

## CHAPTER 1

# INTRODUCTION: THE PARADOX OF MARKET RISK

**W**hile it is not strictly true that I caused the two great financial crises of the late twentieth century—the 1987 stock market crash and the Long-Term Capital Management (LTCM) hedge fund debacle 11 years later—let’s just say I was in the vicinity. If Wall Street is the economy’s powerhouse, I was definitely one of the guys fiddling with the controls. My actions seemed insignificant at the time, and certainly the consequences were unintended. You don’t deliberately obliterate hundreds of billions of dollars of investor money. And that is at the heart of this book—it is going to happen again. The financial markets that we have constructed are now so complex, and the speed of transactions so fast, that apparently isolated actions and even minor events can have catastrophic consequences.

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My path to these disasters was more or less happenstance. Shortly after I completed my doctorate in economics at the Massachusetts Institute of Technology and quietly nestled into the academic world, my area of interest—option theory—became the center of a Wall Street revolution. The Street became enamored of quants, people who can build financial products and trading models by combining brainiac-level mathematics with massive computing power. In 1984 I was persuaded to join what would turn out to be an unending stream of academics who headed to New York City to quench the thirst for quantitative talent. On Wall Street, too, my initial focus was research, but with the emergence of derivatives, a financial construct of infinite variations, I got my nose out of the data and started developing and trading these new products, which are designed to offset risk. Later, I managed firmwide risk at Morgan Stanley and then at Salomon Brothers. It was at Morgan that I participated in knocking the legs out from under the market in October 1987 and at Solly that I helped to start things rolling in the LTCM crisis in 1998.

The first of these crises, the 1987 crash, drove the Dow Jones Industrial Average down more than 20 percent, destroying more market wealth in one day than was generated by the world economies in the previous two years. The repercussions of the LTCM hedge fund default sent the swap and credit markets, the backbone of the world's financial system, reeling. In the process it nearly laid waste to some of the world's largest financial institutions. Stunning as such crises are, we tend to see them as inevitable. The markets are risky, after all, and we enter at our own peril. We take comfort in ascribing the potential for fantastic losses to the forces of nature and unavoidable economic uncertainty.

But that is not the case. More often than not, crises aren't the result of sudden economic downturns or natural disasters. Virtually all mishaps over the past decades had their roots in the complex structure of the financial markets themselves.

Just look at the environment that has precipitated these major meltdowns. For the crash of 1987, it was hard to see anything out of the ordinary. There were a few negative statements coming out of Washington and some difficulties with merger arbitrage transactions—traders who play the market by guessing about future corporate takeovers. What else is new? The trigger for the LTCM crisis was something as remote as a Russian default, a default we all saw coming at that. Compare these with the market

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reaction to events that shook the nation. After 9/11, the stock market closed for a week and reopened to a drop of about 10 percent. This was a sizable decline, but three weeks later the Dow had retraced its steps to the pre-9/11 level. Or go back to the assassination of President John F. Kennedy in 1963 or the bombing of Pearl Harbor in 1941. Given the scope of the tumult, the market reactions to each event amounted to little more than a hiccup.

There is another troublesome facet to our modern market crises: They keep getting worse. Two of the great market bubbles of the past century occurred in the last two decades. First, the Japanese stock market bubble, in which the Nikkei index tripled in value from 1986 through early 1990 and then nearly halved in value during the next nine months. The second was our own Internet bubble that witnessed the NASDAQ rise fourfold in a little more than a year and then decline by a similar amount the following year, ultimately cascading some 75 percent.

This same period was peppered with three major currency disasters: the European Monetary System currency crisis in 1992; the Mexican peso crisis that engulfed Latin America in 1994; and the Asia crisis, which spread from Thailand and Indonesia to Korea in 1997, and then broke out of the region to strike Russia and Brazil. The Asia crisis triggered losses that wiped out the majority of the market value that the Asian "Tiger" economies had amassed in the prior decade of booming growth. LTCM seemed just as cataclysmic at the time, but it centered on a single \$3 billion hedge fund in 1998, albeit one that had more than \$100 billion at risk. As a debacle, it was later overshadowed by the spectacular failures of Enron, WorldCom, and Tyco after the dot-com collapse. Yet, did anyone even notice the convertible bond collapse that erupted for no apparent reason in 2005 or the \$6 billion of losses by Amaranth in September 2006? It's only money.

One of the curious aspects of worsening market crises and financial instability is that these events do not mirror the underlying real economy.<sup>1</sup> In fact, while risk has increased for the capital markets, the real economy, the one we live in, has experienced the opposite. In recent decades the world has progressively become a less risky place, at least when it comes to economics. In the United States, the variability in gross domestic product (GDP) has dropped steadily. Year by year, GDP varies half as much as it did 50 years ago. The same holds for disposable personal income. With greater stability in economic productivity and earnings, and with greater

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and broader access to borrowing—think of your home equity line of credit—the variability of consumption year by year is less than a third of what it was in the middle of the twentieth century. And while recessions still occur, they have become shallower. This same pattern is true in Europe, where both GDP and consumption have become more stable over the course of the past 50 years.

There is ample reason for the increased economic stability. In the United States, the federal government provides unemployment insurance and Social Security, most corporations support 401(k) accounts, and many provide pensions. Governments worldwide stabilize commodity and farm prices with massive subsidies. Monetary and fiscal policy has improved with experience and study, and it benefits from improving coordination and real-time access to data.

The workforce is more diversified, with a much greater proportion employed in noncyclical sectors such as technology and services than in the past. The economic sectors themselves are also far more diversified. In the early twentieth century, there were no technology, telecommunications, media, or health care sectors. The industrial economy revolved around a few highly integrated, large-scale industries. A coal miners' or steelworkers' strike would cripple the country, shutting factory floors and shipping yards. Even as late as the 1970s, the industrialized nations were so energy dependent that an oil shock precipitated a global recession. Today, high gasoline prices cause lots of grumbling, but little real pain.

Similarly, as progress and refinement reduce risk, so should they also level the playing field for market participants. There should be less of a gap between your investment returns and those of Wall Street pros. Do you think that's happening? Sure, the trappings are there: Information is released more quickly and to a broader constituency of investors, and limitations are imposed on insider trading and nonpublic disclosure. Trading costs are a tenth of what they were 30 years ago. Ample liquidity and innovative financial products—all manner of swaps and options, weather futures, exchange-traded funds, Bowie bonds—accommodate trading in more areas. With all these improvements we are moving ever closer to the notion of perfect markets—and perfect markets should not offer unusual profit opportunities for a subgroup of investors and traders.

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That does not seem to be happening. The market remains volatile and the returns widely uneven. In spite of 40 years of progress and a drop in real economic risk by 50 percent or more, the average annual standard deviation in the S&P 500 index was higher during the past 20 years than it was 50 years earlier. The fact that the total risk of the financial markets has grown in spite of a marked decline in exogenous economic risk to the country is a key symptom of the design flaws within the system. Risk should be diminishing, but it isn't.

Meanwhile, there is a proliferation of hedge funds that continue to capture differentially higher returns. Over the past five years, the assets under management by hedge funds have grown over sixfold from \$300 billion to more than \$2 trillion. And this does not include the operation of the quasi-hedge fund proprietary trading desks at firms like Goldman Sachs or Deutsche Bank. It's a zero-sum game, though, so if hedge funds are able to extract differentially higher returns, someone else is paying for them with comparably subpar returns. Maybe it's you.

This is not the way it is supposed to work. Consider the progress of other products and services over the past century. From the structural design of buildings and bridges, to the operation of oil refineries or power plants, to the safety of automobiles and airplanes, we learned our lessons. In contrast, financial markets have seen a tremendous amount of engineering in the past 30 years but the result has been more frequent and severe breakdowns.

These breakdowns come about not in spite of our efforts at improving market design, but because of them. The structural risk in the financial markets is a direct result of our attempts to improve the state of the financial markets; its origins are in what we would generally chalk up as progress. The steps that we have taken to make the markets more attuned to our investment desires—the ability to trade quickly, the integration of the financial markets into a global whole, ubiquitous and timely market information, the array of options and other derivative instruments—have exaggerated the pace of activity and the complexity of financial instruments that makes crises inevitable. Complexity cloaks catastrophe.

My purpose here is to explain why we seem to be doing the right things but the results go in the other direction. The markets continue to develop new products to meet investors' needs. Regulation and oversight

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seek to ensure that these advances land on a level playing field, with broad and simultaneous dissemination of information and price transparency. But the innovations are somehow making our investments more risky. And more regulation, ironically, may be compounding that risk. It would seem there is a demon unleashed, haunting the market and casting our efforts awry: a demon of our own design.