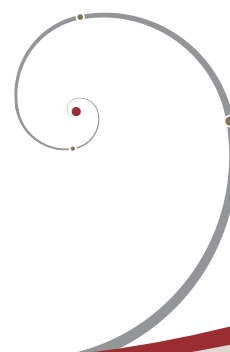


A reprinted article from Volume 14, Number 2, 2013

THE JOURNAL OF  
**Investment  
Consulting**

# **Endogenous Risk and Dangers to Market Stability**

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# Endogenous Risk and Dangers to Market Stability

By Jim Pasztor, MSF, MPAS<sup>SM</sup>, CFP<sup>®</sup>

## Abstract

Various methods and models can quantify risks and try to predict future correlations. However, the flaw with any given financial model is that certain assumptions must be made, and when the market deviates too much from these assumptions, then the model falls apart. Under traditional valuation methods, risk is divided into systematic and unsystematic risk. But there is another way to look at risk, and that is whether it is exogenous or endogenous. Exogenous risk represents risks found outside the financial system, and it is taken into account when doing fundamental analysis. Endogenous risk, on the other hand, is the risk found within the financial system itself. This type of risk is the most dangerous, and it is often overlooked or not taken seriously enough by advisors and financial planners. Endogenous risk comes from aberrations and shocks that are generated within the financial system itself and ripple through the financial markets. It can cause extreme volatility (and losses) for investors and lead to behavior that may not be in the best interest of a client, namely selling when prices are depressed.

The number of events occurring because of endogenous risk is increasing, which should be a source of concern. The emergence of financialized capitalism, the increase in speculation and decrease in investing, the growth of derivatives and use of leverage, the practice of shadow banking and lack of transparency, and the existence of institutions that are “too big to fail” all increase the likelihood of an endogenous event. Given the potential impact of endogenous risk, and the threat it poses, it should be taken into account when putting together financial plans and constructing client portfolios.

## Introduction

Wall Street is constantly trying to quantify risk because, if risk is done right, then fortunes can be made. Billions have been, and still are, being made using sophisticated formulas and valuation techniques to find market anomalies and arbitrage opportunities. The flip side, though, is that investors have been subjected to increased volatility and uncertainty.

Being able to quantify risk, and thus control it and profit from it, is one of the attractions of modern portfolio theory. Unfortunately, financial models and formulas can give market participants an idea of what the future may hold, but not a guarantee. Often when a model works for awhile it gives its creators a false sense of security. Markets in the future will not necessarily behave as they have in the past, so extrapolating future risks, returns, and correlations based upon

past data will always be suspect. For example, correlations between assets change over time and are especially volatile in the short term; they increase dramatically in rapidly declining markets, just when the benefits of diversification are needed most. Coaker (2006), writing about the volatility of correlations concludes, “Rather than rely on historical correlations, a more comprehensive and dynamic approach is needed in making asset allocation decisions.”

Recent examples of the dangers of overconfidence include Long-Term Capital Management (LTCM), which had two Nobel prize-winning academics helping to develop trading strategies: Harvard’s Robert C. Merton and Stanford’s Myron Scholes, who is famous for the Black-Scholes model for valuing options. Overconfidence in being able to quantify risk led to LTCM’s dramatic downfall in 1998. But apparently the lesson was lost, because confidence in being able to quantify risk ran high once again before the 2008 meltdown—so high, in fact, that prominent individuals boasted about how seemingly infallible quantifying risk had become. “We have a wealth of information we didn’t have before. We understand and can price risk,” stated Joe Anderson, a Countrywide executive, in a 2005 *BusinessWeek* interview (Farzad et al. 2007). Erin Callan, who was the chief financial officer of Lehman Brothers at the time, stated in 2008 (just before Lehman’s collapse) that the company had industry veterans in the executive suite that had perfected the science of risk management (Benabou 2009). When everything began to unravel Countrywide had to be absorbed by Bank of America, and Lehman Brothers, a firm founded in the 1850s, went into bankruptcy. The type of risk that was not factored into their computations—and the risk that was responsible for their downfall—was endogenous risk.

## What is Endogenous Risk?

Endogenous risk is risk within the financial system itself that recognizes that financial markets may not behave normally due to a change in behavior of the market participants. Exogenous risk, on the other hand, is any risk generated outside of the financial system, such as from an earnings report or an earthquake. Either may impact a stock or the market, but exogenous risk is an outside event that is influencing the price of a stock or the level of the market, not something that was generated from inside the financial system itself.

Danielsson and Shin (2002) from the London School of Economics provide a good analogy of how endogenous risk works. Using an example of the opening of the Millennium Bridge built over the River Thames, the authors recount how

engineers designed the bridge to hold the weight of thousands of pedestrians, so they never anticipated any problem on dedication day. However, once the crowd assembled, a gusty wind hit the bridge and it began to wobble. Then everyone on the bridge changed stance at the same time to adjust to the wind, and the bridge swayed more violently and some people even got ill. What the bridge engineers had not counted on nor planned for was for everyone behaving in the same way at the same time; they assumed that whoever was on the bridge at any given time would be moving randomly relative to anyone else on the bridge. This is analogous to market participants buying and selling under typical conditions. But what happens when they all want to sell at the same time? Fear, panic, similar behavior, and rapidly declining asset prices.

Markets are not random, unlike a coin flip. With a coin flip, any given toss has a 50/50 chance of being heads or tails. A reliable model could be built around this because every toss is independent of another. However, a dramatic price change in the market will affect how traders and market participants react and behave the next day, such as in the case of panic selling, which can then result in even more selling the following day. No matter how sophisticated a formula or model may be, it does not take into account the human factor; it assumes markets fall within certain parameters (such as a certain amount of volatility), and even though this may be accurate most of the time, it fails to pick up the outliers that cause the endogenous events.

### Historical Examples of Endogenous Risk Events

Three examples of recent events representing endogenous risk are examined here:

- the 1987 market crash
- the 1998 Long-Term Capital Management crisis
- the 2008 financial crisis

#### 1987 Market Crash

This was the U.S. economy's first major post-World War II event tied to endogenous risk. The beginning of computing power had enabled Wall Street to invent program trading, an automated approach to buying and selling large amounts of assets based upon trigger points and prices. Another popular concept at this time was "portfolio insurance"—the belief that by having electronic stop orders in place, one could protect a portfolio in a declining market. However, this concept was based upon an orderly market, and it assumed there always would be a large number of both buyers and sellers; in other words, it assumed everyone wouldn't be selling at the same time. It also assumed that prices would move down in an orderly fashion without any significant price gaps. This was not the case on Black Monday, October 19, 1987, when the Dow Jones Industrial Average dropped 22.6 percent in one day.

One theory about the 1987 crash holds that as prices continued to fall (they had already declined the previous

Thursday and Friday), stop orders were being hit, which then resulted in more stop orders being hit, creating a domino effect as both program trades and investor panic set in. This is an example of a ripple effect occurring within the financial system itself. Exogenous events may have contributed to the selling pressure, but the speed and temporary collapse of the market was endogenous in nature. Some investors and speculators placed orders on Black Monday but did not get confirmations back until days later. Many market makers during the crash did not answer their phones, and the electronic trading systems in place at the time could not handle the volume. More than 604 million shares traded on the NYSE that day, shattering previous records.

An account from the *Washington Post* (Behr and Vise 1987) on the day following Black Monday stated:

John Phelan, chairman of the NYSE, called the collapse a near "meltdown" caused by a confluence of factors: the market's inevitable turnaround after its long climb, heightened anxieties over rising interest rates and future inflation, and the impact of computerized trading maneuvers.

In other words, there were mostly sellers and few buyers, creating a tremendous ripple effect throughout the financial markets as lower prices triggered and resulted in more selling. This was the first major endogenous event of the computer age. Yale University economics professor Robert Shiller told the *Wall Street Journal* after the crash, "The efficient market hypothesis is the most remarkable error in the history of economic theory" (Lowenstein 2011, 74).

#### 1998 Long-Term Capital Management Crisis

The second major endogenous event occurred in 1998, when a leveraged hedge fund, Long-Term Capital Management (LTCM), found itself on the wrong side of many trades and ultimately had to be bailed out by the consortium of banks and investment firms that had loaned it money and allowed it to become overleveraged. This was an endogenous event that could have been much worse without intervention by the Federal Reserve. The Fed did not provide any funds, as it would later in the 2008 financial crisis, but it did bring the parties together and pressure them to find a solution or risk a vicious cycle of selling and forced liquidations—what Federal Reserve Board Chairman Alan Greenspan referred to at the time as "a seizing up of markets" (Lowenstein 2011, 195).

LTCM's principals believed strongly in the firm's financial models, and they felt comfortable leveraging capital about 25- or 30-to-1 (not counting the derivatives they controlled). This was to increase to 100-to-1 right before the bailout. Based upon its Value-at-Risk models, LTCM had come up with a maximum daily loss possible of \$35 million, yet in a single day in August 1998 the fund lost \$553 million. The Russian bond restructuring (in effect a default) during this time was an exogenous event that impacted the markets and LTCM, and,

along with problems in Asia and Brazil, caused credit spreads to widen substantially out of historic ranges. LTCM was losing money on both sides of the spread: The riskier securities it owned were declining in price, and the government securities it was short (to hedge the long positions) were rising in price. This was because of a flight to quality caused by all the uncertainty in the world debt markets at the time. LTCM's models considered the likelihood of what ultimately happened to be unthinkable high. For even a 50-percent loss, LTCM's models estimated that "the firm would have to wait until 10-to-the-30th days—several billion times the life of the universe—to experience that kind of a loss" (Kolman 1999).

Even though exogenous events such as the Russian debt default were occurring at this time, an endogenous event also was rippling through the financial markets. World stock and bond markets were spooked by what was happening, and forced selling was occurring because of the leverage of firms such as LTCM. Also, as LTCM scrambled to raise more capital to avoid a bailout, other Wall Street firms became aware of their positions and were selling against them. "LTCM became the victim of a classic squeeze by the arbitrageurs it competed with. The drama of Wall Street sharks eating one of their own is chronicled in (Michael) Lewis's *Times* article. According to Lewis, many Wall Street firms got out in front of LTCM's positions and made bundles of money—including AIG, which was trying to weaken LTCM's positions so it could buy its portfolio on the cheap" (Kolman 1999).

Much of the LTCM story remained out of the public spotlight, and many investors had little, if any, knowledge of what really happened. But without the bailout infusing fresh capital into LTCM, a meltdown in world debt and equity markets may have occurred. The LTCM story provided a harbinger of what was to come just ten years later.

### 2008 Financial Crisis

The 2008 financial crisis is the most destructive and unnerving endogenous event of the three. An analysis by Dutta (2010, 2) in the College for Financial Planning's Advanced Professional Development Series observes:

In the United States, two mortgage giants, Fannie Mae and Freddie Mac, were both taken over by the government. One of the largest investment banks, Lehman Brothers, failing to find a buyer, declared bankruptcy. Merrill Lynch, another large investment bank, was sold to Bank of America; and American International Group (AIG) was saved by an infusion of \$85 billion of federal money. Soon after, J.P. Morgan Chase agreed to buy the assets of Washington Mutual after the biggest bank failure in U.S. history. These failures and buyouts caused a crisis of confidence that made banks reluctant to lend money among themselves and to others. The channels of credit, the life blood of the financial system, had been constricted, cutting off vital funds to consumers and businesses.

Various reasons have been given for this crisis. A bubble occurred in housing prices from the mid-1990s through 2006 because of easily available credit, and a correction was inevitable. Weakening of credit standards led to loans being made without any verification, so-called "liar loans." Then these risky loans were sliced up, repackaged, and sold to unsuspecting investors who were eager to buy because they were rated AAA by rating agencies that in hindsight were major contributors to the financial crisis. Another cause was the increased amount of risk banks took on after Congress repealed the Glass-Steagall Act in 1999. This act had separated investment banks from commercial banks since 1933, and historically commercial banks were not meant to be high-risk ventures, which they increasingly became in the 2000s. After the repeal of Glass-Steagall, the major investment banks, which previously had been structured as partnerships, went public. This meant that ultimate financial risk was not being borne by the partners, who were more careful when it was their own money, but rather by the shareholders (and ultimately the taxpayers). This led to oversized bets and ultimately privatized profits and socialized losses (i.e., taxpayer bailouts).

Derivatives, such as credit default swaps, were also a major cause of the 2008 crisis. Used to hedge or speculate against a particular credit risk, the volume of credit default swaps outstanding increased one-hundredfold during 1998–2008, and total notional value of over-the-counter derivatives rose to \$683 trillion by June 2008, according to the Bank for International Settlements (BIS 2013). (This amount fell to \$595 trillion as of June 2009, but shot back up to \$708 trillion as of June 2011.) Faulty valuation models did not take into account what would happen if entire groups or types of derivatives or investments were to suddenly no longer be marketable because of an absence of buyers. This was considered to be next to impossible, so it was not even considered (although LTCM ten years earlier had encountered severe liquidity problems with derivatives that it had held). In hindsight, it appears that many firms did not have any sort of handle on the amount of risk they were taking. For example:

Lehman's Board of Directors was inexperienced at overseeing a diversified investment bank holding company. Only one outside member had any background in the financial sector. The Board failed to put any brakes on an expanding portfolio of commercial real estate and increasingly toxic securities. Between 2000 and 2007 the so-called risk committee met only twice a year yet the Board awarded total remuneration of close to \$500 million to Chairman [Richard S.] Fuld. Four days before its collapse and following an announcement that the firm lost almost \$4 billion in the third quarter, Fuld told the media that "the Board's been wonderfully supportive" (Ryback 2010, 8).

World stock markets declined dramatically in 2008; the S&P 500 index was down 37 percent, the MSCI EAFE index

was down 45.1 percent, and the MSCI Emerging Markets index was down 54.5 percent. As credit markets froze (an event rippling through the system—an endogenous event) there was a flight to quality, and many sellers and few buyers. Also, just as with the program trading in the Black Monday crash, as prices decreased stop orders were being triggered and orders executed, which then brought on more selling. As the value of portfolios fell, especially the leveraged ones, more assets had to be sold because of the need to raise money, and stocks were the easiest to sell. It became a vicious downward spiral. Even the commercial paper market, which involves some of the largest and highest-rated corporations, became frozen and the Federal Reserve had to step in to provide liquidity, something it had never done in the past.

The markets have experienced a major endogenous event once in each of the past three decades. Rather than an endogenous event being highly improbable, it is highly improbable that an endogenous event won't happen. John Bogle (2005, 13), founder of the Vanguard funds, states: "We simply do not know what the future holds, and we must accept the self-evident fact that historic stock market returns have absolutely nothing in common with actuarial tables. The past is history; the future's a mystery."

### Reasons Why Endogenous Risk is Increasing

It is no coincidence that we have seen three major endogenous events within the past twenty-five years, because the financial climate has become more favorable for endogenous events. Stating that there is a high chance of an endogenous event just because several have occurred recently, however, is falling into the trap of trying to predict the future based on past data. One needs to look at other factors to determine the chances of a future endogenous event, and the following factors point toward its likelihood of happening again sooner rather than later:

- the emergence of a new financialized capitalism
- the increase in speculation and decrease in investing
- the increase in derivatives and use of leverage
- shadow banking and lack of transparency
- the problem of "too big to fail" (TBTF)
- the pace of change is accelerating

### Emergence of a New Financialized Capitalism

A major shift occurred in the United States after the election of President Ronald Reagan in 1980. This was the beginning of financialization, a term used to describe financial wealth being separated from real wealth or the production of goods and services. Bresser-Pereira (2010, 7) pointed out in his working paper, "The Global Financial Crisis and a New Capitalism":

In the 1970s the whole picture changed as we saw the transition from the 30 glorious years of capitalism (1948–77) to financialized capitalism or finance led capitalism—a mode of capitalism that was intrinsically

unstable. While the golden age was characterized by regulated financial markets, financial stability, high rates of economic growth, and a reduction of inequality, the opposite happened in the neoliberal years: rates of growth fell, financial instability increased sharply and inequality increased, privileging mainly the richest two percent in each national society.

Neoliberalism was fed on two fronts: deregulation, by liberalizing laws already in place, such as repealing Glass-Steagall; and the decision not to regulate new financial innovations, such as derivatives like credit default swaps. The thinking was that government just got in the way, so the goal was to reduce its size and influence as much as possible.

The results of neoliberalism and financialization are telling. Essentially, through risky innovations, the financial system, which is made up of banks and financial investors, was able to create artificial financial wealth that enabled those involved to capture an increased share of real wealth, and this wealth was concentrated in the richest 1–2 percent of society. In 1930 the richest 1 percent controlled 23 percent of total disposable income; in 1980 (after the thirty years of "glorious capitalism") this share had fallen to just 9 percent, but by 2007 it had gone back up to 23 percent (Bresser-Pereira 2010, 30).

The United Nations Conference on Trade and Development (2009, iii) sums it up this way in the publication *The Global Economic Crisis: Systemic Failures and Multilateral Remedies*:

Market fundamentalist laissez-faire of the last 20 years has dramatically failed the test. Financial deregulation created the build-up of huge risky positions whose unwinding has pushed the global economy into a debt deflation that can only be countered by government debt inflation. The most important task is to break the spiral of falling asset prices and falling demand and to revive the financial sector's ability to provide credit for productive investment, to stimulate economic growth and to avoid deflation of prices. The key objective of regulatory reform has to be the systematic weeding out of financial sophistication with no social return.

In recent years, even though the financial sector contributed just 20 percent to gross domestic product, it reaped 40 percent of corporate profits (Nersisyan 2010, 5). Financial shenanigans and engineering just for the sake of making money and not creating something of value have become commonplace, and it contributes to the instability of the financial system and thus to increased endogenous risk.

This is happening in part because managers and financial intermediaries are taking a greater share of the returns (even though it is the owners who are taking the risk by providing the capital). One example among many is the aforementioned compensation of \$500 million to Lehman Brothers' Fuld. Bogle (2005, xix) writes:



Today's capitalism, however, has departed, not just in degree but in kind, from its proud traditional roots. Over the past century, a gradual move from owners' capitalism—providing the lion's share of the rewards to those who put up the money and risk their own capital—has culminated in an extreme version of managers' capitalism—providing vast disproportionate rewards to those whom we have trusted to manage our enterprise in the interest of the owners. Managers' capitalism is a betrayal of owners' capitalism, a system that worked, albeit imperfectly, with remarkable effectiveness for the better part of two centuries, beginning with the Industrial Revolution as the eighteenth century turned to the nineteenth.

This shift has major implications for investors, who are the owners. Managers' capitalism means that corporations are being run primarily to benefit the managers, and not the shareholders (owners). According to author and syndicated columnist William Pfaff, a "pathological mutation" occurred late in the twentieth century, and the classical system of trying to maximize return on capital is broken; the markets have so diffused ownership "that no responsible owner exists" (Bogle 2005, 7). Bogle cites many "gatekeepers" who have not done their jobs: directors, accountants, regulators and legislators, and the financial community itself. There are numerous examples of failures: directors not keeping executive compensation under control, accountants allowing mischief such as "pro forma earnings," legislators bowing to the managers of corporations (for example, convincing the U.S. Congress not to require stock options to be expensed in corporate earnings statements), and, finally, the financial community itself. Analysts overwhelmingly have buy recommendations and essentially become marketing arms of their organizations. "They set aside their education, their training, their skepticism, their independence, their responsibility, their duty, and often their integrity, accepting, if not aiding and abetting, the financial shenanigans" (Bogle 2005, 38). Institutional owners of shares, such as pension funds and mutual funds, need to look out for the shareholder's best interests and be aggressive and vocal on their behalf. An unattributed quote cited by Bogle sums up what happens when managers' capitalism takes over: "When we have strong managers, weak directors, and passive owners, don't be surprised when the looting begins."

In the mid-1970s the wealthiest 1 percent of Americans owned about 18 percent of the nation's financial wealth. By the end of the twentieth century this has leaped to 40 percent, the highest share since the age of the Robber Barons, when it was about 45 percent at the turn of the previous century. This is not a stable situation. Bogle warns that "a society that tolerates such differences in income and wealth is a society that faces long-term disruption" (Bogle 2005, 7). And such disruptions increase the likelihood of an endogenous event.

### Increase in Speculation and Decrease in Investing

Warren Buffett takes the approach that many investors used to take, buying with the intention to hold for many years: "I buy with the assumption that they could close the market the next day and not reopen it for five years," he has said (StocksAtBottom.com 2011). However, speculation, rather than investing, is often found in the United States, from electronic trading in the stock market, to casinos and lotteries found in many states.

Despite the elementary mathematics that guarantee the superiority of investment over speculation, today we live in the most speculative age in history. When I first came into the financial field in 1951, the annual rate of turnover was running at about 25 percent. It would remain in that low range for the better part of two decades, then gradually rise above 100 percent in 1998, approaching the record 143 percent turnover rate of the late 1920s. Yet by last year (in 2008) stock turnover had shot up another two times over. Turnover soared to 215 percent, and to 284 percent if we add in the staggering amount of speculation in exchange-traded-funds (ETFs) (Bogle 2009, 56).

High-frequency trading (HFT) is another example of the decline in investing, and is much more prevalent than most people in the financial services industry realize. High-frequency trading uses very sophisticated proprietary trading platforms that employ a combination of secret algorithms and the fastest computers available. The computers absorb and analyze massive amounts of news and market data, and then execute trades that are timed to the millisecond. In 2009, it was reported that high-frequency trading firms, though representing just 2 percent of the approximately 20,000 trading firms operating in the United States, accounted for 73 percent of all U.S. equity trading volume (Iati 2009). According to Morgan Stanley's Quantitative and Derivatives Strategy Group in 2011, the proportion of "real money" and institutional investor trades accounted for just 16 percent of the total market volume in the form of buying (meaning 84 percent was HFT), and 13 percent for selling (meaning 87 percent was HFT). "Real money" refers to buy and sell orders from mutual funds, hedge funds, pensions, and brokerages (Demos 2012). Economist Hyman Minsky believed that it is important to make industry more important than speculation, and if investment is misdirected, then we are not only wasting resources, but also creating an environment of booms and busts (Levy Economics Institute 2012, 26).

Increased turnover means less stability, but Wall Street makes more money with more transactions. Intermediation costs are extremely high for investors. Bogle estimates that on average \$400 billion per year is deducted before passing the remainder on to investors (Bogle 2005, 213).

### Increase in Derivatives and Use of Leverage

Derivatives are relatively new to the financial landscape, and their use has exploded. Established initially to hedge risk, they also can be used to speculate and to leverage bets. Credit default swaps totaled \$920 billion at the end of 2001 and grew to more than \$62 trillion at the end of 2007 (Salmon 2009). Much of this growth in derivatives was due to David X. Li, who created a formula known as the Gaussian copula function that modeled the risks of derivatives. This formula enabled quants and financial firms to allegedly price risk and create scores of derivative products. The formula was widely adopted by Wall Street banks, rating agencies, and regulators. However, the model fell apart completely in 2008 when correlation assumptions didn't hold up. Suddenly, firms were all heading for the exit at the same time (Salmon 2009).

Market share of derivatives is very highly concentrated, with 97.76 percent of the gross notional derivative value found in the top sixteen financial institutions, and 53.35 percent of the gross notional derivative value found in just the top five financial institutions (Markose 2012, 11, 51).

Markose (2012, 47–48) concludes:

The global derivatives markets, despite considerable compression of bilateral positions, are unstable and they can bring about catastrophic failure. Quite simply, a threat of failure to any of the Systematically Important Financial Institutions is an immediate threat to the others. The network topology where the very high percentage of exposures is concentrated among a few highly interconnected banks implies that they will stand and fall together. This topological fragility of the derivatives markets as risk sharing institutions has an implicit moral hazard problem that undermines their social usefulness.

The growth of derivatives has created several problems that can magnify endogenous risk. The sheer size of the market can impact the global markets. For example, if a firm has a losing derivative position, it may have to sell other assets, such as stocks or bonds, to remain solvent. This then has a ripple effect throughout the markets. Another problem can be counterparty risk. A firm may have hedged its position with derivatives purchased from another firm, but if that firm goes bankrupt or is not able to make the promised payments, then the hedging has not worked. This happened in 2008, when various firms were unable to meet all of the derivative obligations they had entered into with other firms. Overuse of derivatives also can be a problem, resulting in too much leverage that can impact not only the firm that has entered into the derivative contracts, but also the financial system itself as other trades occur as a result.

A paper published by the Research Foundation of CFA Institute (Kaplan et al. 2009, 159) offers the following policy recommendations:

To prevent a repeat of the same type of crisis in the future, we believe that more comprehensive regulation of the financial system is necessary. This does not mean that we advocate red tape but that supervisors must guarantee transparency and limit leverage. Moreover, this regulation should not be limited to banks but should also apply to insurance companies, investment banks, other nondepository financial institutions, and holding companies.

When market participants realized that a crash was imminent, they tried to sell all risky assets to take refuge in safe investments, such as short-term government bonds. The leading risk models used by most participants did not consider this possibility. As a result, we believe that risk models must consider scenarios of a sudden flight to quality, and financial analysts should consider this kind of risk when building portfolios and developing their risk models. Moreover, we believe that some aspects of the financial infrastructure, such as the derivatives market, need reform. In particular, a reduction of over-the-counter derivatives transactions would lead to a more transparent and safe financial sector.

The appetite for financial regulatory reform has declined substantially, and many of the reforms found in the Dodd-Frank Wall Street Reform and Consumer Protection Act have yet to be implemented. In fact, as of July 15, 2013 (the three-year anniversary of the passage of Dodd-Frank), regulators had finalized just 40 percent of the required rulemaking found in the bill (158 completed out of the 398 required). In the three years since the passage of Dodd-Frank, we have seen the 848-page bill expand into 13,789 pages of regulation. Most deadlines required within the first year were missed, and even after three years bank regulators have missed 69 percent of their deadlines, the U.S. Commodities Futures Trading Commission has missed 31 percent of its deadlines, and the Securities and Exchange Commission has missed 63 percent of its deadlines for finalizing rules (Davis Polk 2013). Barring the actual implementation of understandable and enforceable regulatory reform, endogenous risk remains high.

### Shadow Banking and Lack of Transparency

Shadow banking and lack of transparency are another destabilizing factor that increases endogenous risk. Shadow banking occurs under the radar of traditional bank regulation, and “operates in the shadows without backstopping from the Fed’s discount lending window or access to FDIC deposit insurance” (McCulley 2009, 257). With shadow banking, bankers essentially become “nonbank bankers” and leverage their lending with activities such as running hedge funds and investment banks.

Hyman Minsky, a visionary professor and economist, divided debt into three units: hedge units (meaning an institution can fulfill all of its obligations with its cash flows), speculative units (meaning the institution can meet its obligations on the income side but cannot repay principal out of cash flows, requiring that the principal would need to be rolled over, so new debt would have to be issued to meet commitments on maturing debt), and Ponzi units. Ponzi units occur when cash flows are not sufficient for either interest or principal payments, so either additional borrowing needs to occur or assets need to be sold. Minsky came up with the “financial instability hypothesis,” observing that when there is stability in the present day capitalists have a herding instinct that makes them extrapolate stability into the indefinite future, so they introduce ever-more-risky debt structures, which eventually leads to the Ponzi units (McCulley 2009, 260). Once this happens, there needs to be a deleveraging process to bring stability back to the financial system, and this is what has been occurring since 2008. This flux within the banking system itself is endogenous in nature.

In his book *Stabilizing an Unstable Economy*, Minsky (2008, 281) writes that regulators play an important role in keeping financial institutions in check:

In a world of businessmen and financial intermediaries who aggressively seek profit, innovators will always outpace regulators; the authorities cannot prevent changes in the structure of portfolios from occurring. What they can do is keep the asset-equity ratios of banks within bounds by setting equity-absorption ratios for various types of assets. If the authorities constrain banks and are aware of the activities of fringe banks and other financial institutions, they are in a better position to attenuate the disruptive expansionary tendencies of our economy.

Barring substantial reform of the amount of capital needed relative to the amount of leverage or derivatives a financial institution may have, endogenous risk will be high.

### Too Big to Fail (TBTF)

Another contributor to endogenous risk is the moral hazard created by too-big-to-fail (TBTF) financial institutions. A moral hazard occurs when an institution or individual is insulated from risk, which then results in a change in behavior. If managers running a bank believe that the government will bail them out no matter what happens, they will then take on more risk. Several major financial firms and banks were helped by the U.S. government in the 2008 credit crisis, and without this help they would have failed. Since then Washington has not broken up these large financial institutions—in fact, they have been allowed to get even larger. The book *13 Bankers: The Wall Street Takeover and the Next Financial Meltdown* by Simon Johnson and James Kwak (2010) reports on the

crisis and its aftermath. Johnson and Kwak (2010) report that at least six banks were TBTF at that time: Bank of America, JPMorgan Chase, Citigroup, Wells Fargo, Goldman Sachs, and Morgan Stanley.

Hard limits on the size of financial institutions have a precedent. Since 1994, the United States has had a rule prohibiting any single bank from holding more than 10 percent of total retail deposits—an arbitrary cap designed to prevent any one entity from becoming too central to the financial system. This rule had to be waived in 2009 for JPMorgan Chase, Bank of America, and Wells Fargo, demonstrating how recent growth and consolidation have rendered our previous safety measures obsolete (Johnson and Kwak 2010, 214).

Johnson and Kwak cite three major problems that develop for society when a financial institution is too big to fail. First, an institution that fails requires a government bailout, which means that the taxpayers are paying for it. Second, if the institution believes that it is TBTF then this creates a moral hazard and the institution has a strong incentive to take on excess risk. This problem only gets worse over time. Finally, TBTF institutions are bad for competition and the economy. Bond investors realize that the TBTF institution has an implicit government guarantee, so this makes their cost of capital less than other less-large banks. Baker and McArthur (2009), in a brief published by The Center for Economic and Policy Research, reported on the spread between the cost of funds for small banks and the cost of funds for large banks:

The spread between the average cost of funds for smaller banks and the cost of funds for institutions with assets in excess of \$100 billion averaged 0.29 percentage points in the period from the first quarter of 2000 through the fourth quarter of 2007, the last quarter before the collapse of Bear Stearns. In the period from the second quarter of 2009, after the government bailouts had largely established TBTF as official policy, the gap widened to an average of 0.78 percentage points.

The “Big Five” banks—JPMorgan Chase, Bank of America, Citigroup, Wells Fargo, and Goldman Sachs—had more than \$8.5 trillion in assets at the end of 2011, which was equal to 56 percent of the U.S. economy. This was up from 43 percent five years earlier (Lynch 2012). It is readily apparent that institutions that were TBTF during the 2008 meltdown have become even larger; as Downie (2012) pointed out in the *Washington Post*, “too big to fail” also has become “too big to indict.” Hu (2012) concludes that some banks today are even “too complex to depict.” Tett (2012) of the *Financial Times* states:



If you want a reason to break up the banks, you do not need to worry just about “too big to fail”; the real danger today is that financial institutions and markets are becoming “too big to understand”—and thus need to be shrunk and simplified.

Increased complexity and size enables banks to take on more risk and essentially bury their activities within the bank while providing generous bonuses and compensation packages to traders and executives. This is not a stable situation and increases endogenous risk.

These problems point to a curious paradox at the heart of modern financial risk management: the more sophisticated the system, the more unreliable it might be. Increased sophistication means greater complexity (and so greater scope for error), less transparency (making errors harder to detect), and greater dependence on assumptions (any of which could be wrong) (Dowd 2009, 148).

The popularity of indexing is part of the problem, and in many ways we have allowed ourselves to be duped by the efficient market hypothesis, which assumes that, among other things, we have an open and competitive market that is transparent and fair. The 2008 meltdown illustrated that many investors (and advisors) were unaware of much of the goings-on. If everyone passively invests in the market, then there is no overriding discipline or accountability. Companies are purchased just because they are big and in an index, not necessarily because they are well-managed or doing business fairly. The “Big Five” banks all have been in the news the past several years for various offenses and ethical lapses, and they are all in the S&P 500 index. Many index investors, including those with 401(k) accounts, hold these stocks and don’t even necessarily know it, or may know it but have limited options in their 401(k) plans. Even Warren Buffett, who has the respect of many investors and advisors, and spoke years ago of derivatives being “weapons of mass destruction,” is a major shareholder in Goldman Sachs and Wells Fargo, both of which use derivatives extensively. The reach of the financial services industry, led by the big banks, has become ever more pervasive over time.

### Pace of Change is Accelerating

The pace of change has been accelerating over time. The Industrial Revolution happened much faster than the Agricultural Revolution, and the Information Revolution has been faster even still. The World Wide Web was introduced just twenty years ago, and innovation continues at an ever-increasing rate. Assuming that the pace of tomorrow will be similar to the pace of today may be a mistake. Russell (1998, 158) writes in *Waking Up in Time: Finding Inner Peace in Times of Accelerating Change*:

[I]t seems more than probable that the pace of change will continue to quicken, and any predictions that we make are likely to materialize far faster than we anticipate. The implications of such sustained acceleration are quite staggering. The degree of progress that humanity has experienced in the two hundred years since the Industrial Revolution is similar to—possibly greater than—the degree of progress that occurred over the preceding two thousand years. This, in turn, was of a magnitude similar to or greater than the progress of the previous twenty thousand years. If rates of development continue to speed up, we could see such degrees of progress compressed into a few decades.

Only the future will tell what impact these rapid changes will have on our financial system. One concern, especially given that regulation has not and most likely will not keep pace with innovation, is whether we can maintain a reasonably stable financial system in the midst of accelerating change.

### Ramifications for Financial Planners and Investment Advisors

Advisors need to understand the role that endogenous risk plays in our financial system. They need to prepare individuals for the likely occurrence of endogenous events. The current financial landscape is not stable. Contrary to what many advisors tell their clients, namely that time reduces risk, “the risk that an adverse event will increase in severity grows with the length of the time horizon” (Bodie 2011). If endogenous risk is not taken into account, especially with individuals near or in retirement, then an unfortunate endogenous event could be catastrophic for the client. Even younger investors should not be fully invested, so that they can then take advantage of buying at low prices when an endogenous event occurs. Advisors can use past data to come up with probabilities (such as Monte Carlo), but as we learned in 2008 it doesn’t matter whether an outcome is highly improbable or not; the reality is that if it does happen, and we haven’t planned for it, clients pay the price.

The odds of an endogenous event have not decreased, and instead have actually increased. Financialized capitalism, the increase in speculation and decrease in investing, the increase in the amount of derivatives and use of leverage, the increase in shadow banking, the TBTF problem, and the rapid pace and acceleration of change all increase the possibility of another endogenous event sooner rather than later. As quoted earlier from a CFA Institute paper, “... risk models must consider scenarios of a sudden flight to quality, and financial analysts should consider this kind of risk when building portfolios and developing their risk models” (Kaplan et al. 2009, 159). The most likely trigger of a sudden flight to quality would be an endogenous event. Taking a lesson from LTCM, a client may be on target over the long run to meet certain goals, but he or

she must have the liquidity and staying power to get there. If too much depends upon leverage and/or the market (which one cannot control) to get somewhere, then there is a high level of risk that an endogenous event could derail the entire plan. Clients need to be advised to take two major steps to address endogenous risk: (1) proper cash and debt management and (2) a “barbell” approach to portfolio management that will help to control (but not eliminate) the risk.

### Proper Cash and Debt Management

It is important for advisors to educate clients about the possibility of an endogenous event and how it would impact a portfolio as well as lifestyle and future plans. Leverage needs to be under control and used wisely. An emergency fund (preferably for six months of living expenses) needs to be in place. Also, any planned expenses for the next five years that are not financed from other sources (such as a pension) should be in liquid investments. Consumption needs to be under control, and overconsumption (such as having too-big a house) is to be avoided. As history has shown us, one needs liquidity during an endogenous event, i.e., sufficient cash flow to ride out any disruption. Only after these basic cash and debt management criteria are met should an advisor move on to portfolio management.

### The Barbell Approach to Investing

The barbell approach calls for investing in both the short and long ends of the market, thus offsetting interest-rate and reinvestment-rate risk and helping to keep endogenous risk under control. The short end of the market includes cash/cash equivalents, short-term Treasuries, and low-duration bonds; the long end includes just about everything else—stocks, junk bonds, real estate, and commodities. In an endogenous event, the long end of the market would take the hit but the short end would remain stable. In between endogenous events the long end would be providing the lion’s share of returns.

Using Morningstar Principia Pro, the following is an illustrative barbell portfolio:

- 30-percent cash/cash equivalents (taxable money market proxy)
- 20-percent short-term bond index (Vanguard)
- 20-percent S&P 500 Index fund (Schwab)
- 15-percent real estate (Fidelity)
- 10-percent international stocks (EuroPacific)
- 5-percent emerging markets (Templeton)

Looking at returns through December 31, 2012, we have the following results (benchmark is the S&P 500) (see table 1).

Note that the Sharpe ratio is higher for all three time periods for the barbell portfolio rather than the benchmark. The five-year and ten-year returns take into account the 2008 meltdown year. Note that the risk, as measured by standard deviation, is substantially lower for the portfolio than the benchmark for all time periods, and that the five-year portfolio has a higher return than the five-year benchmark return, and this covers the turbulent years from 2008 through 2012. These numbers are not what the actual returns would be for the barbell portfolio, though, because one would rebalance the portfolio each year, or after a major market decline of 20 percent or more, to get back to the target percentages. After an endogenous event, the long side would hold less than 50 percent of the portfolio value and the short side would hold more. Sales on the short side and purchases on the long side then bring the portfolio back into balance. When the long side appreciates, sales would occur on the long side and purchases on the short side. This approach would keep the investor disciplined as well as buying low and selling high.

Short-side investments include insured savings accounts, certificates of deposit (FDIC or NCUA insured), and U.S. Treasury bills and short-term notes. Stable value funds carry some risk but may be the only option in some retirement accounts. Money market funds are also candidates, but they do have liquidity risk and may “break the buck” (i.e., fall below \$1 per share) during an endogenous event. Depending upon the interest-rate environment, some medium-duration Treasuries and bonds also may be included.

On the long side, active management is preferred over a passive approach with indexing, which supports behavior that makes endogenous events more likely. This entails investing directly in sound, well-run companies. Eliminating the middle man means fewer fees for the investor, and it also means the investor can limit investments to ones that meet certain criteria, such as companies that do business locally, or companies with strong stewardship by the owners (i.e., owners/shareholders—not managers—are in control). Other criteria could include reasonable executive compensation and perks, productive employees with low turnover, wise use of debt, etc. An advisor can help with choosing such companies, with the intent of holding ten to fifteen companies that are not highly correlated with each other for extended periods of time. If an advisor uses an

**TABLE 1: BARBELL VS. BENCHMARK**

	Three-year Portfolio	Three-year Benchmark	Five-year Portfolio	Five-year Benchmark	Ten-year Portfolio	Ten-year Benchmark
Standard Deviation	7.89	15.30	11.15	19.09	8.53	14.79
Mean	6.50	10.87	3.14	1.66	6.18	7.10
Sharpe ratio	0.83	0.75	0.30	0.16	0.54	0.42


Source: Morningstar Principia Pro as of December 31, 2012

outside money manager, then the money manager should make sure these criteria are met and ensure low turnover in the portfolio. With more securities held in strong hands that are not chasing the latest fad, our financial system will become more stable and there will be less endogenous risk. This would be reminiscent of our financial system fifty years ago, before all the day trading, hedge funds, and financial engineering occurring today.

The barbell approach also can be used in directed retirement accounts such as 401(k) plans. For individuals using target funds, only 60–70 percent of the retirement account should be invested in the target fund; the other 30–40 percent should be invested in the stable value and/or low-duration bond fund offering that the retirement plan offers. Other bonds will be in the target fund itself, hence the 30–40-percent short side of the barbell rather than 50 percent.

Advisors can make adjustments to the barbell approach depending upon other factors such as risk tolerance and time horizon. The important thing is to take endogenous risk into account when constructing portfolios. This inevitably will make the portfolio more conservative than it would have been if this dangerous risk were ignored. However, depending upon the timing of endogenous events, this more-conservative approach will not necessarily mean achieving a lower return; in fact, a higher return may be earned with lower risk. This will depend upon the client's time horizon. The longer the time horizon, the greater the likelihood of a significant endogenous event. Clients need to understand that they are running a marathon, not a sprint, and they need a rational approach to decades of investing. The beauty of this approach is that when an opportunity comes along, the client will be positioned to take advantage of it rather than just riding it out.

The barbell approach may have some perceived unfortunate side effects for some clients—namely, having to save more, work longer, adjust goals, and spend more wisely. But being fully invested with the expectation of higher returns also has unfortunate side effects. Traditional projections using linear returns derived from the long-term Ibbotson numbers or Monte Carlo projections and simulations run over various time horizons can set up the client with unrealistic expectations about how the markets will behave. As we have seen recently, we can experience long periods of time of extreme aberration from historical long-term returns. Investors must take the long view and be patient, while also making sure that they are positioned to take advantage of opportunities.

Advisors should be educators for their clients, and ignoring endogenous risk is in neither the client's nor the advisor's best interests. Barring substantial reform and changes, endogenous risk is an elephant in the room that will be with us for some time, and advisors and clients must acknowledge it and adapt to its presence. The silver lining for financial planners and investment advisors is that they are now needed more than ever—whether clients realize it or not. 

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## References

- Baker, D., and T. McArthur. 2009. The Value of the “Too Big to Fail” Big Bank Subsidy. Center for Economic and Policy Research (September). <http://www.cepr.net/index.php/publications/reports/too-big-to-fail-subsidy/>.
- Bank for International Settlements. 2013. Derivatives Statistics (updated May 8). <http://www.bis.org/statistics/derstats.htm>.
- Behr, P., and D. A. Vise. 1987. Stock Market Suffers Largest Loss in History. *Washington Post* (October 20). <http://www.washingtonpost.com/wp-srv/business/longterm/blackm/87oct.htm>.
- Benabou, R. 2009. Appendix A, Groupthink: Collective Delusions in Organizations and Markets (September). [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1352945](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1352945).
- Bodie, Z. 2011. The Long-Run Risk of Stock Market Investing: Is Equity Investing Hazardous to Your Client's Wealth? *CFA Institute Conference Proceedings Quarterly* 28, no. 2 (June). <http://www.cfapubs.org/doi/pdf/10.2469/cp.v28.n2.3>.
- Bogle, J. C. 2005. *The Battle for the Soul of Capitalism*. New Haven, CT: Yale University Press.
- . 2009. *Enough. True Measures of Money, Business, and Life*. Hoboken, NJ: John Wiley & Sons.
- Bresser-Pereira, L. C. 2010. The Global Financial Crisis and a New Capitalism? Levy Economics Institute of Bard College, working paper no. 592 (May). [http://www.levyinstitute.org/pubs/wp\\_592.pdf](http://www.levyinstitute.org/pubs/wp_592.pdf).
- Coaker, W. J. 2006. The Volatility of Correlation, Important Implications for the Asset Allocation Decision. *Journal of Financial Planning* 19, no. 2 (February): 58–69.
- Danielsson, J., and H. S. Shin. 2002. Endogenous Risk. Working paper, London School of Economics (September 21). <http://hyunsongshin.org/www/risk1.pdf>.
- Davis Polk. 2013 *Davis Polk Dodd-Frank Progress Report* (September 25). [http://www.davispolk.com/files/uploads/FIG/071813\\_DoddFrank.Progress.Report.pdf](http://www.davispolk.com/files/uploads/FIG/071813_DoddFrank.Progress.Report.pdf).
- Demos, T. 2012. “Real” Investors Eclipsed by Fast Trading. *Financial Times* Trading Room (April 24). <http://www.ft.com/intl/cms/s/0/da5d033c-8e1c-11e1-bf8f-00144feab49a.html#axzz2g6yvy1ZW>.
- Dowd, K. 2009. Moral Hazard and the Financial Crisis. *Cato Journal* 29, no. 1 (winter): 141–166. <http://www.cato.org/sites/cato.org/files/serials/files/cato-journal/2009/1/cj29n1-12.pdf>.
- Downie, J. 2012. “Too big to fail” becomes ‘too big to indict.’ *Washington Post* (December 11). <http://www.washingtonpost.com/blogs/post-partisan/wp/2012/12/11/too-big-to-fail-becomes-too-big-to-indict/>.
- Dutta, S. B. 2010. *Financial Crisis and the Great Recession of 2007–2009*. Greenwood Village, CO: College for Financial Planning.
- Farzad, R., M. Goldstein, D. Henry, and C. Palmeri. 2007. Not So Smart. *BloombergBusinessweek* (September 2). <http://www.businessweek.com/stories/2007-09-02/not-so-smart>.
- Hu, H. T. 2012. Too Complex to Depict? Innovation, ‘Pure Information,’ and the SEC Disclosure Paradigm. *Texas Law Review* 90, no. 7: 1,601–1,715.

- Iati, R. 2009. Algorithmic Trading: The Real Story of Trading Software Espionage. *Advanced Training* (July 10). <http://www.advancedtrading.com/algorithms/the-real-story-of-trading-software-espio/218401501>.
- Johnson, S., and J. Kwak. 2010. *13 Bankers: The Wall Street Takeover and the Next Financial Meltdown*. New York: Pantheon Books.
- Kaplan, P. D., T. Idzorek, M. Gambera, K. Yamaguchi, J. Xiong, and D. M. Blanchett. 2009. "The History and Economics of Stock Market Crashes" in *Insights Into the Global Financial Crisis. Research Foundation of CFA Institute* 2009, no. 5 (December): 132–169.
- Kolman, J. 1999. LTCM Speakers. *DerivativesStrategy.com* (April). <http://www.derivativesstrategy.com/magazine/archive/1999/0499feaf753.asp?print>.
- Levy Economics Institute. 2012. *Beyond the Minsky Moment: Where We've Been, Why We Can't Go Back, and the Road Ahead for Financial Reform* (April). Levy Economics Institute. [http://www.levyinstitute.org/pubs/ebook\\_2012.pdf](http://www.levyinstitute.org/pubs/ebook_2012.pdf).
- Lowenstein, R. 2011. *When Genius Failed, The Rise and Fall of Long-Term Capital Management*. New York: Random House.
- Lynch, D. 2012. Big Banks: Now Even Too Bigger to Fail. *BloombergBusinessweek* (April 19). <http://www.businessweek.com/articles/2012-04-19/big-banks-now-even-too-bigger-to-fail>.
- Markose, S. 2012. Systematic Risk from Global Financial Derivatives: A Network Analysis of Contagion and Its Mitigation with Super-Spreader Tax. International Money Fund, working paper 12/282. <http://www.imf.org/external/pubs/ft/wp/2012/wp12282.pdf>.
- McCulley, P. 2009. "The Shadow Banking System and Hyman Minsky's Economic Journey," in *Insights Into the Global Financial Crisis by the Research Foundation of CFA Institute* 2009, no. 5 (December): 257–268.
- Minsky, H. P. 2008 (1986). *Stabilizing an Unstable Economy*. New York: McGraw Hill.
- Nersisyan, Y. 2010. The Global Financial Crisis and the Shift to Shadow Banking. Levy Economics Institute of Bard College, working paper no. 587 (February). [http://www.levyinstitute.org/pubs/wp\\_587.pdf](http://www.levyinstitute.org/pubs/wp_587.pdf).
- Russell, P. 1998. *Waking Up in Time: Finding Inner Peace in Times of Accelerating Change*. Novato, CA: Origin Press.
- Ryback, W. 2010. Lehman Brothers: Too Big to Fail? Toronto Leadership Centre (March). <http://siteresources.worldbank.org/FINANCIALSECTOR/Resources/J3-LehmanBrothersCaseStudy.pdf>.
- Salmon, F. 2009. Recipe for Disaster: The Formula That Killed Wall Street. *Wired Magazine* (February 23). [http://www.wired.com/techbiz/it/magazine/17-03/wp\\_quant?currentPage=all](http://www.wired.com/techbiz/it/magazine/17-03/wp_quant?currentPage=all).
- Tett, G. 2012. The banks that are too complex to exist. *Financial Times* (June 7). <http://www.ft.com/cms/s/0/65281562-b0c1-11e1-a2a6-00144feabdc0.html#axzz2aXBOH9f4>.
- United Nations. 2009. Executive Summary in *The Global Economic Crisis: Systematic Failures and Multilateral Remedies*. [http://unctad.org/en/Docs/gds20091overview\\_en.pdf](http://unctad.org/en/Docs/gds20091overview_en.pdf).

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