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Markets

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Within *Focus* we comment on extraordinary market events and analyse capital market-related special topics.

How black swans became a plague

The stock markets collapsed at an unprecedented speed. After only five trading days, the S&P 500 had lost more than 10% from its all-time high on 19 February. A bear market, ie a loss of more than 20%, was reached after 16 trading days and a loss of more than 30% after 22 days. Only the sell-offs in 1929 and 1987 are still roughly comparable – in these years the 30% loss mark was broken after 31 and 38 trading days, respectively (see Fig. 1).

Since the beginning of the year, there have already been twice as many extreme market movements as in the financial crisis of 2008

This exceptional market development is not limited to equities alone. Since the beginning of the year, a large number of abrupt, sharp market movements have been observed across all asset classes – both downward and upward. By the beginning of April this year, there were already 44 such so-called four-sigma daily movements in 12 selected asset classes (see Fig. 2) – twice as many as in the full year of the global financial crisis in 2008. These are daily movements that are at least four times greater than the standard deviation (volatility) of the daily movements of the last 100 days. For example, the EuroStoxx 50 Index lost 12.4% on 12 March, a movement that is more than nine times greater than the volatility of the returns of the then last 100 trading days of 1.35%. Assuming a normal distribution, the probability of such movements is less than 0.01%. The events of the past few weeks are therefore statistically highly unlikely.

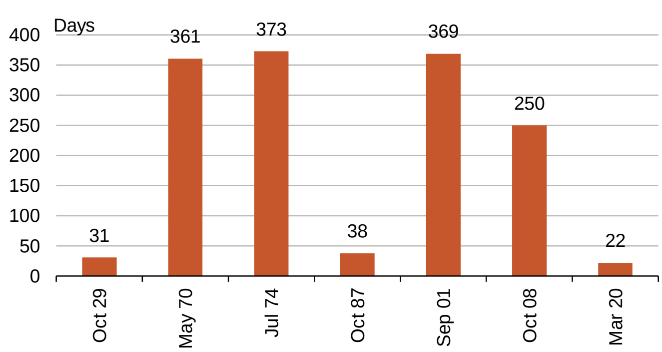
"Black swans" exist and have become a plague

Since the global financial crisis of 2008/09, market participants have been aware that such "black swans" exist. This is because daily movements or returns are not normally distributed. Their distributions show so-called "fat tails", ie increased probabilities of extreme movements. However, it appears that what was observed in the environment of the global financial crisis has become more and more normal in recent years. In 2020, black swans finally became a plague. There are good reasons for this – and these are not only due to the emergency braking of the economy by the measures to combat the coronavirus pandemic.

Rather, the reason for the extreme market movements is that the structure and behaviour of the capital markets have changed significantly over the past 10 years.

Fig. 1: 22 days - fastest 30% correction ever in the S&P 500

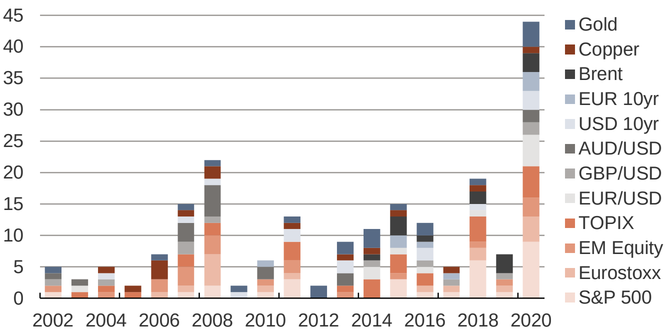
The number of days until a 30% correction of the S&P 500 index from its previous all-time high - current situation only comparable to 1929 and 1987



Time period: 03/01/1928-03/04/2020
Source: Bloomberg, own calculations

Fig. 2: Extreme market movements in all asset classes

Number of daily movements at least four times greater than the standard deviation of the daily movements of the last 100 days in 12 different assets classes



Time period: 01/01/2002-03/04/2020
Source: Bloomberg, own calculations

Rising liquidity requirements, for example due to increasingly uniform investor behaviour, are being met by a significantly reduced quality of liquidity. For example, there are fewer and fewer value investors, who sometimes act contrary to market events. In addition, since the global financial crisis, banks have been taking significantly fewer risks on their own books due to stricter regulatory requirements. Investors cannot rely on liquidity being available under all circumstances. On the contrary, liquidity dries up precisely when it is needed most – when volatility increases. We have continuously pointed out this increasingly difficult environment for investors over the past two years.[1]

The structure and behaviour of the capital markets have changed significantly over the past decade

Increasing importance of rule-based investment strategies...

A significant part of the changed market behaviour results from the increasing influence of rule-based investment strategies, at least for short-term market events. Such strategies have become much more important over the past decade, for example in the form of roboadvisors. Here, approaches with target volatility, risk parity approaches, trend following (CTAs) and short volatility strategies play a central role.

Approaches with target volatility, risk parity, trend following and short volatility strategies play a central role

Approaches with target volatility allocate systematically across asset classes so that the expected volatility of the portfolio corresponds to the target volatility. In some cases, options or futures are also used to achieve the target volatility. In contrast to the more "traditional" allocation of capital, risk-parity approaches aim for diversification through balanced risk contributions of individual asset classes. Accordingly, asset classes with low volatility receive a higher weighting than those with higher volatility. In the multi-asset context, bonds thus receive a historical average portfolio weighting of around 70%. In order to achieve an attractive absolute return on such an asset allocation, the entire allocation is then leveraged. With their procyclical behaviour, both approaches have a trend-reinforcing effect. Since rising equity markets are usually accompanied by falling or low volatility, the allocation to risky assets is increased in these times. If the stock markets fall and volatilities rise again, the strategies systematically reduce the allocation to risky assets. In an environment in which volatilities of all asset classes rise sharply, both strategies not only reallocate between different asset classes, but ultimately reduce risks in all asset classes. The deleveraging of risk parity approaches reinforces this general sell-off. This in turn leads to an increasing correlation between all asset classes. The diversification effect fades and the rule-based approaches have to reduce even more risk. This is a vicious circle that only ends when the risks have been reduced to an extremely low level.

...which act in a uniform and trend-reinforcing manner

All these strategies thus contribute both to regimes of low volatility and to the rapid increase in volatility by acting in a uniform and trend-reinforcing manner. In the case of extreme positioning, it may not even take a large fundamental trigger to induce a sharp trend reversal. And indeed, after the very good performance of all asset classes and low volatility in 2019, all these strategies had an equity allocation at the beginning of the year well above their respective long-term averages. This made the markets vulnerable (see Figure 3). We saw only limited fundamental potential for equities in 2020, but the equity markets had already priced in an economic recovery. The extreme positioning of rule-based investment strategies was one reason why we were only very cautiously optimistic about the performance of equities at the beginning of the year.

All these strategies contribute both to regimes of low volatility and to rapid increases in volatility

[1] See, for example, the author's article in "Investment Opportunities 2019: The bull market nears its end", Publisher FUCHSBRIEFE, October 2018, and Berenberg Markets – Focus "Attention Risk: the vulnerability of the markets is growing", 11 October 2018.

The majority of these rule-based approaches have not been able to generate convincing performance this year, as in many cases in the past few years – and the first investors seem to be withdrawing money from such strategies. Bloomberg reported that China's USD941bn sovereign wealth fund has already reduced its risk-parity portfolio by about 50%. But how did the strong rise of trend-following investment strategies come about? The long-lasting bear market from 2000 to 2003 and the global financial crisis played a central role in this development. During the financial crisis, trend-following approaches benefited from the fact that stock markets initially fell slowly from their highs in October 2007. Trend-following strategies had thus already reduced risks before the crash in autumn 2008. They emerged as the big relative winners from the financial crisis and were very popular in the following decade, because investors feared a repeat of the financial crisis and wanted to avoid it at any cost. Back tests of newly launched strategies also generally show strong relative performance during the global financial crisis or during the bear market of 2000-2003 (see Fig. 4). However, the back tests usually do not go back to 1987, let alone to 1929, when, similar to 2020, the markets collapsed from their all-time high in a very short time.

Trend following strategies were successful in the bear market 2000-2003 and in the global financial crisis

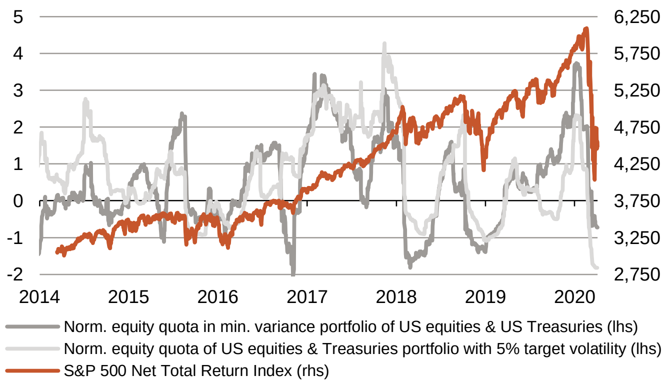
Lessons for investors

The behaviour of rule-based investment strategies currently largely determines the short-term behaviour of the capital markets. Investors should consider carefully whether or not they want to rely on such strategies. From our point of view, it seems sensible to try to profit from the knowledge of the behaviour of these strategies instead. An extreme positioning of rule-based strategies has a negative impact on the future risk/reward ratio on the capital markets. Following strong sell-offs, systematic strategies are currently positioned extremely defensively – their equity exposure has reached historic lows (see Fig. 3). This offers opportunities over a medium-time horizon, because if volatility falls and positive trends emerge, these strategies will increasingly buy equities again.

Unfortunately, the coronavirus crisis is far from over, so that a final assessment is not possible. From today's perspective, however, there is evidence that the strong trend of the past decade towards trend-following investment strategies is likely to decline. The more investors pursue such strategies and act in the same direction, the less convincing their realised performance is likely to be.

Fig. 3: Systematic strategies have greatly reduced equity position

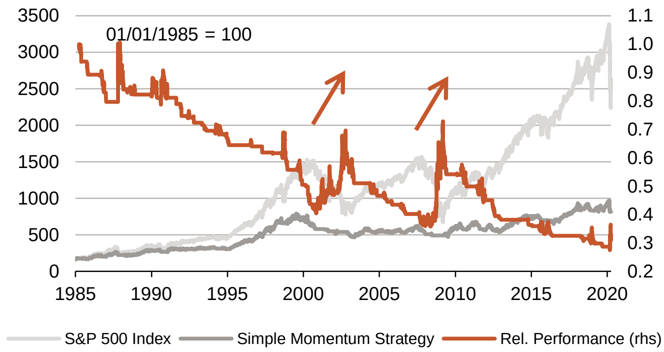
Normalised equity exposure of simulated systematic investment strategies based on the volatility of the last 60 trading days



Time period: 01/01/2014-03/04/2020
Source: Bloomberg, own calculations

Fig. 4: Momentum in 2000-03 and in the financial crisis successful

Simple momentum strategy that is invested in the S&P 500 if the performance of the index over the last 100 trading days has been positive and otherwise holds cash



Time period: 01/01/1985-03/04/2020
Source: Bloomberg, own calculations

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PUBLISHER

Prof Dr Bernd Meyer, CFA | Chief Strategist Wealth and Asset Management

AUTHORS

Prof Dr Bernd Meyer, CFA | Chief Investment Strategist
Head of the Multi Asset division and responsible for the capital markets opinion of Wealth and Asset Management
+49 69 91 30 90-500 | bernd.meyer@berenberg.de

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Joh. Berenberg, Gossler & Co. KG
Neuer Jungfernstieg 20
20354 Hamburg (Germany)
Phone +49 40 350 60-0
Fax +49 40 350 60-900
www.berenberg.com
MultiAssetStrategyResearch@berenberg.de