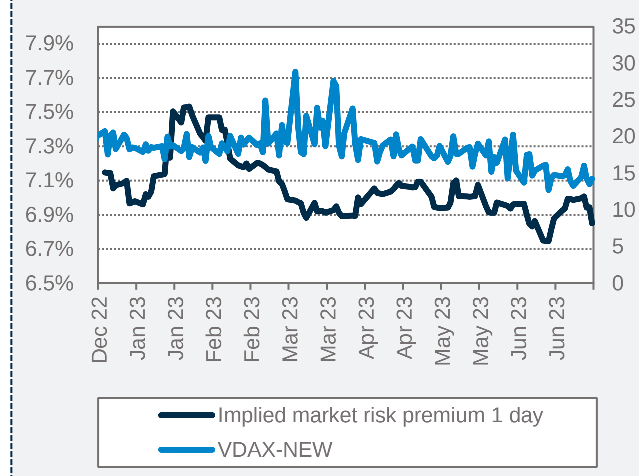
Decreasing risk indicators:

- Though the implied MRP has returned to pre-Corona levels, the required return on equity investments remains high as the risk-free rate has significantly increased.
- If the downward trend for the MRP continues, the current FAUB recommendation for the MRP might be challenged.
- Current market volatility, as measured by the VDAX-NEW index, has dropped significantly to its pre-Corona level as well. This might be interpreted as a sign that investors have absorbed the shocks related to the pandemic and the Ukraine war.

Change in CDAX market cap[4]

Following the drop in equity markets after Russia's invasion of Ukraine, asset prices are gradually returning to pre-war levels.





1) Fachausschuss für Unternehmensbewertung und Betriebswirtschaft (FAUB) of the German Institute of Chartered Accountants (IDW).

2) The MRP is calculated by relating the market capitalization of CDAX companies to analyst forecasts. Whereas stock prices are volatile, analyst forecasts are adjusted with a time lag. The A&M implied MRP model considers capital market data as well as consensus earnings estimates as of 30 June 2023 and is updated on a quarterly basis. The results might be affected by a timing lag with regards to updates of consensus estimates by the equity research community. The range of the MRP shown is derived by varying stock price data from 60 trading days to 20 trading days.

3) Results are subject to information deficiencies and capital market exaggerations

4) The A&M implied MRP model generally analyses firm level data for all CDAX firms with sufficient data availability.

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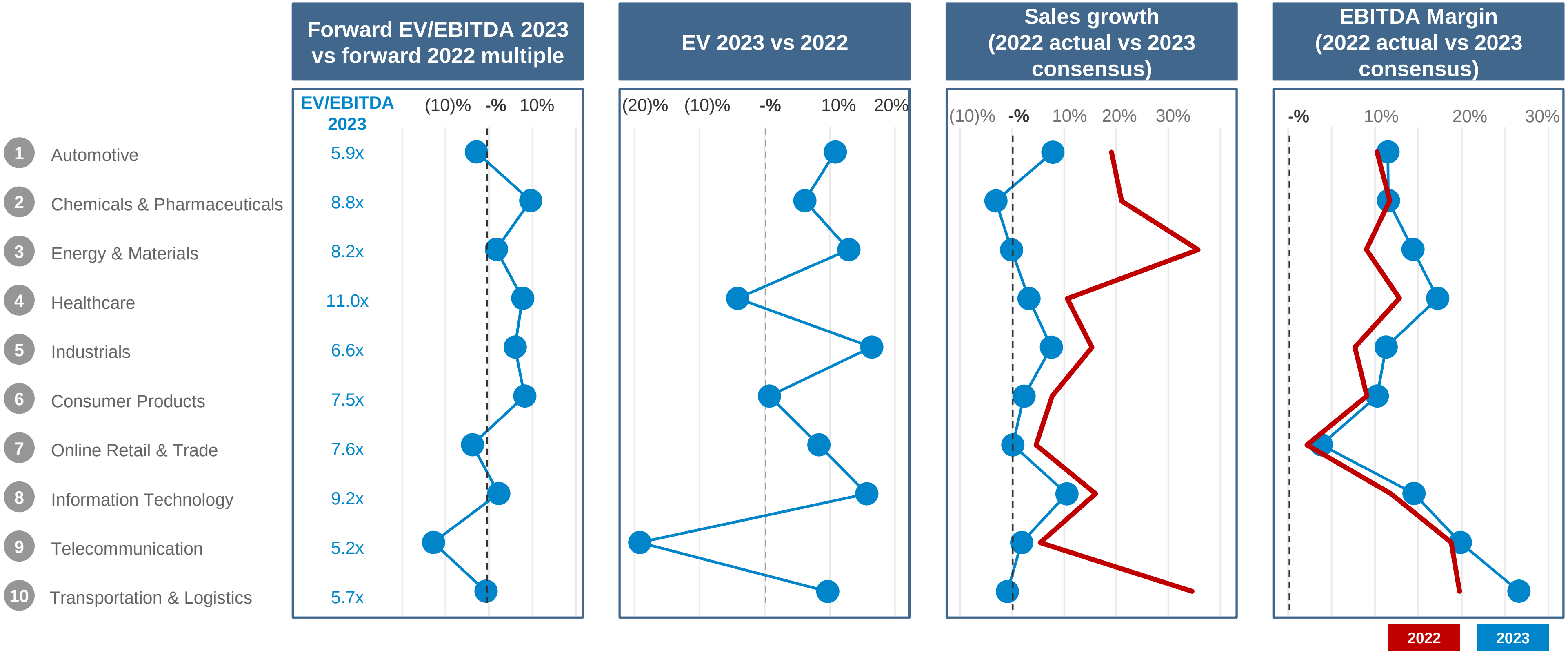
In a one-year comparison, mostly the recovery in asset prices led to rising multiples from previous record low levels

One-year comparison of forward 2023 EV/EBITDA trading multiple on firm level data by industry (CDAX)

- The recovery in asset prices led to Enterprise Values (EV) increases across most industries except Healthcare and Telecommunication.
- Fundamentally, sales outlooks across industries are far less optimistic compared to a year ago. Especially, strong previous growth outlooks in Energy & Materials amid the war in the Ukraine and in Transportation & Logistics following the slowdown in the COVID-19 pandemic dropped from their peeks in 2022.
- EBITDA margins, in turn, are projected to remain rather stable compared to estimated levels a year ago. As such, it, at least partly seems, that rising input costs are mostly passed on to consumers in most industries.
- As a result of recovered asset prices, forward EV/EBITDA multiples increased across most industries.



Note: The analysis of forward EV/EBITDA trading multiple levels is based on all CDAX firms and compares median EV/EBITDA trading multiple levels by industry as of 30 June 2023 and as of 30 June 2022. Only firm years considered for which consistent data was available across analyzed variables. Sales growth and EBITDA margin analysis compares 2022 sales growth and EBITDA consensus as of 30 June 2022 with 2023 sales growth and EBITDA consensus as of 30 June 2023.
Source: S&P Capital IQ, A&M Analysis.

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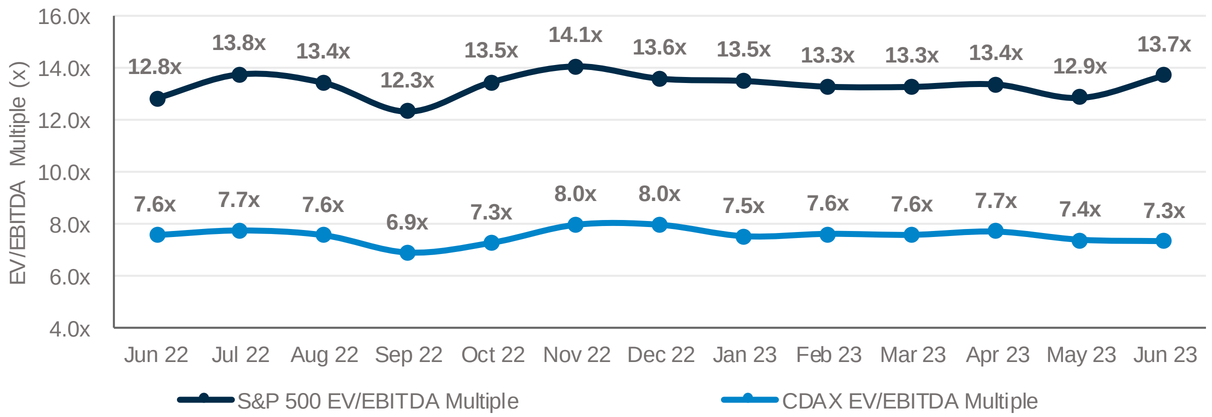
CDAX firms trade at significantly lower EV/EBITDA multiple levels than firms listed in the S&P 500

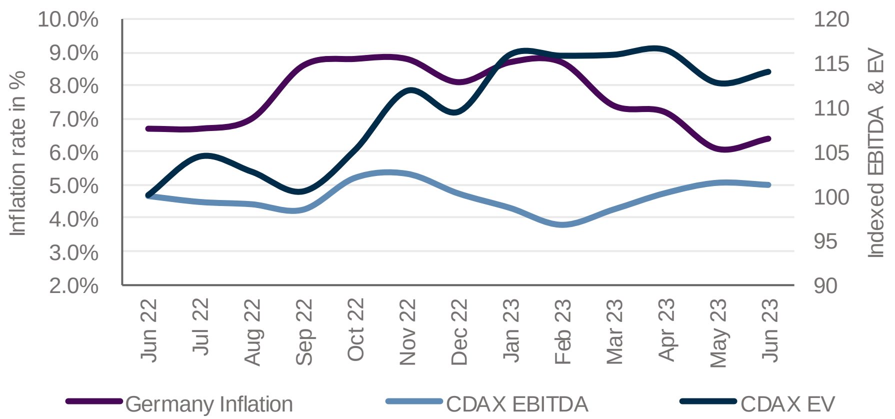
Forward EV/EBITDA trading multiple analysis based on firm level data of CDAX and S&P 500 firms[1]

Forward EV/EBITDA trading multiple development Germany (CDAX) vs. USA (S&P 500)

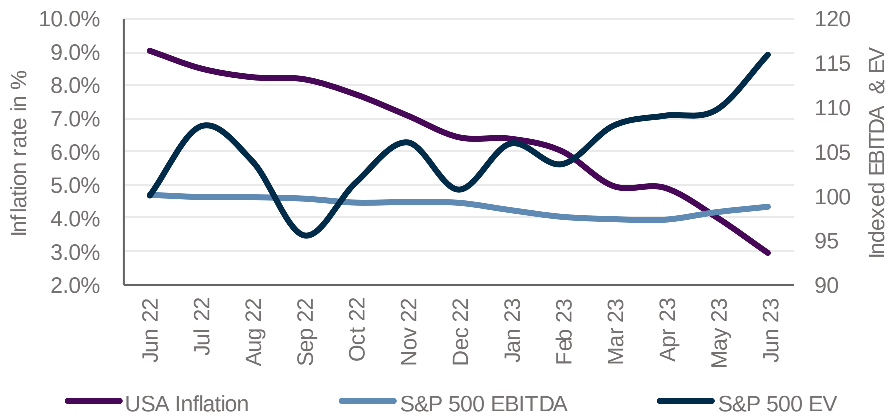


- The median forward EV/EBITDA multiple of S&P 500 firms currently stands at 13.7x, compared just to 7.3x of CDAX firms.
- While inflation decreased both in the USA and Germany, the German inflation rate still surpasses the US inflation rate. The sharper decline in the US inflation rate led to substantially higher increase in asset prices of S&P 500 stocks.
- The question arises whether the premium observed in US trading multiples compared to the trading level in Germany is substantiated by firm fundamentals. For an analysis at the industry level refer to the next slide.

Germany: Inflation rate vs. indexed EV and EBITDA levels



USA: Inflation rate vs. indexed EV and EBITDA levels



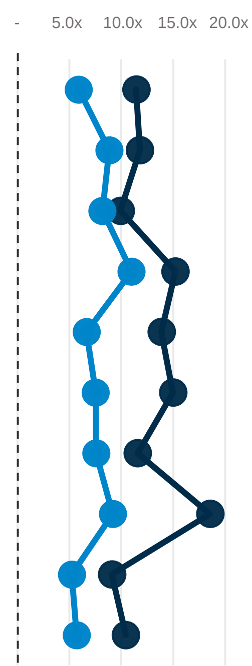
1) The analysis of forward EV/EBITDA trading multiple levels is based on all CDAX and S&P 500 firms and compares median EV/EBITDA trading multiple levels by industry as of June 30, 2023. Only firm years considered for which consistent data was available across analysed variables.
Source: S&P Capital IQ, Deutsche Bundesbank, U.S. BUREAU OF LABOR STATISTICS, A&M Analysis.

Firm fundamentals may explain US multiple premia in some industries, but not uniformly across all industries

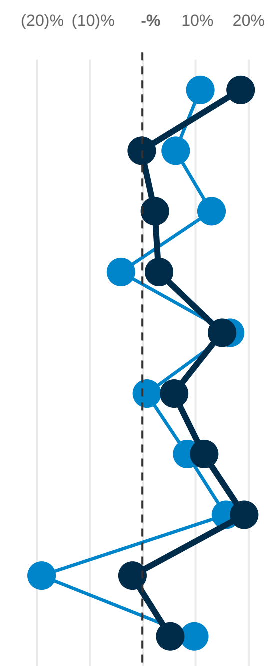
Forward EV/EBITDA trading multiple analysis based on firm level data of CDAX and S&P 500 firms[1]

Comparison of Forward EV/EBITDA 2023 Germany vs USA

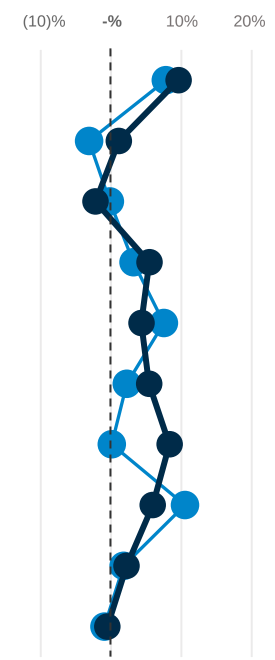
		Germany	USA
1	Automotive	5.9x	11.4x
2	Chemicals & Pharmaceuticals	8.8x	11.8x
3	Energy & Materials	8.2x	9.9x
4	Healthcare	11.0x	15.2x
5	Industrials	6.6x	13.9x
6	Consumer Products	7.5x	15.0x
7	Online Retail & Trade	7.6x	11.6x
8	Information Technology	9.2x	18.6x
9	Telecommunication	5.2x	9.1x
10	Transportation & Logistics	5.7x	10.4x



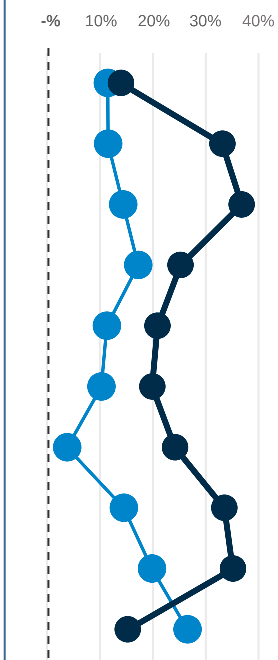
1-year EV deviation



Sales growth 2023



EBITDA Margin 2023



Germany USA

- A comparison of forward EV/EBITDA trading multiples of US (S&P500) and German (CDAX) firms at the industry level reveals that US trading premia are highest in Information Technology (18.6x vs. 9.2x), Transportation & Logistics (10.4x vs. 5.7x) and Automotive (11.4x vs. 5.9x).
- Yearly changes in EV and sales growth projections seem largely in line amongst US and German industries. However, US listed stocks seem to benefit from far more prosperous profitability projections (EBITDA margin) than German listed stocks. We note two exceptions: trading multiple premia in Automotive and Transportation & Logistics are not supported by higher profitability outlooks.

1) The analysis of forward EV/EBITDA trading multiple levels is based on all CDAX and S&P 500 firms and compares median EV/EBITDA trading multiple levels by industry as of Jun 30, 2023. Only firm years considered for which consistent data was available across analysed variables.
Source: S&P Capital IQ, A&M Analysis.

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In a one-year time frame, price tags were highest in IT and Chems & Pharma across European M&A transactions

Comparison of LTM transaction and LTM trading multiple pricing levels (EV/EBITDA) by industry in Europe (S&P Europe 350)

- We compare Last-Twelve-Month (LTM) EV/EBITDA multiples paid in European M&A transactions with LTM European trading pricing levels (S&P Europe 350).
- Highest multiples were paid in Chems & Pharma at 18.1x and Information Technology at 15.1x whereas Transportation and Logistics at 7.1x exhibits the lowest price tag among industries.
- Premia, as measured by the spread between LTM transaction and LTM trading multiple pricing levels, have been highest in Energy & Materials at 56% and lowest in Transportation & Logistics at a discount of 32%.
- When compared to a six-month lagged time frame (June 2022 to June 2021) spreads between transaction and trading price tags have widened significantly in Information Technology.
- This can be attributed to a significant increase in the EV of Information Technology companies within the last six months.

Note: Transaction pricing levels are defined as LTM EV/EBITDA at closing and consist of all closed M&A transactions in Europe with a transaction value greater than EUR 25 Mio., data clustered by industry for the June 2022 to June 2023 period. The trading pricing level is based on LTM EV/EBITDA trading multiples for all S&P Europe 350 firms, data clustered by industry as of June 30, 2023. Source: S&P Capital IQ, A&M Analysis.

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