

Low Volatility Strategies:

Why the Wheels Came Off (Temporarily) in 2020

Melissa R. Brown, CFA, Managing Director, Applied Research, Qontigo



Low Volatility Strategies

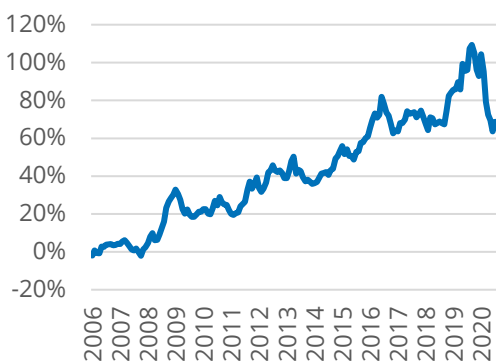
Low Volatility strategies — consisting of portfolios or indices of stocks that have exhibited the least volatility over a certain time period, often the past 12 months — have a deservedly good reputation for offering investors equity-like returns with less risk. In fact, contrary to standard financial theory that high risk equals high reward, these strategies often outperform the benchmark from which the stocks were selected. And even when they underperform the broader index, the lower risk can mean higher Sharpe ratios.

One of the basic tenets of such strategies is that they offer active downside protection, as lower volatility stocks are expected to hold up better than their jazzier counterparts when markets fall. As 2020 has veered from expectations in so many ways, it has also produced results in Low Volatility strategies counter to these expectations. As with so many aspects of our lives in “the new normal” of today, many components of Low Volatility strategies have similarly been upended. However, we do not believe this is the “new normal” for Low Volatility.

Performance Review

We used the STOXX® Global Low Risk Weighted Diversified 200 index (henceforth the “Low Risk 200”) to illustrate the anomalous behavior we have experienced in 2020. This index is rebalanced quarterly, selecting the 200 lowest volatility names¹ in the STOXX® Global 1800 (henceforth the “Global 1800”) and weighting them by the inverse of their volatility. From 2006 through August 2020, the Low Risk 200 returned 5.4% on an annualized basis², versus a return of 4.1% for the Global 1800. Realized tracking error was just over 8%, producing an information ratio of 0.15. While that information ratio may not sound dramatic, the strategy has delivered on its promise to provide better performance when the market was down. There were a few drawdowns, but the outperformance has been fairly steady — *until this year* (Figure 1).

Figure 1. Cumulative Active Return, STOXX Low Risk 200 versus STOXX Global 1800



Source: Qontigo

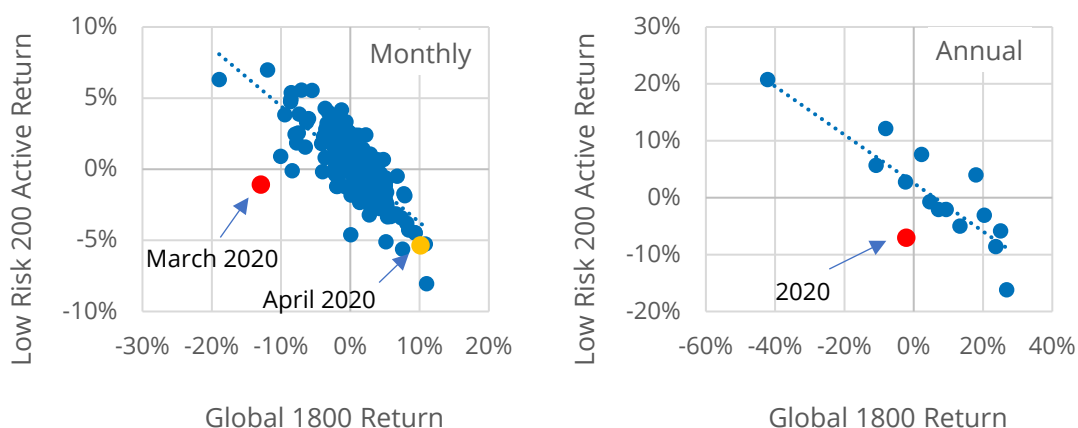
¹ Based on monthly volatility over the prior 12 months.

² This is based on monthly rebalancing, and may differ from official figures that are calculated daily.

Figure 2 shows a scatterplot of the STOXX® Global 1800 return versus the active return of the Low Risk 200, monthly and annually since 2006. There is clearly a strong negative relationship between the two. In other words, when the market was down, the active return was positive, and vice versa. Using monthly data, we get an R-squared of about 60%, indicating a fairly tight fit. We can also immediately see how March 2020, as well as the year-to-date period, were extreme outliers. In March, when the market experienced one of its worst months ever, the Low Risk 200 underperformed the Global 1800 — in sharp contrast to the expectation based on the regression line, which would have been a high level of outperformance. In April, the marker was close to the regression line, although still slightly under. For the annual data, year-to-date 2020 is also much lower than expected even given the down market.

Looking at the maximum total-return drawdowns over rolling 12-month periods, we see that they have always been bigger for the Global 1800 index *until this year*, when the Low Risk 200 had a larger drawdown, although the difference was small (Figure 3). The drawdown in *active* return was much larger during the initial period of market recovery following the Global Financial Crisis, though³.

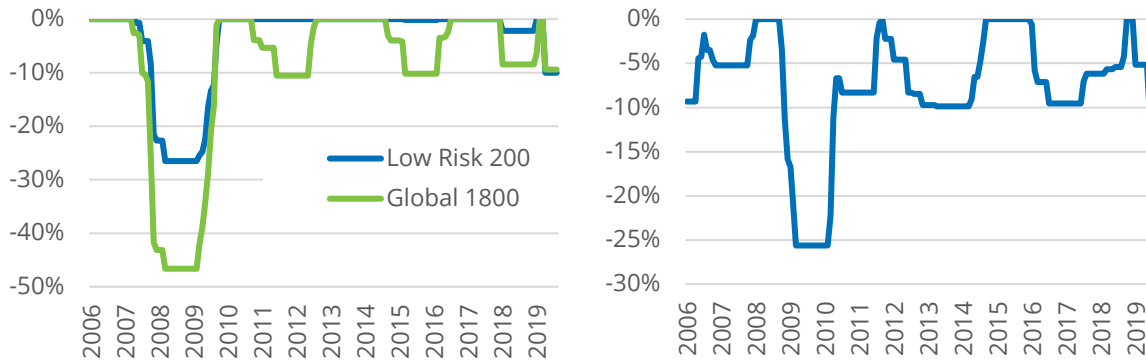
Figure 2. Scatterplots of Low Risk 200 Active Return versus Market Return, 2006 – August 2020



Source: Qontigo

³ It is beyond the scope of this paper to analyze performance in 2009.

Figure 3. 12-Month Drawdown, Total (Left) and Active (Right) Return



Source: Qontigo

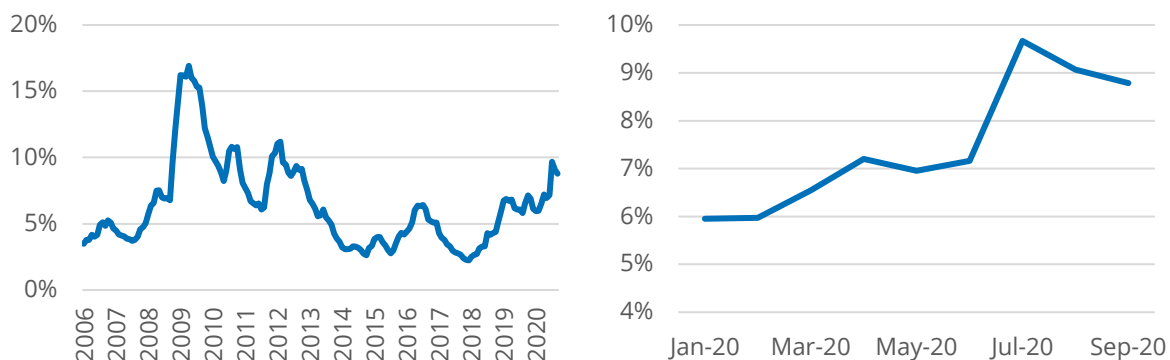
Risk Analysis

Since 2006, the active risk of the Low Risk 200 has ranged from an extremely low level of just over 2% to a high of almost 17%, reached early in the market rebound from the global financial crisis in 2009. The average active risk was 6.4%. This year saw active risk increase by more than 60% until its peak at the end of June, when the index was rebalanced (Figure 4).

By design, we expect total risk for the index, as measured by the Axioma Worldwide Medium-Horizon Fundamental Equity Factor Risk Model (AXWW4), to be higher for the Global 1800 than for the Low Risk 200. That was the case *until March of this year* (Figure 5). This should have been our first signal that we were playing in a different sandbox. How could our Low Volatility strategy have higher volatility than our standard index?

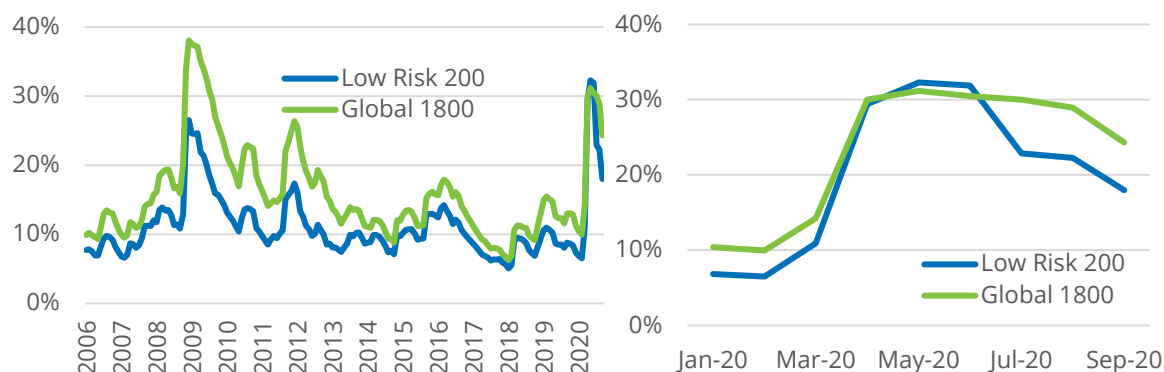
And one more observation. The predicted beta of the Low Risk 200, which bounced between 0.5 and 0.8 most of the time and was at the lower end of that range at the start of this year, shot up over 1.0 in April and May, although it backed off that unexpectedly high level by June (Figure 6).

Figure 4. Low Risk 200 Predicted Active Risk, Long-Term and Year to Date



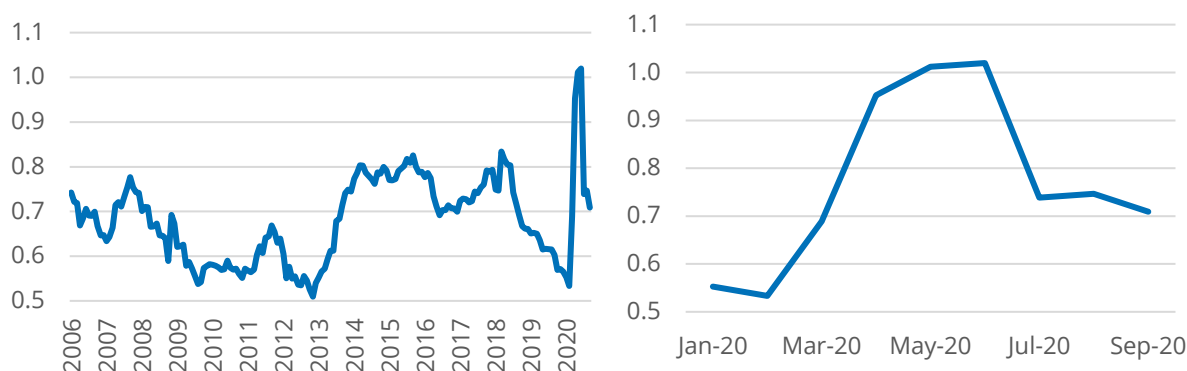
Source: Qontigo

Figure 5. Low Risk 200 Predicted Total Risk, Long-Term and Year to Date



Source: Qontigo

Figure 6. Low Risk 200 Predicted Beta, STOXX Low Risk 200, Long-Term and Year to Date



Source: Qontigo

So, What Happened?

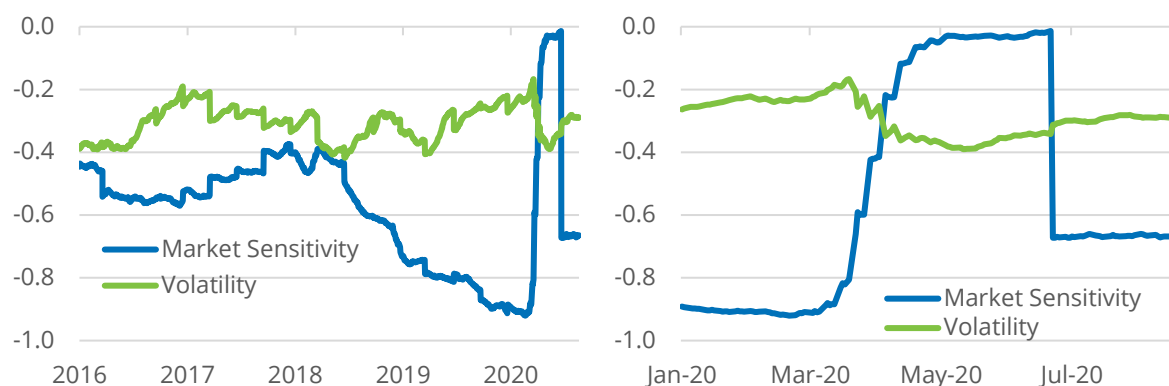
The bear market of 2020 was no normal downturn.⁴ As COVID-19 began to wreak its havoc on the economy, investors tried to sort out which companies, industries, countries, currencies, etc. would benefit or be hurt. Some previously stable industries, such as hotels and mortgage REITs, were crushed and their volatility soared. Others typically viewed as riskier than average — such as Biotech — were seen as potential beneficiaries, and they no longer fell far more than the market. We have written about these effects extensively. See, for example, [“The shifting sands of sector risk...When](#)

⁴ Not that there is any such thing as a “normal” bear market, of course.

[low-volatility sectors become high-volatility – and vice versa”](#) and [“Market Sensitivity Exposures: “And the ‘New Normal’ is...”](#)

Net-net, the characteristics of our Low Volatility portfolio changed suddenly and substantially. For example, the Low Risk 200’s active exposure to the Market Sensitivity style factor was typically quite negative and had reached a level near -1.0⁵ in February 2020 (Figure 7)⁶. Suddenly, that exposure shot up to near zero, meaning the index had the same exposure to the factor as the general market. This is not a characteristic one wants in a Low Volatility strategy, of course. The exposure to the Volatility style factor, also expected to be negative, did not exhibit such a dramatic change, although it did become less negative.

Figure 7. Low Risk 200 Active Factor Exposures, Long-Term and Year to Date



Source: Qontigo

When the Low Risk 200 rebalanced near the end of March, the extent of these Market Sensitivity changes was not yet evident in the volatility metric used to screen the stocks. Therefore, the index continued to comprise *former* Low Volatility stocks that were not necessarily *current* Low Volatility stocks, and it did not contain some newly minted stable names. *Predicted* volatility of the Low Risk 200, based on daily data and, therefore, much more sensitive to the recent changes, remained elevated and, as noted earlier, at a level almost identical to that of the Global 1800⁷.

By the time of the June rebalance, realized volatility had changed considerably. Because of this, two-way turnover for the index (which is not capped) exceeded 140%, almost four times the average turnover, and even twice as high as the next-highest turnover in December 2008 (Figure 8).

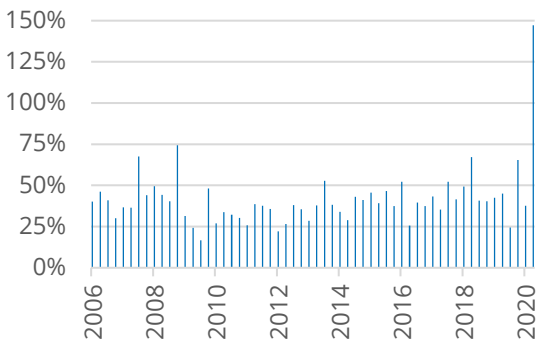
⁵ Roughly meaning the index exposure was about one standard deviation below the average stock in the Global 1800.

⁶ Knowing this, one might have expected the higher exposure to Market Sensitivity to help returns, as the market had started to turn back up and the factor return was positive. However, while the exposure was much less negative than it had been, it was still not positive. The factor’s contribution was therefore close to 0 between April and the end of July. The negative exposure to the volatility and growth factors were the negative contributors early on in the recovery.

⁷ Predicted volatility is based on the Axioma Worldwide Medium-Horizon Fundamental Equity Factor Risk Model (AXWW4).

The very high level of turnover clearly brought the Market Sensitivity factor back into line, but what happened sector-by-sector was also striking.

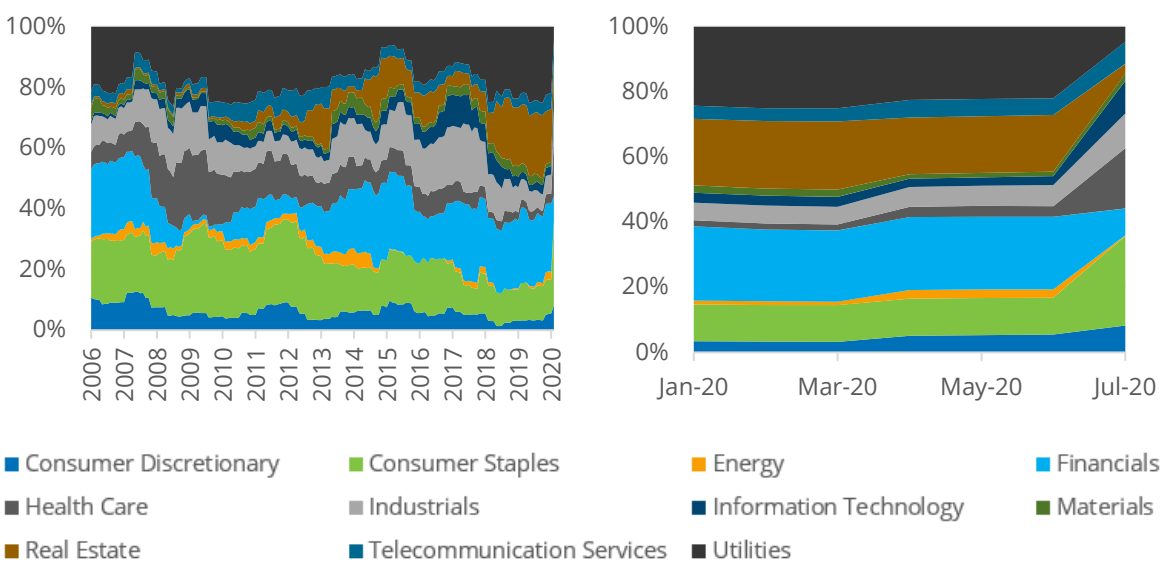
Figure 8. Low Risk 200 Quarterly Turnover



Source: Qontigo

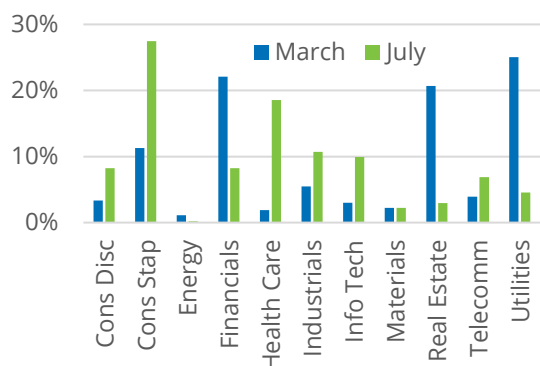
To be sure, sector exposures within the Low Risk 200 have varied widely through time (Figure 9). For example, Financials’ weight dropped from 24% before the financial crisis to just over 1% by January 2010. However, the magnitude of the sector weight changes between the March and June 2020 rebalances were the highest ever for a quarterly rebalance in most sectors. Once again, we note that formerly Low Volatility sectors, such as Financials, Real Estate and Utilities, became much more volatile, and were replaced by Consumer Staples, Health Care and Information Technology in the Low Risk 200 index (Figure 10).

Figure 9. Low Risk 200 Sector Exposures, Long-Term and Year to Date



Source: Qontigo

Figure 10. Low Risk 200 Sector Weights After Rebalancing



Source: Qontigo

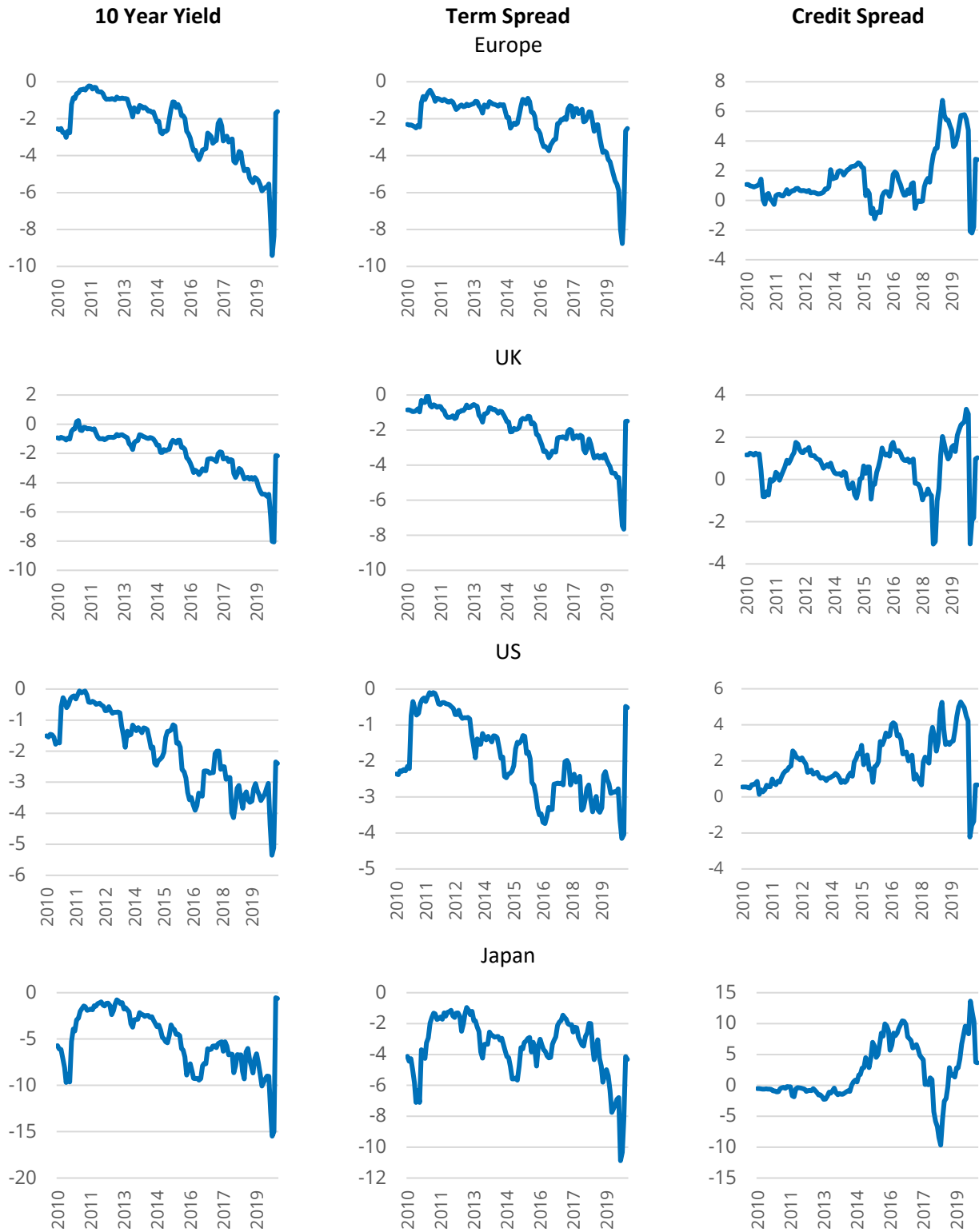
Macroeconomic Exposures

Another interesting observation about the nature of the Low Risk 200 can be found in its macroeconomic exposures. Using the Axioma Macroeconomic Factor Library, we calculated exposures to a number of macro factors, enabling us to look beyond the fundamental risk model factors and gain further insights into the wild ride taken by Low Volatility stocks.

For most of the past 10 years, the Low Risk 200 showed relatively little exposure to 10-year bond yields, term spreads and credit spreads. That abruptly changed in March 2020, as the index suddenly had huge negative exposures to those variables across Europe, the US, Japan (except credit spreads) and the UK. Then, when the index was rebalanced in June, exposures reverted to their previous levels.

Although these changes in sensitivity do not show up in our standard risk analysis or attribution, they can be helpful in understanding just how much was churning under the surface of this Low Volatility strategy.

Figure 11. Low Risk 200 Macroeconomic Sensitivities



Source: Qontigo

Attribution Analysis

So far, we have seen that in the V-shaped market performance in 2020, our Low Risk index's style exposures initially moved in the "wrong" direction and sector exposures did not change very much. It was not until the rebalance in June that the sector weights changed substantially, and factor exposures moved "back into line" with what one would expect from a portfolio that targets low risk. Our next step was to see how these exposures impacted returns by running factor-based attribution analysis: daily from the beginning of the year to the market bottom; from the bottom to the next rebalance; and post the June rebalance. We also ran monthly attribution from 2006 to provide a basis of comparison between what has happened this year and what we have seen in the long run.

In the period from January 2006 through August 2020, the Low Risk 200 outpaced the Global 1800 by 1.43% annually. Over this longer term the negative exposure to Volatility, which produced a highly negative return, was the major driver of the outperformance. Interestingly, the negative Market Sensitivity exposure detracted a bit, but it was the Medium-Term Momentum exposure that produced the biggest drag on returns among style factors. On average, Momentum's exposure was zero, but it fluctuated quite a bit over the years, and the timing of the positive and negative bets on the factor was clearly off. In aggregate, sector over- and underweights hurt the active return, although no one sector stood out. The biggest average overweight was in Utilities, but that bet led to a 0% long-term contribution!

Results for 2020 look quite different, of course. For the first period, which ended Mar. 23, the Low Risk 200 index fell slightly more than the market. While its negative average exposures to Market Sensitivity and Volatility provided a lot of ballast in the rapid and steep market decline, its sector weights produced a substantial drag on return, and were the sole source of underperformance among all the factor blocks. From Mar. 23 through Jun. 22, when the market retraced its steps but before the index was rebalanced, the Low Risk 200 returned almost 10 percentage points less than the Global 1800 — a degree of underperformance not entirely surprising in such a strong market. This time, roughly half of the underperformance could be traced to factor exposures, most notably the negative (albeit small, as discussed above) exposure to Market Sensitivity, along with the negative exposure to Volatility. Sectors also clobbered returns, accounting for almost 3.5% of the 9.5% underperformance. It is also notable that the *realized* volatility for the Low Risk 200 of 31.1% was actually higher than that of the Global 1800 at 30.1%.

Finally, the June rebalance back to a lower volatility profile did once again lead to lower realized volatility for the low risk index (20.4% versus 26.8%), but alas not back to outperformance. The once-again highly negative Market Sensitivity exposure was also once again the biggest drag on performance, as the factor's return was quite positive as the market continued to climb. The impact of most other factors was relatively small, although the underweights in Consumer Discretionary and Information Technology (see "[The US market can thank its FAANGs](#)" for more on this topic) together took away 70 basis points of active return.

Figure 12. Low Risk 200 Active Performance Attribution

Source of Return	January 2006- August 2020*		January-March 2020		March-June 2020		June-August 2020	
	Cont tribution	Avg Exposure	Cont tribution	Avg Exposure	Cont tribution	Avg Exposure	Cont tribution	Avg Exposure
Low Risk 200	8.90%		-31.93%		28.95%		8.23%	
Global 1800	7.47%		-31.55%		38.44%		10.71%	
Active	1.43%		-0.37%		-9.49%		-2.48%	
Specific Return	0.90%		-0.70%		-1.75%		-0.72%	
Factor Contribution	0.52%		0.33%		-7.74%		-1.75%	
Style	0.88%		3.50%		-5.06%		-1.41%	
Dividend Yield	0.12%	0.31	-0.40%	0.40	-0.03%	0.36	-0.08%	0.06
Earnings Yield	0.02%	-0.02	0.05%	-0.04	-0.12%	0.04	-0.01%	0.02
Exch Rate Sensitivity	0.01%	0.00	0.03%	0.16	0.55%	-0.51	0.00%	-0.02
Growth	0.06%	-0.15	-0.08%	-0.25	-0.86%	-0.24	-0.16%	-0.18
Leverage	-0.07%	0.11	-0.26%	0.20	0.04%	0.18	0.06%	0.07
Liquidity	0.00%	0.01	-0.02%	0.11	-0.26%	-0.06	0.02%	0.01
Market Sensitivity	-0.13%	-0.68	4.88%	-0.86	-2.57%	-0.11	-1.21%	-0.65
Med-Term Momentum	-0.76%	-0.01	-0.17%	-0.08	0.23%	-0.18	-0.16%	-0.09
Profitability	-0.10%	-0.05	-0.14%	-0.27	0.05%	-0.26	0.02%	0.07
Size	0.29%	-0.20	-0.92%	-0.24	0.57%	-0.22	0.11%	-0.18
Value	-0.18%	-0.02	-0.19%	0.13	0.05%	0.16	0.02%	-0.07
Volatility	1.62%	-0.36	0.75%	-0.22	-2.71%	-0.33	-0.03%	-0.29
Country	0.03%	-0.03%	0.11%	0.11%	0.40%	0.04%	-0.01%	0.09%
Sectors	-0.33%	-0.03%	-3.28%	0.11%	-3.49%	0.04%	-0.57%	0.09%
Consumer Discretionary	-0.21%	-5.02%	0.06%	-8.99%	-0.99%	-7.30%	-0.31%	-5.20%
Consumer Staples	0.30%	8.90%	0.16%	2.90%	-0.23%	2.55%	-0.07%	19.07%
Energy	0.33%	-6.42%	0.54%	-2.90%	-0.02%	-0.57%	0.20%	-2.59%
Financials	-0.07%	-1.68%	-0.80%	6.82%	-0.51%	9.23%	0.14%	-4.00%
Health Care	-0.24%	-1.45%	-1.04%	-11.09%	-0.19%	-10.96%	0.05%	4.59%
Industrials	0.03%	-0.01%	0.05%	-5.77%	0.16%	-4.17%	0.21%	-0.01%
Information Technology	-0.29%	-9.20%	-1.21%	-17.31%	-0.16%	-19.69%	-0.39%	-14.66%
Materials	0.01%	-3.53%	-0.03%	-1.90%	0.04%	-2.78%	-0.14%	-2.10%
Real Estate	-0.17%	3.44%	-1.54%	16.25%	-0.28%	13.38%	0.00%	-0.13%
Telecomm Services	-0.02%	0.37%	0.10%	1.25%	-0.17%	2.38%	-0.17%	4.08%
Utilities	0.00%	14.56%	0.42%	20.83%	-1.15%	17.97%	-0.07%	1.05%

*Results are annualized and based on monthly returns. Contributions greater than 50 basis points are highlighted (pink for detractors and green for positive contributors).

Source: Qontigo

Conclusion

Historically, the STOXX® Global Low Risk Weighted Diversified 200 — and presumably other strategies that tilt on Low Volatility stocks — has outpaced its STOXX® Global 1800 benchmark and produced a higher Sharpe ratio in about two-thirds of the years since 2006. In months and years when the market fell, Low Risk outperformed. The strategy's worst relative performance came when the market rose sharply.

In 2020, however, when the market was down, the Low Risk 200 fell even more, and then continued to underperform (as *expected*) in the subsequent market recovery. Overall, that made for a very difficult year for Low Volatility investors.

This gives us yet another disappointment to blame on COVID-19. As our lives and economic drivers changed dramatically, stocks and sectors previously considered “Low Volatility” were suddenly Low Volatility no more, as other stocks and sectors took their place. First, this changed the exposures of the index and rendered it no longer Low Volatility. If it had been rebalanced to the “new normal” immediately, it probably would have fared better, as Market Sensitivity and Volatility performed more-or-less as expected. However, once the market started to recover, at the same time as exposures to Volatility and Market Sensitivity approached zero, it was probably better off, since those factors generated highly positive performance.

It subsequently took a huge amount of turnover to reinstate the index's Low Volatility profile, but by then the market continued rising and it still would have been expected to underperform.

Early in the year, during the bear market phase, sectors were the main (bad) influence on performance, but after that both factors and sectors became a huge drag on relative performance, so there was really no place to hide.

Does this mean the end of Low Risk strategies? Given the long history of outperformance, especially during market downturns, we do not think so. Instead, we believe the market environment so far in 2020 has been extremely unusual, driven not only by the unique economic circumstances of the COVID-19 crisis, but also by policy responses. By providing unprecedented liquidity and downside risk protection (e.g. by extending asset purchases into the credit markets), the Federal Reserve has distorted investors' views of the true risk of their investments. While this may be the “new normal,” we do not think we have been seeing the “consistent normal.”