

PERSPECTIVES

Black Monday and Black Swans

John C. Bogle

The 20th anniversary of what came to be known as “Black Monday”—19 October 1987—provides a memorable platform for considering, yet again, the role of risk in our financial markets. On that single day, the Dow Jones Industrial Average dropped from 2,246 to 1,738, an astonishing decline of almost 25 percent, nearly twice the largest previous daily decline of 13 percent. The 13 percent decline, which took place on 24 October 1929—known as “Black Thursday”—proved to be a distant early warning that the Great Depression lay ahead.¹

From its earlier high in late August 1987 until the stock market at last closed on that fateful Black Monday, some \$1 trillion was erased from the total value of U.S. stocks. The stunning decline shocked nearly all market participants, although some veterans were not surprised. For example, Alan (“Ace”) Greenberg, former chairman of Bear Stearns Companies, was quoted in the newspapers as saying, “So markets fluctuate. What else is new?” And only a year before Black Monday, I observed to the Vanguard crew that even a 100-point decline in the Dow—something that had never before occurred—was possible. Why? Because in the stock market, *anything can happen*.

Not only *can* anything happen in the stock market, but anything *does* happen. What is more, changes in the nature and structure of our equity market—and a radical shift in its participants—are making shocking and unexpected market aberrations ever more probable. In fact, during 2007, we witnessed an unprecedented series of amazing market swings. Whereas in the 1950s and 1960s, the daily changes in the level of stock prices typically exceeded 2 percent only three or four times a

year, in the second *half* of 2007 alone, we witnessed 15 such moves—9 downward and 6 upward. Based on past experience, the probability of that scenario was . . . zero.

So, the application of the laws of probability to our financial markets is badly misguided. If truth be told, the fact that an event has never before happened in the markets is no reason whatsoever that it cannot happen in the future. As we have discovered, the fact that up to some point the only swans ever observed had been white does not prove that no black swans exist.² *The Black Swan: The Impact of the Highly Improbable*, as most financial analysts are probably aware, is the title of a recent book by Nassim Nicholas Taleb (2007) in which he calls our attention to the phenomenon and cites three characteristics of a black swan:

1. It is an outlier beyond the realm of our regular expectations (*rarity*).
2. It is an event that carries an extreme impact (*extremeness*).
3. After the fact, our human nature enables us to accept it by concocting explanations that make it seem predictable (*retrospective predictability*).

So, rarity, extremeness, and retrospective predictability together define the occurrence of an event that is regarded as impossible or, at least, highly improbable. What is more, as Taleb noted, a black swan can also be the reverse of this definition: the nonoccurrence of an event that is regarded as highly probable.

Black Monday, then—with its rarity, extremeness, and retrospective predictability—was a black swan. Unlike its 1929 antecedent, Black Monday did not prove to be an omen of dire days ahead. If anything, it was, quite counterintuitively, a harbinger of the greatest bull market in recorded history (which itself may have been yet another black swan).

Nonetheless, I observe little concern about the ever-present possibility that what will occur in our financial markets in coming years might prove to be a nonoccurrence of what market participants expect. Indeed, despite the recent wild disturbances in both the stock market and the bond market, most market participants seem confident that future returns will resemble those of the past.

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Note: The opinions expressed in this article do not necessarily represent the views of the Vanguard Group's present management.

Of course, only time will tell whether yet another black swan lurking beyond the horizon will become part of financial market history. But the fact is that the movements of the stock market exhibit a lot of randomness. So, the knowledge that black swans can and do occur holds important lessons for how we think about risk.

Rather than slavishly looking to past market returns, we ought to be seeking out evidence that contradicts our assumptions. Indeed, this lesson goes far beyond the financial markets; it applies to the very nature of knowledge. The eminent British philosopher Sir Karl Popper (1902–1994)—well known for his use of the black swan metaphor—proposed that science does not proceed from observation to theory but proceeds the other way around. Describing his theory of science as critical rationalism, Popper held that scientific theories are abstract in nature and can be tested only indirectly.

Writing about Popper in the *New Yorker*, journalist Adam Gopnik (2002) described Popper's reasoning in this way:

No number of white swans could tell you that all swans were white, but a single black swan could tell you that they weren't. . . . Science, Popper proposed . . . didn't proceed through observations confirmed by verification; it proceeded through wild, overarching conjectures, which generalized "beyond the data" but were always controlled and sharpened by falsification [i.e., proof that the theory was wrong]. (p. 90)

Gopnik (2002) further explained that it was the conscious, purposeful search for falsification by refutation, by the single decisive experiment (or black swan), that Popper believed allowed science to proceed and objective knowledge to grow.

Yet, most of us—in our investment ideas and in our political ideas—do exactly the reverse: We search for the facts that confirm our beliefs (*reinforcement bias*), not for the facts that would negate them.

The Light Shined by Knight

In the markets, few theories are advanced with the search for falsification as the object, and we continue to speak of forecasts and probabilities. But *probability* is a slippery concept when applied to our financial markets. We use the term "risk" all too casually and the term "uncertainty" all too rarely. The distinction between them was first made by the late University of Chicago economist Frank H. Knight (1885–1972), who spelled it out in his seminal work, *Risk, Uncertainty, and Profit* (1921). Knight wrote:

. . . [U]ncertainty must be taken in a sense radically distinct from the familiar notion of risk, from which it has never been properly separated. The term "risk," as loosely used in everyday speech and in economic discussion, really covers two things which . . . are categorically different. (p. 19)

Those two things are risk and uncertainty. In Knight's view, risk properly used is a measurable quantity in which probabilities and distributions are known (as with the roll of dice). Uncertainty is *immeasurable* and, therefore, not subject to probabilities.

Knight continued:

It is a world of change in which we live, and a world of uncertainty. We live only by knowing something about the future; while the problems of life or of conduct at least, arise from the fact that we know so little . . . in business as in other spheres of activity. [We act according to our] opinion, of greater or less foundation and value, neither entire ignorance nor complete information, but partial knowledge. If we are to understand the workings of the economic system, we must examine the meaning and significance of uncertainty. (p. 199)

In this view, the susceptibility of opinion or estimate to error must be radically distinguished from probability or chance because in the case of opinion, groups cannot be formed of instances of sufficient homogeneity to make possible a quantitative determination of true probability in which any sort of statistical tabulation provides any value for guidance. Knight concluded:

. . . [T]he conception of an objectively measurable probability or chance is simply inapplicable. . . . [T]here is much question as to how far the world is intelligible at all. . . . It is only in the very special and crucial cases that anything like a mathematical study can be made. (various pages in Part III)

In a 2004 article, Glyn A. Holton properly pointed out that *uncertainty* accounts for only one aspect of the idea of risk. The second aspect is *exposure*. People must have a stake in the outcome; it must matter to them. What Holton means is that although outcomes are inevitably uncertain, we must consider not only the uncertainties or probabilities of our choices but also the consequences that we face if we are wrong. Consequence is illustrated by the famous Blaise Pascal (1623–1662) wager on whether or not God exists. (Pascal concluded that, considering the consequences, the safer bet is that He exists.) As Peter Bernstein explained, "Considering the consequences of being wrong is essential in decision-making under uncertainty" (2007, p. 5).

Mandelbrot on Risk, Ruin, and Reward

The abstract theories of Popper, Knight, and Pascal can be directly applied to the financial markets, which is exactly what Benoit Mandelbrot, the brilliant inventor of fractal geometry, did with Richard Hudson in *The (Mis)Behavior of Markets*, ominously subtitled *A Fractal View of Risk, Ruin, and Reward* (2004).

Fractal geometry, simply defined, is about patterns that repeat themselves continually—in nature and in geometry—scaling up or scaling down. Sometimes the patterns are defined by a determination rule; sometimes they form entirely by chance. They often relate to so-called power laws, where growth is not linear but logarithmic. In the Fibonacci sequence, for example, each successive number is the sum of the two previous numbers—that is, 1 – 2 – 3 – 5 – 8 – 13 – 21 – 34 – 55 – 89 – 144, and so on. As it happens, each successive number is 1.6 times its predecessor, and after 144, the multiplier is 1.618, a ratio that the Greeks called “the Golden Mean.” It is a ratio that permeates our globe, most notably in nature, art, and architecture.

Mandelbrot applied this concept to the daily price movements of the Dow. As **Figure 1** shows, since 1915, the standard deviation (sigma) of the daily change in the Dow has been 0.89 percent; that is, two-thirds of the fluctuations were within ± 0.89 percentage points of the average daily change of 0.74 percent. Nonetheless, the occasions when the standard deviation has been as high as 3 or 4 have been frequent; occasions when it has exceeded 10 have occurred infrequently; and as **Figure 1** points out, the U.S. market has experi-

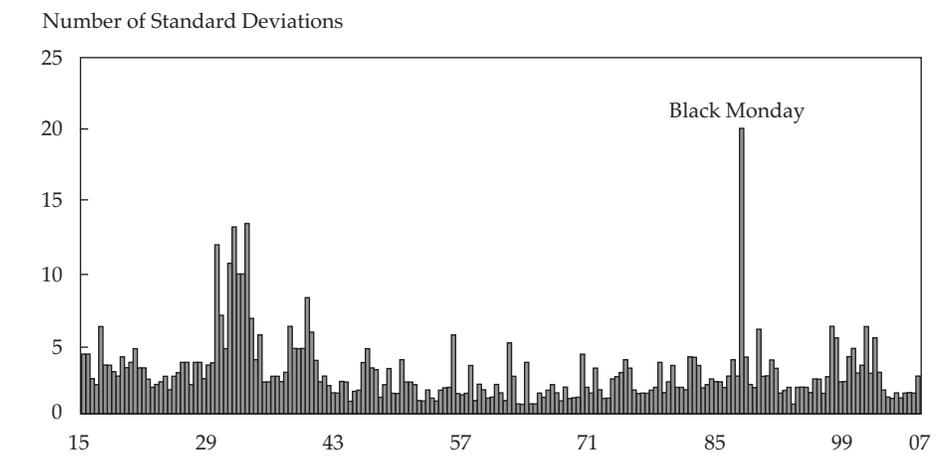
enced only one 20-sigma occasion—that infamous Black Monday. The odds against such a happening are about 10 to the 50th power.

Our markets are periodically defined by fractals and power laws (although we never know when), but fractals and power laws do not apply in many areas. The classic example is the height of men; another is the extremes of temperature. A third, the flipping of coins, is shown in **Figure 2**. This pattern is the familiar Gaussian (standard frequency) distribution curve known as the “bell curve.” Yes, when two dice are rolled 1,000 times, 7 will come up (roughly) 167 times; 6 or 8, 139 times each; 5 or 9, 111 times each; 4 or 10, 83 times; 3 or 11, 56 times; 2 or 12, just 28 times.

But other areas in which fractals appear are surprising. One classic fractal pattern is the average wealth of U.S. citizens. The figure follows a fairly neat Gaussian distribution pattern until we reach very high figures, at which point the pattern takes on a fractal look. For example, bring a hedge fund manager with annual earnings of \$200 million into a room of 100 people earning an average of \$50,000, and the *average* jumps to more than \$2 million.

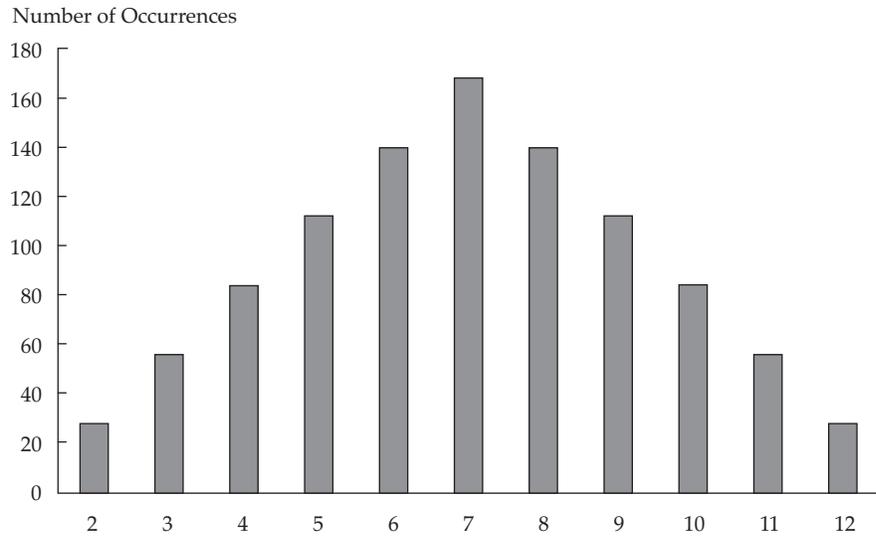
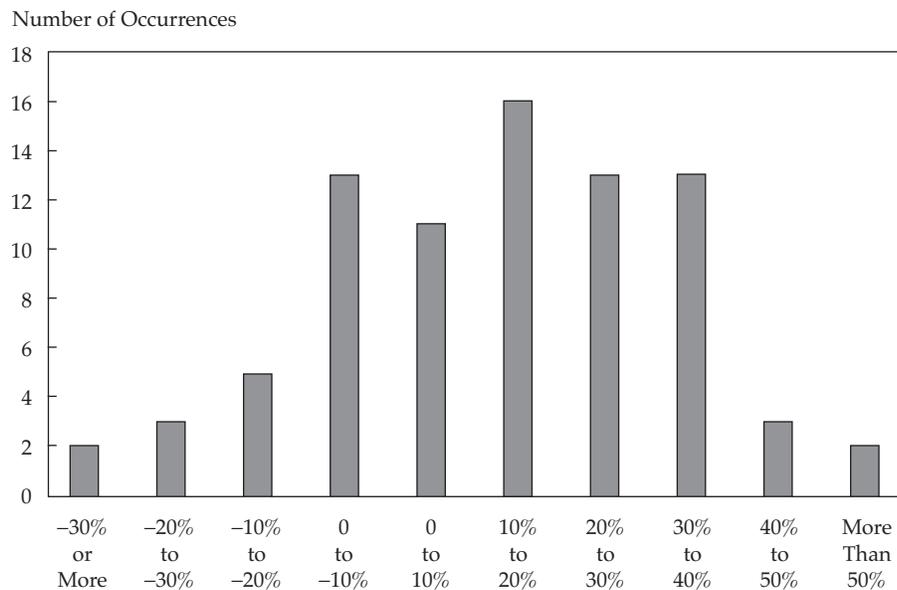
So, looking at past patterns of market repetition as a sort of Gaussian bell curve, or relying on Monte Carlo simulations in which past stock market returns are thrown into a giant mixer that produces a million or more permutations and combinations, or looking at probabilities in the stock market—all send us on a fool’s errand. We deceive ourselves when we believe that the Gaussian-like returns recorded in the stock market, as shown in **Figure 3**, provide the *bounds* by which we can predict the future.³ When we settle for those beliefs, we ignore the potential for future black swans.

Figure 1. Daily Changes in the Dow, 1915–2007



Note: Dates are January of each year, except 2007 ends with the third quarter.

Source: Originally depicted in Mandelbrot and Hudson (2004).

Figure 2. Expected Distribution of 1,000 Rolls of Two Dice**Figure 3. Distribution of S&P 500 Index Annual Returns, 1926–2006**

Source: The Vanguard Group.

The fact is that the infrequent but extreme daily changes in the stock market can overwhelm the frequent—but usually humdrum—fluctuations that take place each day within normal ranges. For example, since 1950, the S&P 500 Index has risen from a level of 17 to a recent level of 1,470. But if we deduct the returns achieved on only the 40 market days in which the S&P 500 had its highest percentage gains—40 out of 14,588 days—the level drops to 288. Contrarily, if we eliminate the 40 worst days, the S&P 500 will be sitting at 11,550. That so much can

happen on so few days, and so unpredictably, suggests the perils of jumping into and out of the market and the value of simply staying the course.

The Wisdom of Keynes

Although returns earned in the stock markets are volatile and unpredictable, the returns earned by the underlying businesses in the aggregate—which collectively represent the foundation of aggregate market capitalization—are (or have been historically) far less volatile and unpredictable. Put another way,

investors are more volatile than *investments*. Economic reality governs the long-term returns earned by our businesses, and black swans in business are unlikely. But emotions and perceptions—the tides of hope, greed, and fear among the participants in the financial system—govern the short-term returns generated in the markets. These emotional factors magnify or minimize the central core of economic reality, and in such an environment, a black swan may appear at any time.

More than 70 years ago, the great British economist John Maynard Keynes (1883–1946) recognized the critical distinction between the rational and the irrational in the stock market. In his remarkable *The General Theory of Employment, Interest and Money* (1936), Keynes focused on the two forces that tug at stock prices. The first he called *enterprise*—the rational exercise of “forecasting the prospective yield of an asset over its entire life.” (Quotations in this section are from Chapter 12.) The second was *speculation*—the irrational exercise of “forecasting the psychology of the market.” Together, these two factors explain what he called “the state of long-term expectation” for an investment.

From his vantage point in London, Keynes observed that:

In one of the greatest investment markets in the world, namely, New York, the influence of speculation . . . is enormous. . . . It is rare . . . for an American to invest . . . ‘for income’; and he will not readily purchase an investment except in the hope of capital appreciation. This is only another way of saying that . . . the American is attaching his hopes . . . to a favourable change in the conventional basis of valuation, *i.e.* that he is . . . a speculator.

In the U.S. stock market today, the same situation prevails—even more strongly.

Keynes’ observation that speculation was overwhelming enterprise was based on the then-dominant ownership of stock by individuals who were largely ignorant of business operations or valuations, which led to excessive, even absurd, short-term market fluctuations based on events of an ephemeral and insignificant character. Short-term fluctuations in the earnings of existing investments, he argued (correctly), would lead to unreasoning waves of optimistic and pessimistic sentiment—fertile ground for the appearance of a black swan.

Although competition between professionals possessing judgment and knowledge beyond that of the average private investor should correct the vagaries caused by ignorant individuals, Keynes added, the energies and skill of the professional investor would come to be largely concerned with

forecasting what the general public will do in the market. He thus described the market as a “. . . battle of wits to anticipate the basis of conventional valuation a few months hence, rather than the prospective yield of an investment over a long term of years.”

In my 1951 senior thesis on the mutual fund industry, I had the temerity to disagree with Keynes’ conclusions.⁴ Rather than professional investors succumbing to the speculative psychology of ignorant market participants, I argued, investment pros would focus on enterprise. In what I predicted would become a far larger mutual fund industry than at that time, portfolio managers would “supply the market with a demand for securities that is *steady, sophisticated, enlightened, and analytic*, a demand that is based essentially on the [intrinsic] performance of the corporation rather than the public appraisal reflected in the price of its shares” (emphasis added). I was accurate about the growth of the industry, but alas, the sophisticated and analytical focus on enterprise that I expected from the professional investors failed to materialize. Rather, the emphasis on speculation by mutual funds actually increased. Call the score Keynes 1, Bogle 0.

Interestingly, Keynes was well aware of the fallibility of forecasting stock returns. He noted, “It would be foolish, in forming our expectations, to attach great weight to matters which are very uncertain.” And he added (shades of Knight!), “By ‘very uncertain’ I do not mean the same thing as ‘very improbable.’” Keynes made no attempt to quantify the relationship between enterprise and speculation in shaping stock market returns, but decades later, it occurred to me to do exactly that.

Quantifying Keynes’ Distinction

By the late 1980s, based on my own experience and research on the financial markets, I began to measure what Keynes called “enterprise,” which I called “economics,” and what Keynes termed “speculation,” which I called “emotions.” Economics was represented by *investment return*—the initial dividend yield on stocks plus the subsequent annual rate of earnings growth. Emotions I defined as *speculative return*—the change in the price investors are willing to pay for each dollar of earnings (essentially, the return generated by changes in the valuation or discount rate that investors place on future corporate earnings). Simply adding speculative return to investment return—a crude but simple step—produces the *total* return generated by the stock market.

The investment return on stocks has proven to be remarkably susceptible to the application of reasonable expectations. The initial dividend yield—a crucial but underrated factor in shaping stock returns—is a known factor. The secular rate of earnings growth, although hardly certain, is relatively stable. Corporate earnings in the United States have grown with remarkable consistency at about the rate of the U.S. GDP. There have been no black swans in *long-term* investment returns. Even the sharp drop in corporate earnings during the Great Depression was but a 2-sigma event, within the 95 percent probability range.

Speculative return has proven to be, well, speculative. It has alternated from positive to negative over the decades.⁵ But in the long run, even speculative return has produced no black swans. In fact, when P/E multiples were low by historical standards (say, below 10 times earnings), they were likely to rise over time. And when they were high (say, above 20 times), they were likely to decline (although in neither case did we know *when* the change was coming). Certainty about the future never exists, nor are probabilities always borne out, but applying reasonable expectations to investment return and speculative return and then combining them has proved to be a sensible and effective approach to projecting the total return on stocks over the decades.

The point is this: Over the very long run, it is the *economics* of investing—enterprise—that has determined total return. The evanescent *emotions* that surround investing—speculation—so important over the short run, have ultimately proven to be virtually meaningless. For example, the 9.6 percent average annual return on U.S. stocks over the past century was composed of 9.5 percentage points of investment return (an average dividend yield of 4.5 percent plus an average annual earnings growth of 5 percent) and only 0.1 percentage point of speculative return, arising from an inevitably period-dependent increase in P/E. Despite the black swans of stock market history, ownership of U.S. business for investors who have stayed the course has been a remarkably successful strategy.

Minsky Adds a Crucial Ingredient

I envisioned that the simple insights presented would provide a framework for understanding stock market returns. But I failed to consider the extent to which speculation in the financial economy (emotions) might influence changes in the business economy (enterprise). When I learned of the work of the great U.S. economist Hyman Min-

sky (1919–1996), who dedicated much of his career to what he described as the “financial instability hypothesis,” I recognized that an additional key element of “risk”—here, clearly “uncertainty”—had to be considered.⁶

In 1974, Minsky observed the fundamental link between finance and economics with these words: “The financial system swings between robustness and fragility, and these swings are an integral part of the process that generates business cycles.” The prevailing financial structure, under this concept, then, becomes a central determinant of the behavior of the capitalist economy. Minsky added:

Financial markets will not only respond to profit-driven demands of business leaders and individual investors but also as a result of the profit-seeking entrepreneurialism of financial firms. Nowhere are evolution, change, and Schumpeterian entrepreneurship more evident than in banking and finance, and nowhere is the drive for profits more clearly the factor making for change.⁷

Long before the recent wave of complex financial products, Minsky observed that the financial system is particularly prone to innovation. He noted the symbiotic relationship between finance and industrial development, in which “financial evolution plays a crucial role in the dynamic patterns of the economy.” When money-manager capitalism became a reality during the 1980s and institutional investors became the largest repositories of savings in the country, they began to exert their influence on financial markets and the conduct of business enterprises.

This change in the structure of capitalism has been dramatic. A half-century-plus ago, individuals owned 92 percent of U.S. stocks and institutions owned but 8 percent. Currently, individuals own 26 percent and institutions, 74 percent. In this new environment, the *raison d'être* for money managers (and the basis by which they were held accountable) became the maximization of the value of the investments made by their clients—measured over periods as short as years or even quarters.

As institutional managers turned increasingly to speculation (versus investment, just as Keynes had predicted), business executives became increasingly attuned to short-term profits and the stock market valuations of their companies. The growing role of institutional investors fostered continued evolution of the financial system by providing a ready pool of buyers of securitized loans, structured finance products, and myriad other exotic innovations whose complex risks are shaking the financial markets today.

Minsky's key concept was that the financial economy, focused on speculation, should not be considered separate and distinct from the productive economy, focused on enterprise. His expectation—and fear—like that of Keynes, was that speculation would come to overwhelm enterprise. Were Minsky and Keynes right? Recent history seems to confirm their fears, as rampant speculation in the markets has added a new element of uncertainty into our economy.

Indeed, my view of the secular changes in the economy (which is similar to Minsky's view) is that over the past two centuries, the United States has moved from an agricultural economy to a manufacturing economy, to a service economy, and to what is now predominantly a financial economy—and a global one at that. The United States, it seems to me, is now on the way to becoming a country where no business actually *makes* anything. We merely *trade* pieces of paper, swap stocks and bonds back and forth with one another, and pay the financial croupiers a veritable fortune.

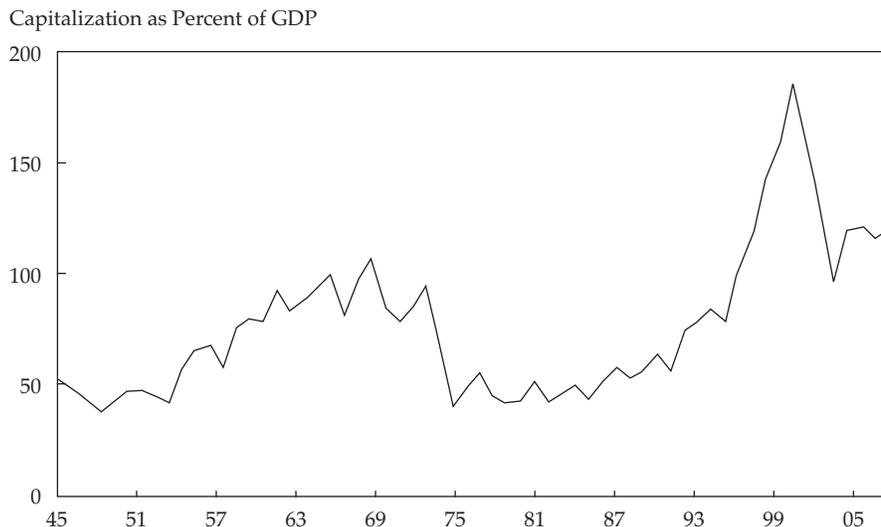
Furthermore, the creation of ever more complex financial derivatives that entail huge and unfathomable uncertainties and risks adds substantially to those intermediation costs. Led by Wall Street investment bankers and brokers and mutual funds, followed by hedge funds, pension fund managers, financial advisers, and all the other participants in our financial system, these costs have soared to staggering proportions. Aggregate annual costs incurred by market participants have risen from an estimated \$2.5 billion as recently as 1988 to something like \$528 billion in 2007, an

increase of more than 20 *times*.⁸ The costs that the nation incurs in its financial economy must, by definition, be subtracted from the value created by its productive businesses.

We can measure the dominance of the financial economy over our productive economy in many ways. In 1975, as shown in **Figure 4**, the stock market had an aggregate capitalization of \$800 billion, about 50 percent of the \$1.6 trillion value of the goods and services that the United States as a nation produces each year, measured by GDP. But while GDP was rising 8 times over between 1975 and 2007, stock valuations were rising nearly 20 times over. Today, the \$15.7 trillion aggregate value of U.S. stocks is actually equal to about 120 percent of the country's \$13 trillion GDP.

Moreover, comparing the capitalization of the U.S. stock market with U.S. GDP greatly understates the rise in speculation, for new financial "products" have themselves overwhelmed stock market valuations. In 1957, the market value of stocks in the S&P 500 was \$220 billion and futures and options markets on the index did not even exist.⁹ By 1982, the value of the S&P 500 had soared to \$1.2 trillion and the then-recently-created S&P 500 futures and options outstanding totaled \$438 billion, about one-third the value of the index itself. By the close of 2006, with the S&P 500 valued at \$12 trillion, futures and options contracts on the index had soared to \$20 trillion—an "expectations market" valued at almost *double* the value of the "real market." On this basis, stock market participants have a \$32 billion stake in the S&P 500, equal to an astonishing 250 percent of GDP.

Figure 4. U.S. Stock Market Capitalization as a Share of GDP, 1945–2006



Source: U.S. Federal Reserve Board and U.S. Department of Commerce.

Even more striking is the truly staggering increase in financial transactions of all types, a global phenomenon whose implications are far from clear. Although the world's GDP is about \$60 trillion, the aggregate nominal value of global financial derivatives is said to be \$600 trillion, fully 10 times as large as all of the net goods and services produced by our entire world. Among the riskiest of these derivatives are credit-default swaps, which alone total \$45 trillion, an amazing ninefold increase in the last three years. These swaps are five times the size of the U.S. national debt and three times U.S. GDP.¹⁰

If Minsky's nightmare has not yet materialized in full, surely the value of speculation in the U.S. financial system has come to dominate the nation's productive economy. Keynes' warning of 70 years ago seems almost prescient:

[T]he position is serious when enterprise becomes the bubble on a whirlpool of speculation. . . . When the capital development of a country becomes a by-product of the activities of a casino, the job [of capitalism] is likely to be ill-done. (from Chapter 12)

Risk and Ruin—A Reprise

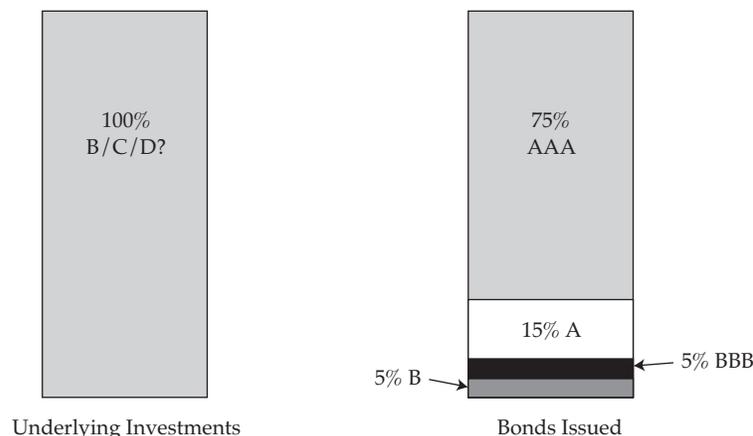
Just as the volume of financial transactions has soared, so has their mind-numbing complexity. The most recent example is, of course, the boom in mortgage-backed debt obligations, part of the secular move toward the "securitization" of assets of all kinds. Once held largely by community banks for local citizens (the Jimmy Stewart movie *It's a Wonderful Life* comes quickly to mind), mortgages have been disintermediated by lenders pooling their loans and sending them off to Wall Street for conversion into "packaged products" never again to be

seen by the original lenders. It is common sense that under such conditions the lenders pay far less attention to loan quality than if they were keeping the loans. Nor is it surprising that the creators of these mortgage-backed bonds have no incentive to help mortgagees in distress work through their financial difficulties and retain their homes.

Given Wall Street's ever-pressing need to have something, anything, to sell in the way of "new product," it is hardly surprising that these collateralized debt obligations (CDOs) became more and more complex over time, with risk more and more deeply concealed. U.S. SEC-registered rating agencies placed their imprimatur on hundreds of new issues of CDOs that were created entirely out of subprime mortgages. (These agencies, as I understand it, were paid some \$400,000 per rating.)

A typical example is provided in **Figure 5**. The column on the left shows what might be underlying the CDO—subprime mortgages that would likely be considered as rated B, C, or even D in quality. Transformed by the CDO, however, 75 percent of the value of the bonds were in tranches (series) rated AAA, another 15 percent were rated at least A, and 5 percent were rated BBB. Only the remaining 5 percent carried a rating of B. One might call this magical conversion of low quality into high quality a new version of the old alchemy—turning lead into gold. This financial alchemy represented the same false promise, an illusion. Financial lead, it turns out, is still lead. By early 2007, when mortgage defaults began to snowball, the financial crisis in mortgages was upon us, at a great (and growing) cost to U.S. citizens and society. This crisis is a classic example of the impact of the financial economy on the real economy.

Figure 5. The New Alchemy



Source: Bogle Financial Markets Research Center.

Given the nature of the modern financial system, few giant investment banks had the courage to jump off the mortgage-backed bandwagon (and even fewer had the guts not to jump on). Issuance of such bonds in the United States in the past five years totaled \$2 trillion (including both prime and subprime mortgages), which probably generated an estimated \$80 billion of revenues to Wall Street—its investment bankers, its brokers, its rating agencies, its attorneys, and its securities processors. I conclude that, like Oscar Wilde, the only thing the banks could not resist was temptation. Even the biggest and most savvy firms reveled at the party, with its rocking music and joyous dancing. Charles Prince, former chairman of giant Citigroup, said of the situation, “As long as the music is playing, you’ve got to get up and dance. We’re still dancing” (Nakamoto and Wighton 2007).

But as 2007 ended, Citigroup’s write-down in the value of its CDOs (and other deteriorating credits) would total an astonishing \$22.1 billion. For Merrill Lynch, the write-down was even larger, \$24.1 billion. UBS has written down \$18.4 billion. And HSBC has so far written down \$10.7 billion.¹¹ Following a long era of cheap credit, easy credit availability, and borrowers with high confidence and low collateral, the price is beginning to be paid—even as the U.S. economy faces a plethora of other risks created by the financial system.

High Risks, Low Risk Premiums?

If systemic risks are increasing, how can risk premiums on stocks in the U.S. market be less than one-half the historical average? On the one hand,

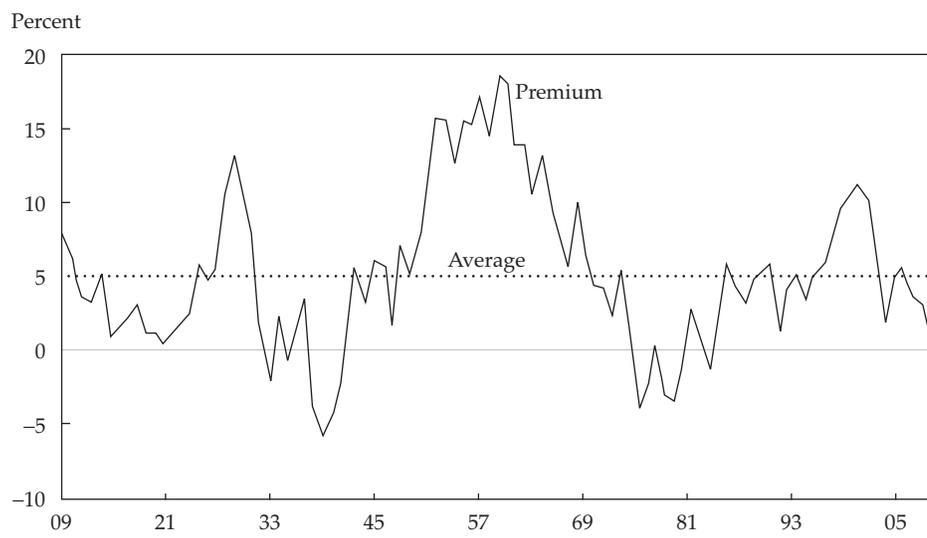
Figure 6 shows that today’s projected equity premium of only 2 percent would be 60 percent below the century-long average of 5 percent. Such a spread assumes (1) that bonds, based on the current yield on investment-grade issues, should return about 5 percent annually over the coming decade and (2) that stocks, based on today’s dividend yield of about 2 percent and prospective nominal earnings growth of about 6 percent (with a shading for the slightly lower P/E that I expect a decade hence), could return about 7 percent annually. On the other hand, risk is already being repriced in the bond market. As Figure 7 shows, the spread of rates on high-yield bonds over intermediate-term U.S. Treasury bonds, which tumbled from 10 percent in 2002 to 3 percent in mid-2007, has leapt to about 6 percent amid the growing unpleasantness in the mortgage market.

Our markets seem to be ignoring the warning issued by former U.S. Federal Reserve Board chairman Alan Greenspan in 2005: “History has not dealt kindly with the aftermath of protracted periods of low risk premiums.”¹² When participants in the financial services field ignore the lessons of history, yet another set of financial uncertainties with potential black swans is created.

Other Risks

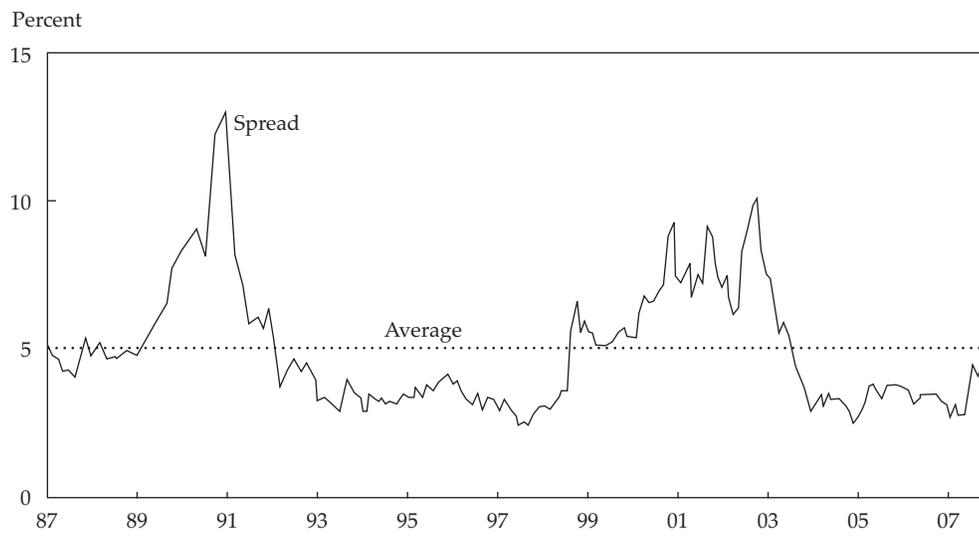
The risks in our financial sector are hardly the only risks investors face. Some huge, seemingly unacknowledged, risks characterize U.S. society. Consider: the Social Security and Medicare payments committed to by our national government; the string of huge (and, in fact, understated) deficits in the U.S. federal budget (see Gokhale and Smetters 2007); our

Figure 6. U.S. Equity Risk Premium for Trailing 10-Year Periods, 1909–2006



Source: Bogle Financial Markets Research Center.

Figure 7. Yield Spread between High-Yield U.S. Corporate Bonds and Intermediate-Term T-Bonds, January 1987–June 2007



Note: Dates are January of each year.

Source: Lehman Brothers and the Fed.

enormous expenditures (soon to reach \$1 trillion) on the wars in Iraq and Afghanistan; terrorism; the threat of global warming and the cost of dealing with it; unfettered global competition, our trade deficit, and the decline in the value of the U.S. dollar.

Other risks are more subtle in nature: a political system dominated by money and vested interests; a Congress and an administration seemingly focused entirely on the short term, with an attitude of “the long-term consequences be damned”; the vast chasm between the wealthiest among us and those at the bottom of the economic ladder (the top 1 percent of our citizenry holds more than a third of our total wealth, whereas some 20 percent of New York City residents earn less than \$8,300 per year); our self-centered, “bottom-line” society focused on money over achievement, charisma over character, and the ephemeral over the eternal; and finally, the paucity of leaders who are willing to, well, lead—to defy the conventional wisdom of the day and to stand up for what is right and noble and true.

So, the risks are high; the uncertainties rife. Yet, perhaps we’ll muddle through. After all, throughout our 230-year history, the United States has always done exactly that. Perhaps, too, our society and our economy will continue to reflect the resilience that they have demonstrated in the past, often against all odds. And perhaps we’ll come to our collective senses and develop the courage to take arms against this sea of troubles and by opposing,

end them. The stock market, indeed, seems to be saying that it expects the Republic not only to muddle through but to surmount the troubles. I can only hope that the market is right.

Whatever the case, some surprising event out there, far beyond our expectations, will surely come to pass, an event that will carry an extreme impact, and one for which, once it happens, we’ll quickly concoct an explanation as to why it was so predictable after all. That event, if—perhaps I should say *when*—it comes, will be just one more black swan.

Afterword

This essay is based largely on a speech delivered to the Risk Management Association on 11 October 2007. In early February 2008, the extreme volatility in the stock market continued at high levels, the contagion in the CDO markets had continued to spread, and the stock market (the S&P 500) had declined by another 14 percent. Together, these problems in the financial economy seemed to be spreading to the productive economy, with an emerging consensus that a business slowdown, if not a recession, lies ahead. The plethora of risks that I described in the article are beginning to manifest themselves, although a black swan has yet to appear.

This article qualifies for 0.5 CE credit.

Notes

1. From its September 1929 high of 381 to its July 1932 low of 41, the Dow dropped by an astonishing 90 percent.
2. Before the discovery in the 17th century of Australia, where black swans are common, Europeans thought that all swans were white; to imagine swans of any other color was completely unreasonable.
3. The *average* annual return on stocks during the 1926–2006 period was 10.4 percent. Curiously, in only 2 years of those 80 years did the returns realized fall between 9 percent and 11 percent. The “average” year, then, rarely occurred.
4. This thesis, written for Princeton University, was entitled “The Economic Role of the Investment Company” and was published in Bogle (2001).
5. For a discussion of the stock market’s historical returns, including each decade’s investment return, speculative return, and total return, see pp. 15–18 of Bogle (2007).
6. In this section, I have liberally quoted and paraphrased investment adviser Frank K. Martin (2006). Martin’s quotes from Hyman Minsky come from Minsky’s 1974 article “The Modeling of Financial Instability: An Introduction,” in *Modeling and Simulation*.
7. Joseph Schumpeter (1883–1950) characterized capitalism with the famous phrase “creative destruction,” in which the old ways of doing things are endogenously destroyed and replaced by new ways.
8. These data are Bogle Financial Markets Research Center estimates based on data from the Securities Industry and Financial Markets Association, Lipper Analytical Services, and Empirical Research Associates. I recognize the fragility of these data and continue to urge a thorough and independent economic analysis of the costs and benefits of our financial system.
9. Data in this paragraph are from the McGraw-Hill Companies symposium held 20 June 2007 to recognize the 50th anniversary of the S&P 500.
10. These figures come from Seides (2007).
11. These write-down amounts are from the *New York Times* (1 February 2008, p. C6).
12. Spoken at a symposium entitled “The Greenspan Era: Lessons for the Future” in Jackson Hole, Wyoming, 26 August 2005.

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