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Dr. Michaud earned a Ph.D. in Mathematics from Boston University and has taught investment management at Columbia University. He is the co-holder of four U.S. patents and is the author of *Efficient Asset Management* and many professional and academic articles.

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No Place to Hide

Perspectives

The last quarter of 2018 marked the dramatic end of the longest bull market in financial history, nine-and-a-half-years (115 months) of generally rising U.S. stock indices. December was the worst performing month since the Great Depression and the year was the worst since 2008. The quarter was notable for almost unprecedented market swings and volatility. By year end, major U.S. equity indices were close to bear market territory, in marked contrast to where they were on September 20th, with a nearly 10% gain for the year. However, from a longer-term perspective, returns over a two and five-year period remain very positive.

Normally, at least one major category of global investments is positive for the year. But the year 2018 was notable as no place to hide. Stock markets around the world were twice as bad or more than the U.S. During the year oil and copper swung from gains to losses while bond indices were negative or neutral. Cocoa was one of a very few assets that beat cash for the year.

The fall in security prices is, in hindsight, not that surprising. We noted in our 3rd quarter commentary that a feeling of investor complacency had settled in with expectations of a norm of steady gains and minor interruptions. American equity investors had become presumptive of a goldilocks era of quantitative easing and good government and corporate financial management, particularly when compared with other parts of the global economy. But the list of potential economic and financial disruptive factors continued to pile up during the year and into the 4th quarter. How long could the market ignore a no longer accommodative Fed, threats of government shutdowns, inflation fears, domestic and global political dysfunction, and tepid and negative international economic and financial data?

In the final moments of the 4th quarter, a point of major investor sentiment disequilibrium occurred and the market responded with a roar. Market volatility experienced in the last week of 2018 has been described as something no one has ever seen before. A 700-point decline in the Dow followed by a 1000-point rise the following day followed by a 600-point decline during the day only to end up 200 points above the prior close at the end of the day. The result was a dizzying investment moment. How to understand such persistent dramatic volatility? Is cash ultimately the only safe asset? Academic theories of market equilibrium and expected value seem far removed from financial reality.

The fact that eighty-five percent of all trading is said to be on automatic pilot is a convenient rationale for explaining waves of up and down stock prices over short time periods. Rule-based, model, and passive strategies can result in trade herding over short periods. But persistent volatility during each of the three days, including

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About New Frontier

New Frontier is a Boston-based institutional research and investment advisory firm specializing in the development and application of state-of-the-art investment technology. Founded in 1998 by the inventors of the world's first broad spectrum, patented, provably effective portfolio optimization process, the firm continues to pioneer new developments in asset allocation and portfolio selection. Based on practical investment theory, New Frontier's services help institutional investors across the globe to select and maintain more effective portfolios.

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changes in direction and of the magnitude observed, is not very consistent with other examples of bursts of computer-driven volatility which tended to be very short-lived.

Financial markets are sometimes said to be a leading indicator of the economy. But such a relationship is often contradicted in actual experience. Financial markets reflect investor sentiment but economics is more representative of cost of production. Economists largely agree that the American economy is very healthy, which is inconsistent with the wild volatility observed.

Behavioral finance is a fairly popular theory of capital markets that may seem useful as a rationale for hard-to-explain volatility. In this view, capital markets often reflect anomalous behavior due to "irrational" investors. While behavioral issues may be useful when analyzing various persistent long-term trading patterns, it is not a theory of volatility.

Hard-to-explain eruptions of volatility of the kind observed in December are rare but they are not unique. Another notable example is the burst of volatility on October 19, 1987, when the market dropped 20% in a single day. As in the case of volcanic eruptions, such extraordinary events may often provide a deeper understanding of the fundamental nature of capital markets that is largely invisible during less volatile times. A new theory of how capital markets function may be in order.

A number of academics have begun to seriously question whether 20th century neoclassical financial theory, the canon of modern finance, is viable. For somewhat similar reasons, the author has been exploring a new framework for understanding capital markets in practice as an alternative to neoclassical game theory financial axioms. The first four of five videotaped lectures given to the CFA Society Boston last spring addressed multiple rationales for the need to replace neoclassical capital market theory, as well as 20th century investment technology, as the basis for understanding and managing capital markets. The fifth lecture presented a new social-group-dynamic framework that provides a rationale for occasional positive feedback volatility events of the kind observed as part of the nature of normal functioning capital markets. A discussion of all the proposals presented in the five lectures is beyond the scope of this quarterly commentary. However, an indication for the basis of a revisionist theory of capital markets presented in the lectures is briefly indicated here.

In his classic text,[2] Knight addresses the problem of decision making for rational agents in financial markets. In it, he describes three levels of uncertainty in rational decisions:

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[1] Michaud, R. "Finance's Wrong Turn." Five videotaped lectures, presented to CFA Society Boston March-April 2018.

[2] Knight, F. 1921. *Risk, Uncertainty, and Profit*. Houghton Mifflin Company: Boston.

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New Frontier Portfolios

New Frontier develops and manages a broad range of ETF asset allocation portfolios for advisors and their clients, and currently oversees over $3 billion in global ETF asset allocation portfolios.

1. Games: The outcome of a particular play of a game such as roulette in a casino is unknown but the odds and long-term behavior can be estimated with great precision.
2. Insurance: The cost of estimating fire insurance for a particular group or census region, for instance, can often be approximated reliably with the analysis of historical data over some appropriate period of time.
3. Investing: The probability of the success of a firm's investment in a new project is fundamentally unknowable. Success depends on time to completion and the future state of the economy, consumer preferences, health of the firm, and many other factors.

Markets tend to have stable patterns of investment behavior over relatively short periods of time. Fads and fashions are behavioral patterns that often emerge and can characterize much financial behavior. Long-term prospects, as Knight explains, are subject to many unknowable factors where forecasting must rely on business acumen and where random events dominate. In this context, the notion of "fundamental value" emerges as an unstable and likely ephemeral social norm of relative value within well-defined investor and institutional risk habitats.

Look Ahead

High on the list of 2019 economic risks has to do with the pursuit of aggressive trade policies by the Trump administration. Trade war risks with China, the second largest global economy, have huge economic, political, and military consequences. America holds the high ground in this instance. China restricts foreign activities, forces technology transfers, has a state policy of intellectual property theft by whatever means, and is increasing military assertiveness. While America can impose its will successfully, the potential disruption of a no-holds-barred trade war could disrupt the entire global economy in many fearful ways. One reason for optimism is that the much larger healthy American economy is likely to encourage Chinese concessions in a slowing economy. The March 1 deadline for a deal with the administration seems important. Notably, Chinese stocks are among the year's worst performers of major global markets.

The partial government shutdown over immigration policy is a clear indication of a changed domestic political climate in 2019. The Trump administration will no longer be able to rely on a rubber stamp Congress. Subpoena power will make the Democratic House majority a formidable threat to the administration, including to Trump business practices. Problems of political unpredictability and unreliability include not yet lifting tariffs on Canadian aluminum and steel as promised when signing NAFTA, and of changing the decision to accept legislation for funding the government one day after saying it would be signed. The incomplete Mueller investigation has already claimed many indictments, convictions, and plea deals. The implications of further revelations

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in 2016 presidential election meddling by Russia, Iran, Saudi Arabia, and others is impossible to compute. The likelihood of persistent Washington governance dysfunctionality and forthcoming impeachment charges or resignation are not remote.

In December, the Federal Reserve governors raised the Fed-funds rate and are expected to announce at least two more rate hikes in 2019 followed by one in 2020. For many, the Fed seems oblivious to the market and is wrongheadedly encouraging a recession by tightening too quickly. The theory the Fed is following has to do with the concept of the "natural" or "neutral" Fed-funds rate, estimated to be 3%, where inflation is largely controlled. Fed policy is part of the canon of modern macroeconomics. A reason for optimism is that it is the same macroeconomic theory that saved the American economy from falling into a depression in 2008-2009. However, realistically, the risks of a tightening monetary policy in severely declining markets is unknown.

One of the most serious ongoing risks to the American economy has to do with the collusion by default, and occasionally by design, of major tech firms such as Facebook, Twitter, and Google, to facilitate divisiveness in American politics. Problems include ignoring the spread of misinformation, hoaxes, and abusive behavior; allowing Cambridge Analytica to gain access to the data of millions; not being forthcoming of failures for business reasons. While there are signs of increased acknowledgement of the issues and of the implementation of better monitoring technology for eliminating fake accounts and profiling activity, an unknown threat level persists for future elections.

Given the wide range of risks at home, the global economy sometimes seems relatively irrelevant. But there are huge risks in the European economies that can have a serious impact on the global economy. One uncertainty is whether Brexit will happen and if so under what conditions. Brexit may not be the negative factor many fear but it will no doubt alter trade patterns and precipitate economic disruption for some time to come. While the Fed is transitioning to hands-off monetary policy, Eurozone monetary policy is behind the curve while the economy remains in guarded health. There are political clouds in major Eurozone economies that make economic governance for the ECB far more difficult than it is for the Fed, as well as unresolved tariff issues with the Trump administration.

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DISCLOSURES: Past performance does not guarantee future results. As market conditions fluctuate, the investment return and principal value of any investment will change. Diversification may not protect agains market risk. There are risks involved with investing, including possible loss of principal.

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