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CRISIS OR CORRECTION?

A Quant's View of the Coronavirus

By Kathryn M. Kaminski, PhD, CAIA®

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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 during late February and early March of 2020, the question on everyone's mind remains: "Is this a crisis or a correction?"

A crisis often is driven by a key risk that is not well understood or easily solvable. This is something that may be hard to measure or hard to understand in terms of the level of impact.

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 often is driven by a key risk that is not well understood or 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 over-the-counter derivatives contracts created an opaque and vulnerable system. Over the past 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, and 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 simple click of a button or tap on 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 before, but now they certainly feel real.

As companies endured travel bans, conferences got canceled, and universities and schools were closed, consumers pulled back. The challenge will be where it always has been: leverage, credit risk, and tight profit margins. Anything that is built for economically optimal conditions eventually could fall and fall hard. When events are canceled, hotels remain empty for extended periods, taxi drivers are left at home, restaurants remain empty, and billions of dollars will continue to go unspent. Humans hate to be wrong, so financial analysts will continue to wave fundamental views in our faces, 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 12-year bull market."[1]

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.

Uncertainty magnified: We don't know what is going on.

The market smelled a skunk: Cross-asset trends are consistent with past crisis periods.

The search begins for crisis alpha: Momentum profits from coordinated moves.

UNCERTAINTY MAGNIFIED

Starting the week of February 24, the market has experienced huge swings in prices, in orders of magnitude unheard of by many market participants. What does it mean when markets move so violently? It means "we don't know what is going on" (Hajric and Popina 2020). We couldn't figure out which way is up or down. Let's consider the data. Figure 1 plots magnitude of returns in the S&P 500 during Q1 and Q2 2020. The average move of the S&P 500 is roughly 1 percent, so a two standard deviation (two-sigma) event is 2 percent in one day. But between January 24 and June 30, 2020, there were 38 such two-sigma events or more. According to statistics, if returns were stationary and normally distributed, the odds of this happening are close to zero. Clearly, market returns are not behaving normally.

THE MARKET SMELLED A SKUNK

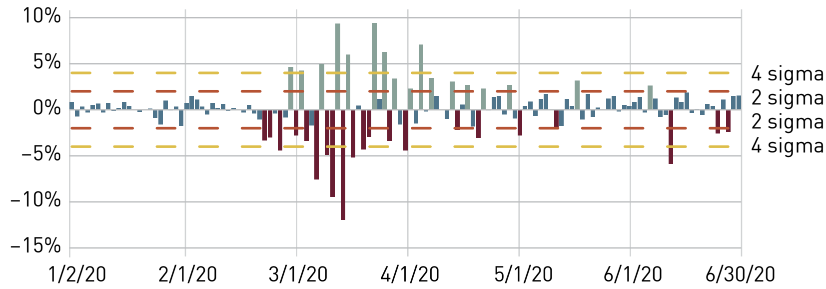
As early as January, global markets, with the exception of equities, started rapidly changing directions. Bond markets began a massive rally because investors were cautiously optimistic and then more concerned about the potential impact of the coronavirus later in January. Global currency markets, although pushing against the U.S. dollar in late 2019, began to favor the United States over other regions of the world. The oil markets began a steady and stealthy plunge 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 from December 2019 through June 2020. Through the month of March, the trends were relatively clear: Fixed income increased, commodities suffered, and the U.S. dollar steadily strengthened. In late March and early April we started to see these trends revert as markets steadily recovered.

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, and 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 such as oil or copper. Figure 3 plots the return of copper and oil and the equity markets year-to-date. Note that when equities fall, oil and copper fall, but when equities rally (potentially on hope), the commodities rally less. Since the recovery of equity markets in late March we have seen a sizable recovery in commodity markets as well.

History does not repeat, but it tends to rhyme. If history has taught us

Figure 1

S&P DAILY RETURNS IN 2020

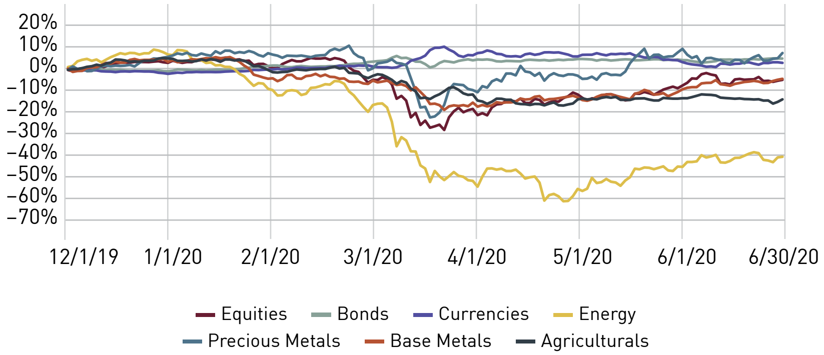


S&P 500 returns from January 2, 2020, to June 30, 2020. Since 2010, S&P 500 daily returns experienced a one standard deviation move of 1 percent. Therefore, based on history, a 2-percent move is roughly two sigma and a 4-percent move is roughly four sigma. Past performance is not necessarily indicative of future results.

Source: Bloomberg.

Figure 2

ASSET CLASS RETURNS, DECEMBER 1, 2019–JUNE 30, 2020

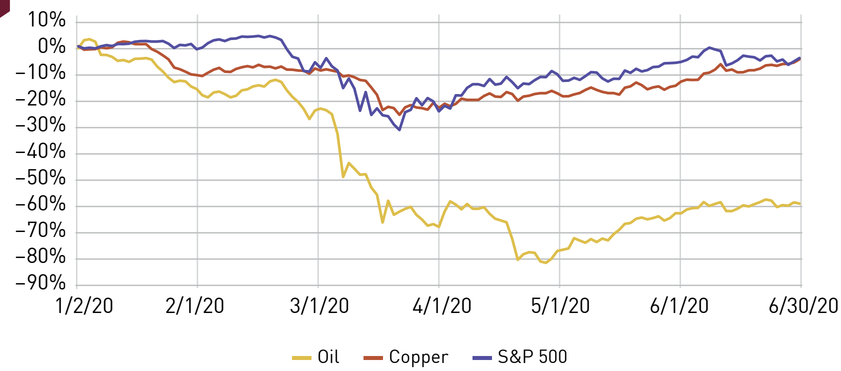


Asset class returns from December 1, 2019, to June 30, 2020. The asset class returns are average returns of a basket of global futures contracts compounded over time. Past performance is not necessarily indicative of future results.

Source: Bloomberg.

Figure 3

2020 YTD RETURNS FOR OIL, COPPER, AND THE S&P 500

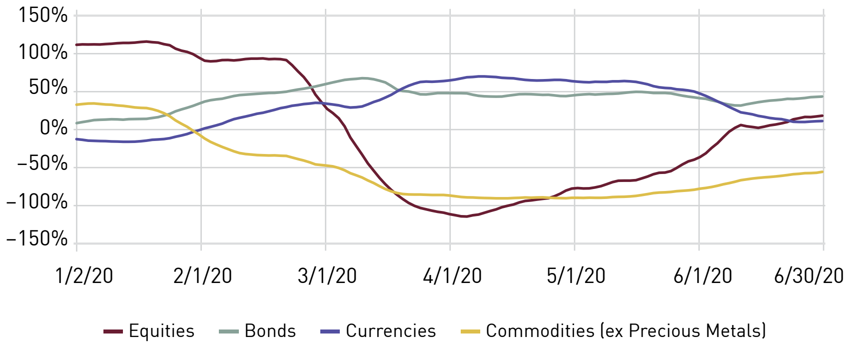


Oil (Crude Oil Futures), copper (CMX Copper Futures), and the S&P 500 (S&P 500 Futures) returns through June 30, 2020. Past performance is not necessarily indicative of future results.

Source: Bloomberg.

Figure 4

TREND STRENGTH (RISK EXPOSURE) BY ASSET CLASS 2020 YTD

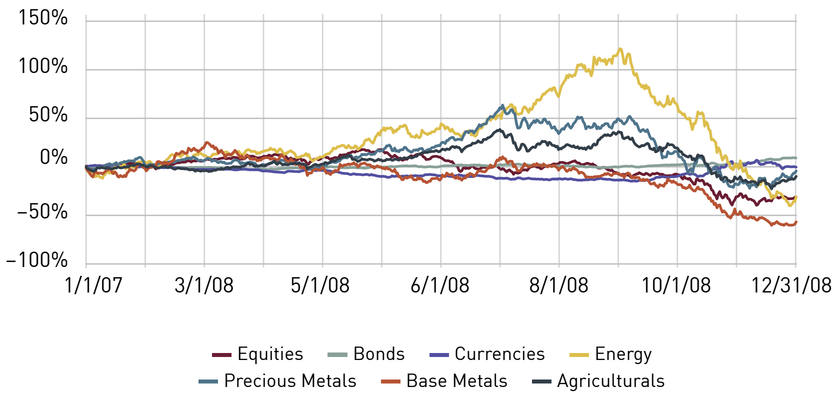


Trend strength/risk exposure (long or short) by asset class for a hypothetical trend-following system in 2020. Past trend strength is not necessarily indicative of future trend strength nor of future results.

Source: Bloomberg, AlphaSimplex.

Figure 5

THE GREAT FINANCIAL CRISIS ASSET CLASS RETURNS (2007–2008)



Asset class returns during the Great Financial Crisis plotted from 2007 to 2008. 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.

anything, it is that in periods of market stress, markets can move in sustained ways causing trends.[2] A common quant strategy for trading these moves is trend following—in simple terms, a strategy that buys markets as they move upward and sells them as they move downward. 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 enormous drops in equity prices in late February and early March. It is interesting that most trend signals outside of equity markets already were moving as early as late January 2020.

When markets are stressed, they are driven by fear and hope, and people act in more coordinated ways.

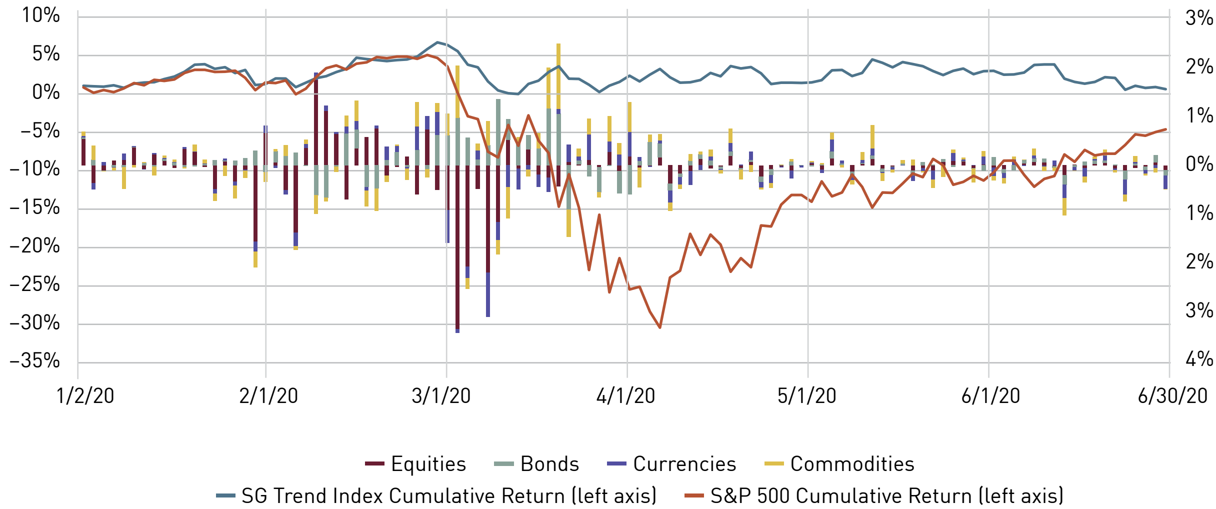
THE SEARCH BEGINS FOR CRISIS ALPHA

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 saw during the equity drawdown in late February and March 2020. 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.

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 also has led to smaller losses in equities as the drawdown continued to extend. As trend signals moved into the neutral to negative territory in equity markets starting in March, this position would have been favorable should the ongoing disruption in markets have continued (Cantrell 2020). Since late March, equity markets have rebounded, returning some of the profits lost during the drawdown. If we were to see a subsequent drawdown period, the strategy is cautiously positioned to adapt to this move.

Figure 6

TREND FOLLOWING AND EQUITIES IN 2020



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 horizon 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 pandemic is uncertainty and its impact on tightly coupled systems that need to work to make our day-to-day life function smoothly. It is unclear how the pandemic might further disrupt our healthcare 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 because there does not seem to be a simple answer.

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ENDNOTES

1. Comment by an undisclosed reporter at the annual international women's day event in New York, which focused on discussing the coronavirus, paraphrasing a quotation generally attributed to Warren Buffett.
2. See also Kaminski (2011) and Greyserman and Kaminski (2014).

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