Crisis or Correction?
A Quant's View of the Coronavirus

Kathryn M. Kaminski, Ph.D., CAIA®
Chief Research Strategist,
Portfolio Manager

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Introduction

A correction is a short-lived loss that recovers relatively quickly. A crisis is a prolonged period of market stress with sustained losses. Given the magnitude of moves and the sizable loss in equity markets in the last two weeks, the question on everyone's mind is: "Is this a crisis or a correction?"

What is a crisis?

Every crisis is different, and can be defined by both the length and depth of the crisis event. From this perspective, sustained and substantial periods of losses can be classified as a crisis, while short-term market reversals can be classified as a correction. A crisis is often driven by a key risk that is not well understood nor easily solvable. This is something that may be hard to measure or hard to understand in terms of the level of impact. In 2008, the complexities of structured products and the intricate web of counterparties in OTC derivatives contracts created an opaque and vulnerable system. Over the last two decades, we have experienced a number of financially-driven crisis periods. As a result, in the field of finance, we define systemic risks to be the risk of collapse of an entire financial system or market. If we extend that approach to the current pandemic caused by the coronavirus (COVID–19), we must ask two questions: (1) what is the core risk we might be exposed to? and (2) what systems if any might collapse as a result of it?

In our modern society, we are living with the positive sides of globalization, including the free flow of individuals around the world. Companies are interconnected; markets are interconnected; travel routes span the globe. The internet keeps us all connected and information travels faster than ever before. The supply chains that provide food and necessary items have made everything readily available and delivered at the click of a simple button or tap of a phone screen. But if the music stops, what does one do if the local grocery store isn't open? These are fears we have not necessarily considered but now they certainly feel real.

As companies brace for travel bans, conferences get canceled, and universities and schools are closed, consumers hide their heads in the sand. What happens next? The challenge will be where it always has been: leverage, credit risk, and tight profit margins. Anything that is built for "a perfect paradise" will fall first and fall hard. If events are canceled, hotels will be empty, taxi drivers will be left to go home, restaurants will remain empty, and billions of dollars will go unspent. Humans hate to be wrong so financial analysts will continue to wave fundamental views in our face, citing past data that states the economy is still fine. As a smart reporter said to me, "When the waves withdraw we will see who is swimming naked after a twelve year bull market."[1]

[1] Comment by an undisclosed reporter at the annual international women's day event in New York which focused on discussing the coronavirus.

What does the data say?

This is all speculation, and as a quant, I don't like to speculate. I like to analyze. Here is what the market is telling us.

(1) **Uncertainty Magnified:** We don't know what is going on
(2) **The Market Smells a Skunk:** Cross-asset trends are consistent with past crisis periods
(3) **The Search Begins for Crisis Alpha:** Momentum profits from coordinated moves

Uncertainty Magnified

Since the week of February 24th, the market has experienced massive swings in prices, in order of magnitudes unheard of by many market participants. What does it mean when markets move so violently? It means that "**we don't know what is going on**."[2] We can't figure out which way is up or down. Let's consider the data. Figure 1 plots the magnitude of the returns in the S&P 500 in the last two weeks. The average move of the S&P 500 is roughly 1%, so a 2 standard deviation (2 sigma) event is 2% in one day. Is it feasible that we would have eight >2+ sigma events in two weeks? According to statistics, if returns were stationary and normally distributed, the odds of this happening are 1 in 180 million.[3] Clearly, market returns are not behaving normally.

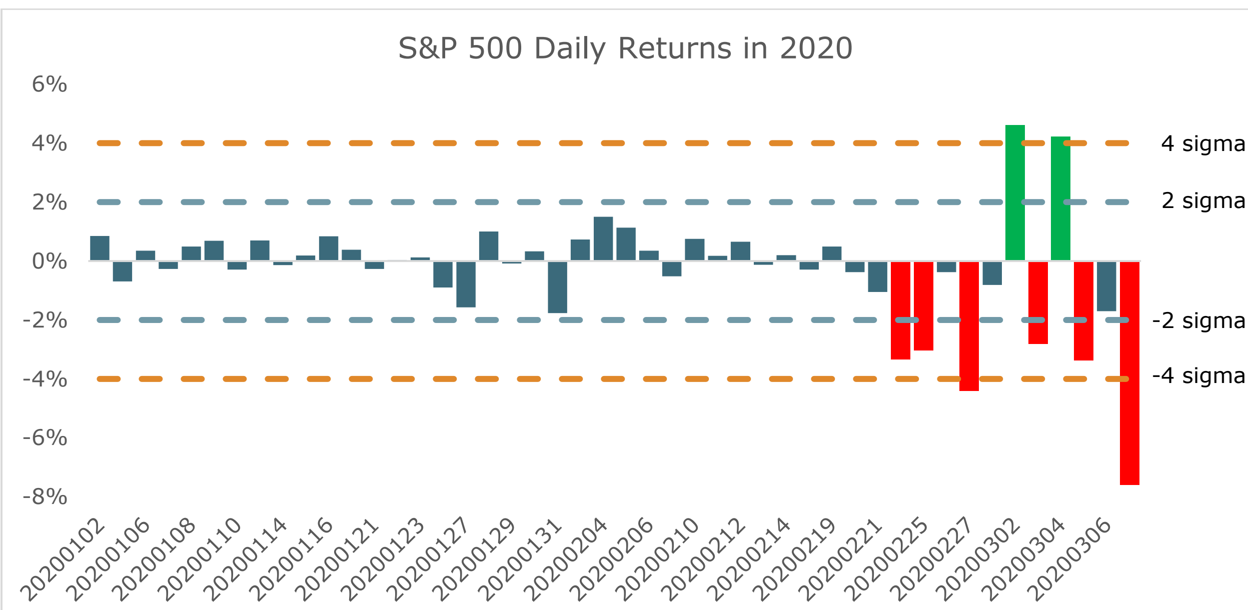

Figure 1: S&P 500 returns from January 2, 2020 to March 9, 2020. Since 2010, daily S&P 500 daily returns experienced a one standard deviation move of 1%. Therefore, based on history, a 2% move is roughly 2 sigma and a greater than 4% move is roughly 4 sigma. Past performance is not necessarily indicative of future results. Source: Bloomberg.

[2] Hajric and Popina, March 5, 2020, *Bloomberg*.

[3] Eight events which are greater than 2 sigma could occur with probability $\binom{11}{8} 0.05^8 0.95^3$, which is approximately 1 in 180 million.

The market smells a skunk

As early as January, global markets, with the exception of equities, started rapidly changing directions. Bond markets began to rally massively as investors were cautiously optimistic and then more concerned about the potential impact of the coronavirus later in January. Global currency markets, although pushing against the U.S. dollar late 2019, began to favor the U.S. over other regions of the world. The oil markets began a steady and stealthy plunge downwards as global demand subsided in the wake of virus concerns. Equities remained complacent after a period of exuberant gains in 2019, until they could not ignore the potential impact of the possible pandemic. Figure 2 plots market returns by asset class year-to-date in 2020. The trends are relatively clear, fixed income increased, commodities suffered, and the U.S. dollar steadily strengthened.

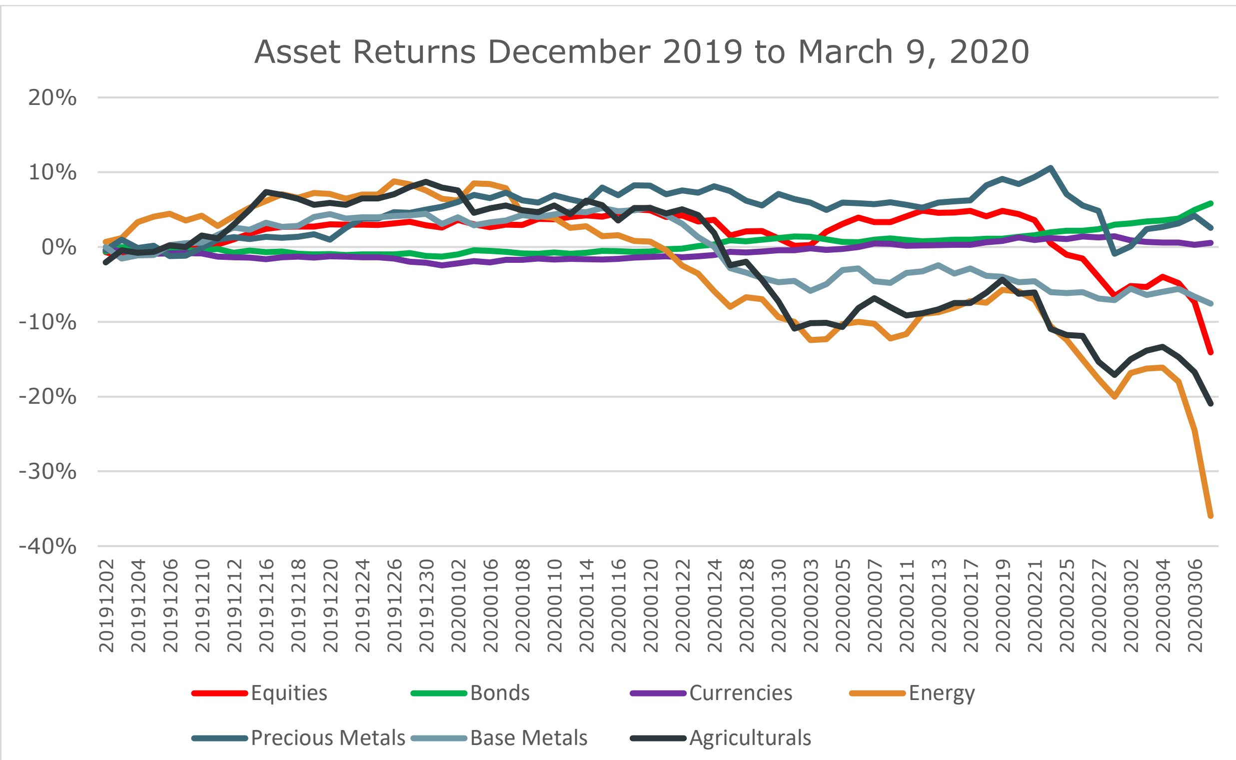

Figure 2: Asset class returns from December 1, 2019 to March 9, 2020. The asset class returns are average returns of a basket of global futures contracts compounded over time. Past performance is not necessarily indicative of future results. Source: Bloomberg.

In a period of crisis, markets can be driven by a combination of emotion and fundamentals. Emotions, especially when they are heightened, can be hard to predict or understand, while fundamental effects can be hard to accept when all the data is not yet available. In this case, it is easier to consider markets that are more directly linked to fundamentals, markets like oil or copper. Figure 3 plots the return of copper and oil and equity markets year-to-date. Note that when equities fall, energy and copper fall, but when equities rally (potentially on hope) the commodities rally less.

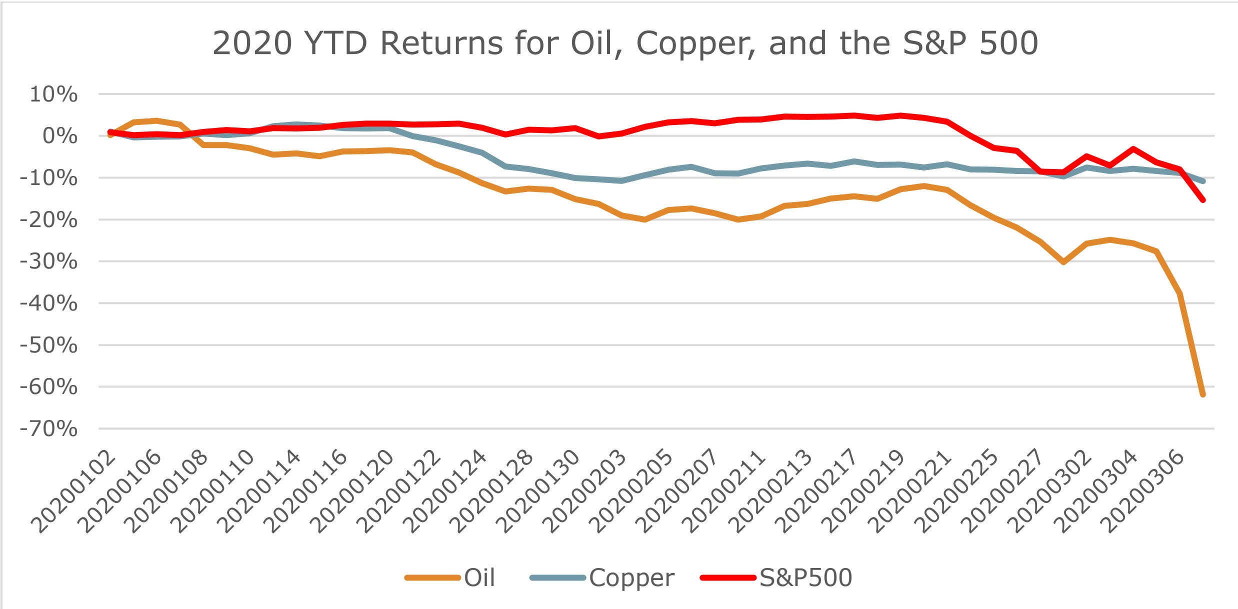

Figure 3: Oil (Crude Oil Futures), copper (CMX Copper Futures), and the S&P 500 (S&P 500 Futures) returns through March 9, 2020. Past performance is not necessarily indicative of future results. Source: Bloomberg.

History does not repeat but it tends to rhyme. If history has taught us anything, it is that in periods of market stress, markets can move in sustained ways causing trends.[4] A common quant strategy for trading these moves is trend following—in simple terms, a strategy that buys markets as they move upwards and sells them as they move downwards. Trend-following strategies do not ask *why* something is moving. Instead, trend-following systems ask *what* is moving and attempt to capture these moves. This is done by measuring the trend strength in different markets and sizing risk long or short as trends move over time. For a demonstration, Figure 4 plots the trend strength of a hypothetical trend-following system by asset class year-to-date in 2020. In this case, trend-following strategies were picking up the shift to long bonds, short commodities (except precious metals), and long the U.S. dollar prior to the massive drops in equity prices in late February and early March. It is interesting that most trend signals outside of equity markets were already moving as early as late January.

[4] See also Kaminski (2011) "In Search of Crisis Alpha: An Introduction to Managed Futures" and Greyserman and Kaminski (2014) *Trend Following with Managed Futures: The Search for Crisis Alpha*.

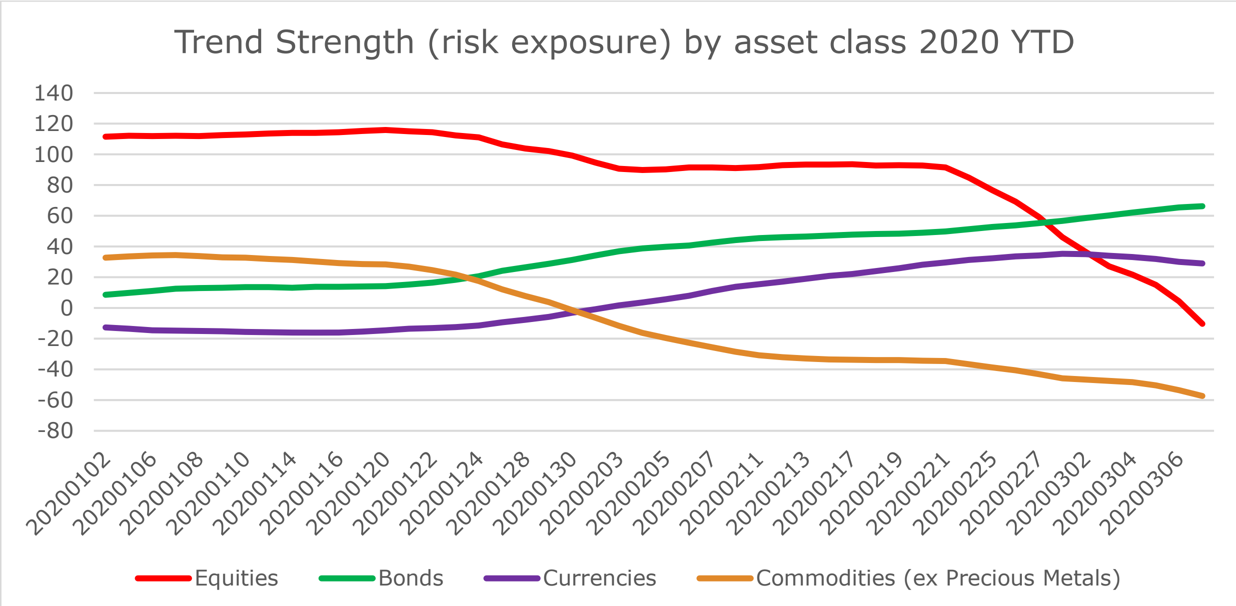

Figure 4: Trend strength/risk exposure (long or short) by asset class for a hypothetical trend-following system in 2020. Past trend strength is not necessarily indicative of future trend strength nor of future results. Source: Bloomberg, AlphaSimplex.

The Search Begins for Crisis Alpha

When markets are stressed, they are driven by fear and hope and people act in more coordinated ways. During periods of stress, markets tend to be more synchronized and prices move in more predictable ways, leading to trends in different asset classes. This is precisely what we are seeing now. A common example is 2008, which was a banner year for trend-following strategies as strong trends either long or short emerged in many asset classes in the wake of a challenging market environment. For comparison and historical perspective, Figure 5 plots the return across asset classes in 2007 and 2008. During this period, we saw downward trends in commodities, upward trends in fixed income, and a later rally in the U.S. dollar. Comparing Figure 2 with Figure 5 we can certainly see some similar cross-asset trends.

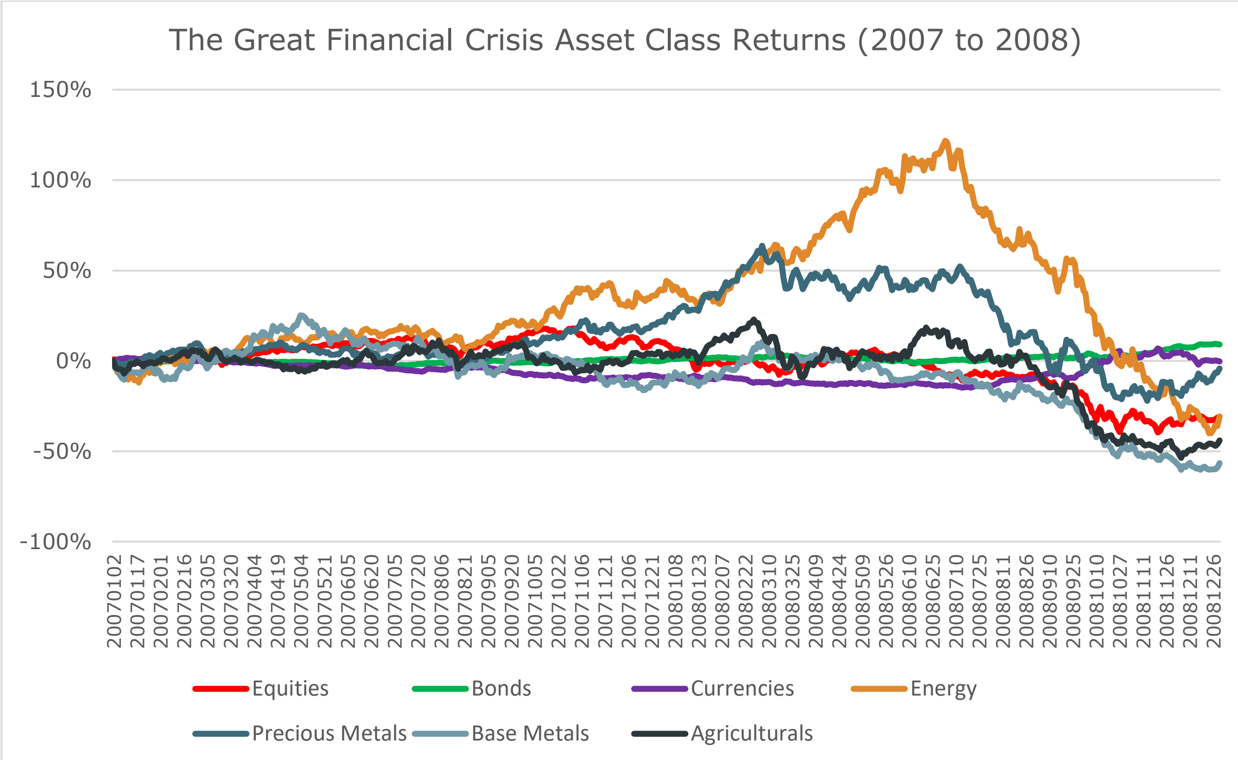

Figure 5: Asset class returns during the Great Financial Crisis plotted from 2007 to 2009. The asset class returns are average returns of a basket of global futures contracts compounded over time. Past performance is not necessarily indicative of future results. Source: Bloomberg, AlphaSimplex.

How have trend-following strategies navigated this difficult environment in 2020? Figure 6 plots the performance of the SG Trend Index year-to-date versus the S&P 500. Note that both returns seemed markedly similar until the equity drawdown began in late February. Since this period, short positions in energy and other commodities, long U.S. dollar exposure, and long positions in fixed income have first offset and began to outweigh losses in equity markets. It is also notable that the reduced trend strength in equities has also led to smaller losses in equities as the drawdown continued to extend. As trend signals have moved into the neutral to negative territory in equity markets, this position may be favorable should the ongoing disruption in markets continue.[5]

[5] Cantrell, March 7, 2020, *Institutional Investor.*

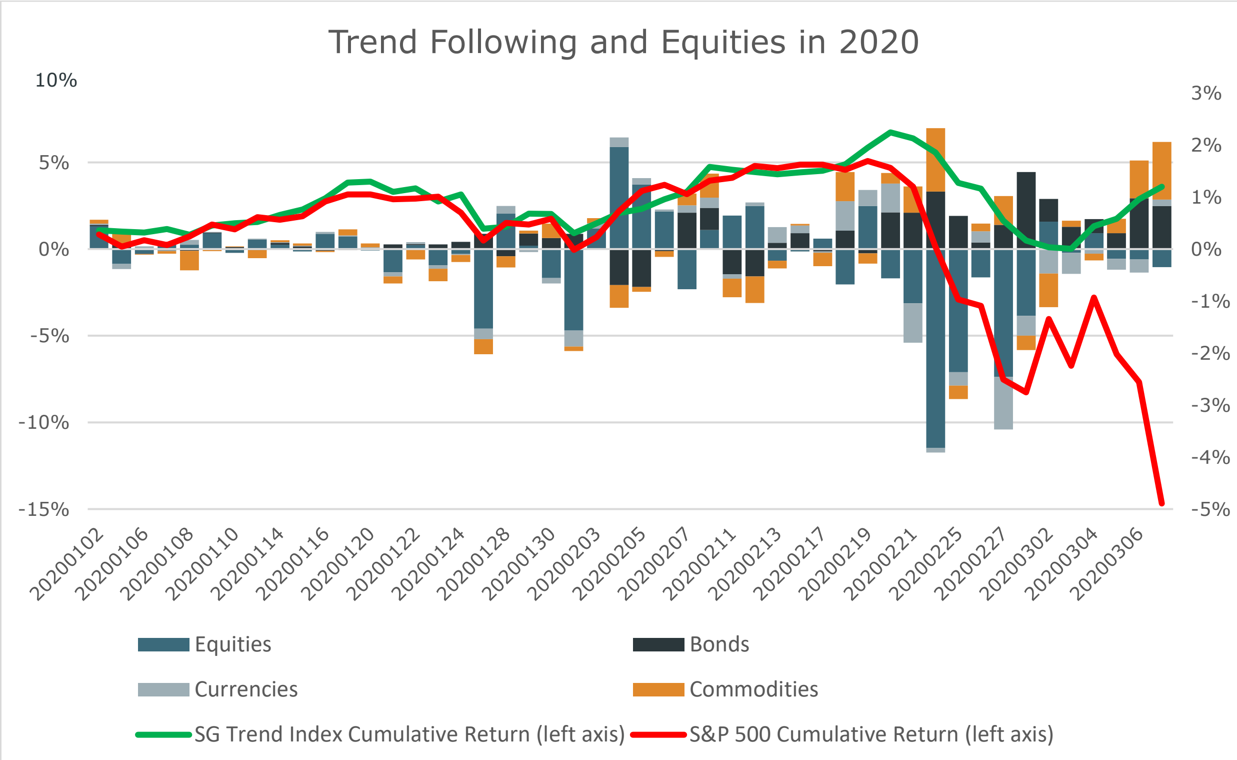

Figure 6: Performance of trend-following strategies versus the S&P 500 in 2020. In this case, the SG Trend Index (left axis) is used as a proxy for trend-following strategies and a hypothetical trend-following system (right axis) with a medium- to long-time horizons is used to provide an example of potential asset class returns for trend following year-to-date. Past performance is not necessarily indicative of future results. Source: AlphaSimplex, Bloomberg, Societe Generale.

No resolution in sight

The challenge with the coronavirus is the uncertainty and its impact on tightly coupled systems that need to work to make our day-to-day function smoothly. It is unclear how a pandemic might disrupt our health care system, interrupt economic activity, and scare the consumer in a consumer-driven economy. Even if one could snap one's fingers and find a solution, it would still take time as there does not seem to be a simple answer.

Related References

- Bloomberg. March 5, 2020. "Bloomberg The Open' Full Show." https://www.bloomberg.com/news/videos/2020-03-05/-bloomberg-the-open-full-show-3-5-2020-video.
- Cantrell, Amanda. March 7, 2020. "I Wouldn't be Surprised to See Rates Go Negative." *Institutional Investor*. https://www.institutionalinvestor.com/article/b1kn2sw3mfkysj/I-Wouldn-t-Be-Surprised-to-See-Rates-Go-Negative.
- Greyserman, Alex, and Kathryn M. Kaminski. 2014. *Trend Following with Managed Futures: The Search for Crisis Alpha*. New York: Wiley Trading.
- Kaminski, Kathryn M. 2011. "In Search of Crisis Alpha: A Short Guide to Investing in Managed Futures." CME whitepaper.
- Kaminski, Kathryn M. 2019. "Crisis or Correction? Managing Expectations for Managed Futures and Crisis Alpha." *AlphaSimplex Insights*. https://www.alphasimplex.com/insight/correction-or-crisis-managing-expectations-for-managed-futures-and-crisis-alpha-2/
- La Monica, Paul. March 6, 2020. "Perspectives: The Fed did its part to soothe coronavirus fears. Now the president and Congress must act." *CNN*. https://www.cnn.com/2020/03/06/perspectives/coronavirus-fiscal-stimulus-economy/index.html.
- Massa, Annie. March 6, 2020. "Money Managers Preach Calm with Market Turmoil Worrying Clients." *Bloomberg*. https://www.bloomberg.com/news/articles/2020-03-06/money-managers-preach-calm-with-market-turmoil-worrying-clients.
- Oh, Sunny. March 6, 2020. "Boring bonds turning into best investment of the year as Treasurys see returns north of 20%." *MarketWatch*. http://www.marketwatch.com/story/boring-bonds-turning-into-best-investment-of-the-year-as-treasurys-see-returns-north-of-20-2020-03-06.
- Yahoo Finance. March 5, 2020. "We've seen negative pressure on other asset classes outside of stocks: Strategist." https://finance.yahoo.com/video/ve-seen-negative-pressure-other-181005039.html.

About the Authors

Kathryn M. Kaminski, Ph.D., CAIA® is the Chief Research Strategist at AlphaSimplex Group. As Chief Research Strategist, Dr. Kaminski conducts applied research, leads strategic research initiatives, focuses on portfolio construction and risk management, and engages in product development. She also serves as a co-portfolio manager for the AlphaSimplex Managed Futures Strategy. Dr. Kaminski's research and industry commentary have been published in a wide range of industry publications as well as academic journals. She is the co-author of the book *Trend Following with Managed Futures: The Search for Crisis Alpha* (2014). Dr. Kaminski holds a B.S. in Electrical Engineering and Ph.D. in Operations Research from MIT.

Contact Information

For more information, please contact:

Peter Martin, Director of Client Portfolio Management
clientservices@alphasimplex.com
617-475-7100

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