

Tech-oriented Thematic Indices through a Factor Lens

An analysis of the STOXX® Global Artificial Intelligence, STOXX® Global Automation & Robotics, STOXX® Global Digital Security, and STOXX® Global Fintech Indices

Diana R. Baechle, Principal, Qontigo Applied Research¹



¹ Many thanks to Qontigo's Melissa Brown, Elizabeth Turner and Ladi Williams for their valuable input.

Table of Contents

1. Introduction	3
2. Thematic indices outperformed STOXX Global 3000	5
3. Digital Security and Fintech saw highest growth in number of constituents	7
4. Artificial Intelligence consistently the riskiest index	7
5. Specific return helped Artificial Intelligence and Fintech outperform STOXX Global 3000 Technology	8
6. Market and Industry behind factor contribution to index returns	9
7. Positive tilts towards Growth, Liquidity, and Market Sensitivity for all thematic indices	10
8. Strong historic positive exposure to Growth for thematic indices	11
9. Largest impact on tech-oriented thematics' returns from Momentum, Value, and Volatility	15
10. Fintech currently provides the largest exposure to Growth but lowest exposure to Momentum	19
11. Conclusion	20
Contacts & Information	23
> Americas	23
> Europe	23
> Asia Pacific	23

1. Introduction

Investors interested in capitalizing on ongoing global structural changes and trends in society and in the economy have been paying increasing attention to technology-oriented thematic indices.² The COVID-19 pandemic only served to increase investor interest as the pandemic has accentuated society's dependence on technology and highlighted just how advances in this area are changing our daily lives.

Results since 2012 have been impressive, with all analyzed Thematic indices producing better returns (both absolute and risk-adjusted) than the global market. Industry exposures generally drove excess returns, as expected given the nature of the indices, while specific names in each index were less important than the overall theme. Aggregate Style factors' impact was small, masking substantial contributions of opposite signs from various Style factors. All indices held liquid stocks, with higher historical betas, and higher growth level. However, the largest effects on tech-oriented thematics' returns came from Momentum, Value, and Volatility — the style factors with the largest returns during the period under review.

The correlations between the thematic indices and the broader market have been low, suggesting they could add additional return to a broad portfolio without increasing its risk. Nevertheless, investors may need to analyze the risks and other characteristics associated with such indices to ensure that these attributes are aligned with their objectives and return expectations and do not introduce unwanted risks into their investments.

This study analyzed four tech-oriented thematic indices intended to capture overarching themes that, given the rapid evolution in technology, are likely to continue to be, or to become, megatrends:

- > [STOXX® Global Artificial Intelligence](#) ("Artificial Intelligence"),
- > [STOXX® Global Automation & Robotics](#) ("Automation & Robotics"),
- > [STOXX® Global Digital Security](#) ("Digital Security"), and
- > [STOXX® Global Fintech](#) ("Fintech").

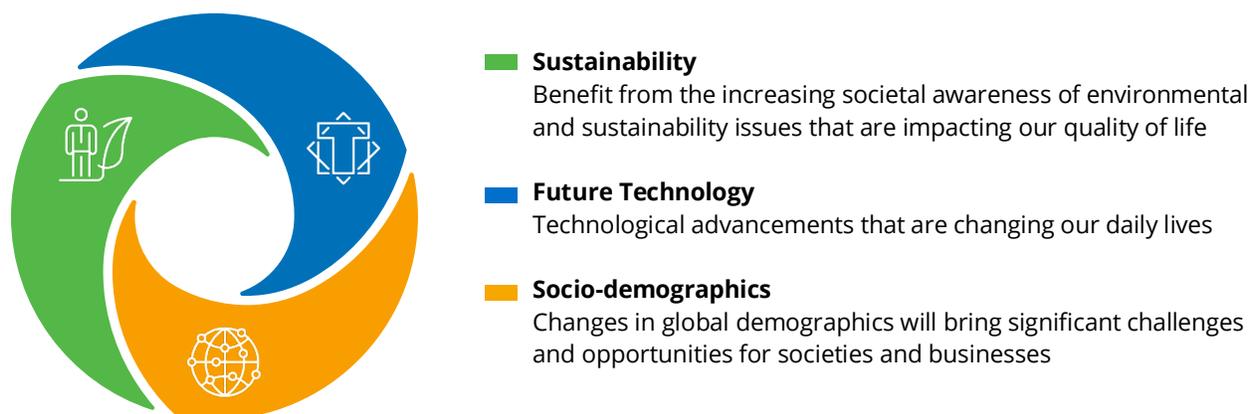
More precisely, we analyzed these indices' performance and risk through a factor lens leveraging Axioma's Worldwide Fundamental Factor Model, and also compared their characteristics to the broad market [STOXX® Global 3000](#) ("Global 3000") and the [STOXX® Global 3000 Technology](#) ("Global Technology") indices.

Qontigo's framework for thematic investing includes three overarching categories (Figure 1):

- > Sustainability,
- > Socio-demographics, and
- > Future Technology.

The analyzed four technology thematic indices fall under the Future Technology category.

²Source: Qontigo. Flows into passive thematic ETFs have been approximately \$20 billion year-to-date, as of June 30, 2021. Total flows track to surpass last year's numbers. Total assets under management were about \$142 billion as of June 30, 2021.

Figure 1. Qontigo's framework for thematic investing

Source: Qontigo

They are built using a revenue-based approach that permits a detailed breakdown of companies' revenue sources, helping to identify and select businesses with substantial exposure to specific themes.

Table 1. High-level description of index components

Artificial Intelligence	Companies engaged in building artificial intelligence (AI) applications and in providing or improving the systems required to successfully utilize AI.
Automation & Robotics	Companies deriving more than 50% of their most recent total annual revenues from automation- and robotics-related sectors.
Digital Security	Companies involved in the transmission, safeguarding, and/or handling of sensitive data, and/or in access control to secure locations.
Fintech	Companies offering leading technologies for automating and improving financial services.

Source: Qontigo

2. Thematic indices outperformed STOXX Global 3000

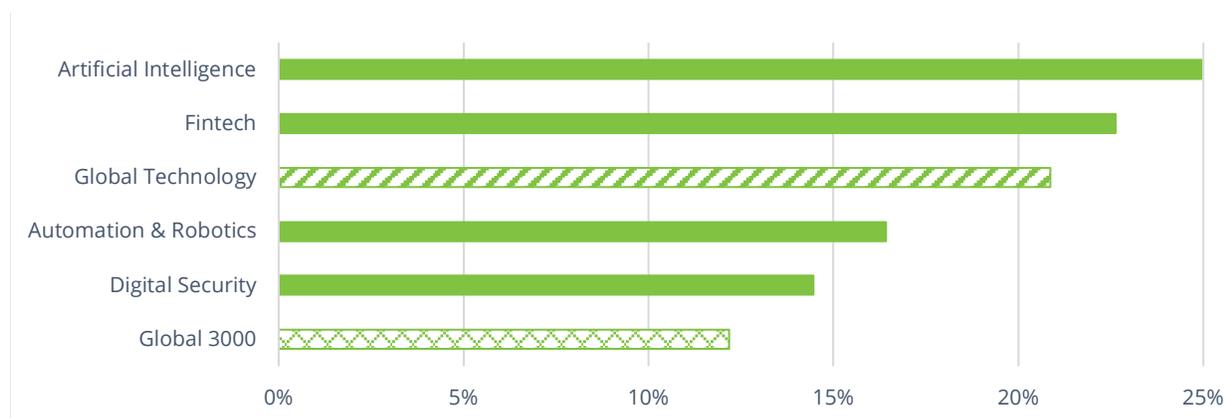
All four tech-oriented thematic indices produced impressive results over the period under review (the nine years between June 18, 2012, and June 18, 2021, for which data was available for all four indices). Annualized returns were in double digits, outperforming the Global 3000 index³. Artificial Intelligence saw the highest annualized return at 25%, followed by Fintech at 23% over the study period. Both these figures outstripped the Global Technology index. Automation & Robotics and Digital Security saw annual returns in excess of 14% — more than two percentage points higher than that recorded by the broad-market Global 3000 index but underperformed Global Technology (Figure 2)⁴.

Unsurprisingly given its greater concentration, Artificial Intelligence was also the riskiest among the thematic indices. However, its realized volatility was only roughly five percentage points higher than that of Global Technology, which is much more diversified with seven times as many index constituents (as of June 18, 2021). The risk of the other three thematic indices was lower than that of Global Technology even though they contained around one-third of the names.

Fintech had the second-highest return and the second-highest realized volatility, producing the highest Sharpe ratio⁵ of all the thematic indices over the entire period under review (Figure 3). In other words, it generated the highest return per unit of risk.

Although Digital Security was the least volatile index, it also produced the lowest return. This ultimately translated into the lowest — but nevertheless impressive — Sharpe ratio among the thematic indices (0.95) and was still higher than that of the Global 3000 (0.90).

Figure 2. Annualized return for the period from June 18, 2012 to June 18, 2021

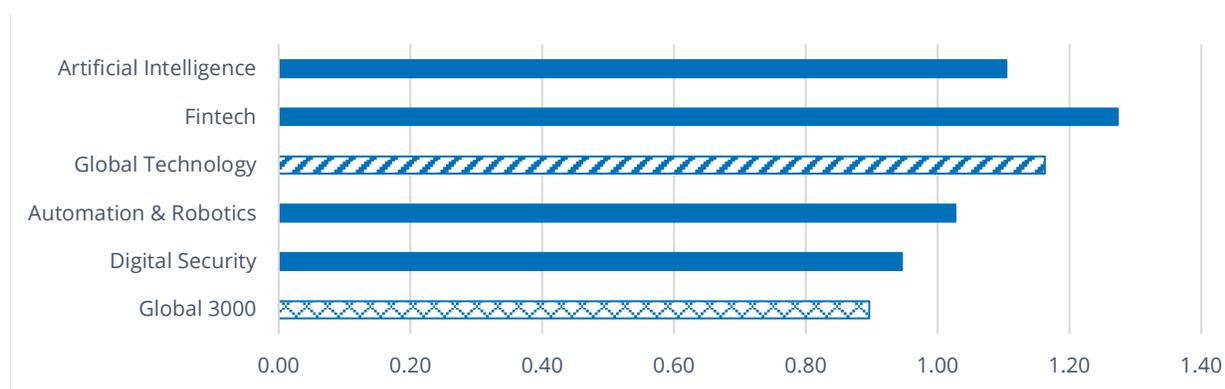


Source: Qontigo

³ The starting date is the first date for which we have index holdings for all four thematic indices.

⁴ I would like to thank my colleagues Rafael Ignacio Valenzuela Rodriguez and Walter Wang for providing the data used in this analysis.

⁵ Zero is used as a proxy for riskless returns.

Figure 3. Index Sharpe ratios for the period from June 18, 2012 to June 18, 2021

Source: Qontigo

One decision element for an investor considering whether to include one or more of these indices to a broader market portfolio is deciding whether the addition would provide additional diversification. Table 2 shows the correlation of monthly excess returns (vs. the Global 3000) of each thematic index with each other, with the Global Technology index and with the broad-market Global 3000. The correlation with the market is close to zero, with the exception of the moderately positive correlation of Automation & Robotics. Assuming future correlations remain low, adding any of these thematic indices to a portfolio could potentially improve its risk-return tradeoff, as they should add higher expected return without increasing the risk.

Not surprisingly, since these are all technology-themed indices, correlations with the Global Technology index are higher, although they are far from being perfectly correlated. Correlations of the indices with each other are also generally quite low, suggesting each index brings something new to the investment table.

Table 2. Correlations of active monthly returns

	Artificial Intelligence	Fintech	Automation & Robotics	Digital Security	Global Technology	Global 3000
Artificial Intelligence	1.00	0.34	0.60	0.59	0.70	0.12
Fintech		1.00	0.13	0.28	0.31	0.05
Automation & Robotics			1.00	0.50	0.48	0.33
Digital Security				1.00	0.51	-0.06
Global Technology					1.00	0.03
Global 3000						1.00

Source: Qontigo

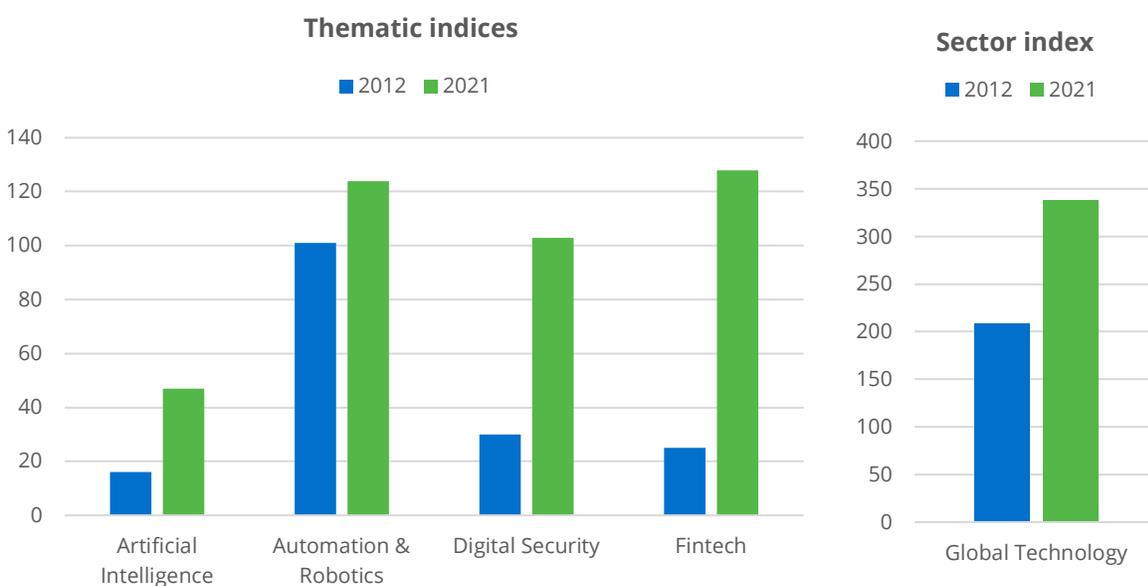
3. Digital Security and Fintech saw highest growth in number of constituents

As the various themes' popularity has grown, the sector definitions have evolved, and in most cases broadened, to keep pace of the developments within the space and ensure that the indices remain relevant. This has generally translated in the number of holdings trending upwards, which can therefore be attributed to both macro and structural changes.

Fintech and Digital Security saw their number of holdings rise from 20–30 in 2012 to over 100 in 2021 (Figure 4). Artificial Intelligence's constituents tripled from 2012 to 2021, although the total number in 2021 was still less than 50. Automation & Robotics had the largest number of constituents (around 100) both nine years ago and most recently. It also had about half the number of Global Technology in 2012 and about one-third in 2021.

However, it should be noted in this context that the number of holdings in Global Technology also rose, from roughly 200 in 2012 to 340 in 2021. The number of names is a measure of potential diversification that investors can use to assess if the investment meets their potential risk-return tradeoff needs.

Figure 4. Number of holdings for the indices



Source: Qontigo

4. Artificial Intelligence consistently the riskiest index

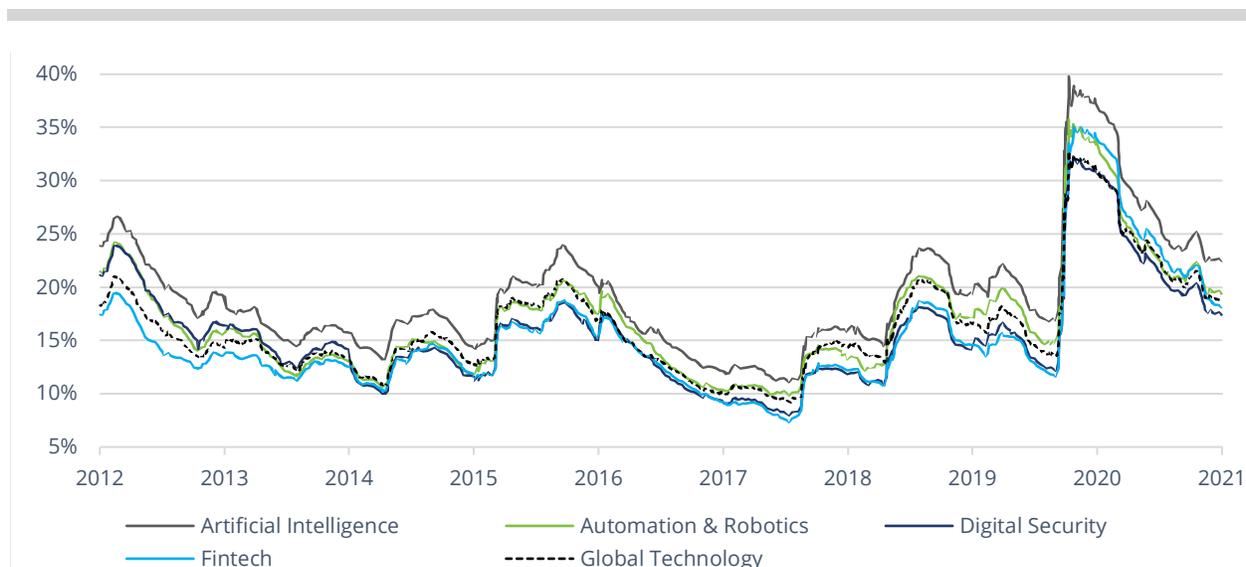
Understanding the potential volatility of an investment is obviously half of the risk-return equation; higher volatility should be commensurate with a higher return expectation or a lower correlation with other investments to provide added diversification.

Artificial Intelligence's forecasted risk was higher than that of Global Technology throughout, while Fintech's was lower for most of the period under review as measured by Axioma Worldwide Medium-horizon Fundamental

Model (Figure 5). Fintech's risk soared to overtake Global Technology at the height of the COVID-19 crisis in March 2020, but has recently fallen below it again. Digital Security and Automation & Robotics' forecasted risk have historically been somewhere in between that of Artificial Intelligence and Fintech, although most recently Digital Security became the least volatile of these thematic indices.

Of course, volatility will vary over time with that of the market as well as the specific circumstances of the index. In and of itself volatility is not good or bad — after all, no risk, no reward, but the relative position of risk for an index can help drive a more-informed investment decision for an investor choosing among these indices.

Figure 5. Total predicted risk



Source: Qontigo

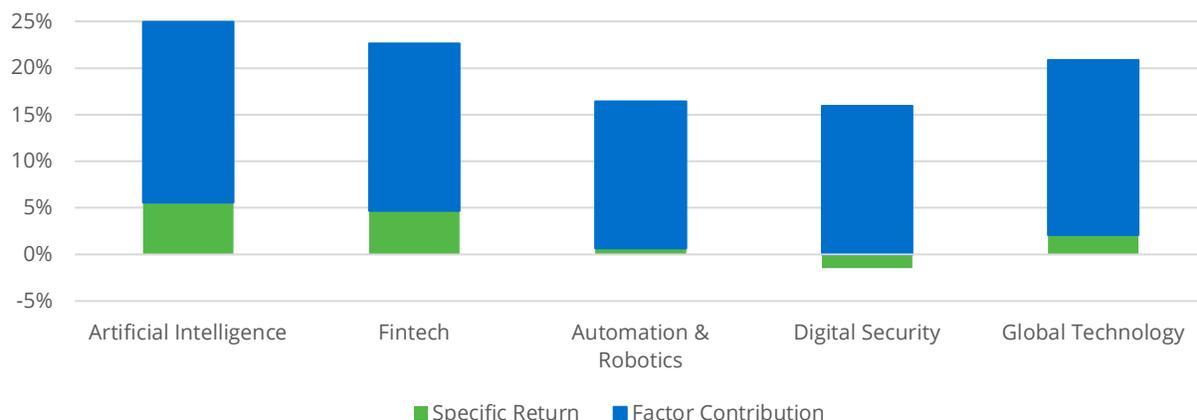
5. Specific return helped Artificial Intelligence and Fintech outperform STOXX Global 3000 Technology

Performance attribution can help us understand whether our expected sources of return (based on the sources of risk) have panned out. Fundamental attributes contributed the most to all four thematic indices and the Global Technology index return, while specific return made a small contribution (5% or less) to the total return for each index. Digital Security stands out here: in this case, the specific return made a small negative contribution to the index's return (Figure 6). In other words, the specific names in each index were less important than the overall theme — sometimes the names chosen were additive and sometimes not, but always to a small degree.

Artificial Intelligence, Fintech, and Global Technology saw a similar factor contribution, although the two thematic indices outperformed the sector index thanks to their higher specific contributions. In other words, the names in these indices generated higher returns than would be accounted for by their Industry, Country, Currency, and Style exposures alone.

Automation & Robotics and Digital Security saw both lower factor contributions and lower specific returns than Global Technology, leading to these two indices underperforming the technology sector index.

Figure 6. Sources of index return



Source: Qontigo

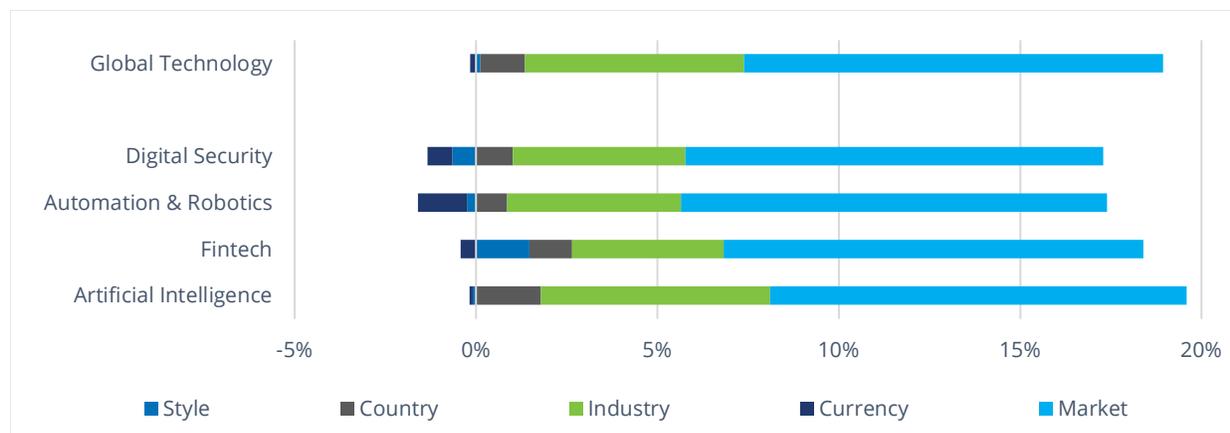
6. Market and Industry behind factor contribution to index returns

Delving deeper into the individual contributions made by the fundamental factor groupings (Style, Country, Industry, Currency, and Market), it emerged that Market and Industry were responsible for over 90% of factor contribution (Figure 7). This is not surprising, since these indices are designed to capture megatrends that target particular industries.

The Country factor made a small positive contribution, and the Currency factor a small negative one, to each index.

Style factors had a mixed, albeit small, impact overall. Only Fintech and Global Technology saw a positive overall contribution from Style. However, the aggregate figure masks both some very positive and a number of other, quite negative, impacts.

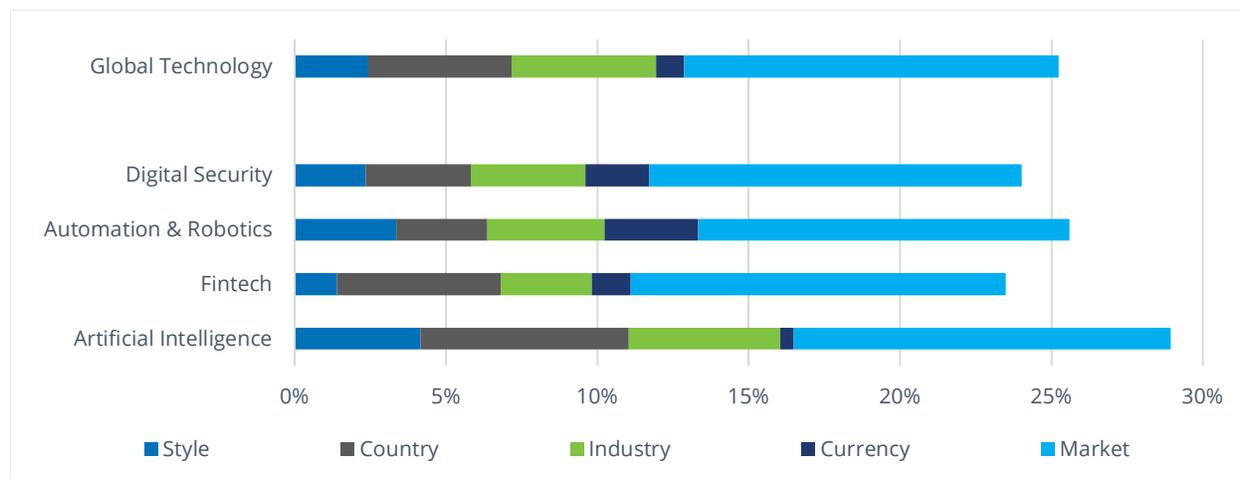
Figure 7. Factor contribution to return



Source: Qontigo

As we would expect, the highest contributors to risk also made the largest contributions to return. However, although the Country factor's risk contribution was similar to that made by the Industry factor, its contribution to the return was only about one-quarter as large (Figure 8).

Figure 8. Factor contribution to risk



Source: Qontigo

7. Positive tilts towards Growth, Liquidity, and Market Sensitivity for all thematic indices

All indices (both thematic and sector) held stocks with higher historical betas, experienced a higher growth level, and were easier to trade in the market (i.e., they had positive average exposures to Market Sensitivity, Growth, and Liquidity).

In addition, all indices saw a positive average exposure to Momentum, with the exception of Digital Security, where this was zero (Figure 9).

Fintech was the only index to favor low-volatility stocks, recording a negative average exposure to Volatility, while the other thematic indices leaned on higher-volatility stocks. Global Technology's average exposure to Volatility was zero.

Automation & Robotics' exposure to Profitability was zero, while the other indices saw a positive average exposure to this factor.

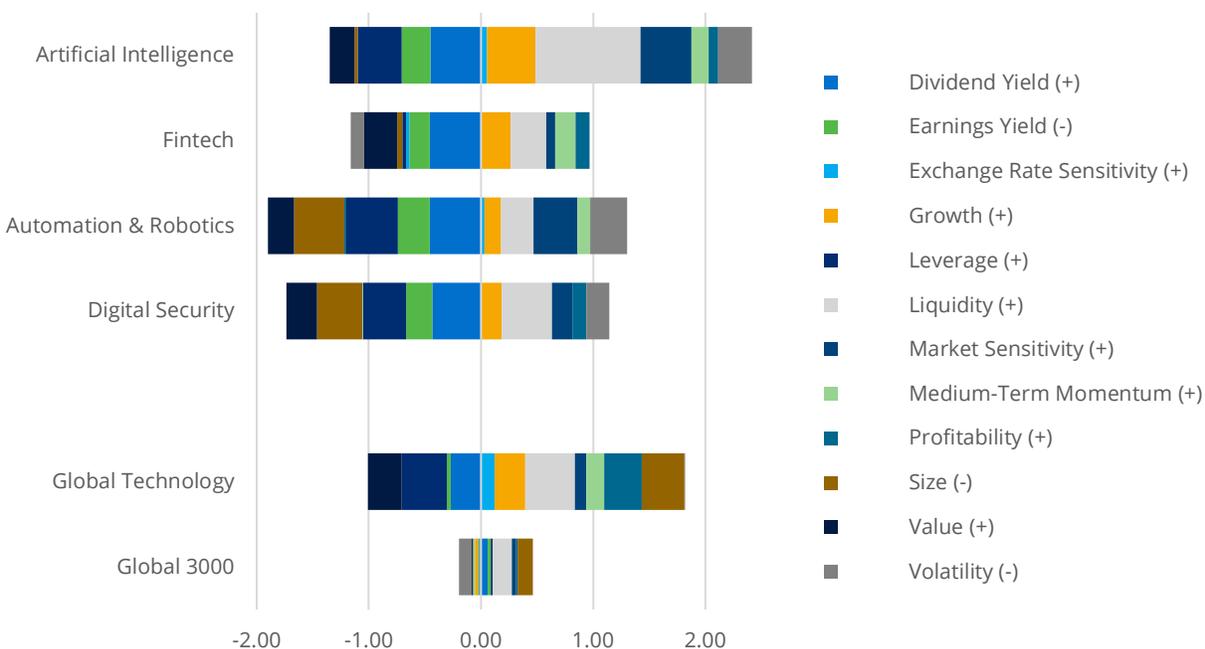
Whereas Global Technology held assets with large market caps (and hence had a positive average exposure to Size), the thematic indices did not necessarily include certain well-known market behemoths but contained smaller stocks by comparison. This was reflected in their negative average exposure to this style factor.

Equally unsurprisingly, all indices had negative average exposures to Dividend Yield, Earnings Yield, Leverage, and Value, i.e., they contained stocks that paid lower or no dividends, had lower debt levels, and were viewed as relatively more expensive in the model universe, as measured by the Earnings Yield and Value factors in the Worldwide Medium-Term Fundamental Model.

The broad-market index saw much smaller average exposures to all style factors than either the Global Technology index or the thematic indices.

Again, investors may want to judge how these exposures align with those of the rest of their portfolio and/or if the associated risks are acceptable. As noted earlier, they have had a relatively small impact on past performance.

Figure 9. Average exposure to individual Style factors (factor return +/- in parentheses)



Source: Qontigo

8. Strong historic positive exposure to Growth for thematic indices

Almost all indices had positive exposures to Growth for the entire period under review, which is not surprising as that is often one of the main characteristics investors seek when investing in thematic indices. The exception is Fintech and Automation & Robotics, where exposure turned negative for brief periods in 2012–2014 and 2016, respectively. Digital Security and Artificial Intelligence saw a steep drop in their exposure to Growth over the past year, although it remained positive (Figure 10).

As for other style bets: Momentum exposure oscillated wildly for all indices as their themes fell in and out of favor. It also dropped considerably in 2021, approaching zero for most indices and even turning negative for Digital Security and Fintech in the recent past.

Only Fintech saw a large negative average exposure to Volatility (in other words, it comprised stocks that were less volatile than the overall market), although its exposure to the factor also entered positive territory at some points in time.

Global Technology's exposure to Size was consistently positive throughout the period under review, at around 0.4, meaning its component names were larger than average. The thematic indices' exposure to Size started at strongly negative levels in 2012, particularly for Automation & Robotics (-0.60) and Digital Security (-0.4). Artificial Intelligence and Fintech's exposure to Size, which started at -0.2 in both cases in 2012⁶, followed an upward trajectory over the past nine years and by 2021 was slightly positive for both indices, at around 0.05. Digital Security's exposure to Size fell below -0.4 a couple of times, but finished where it had started in 2012. Automation & Robotics saw a steep jump in its exposure to Size, from -0.6 to -0.2 in 2020, and has remained around that level most recently. The generally negative exposure to Size is not surprising, as the expectation of investing in an up-and-coming industry is that initially smaller names will grow. The Size exposure in Global Technology reflects that it contains many more of the larger, established companies.

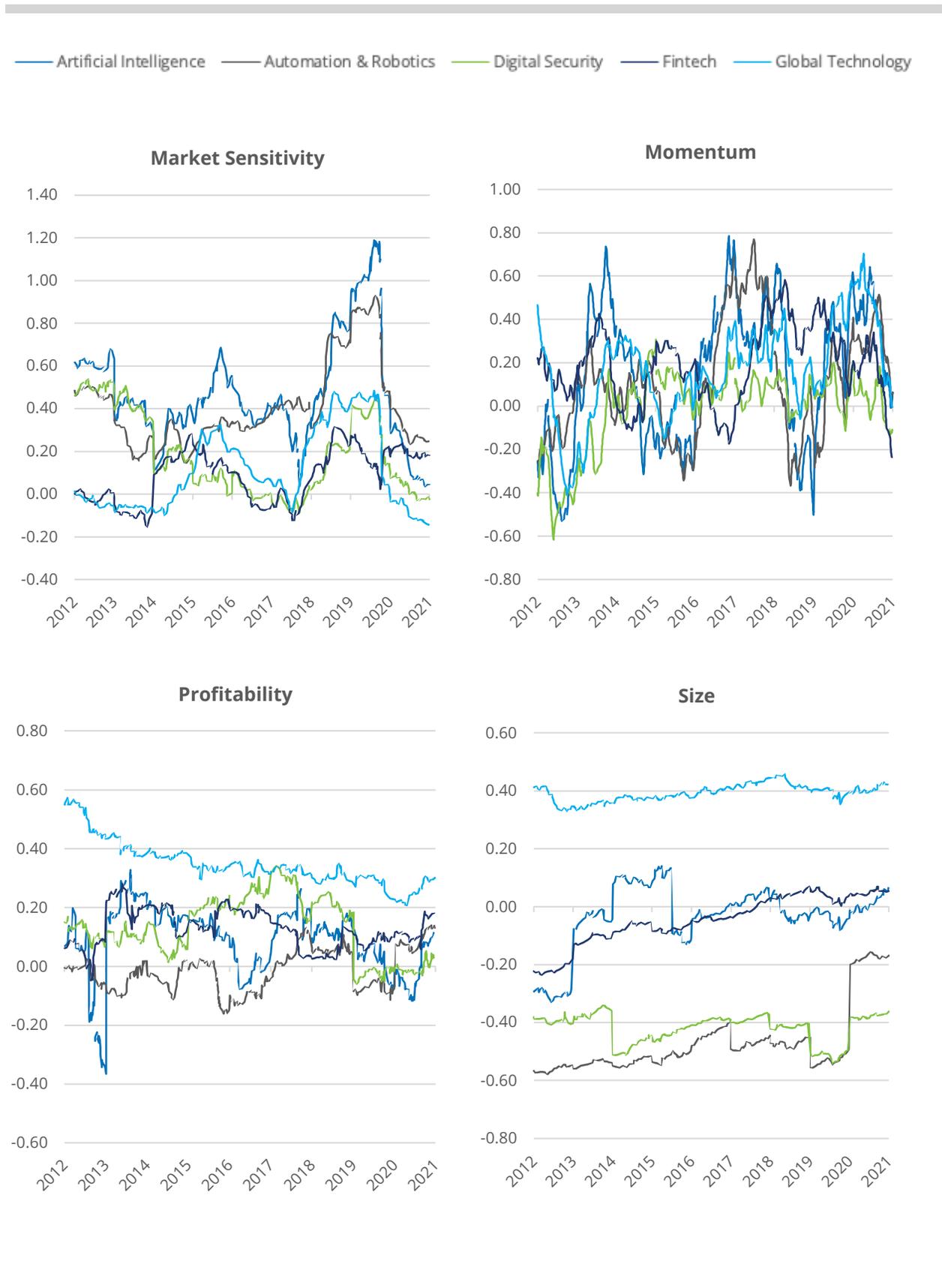
Artificial Intelligence was the only index to have a positive exposure to Market Sensitivity throughout the period under review, while that of the other indices dipped into negative territory at times while generally remaining above zero. Artificial Intelligence and Automation & Robotics saw their highest exposures to Market Sensitivity around the peak of the COVID-19 crisis in March 2020, although this has dropped sharply since then. Put another way, along with smaller Size and higher Volatility, these indices usually contain higher beta names.

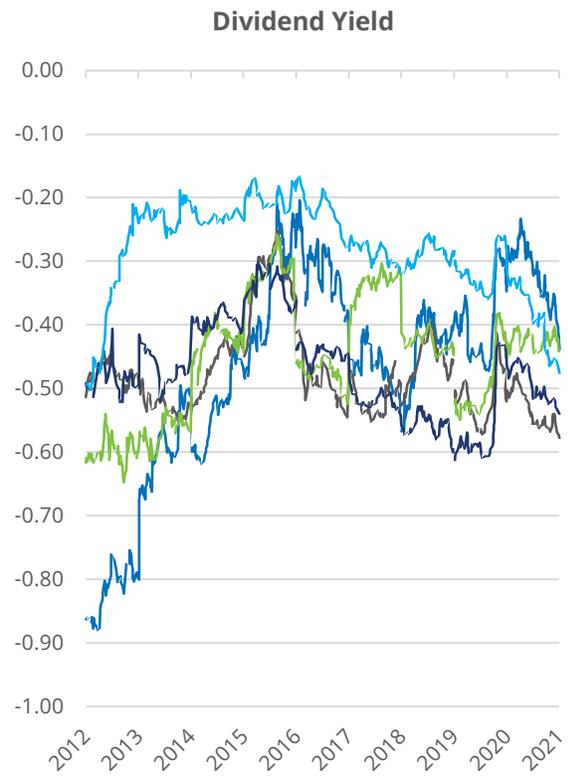
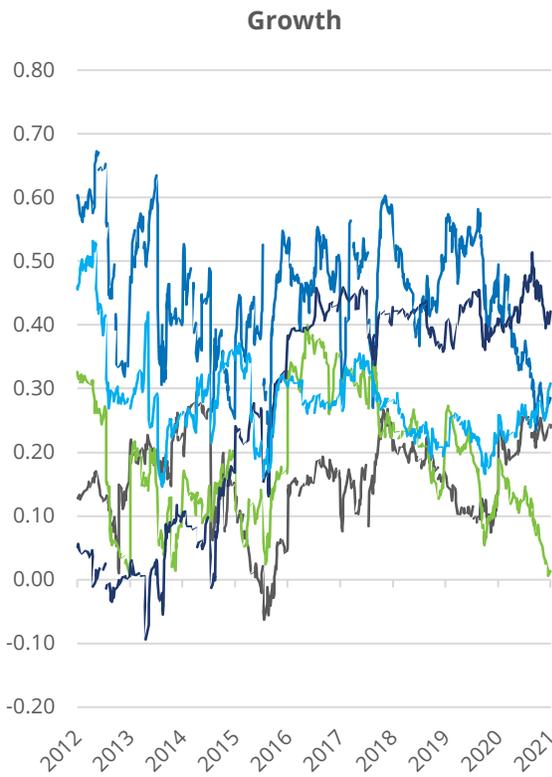
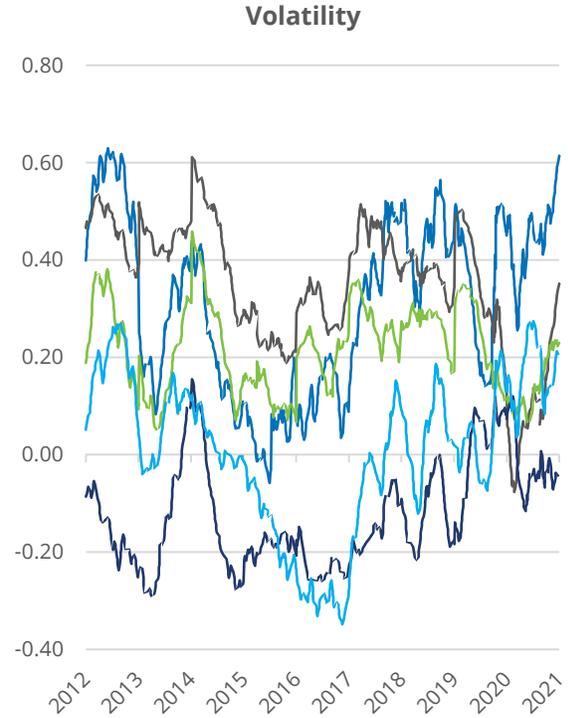
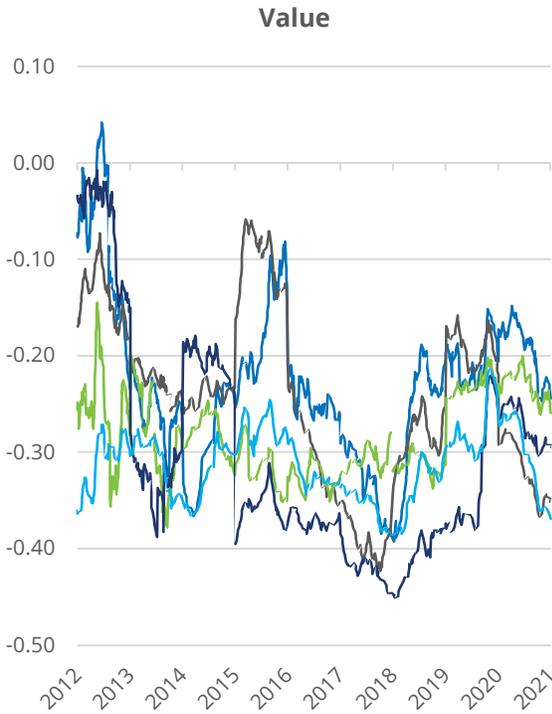
Exposure to Profitability was consistently positive for Global Technology but seesawed for the thematic indices. It was positive for all five indices as of June 2021.

All indices had strongly negative exposures to Value throughout most of the period under review. This is not surprising, since these types of names tend to be expensive. They also had negative exposures to Dividend Yield.

⁶ In other words, 0.2 standard deviations below the cap-weighted average value for the full World-Wide Model estimation universe.

Figure 10. Historical exposure to Style factors



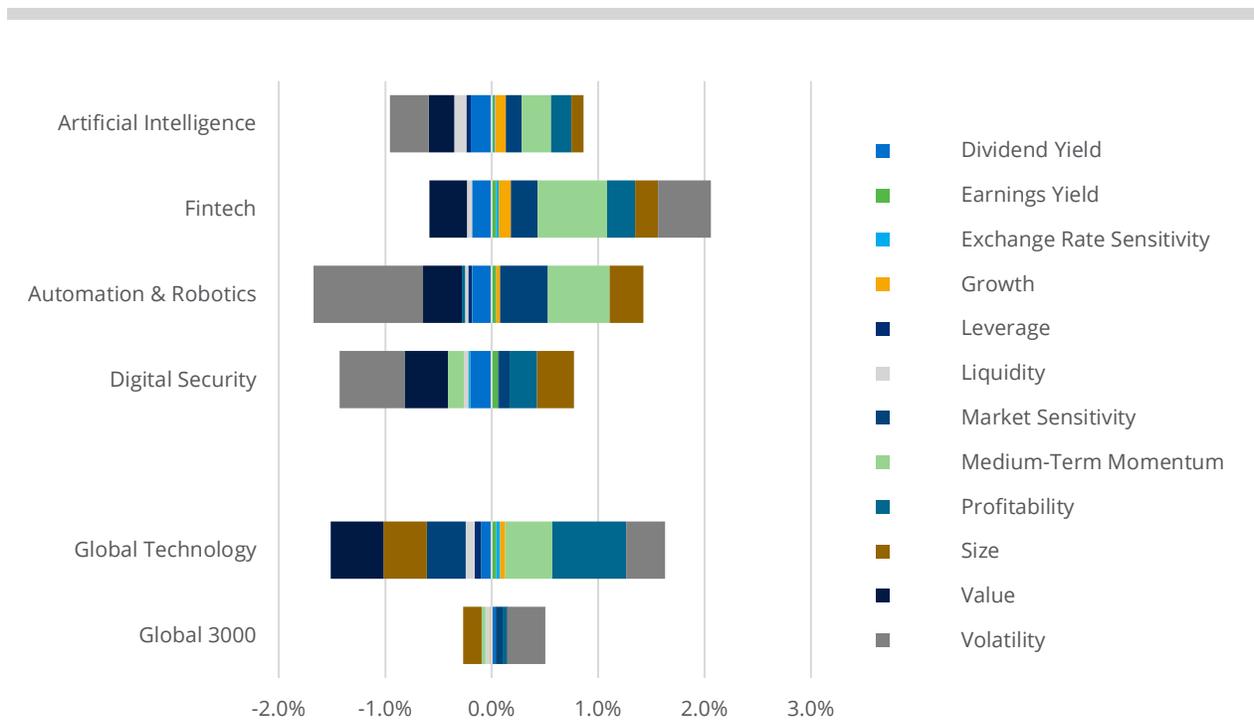


Source: Qontigo

9. Largest impact on tech-oriented thematics’ returns from Momentum, Value, and Volatility

Although Style factors in the aggregate had a relatively small impact on returns, large negative returns from some of them offset positive returns from others meaning that understanding the individual exposures is important. The largest contributions to the thematic indices’ returns (both positive and negative) came from Momentum, Volatility, Size, Profitability, Market Sensitivity, and Value factors in the Worldwide Medium-term Fundamental Model (Figure 11).

Figure 11. Style factor return contributions



Source: Qontigo

All thematic indices were significantly impacted by Momentum despite their small average exposure to this factor, due to its extremely large return over the past nine years. In addition, the high Momentum exposures seen by all indices at certain times offset negative exposures at others. Momentum recorded the highest cumulative return in absolute terms of all Style factors during the period under review (close to 40%). All indices with positive exposures to Momentum profited, especially in the last four years, while Digital Security was hurt by its small negative average exposure to this factor. Fintech saw the highest cumulative contribution from Momentum, at 15% (Figure 12). If history repeats itself and the return to Momentum remains strong, the Momentum exposures will be important to track.

Volatility had the highest negative cumulative return of all Style factors in the Worldwide Model over this period. This benefited Fintech, which was the only thematic index with a negative exposure to Volatility. Volatility contributed roughly 12% to Fintech and -19% to Automation & Robotics — with its positive exposure, over the study period.

Size had the second-highest negative cumulative return, (i.e. smaller stocks had higher returns) which helped all thematic indices due to their negative average exposure to this factor. By contrast, Global Technology was hurt by its tilt towards higher-capitalization stocks. Automation & Robotics and Digital Security saw the highest cumulative contribution from Size, at about 6%.

The small positive exposure to Market Sensitivity helped all thematic indices but hurt Global Technology. Market Sensitivity's jump in return over the past 12 months put it in second place after Momentum in terms of positive cumulative returns, despite the fact that prior to the recent period its cumulative return was quite negative. Global Technology's lack of luck was a timing issue: Its exposure to Market Sensitivity dipped below zero just as the Style factor took off in the past year. Market Sensitivity's contribution to the thematic index returns mirrored the Style factor's return: After contributing negatively to the returns for all indices in the period up to March 2020, the cumulative contribution rose and turned positive in the case of all thematic indices but not for the tech sector index.

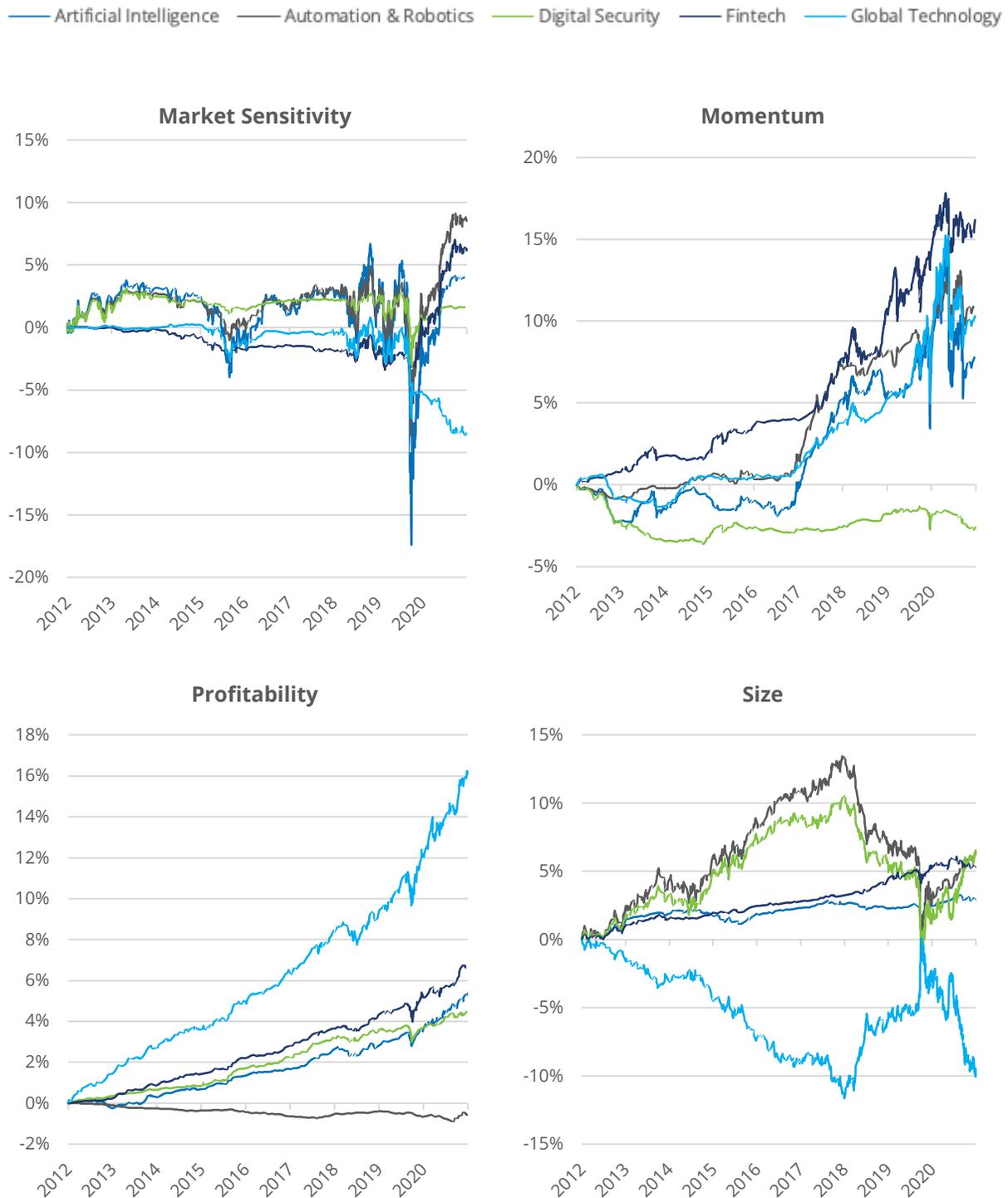
Profitability had a positive and consistent impact on all indices except Automation & Robotics – the only index with a small average negative exposure to the factor. This Style factor's cumulative contribution was a minor -0.6% for Automation & Robotics, and +16% for Global Technology.

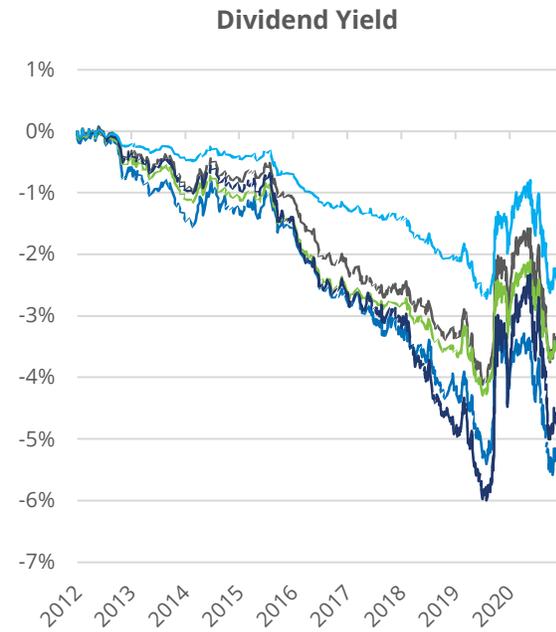
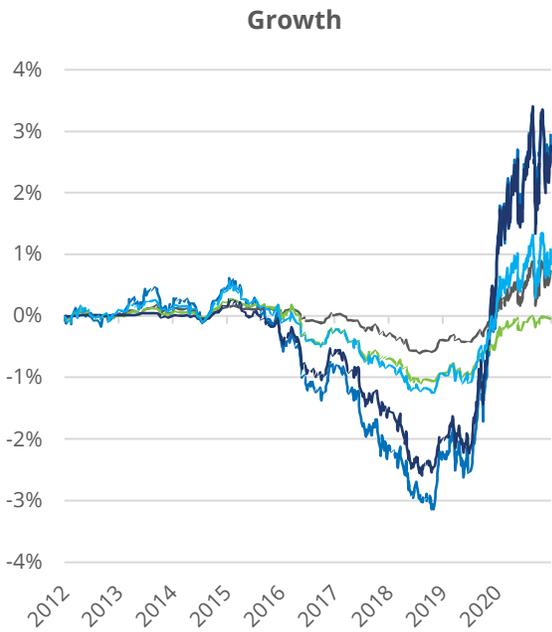
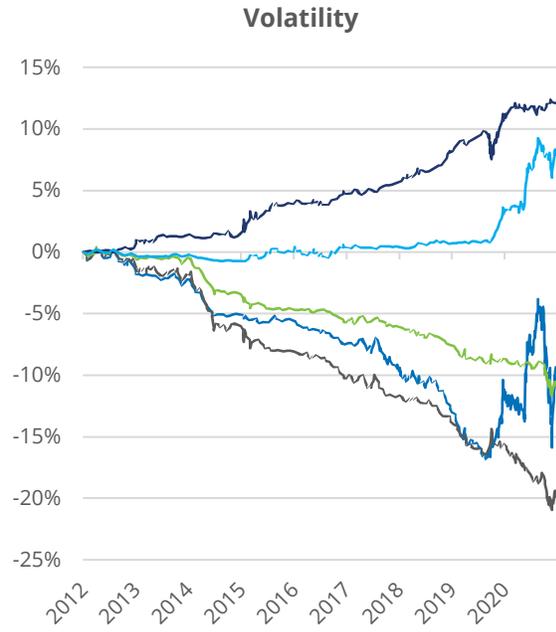
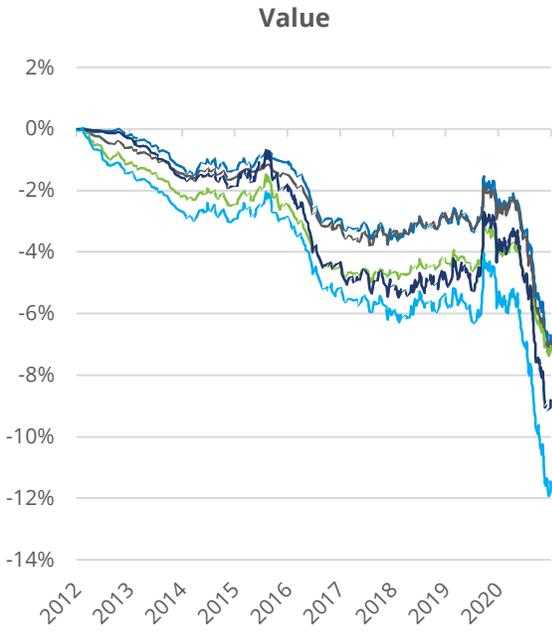
Growth saw large swings in its return generated over the test period, finishing the period under review with a relatively small positive cumulative return. This means that Growth did not have a major overall impact on either the thematic indices or the sector index over the period as a whole. Digital Security was the only thematic index that did not benefit from its exposure to Growth; this was due to the index's large positive exposure to this factor in 2016–2019, when the latter took a tumble. Growth's cumulative contribution to Digital Security was close to zero. Artificial Intelligence saw the largest cumulative contribution (3%), but this was relatively small compared to the dominant Style factors mentioned above. Note that most investors' expectations are for the growth to come in the near-to-medium future, and those expectations may not be well-captured by the risk-model Growth factor.

The negative exposures to Value and Dividend Yield were the detractors across all indices' returns, especially in the last year when Style factors produced strong positive returns. Global Technology saw the largest negative cumulative contribution from Value (roughly 11%), while Artificial Intelligence saw the largest shortfall from Dividend Yield (roughly 5%).

The Global 3000 index was most impacted by Size (negatively) and Volatility (positively), while the other Style factors had minor contributions to its return.

Figure 12. Cumulative contribution from Style factors





Source: Qontigo

10. Fintech currently provides the largest exposure to Growth but lowest exposure to Momentum

Investors betting on positive performance from the risk-model Growth factor in the near future would benefit from investing in all thematic indexes but Digital Security. Artificial Intelligence, Automation & Robotics and Fintech currently have sizeable exposures to Growth, in particular Fintech, whose positive exposure exceeds that of Global Technology (Figure 13). In contrast, Digital Security's Growth exposure nears zero, while that of the broad market index is slightly negative. This does not mean Digital Security should be eliminated from consideration, of course, just that growth in that index may come later.

However, both Fintech and Digital Security currently have negative exposures to Momentum, more negative than that of Global 3000. Investors seeking momentum stocks, could take advantage of Artificial Intelligence and Automation & Robotics' positive exposures to Momentum. Global Technology was neutral to Momentum as of June 18, 2021. As we've noted, these exposures may change.

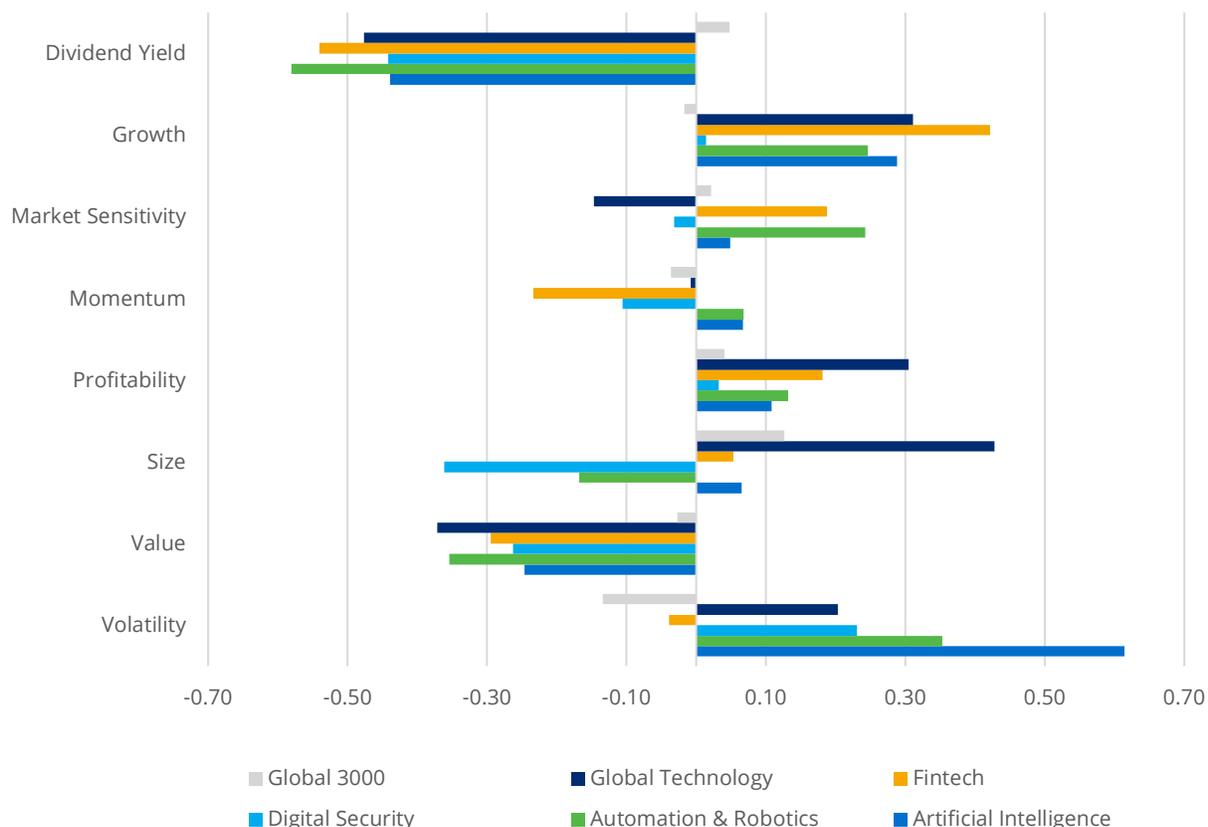
The thematic indices and the sector index all exhibited significantly negative exposures to Dividend Yield and Value and positive exposures to Profitability. In the case of Dividend Yield, thematic indices' exposures were of the opposite sign than that of the Global 3000 index. It is not surprising that the types of stocks expected to experience substantial growth should rank poorly on measures of valuation, as current book value does not reflect expectations for the future, and these companies are much more likely to reinvest back in their businesses than to pay out dividends. It is good to see that on average these companies are profitable, however.

Digital Security showed a negative exposure to Market Sensitivity, although not as negative as Global Technology. Investors preferring high-beta stocks may be more interested in Fintech and Automation & Robotics, which showed large positive exposures to Market Sensitivity. Artificial Intelligence's exposure was also positive, but relatively small.

Investors leaning towards larger capitalization stocks, could take advantage of the positive exposures to the Size factor of Fintech and Artificial Intelligence. Note, however, that these exposures are much smaller than that of Global Technology's exposure to Size, and even lower than that of Global 3000.

Investors are obviously seeking out the industry exposures these thematics represent, while the style exposures are incidental, if not unexpected. They are typically in a direction that would be expected (e.g. Small Size and Low Value). Some exposures may come with positive compensation expectations, while others should be evaluated in the context of an investor's overall portfolio.

Figure 13. Current style factor exposures



Source: Qontigo

11. Conclusion

All tech-oriented thematic indices outperformed the STOXX Global 3000 index, with Artificial Intelligence and Fintech also outpacing the STOXX Global 3000 Technology sector index during the period under review (2012–2021). Artificial Intelligence – the index with the fewest names – produced the best yearly return.

Artificial Intelligence and Fintech were not only the strongest performers, but also saw the highest level of realized risk out of the four thematic indices. Artificial Intelligence’s risk was higher than that of Global Technology (as we would expect for an index that is seven times smaller). However, Fintech’s comparatively more stable realized risk was the same as the sector index risk. This is despite the fact that the index started with roughly one-tenth of the number of holdings that Global Technology had in 2012 and still contained less than half the number of holdings in June 2021. Fintech reported the highest level of return per unit of risk (i.e., the highest Sharpe ratio).

Table 3. Selected index highlights

Artificial Intelligence	<ul style="list-style-type: none"> > Best yearly return, but riskiest index > Largest average exposure to Growth, second-highest currently > Highest current positive exposure to Volatility, Momentum > Fewest names
Automation & Robotics	<ul style="list-style-type: none"> > Highest current exposure to Market Sensitivity (i.e. highest beta) > Tied for highest current Momentum exposure
Digital Security	<ul style="list-style-type: none"> > Lowest current Size exposure (i.e. smallest names) > Lowest current exposure to Market Sensitivity > Excess return negatively correlated with the broad market
Fintech	<ul style="list-style-type: none"> > Highest realized Sharpe ratio > Largest average exposure to Momentum, but currently negative > Only tech-thematic index tilting on low-volatility stocks > Highest current exposure to Growth, Profitability > Very low correlation with broad market

Source: Qontigo

Of course, past performance is no guarantee of future returns, so analysis of performance drivers and current risk characteristics are key to making future investment decisions.

Factor contributions – particularly Market and Industry factors – were largely responsible for the positive returns recorded by all four thematic indices and the sector index. By contrast, the specific return added little to the mix, and in the case of Digital Security in fact detracted from it. However, the specific return did push the total returns for Artificial Intelligence and Fintech above that for Global Technology.

Style's contribution to all index returns was small, reflecting the offsetting impacts of individual factors, requiring a deeper dive, and was only positive for Global Technology and Fintech.

All funds tilted towards Growth. Artificial Intelligence had the largest positive exposure but reaped small benefits from it, since Growth's return was small over the period under review.

Momentum, Volatility, Size, and Value were the main contributors to the thematic indices' performance. This was due to the large returns from these Style factors over the past nine years and despite the indices' relatively small exposures to these factors. Positive tilts towards Liquidity and Market Sensitivity were common to all four thematic indices.

Momentum benefitted Artificial Intelligence, Fintech, and Automation & Robotics due to their positive average exposures to it. However, it hurt Digital Security, which had a small negative average exposure to this factor.

Fintech was the only index to tilt towards low-volatility stocks, and although its negative average exposure to Volatility was small it gained considerably from it. All other indices were hurt by their positive average exposures to Volatility, which saw the most negative nine-year cumulative return of all style factors in Axioma Worldwide Medium-horizon Fundamental Model.

All thematic indices were tilted towards smaller-capitalization stocks, in contrast to Global Technology with its tilt towards larger-capitalization names. Automation & Robotics had the largest average negative exposure to Size and therefore benefitted the most from the large negative return for this factor.

The negative average exposure to Value had a significant negative impact on the performance of all thematic indices.

Investors in these indices were looking for the higher expected performance offered, and all indices delivered better returns (both absolute and risk-adjusted) than the general market. The excess returns were driven mainly by Industry exposures, as was to be expected given the nature of the indices. By contrast, aggregate Style factor exposures did not result in any significant returns, as the individual Style factor contributions canceled each other out. The latter did have a significant impact in some cases, however.

Based on their most current exposures to style factors, market participants betting on Growth as defined by the risk model would benefit from investing in all tech thematic indices, except Digital Security. Artificial Intelligence and Automation & Robotics would benefit investors leaning on Momentum, while Digital Security and Fintech are seeing negative exposures to the factor.

With their intuitive appeal, robust returns, and long track records, these indices have demonstrated that they can be part of a successful investment program.

Contacts & Information

Learn more about how Qontigo can help you better manage risk and enhance your investment process.

[Qontigo.com](https://www.qontigo.com)

Europe

Frankfurt

Mergenthalerallee 61
65760 Eschborn, Germany
+49 69 2 11 0

Geneva

Rue du Rhone 69, 2nd Floor
1207 Geneva, Switzerland
+41 22 700 83 00

London

11 Westferry Circus
London E14 4HE, United Kingdom
+44 20 7862 7680

Paris

19 Boulevard Malesherbes
75008, Paris, France
+33 1 55 27 38 38

Prague

Futurama Business Park Building F
Sokolovska 662/136b
186 00 Prague 8, Czech Republic

Zug

Theilerstrasse 1A
6300 Zug, Switzerland
+41 43 430 71 60

Americas

Atlanta

400 Northridge Road, Suite 550
Atlanta, GA 30350
+1 678 672 5400

Buenos Aires

Corrientes Avenue 800, 33rd Floor
Office 101
Buenos Aires C1043AAU, Argentina
+54 11 5983 0320

Chicago

1 South Wacker Drive, Suite 200
Chicago, IL 60606
+1 224 324 4279

New York

17 State Street, Suite 2700
New York, NY 10004 USA
+1 212 991 4500

San Francisco

201 Mission Street, Suite #2150
San Francisco, CA 94105
+1 415 614 4170

Asia Pacific

Hong Kong

28/F LHT Tower
31 Queen's Road Central
Hong Kong
+852 8203 2790

Singapore

80 Robinson Road, #02-00
Singapore 068898, Singapore
+852 8203 2790

Sydney

9 Castlereagh Street, Level 17
Sydney, NSW 2000, Australia
+61 2 8074 3104

Tokyo

27F Marunouchi Kitaguchi Building,
1-6-5 Marunouchi Chiyoda-ku
Tokyo 100-0005, Japan
+81 3 4578 6688



STOXX Ltd. (STOXX) and Qontigo Index GmbH (together "Qontigo") research reports are for informational purposes only and do not constitute investment advice or an offer to sell or the solicitation of an offer to buy any security of any entity in any jurisdiction. Although the information herein is believed to be reliable and has been obtained from sources believed to be reliable, we make no representation or warranty, expressed or implied, with respect to the fairness, correctness, accuracy, reasonableness or completeness of such information. No guarantee is made that the information in this report is accurate or complete, and no warranties are made with regard to the results to be obtained from its use. Qontigo will not be liable for any loss or damage resulting from information obtained from this report. Furthermore, past performance is not necessarily indicative of future results. Exposure to an asset class, a sector, a geography or a strategy represented by an index can be achieved either through a replication of the list of constituents and their respective weightings or through investable instruments based on that index. Qontigo does not sponsor, endorse, sell, promote or manage any investment product that seeks to provide an investment return based on the performance of any index. Qontigo makes no assurance that investment products based on any STOXX® or DAX® index will accurately track the performance of the index itself or return positive performance. The views and opinions expressed in this research report are those of the author and do not necessarily represent the views of Qontigo. This report may not be reproduced or transmitted in whole or in part by any means – electronic, mechanical, photocopying or otherwise – without Qontigo's prior written approval.