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**Research Report**

## The US credit crunch of 2007: A Minsky moment

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The Levy Economics Institute of Bard College

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# ***Public Policy Brief***

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**No. 92, 2007**

## **THE U.S. CREDIT CRUNCH OF 2007**

A Minsky Moment

CHARLES J. WHALEN

**Public Policy Brief**

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## Contents

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<b>Preface</b> .....	5
Dimitri B. Papadimitriou	
<b>The U.S. Credit Crunch of 2007</b> .....	7
Charles J. Whalen	
<b>About the Author</b> .....	24

## Preface

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Most economists underestimated the economic impact of the credit crunch that has shaken U.S. financial markets this year. Charles J. Whalen reviews the nature of the 2007 credit crunch and concludes that it can be aptly described as a “Minsky moment.” He also concludes that the housing difficulties at the root of much of the credit crunch are likely to continue for some time.

Hyman P. Minsky was an economist at the Levy Institute and the foremost expert on credit crunches. He derived his financial instability hypothesis from his reading of John Maynard Keynes’s work. In contrast to the “Adam Smith” view of a market economy where endogenous processes generate an economic equilibrium and business cycles are the product of exogenous shocks, the Keynesian view led Minsky to maintain that endogenous processes breed financial and economic instability, and cyclical downturns are associated with involuntary unemployment.

Minsky rejected conventional economic ideas such as the efficient market hypothesis. His financial instability hypothesis holds that the structure of a capitalist economy becomes more fragile over a period of prosperity. Whalen observes that the evolutionary tendency toward Ponzi finance and the financial sector’s drive to innovate are connected to the recent situation in the U.S. home loan industry, where there has been a rash of mortgage innovations and a thrust toward more fragile financing by households, lending institutions, and purchasers of mortgage-backed securities.

The expansionary phase of the financial instability hypothesis leads to a Minsky moment. Without intervention in the form of collective action, usually by the central bank, a Minsky moment can engender an economic meltdown (i.e., plummeting asset values and credit, falling investment and output, and rising unemployment).

The key elements behind the 2007 credit crunch include the recent housing boom, “creative” lenders, exotic and subprime mortgages, unregulated

mortgage brokers, the securitization of mortgages—whereby bundles of loans are sold to investment funds such as hedge funds—and a conflict of interest among credit-rating agencies. The investment tools widely used by these funds involve a lot more Keynesian uncertainty than probabilistic risk, resulting in a wave of defaults by homeowners, highly leveraged mortgage lenders, and holders of mortgage-backed securities. Moreover, it is now recognized that precarious borrowing has woven its way throughout the entire global financial system.

Despite the arrival of a Minsky moment, a meltdown is unlikely, says Whalen. Central banks have stepped in as “lenders of last resort” to help maintain orderly conditions in financial markets and to prevent credit dislocations from adversely affecting the broader economy. The responses to the credit crunch have been consistent with Minsky’s advice, except for actions to preempt financial-market excesses by means of more rigorous bank supervision and tighter regulation of financial institutions.

Whalen believes that Minsky’s writings about the financial system and economic dynamics continue to be meaningful and should not be relegated to times of crisis. Minsky’s ideas challenge the belief in the inherent efficiency of markets and the laissez-faire stance toward economic policy. Moreover, his views draw attention to the value of evolutionary and institutionally focused thinking about the economy.

As always, I welcome your comments.

Dimitri B. Papadimitriou, *President*

October 2007

# The U.S. Credit Crunch of 2007

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## Introduction

On September 7, 2007, just after the U.S. Department of Labor released its monthly jobs report, a journalist at National Public Radio asked three economic analysts for a reaction. Their one-sentence responses were: “It’s worse than anybody had anticipated”; “It’s pretty disastrous”; and “I’m shocked” (Langfitt 2007). Before the report became available, the widespread view among economic forecasters was that it would show the U.S. economy gained about 100,000 jobs in August. Instead, there was no job growth for the first time in four years. In fact, there was a net *loss* of 4,000 jobs (U.S. Department of Labor 2007).

The forecasters were not done getting it wrong, however. After publication of the jobs data, a number of them predicted the news would bolster the U.S. stock market. Why? Because, they argued, the employment report practically guaranteed that the Federal Reserve (Fed) would cut interest rates on September 18. Instead, investor panic over the employment report caused the market, which had been volatile during most of the summer, to quickly lose about 2 percent on all major indices. The Fed did eventually cut rates as expected, but it took a number of reassuring comments by U.S. central bank governors on September 10 to calm Wall Street’s fears.

What is now clear is that most economists underestimated the widening economic impact of the credit crunch that has shaken U.S. financial markets since at least mid-July. A credit crunch is an economic condition in which loans and investment capital are difficult to obtain. In such a period, banks and other lenders become wary of issuing loans, so the price of borrowing rises, often to the point where deals simply do not get done. Financial economist Hyman P. Minsky (1919–1996) was the foremost expert on such crunches, and his ideas remain relevant to understanding the current situation.



This brief demonstrates that the U.S. credit crunch of 2007 can aptly be described as a “Minsky moment.”<sup>1</sup> It begins by taking a look at aspects of this crunch, then examines the notion of a Minsky moment, along with the main ideas informing Minsky’s perspective on economic instability. At the heart of that viewpoint is what Minsky called the “financial instability hypothesis,” which derives from an interpretation of John Maynard Keynes’s work and underscores the value of an evolutionary and institutionally grounded alternative to conventional economics. The brief then returns to the 2007 credit crunch and identifies some of the key elements relevant to fleshing out a Minsky-oriented account of that event.<sup>2</sup>

### **The Credit Crunch of 2007**

As early as March 2007, a smattering of analysts and journalists were warning that financial markets in the United States were on the verge of a credit crunch. By early August, business journalist Jim Jubak concluded that a crunch had finally arrived in the business sector, but not yet for consumers (Jubak 2007). Then, in early September, a survey sponsored by a mortgage trade group provided evidence that households were feeling the crunch too: a third of home loans originated by mortgage brokers failed to close in August because brokers could not find investors to buy the loans (Zibel 2007).

In an effort to explain the current credit crunch with an illustration, Jubak described the situation in the market for loans that finance corporate buyouts. In the past, banks have been willing to lend to the buyout firms because the banks have been able to resell the loans to investors. The problem in July 2007, however, was that the market for new and existing buyout loans had shrunk rapidly. Indeed, “Investors with portfolios of existing loans discovered [in late July] that they couldn’t sell their loans at any price. They were stuck owning loans that were losing big hunks of value by the hour. And they couldn’t find an exit” (Jubak 2007). Because other investors do not want to get caught in the same situation, buyout deals sit idle. According to the September 3 issue of *BusinessWeek*, “Banks now have a \$300 billion backlog of deals” (Goldstein 2007, p. 34).

The buyout market is just one dimension of the credit crunch. Another dimension involves “commercial paper”—promises to pay that a wide variety of companies issue to acquire short-term funding. By the end

of August, the \$1.2 trillion asset-backed commercial paper market, which often uses mortgages as collateral, was “freezing up,” just like the market for buyout loans (ibid.).

Yet another dimension to the crunch involves the role of hedge funds, which are largely unregulated, operate with considerable secrecy, and are designed primarily for wealthy individuals. Such funds are among the institutions that have relied most heavily on issuing commercial paper in the past few years. As recently as the end of 2006, Wall Street banks lent liberally to such funds, and much of that borrowed money was used to invest in huge packages of mortgages. However, when it became increasingly clear that large numbers of homeowners could not repay their mortgage obligations, the cash flowing to hedge funds dried up, and fund managers found themselves sitting on enormous losses. In June 2007, for example, two hedge funds run by Bear Stearns were wiped out, for a total loss of \$20 billion (Foley 2007).<sup>3</sup>

### **The Economics of Minsky**

Throughout the summer of 2007, more and more financial-market observers warned of the arrival of a *Minsky moment*. In fact, “We are in the midst of [such a moment],” said Paul McCulley, a bond fund director at Pacific Investment Management Company, in mid-August. McCulley, whose remarks were quoted on the cover of the *Wall Street Journal*, should know about a Minsky moment: he coined the term during the 1998 Russian debt crisis (Lahart 2007).

McCulley may have originated the term, but George Magnus, senior economic advisor at UBS, a global investment bank and asset management firm, offers perhaps the most succinct explanation of it. According to Magnus, the stage is first set by “a prolonged period of rapid acceleration of debt” in which more traditional and benign borrowing is steadily replaced by borrowing that depends on new debt to repay existing loans. Then the “moment” occurs, “when lenders become increasingly cautious or restrictive, and when it isn’t only overleveraged structures that encounter financing difficulties. At this juncture, the risks of systemic economic contraction and asset depreciation become all too vivid” (Magnus 2007, p. 7).

If left unchecked, the Minsky moment can become a “Minsky meltdown,” a spreading decline in asset values capable of producing a recession (McCulley, quoted in Lahart 2007). Even without a meltdown, the jobs market can soften. The “natural response” of employers is to be more cautious about adding workers when financial conditions tighten (Langfitt 2007).

The attention now being paid to Minsky raises the questions, Who was this economist, and what did he have to say about market economies and financial instability?

Hyman Minsky was born in Chicago in 1919 and studied at the University of Chicago and Harvard University. He earned tenure as an economics professor at the University of California, Berkeley, but later moved to Washington University in St. Louis. From 1991 until his death in 1996, he worked as a senior scholar at The Levy Economics Institute of Bard College. Minsky considered himself a Keynesian, which is not at all surprising since he served as a teaching assistant to Harvard’s Alvin Hansen, who was sometimes called the leading disciple of Keynes in America. However, Minsky was not comfortable with the way Hansen and most in the economics profession interpreted Keynes.

Minsky believed there were two fundamentally distinct views of the workings of a market economy, one of which he associated with Adam Smith, the other, with Keynes. In the “Smithian” view, Minsky argued, the internal and inherent (endogenous) processes of markets generate an economic equilibrium (either a static equilibrium or a growth equilibrium). In the Keynesian view, however, Minsky maintained that endogenous economic forces breed financial and economic instability (Minsky 1992a, 1992b; Ferri and Minsky 1992).<sup>4</sup>

This leads to what Minsky interpreted as two very different views of business cycles. In the Smithian view, business cycles are the product of exogenous shocks—forces external to market processes. In fact, unanticipated public policy interventions are, from this vantage point, among the most commonly identified sources of cycles. Moreover, in a Smithian variant called “real business cycle theory,” an economy is believed to be at full employment during all cycle stages.

According to what Minsky called the Keynesian view of business cycles, however, booms and busts are considered an inherent part of the system. In the Keynesian view, the ups and downs of the economy are a

product of the internal dynamics of markets, and this instability is considered a genuine social problem, in part because cyclical downturns are seen to be associated with an increase in *involuntary* unemployment.

In the 1950s and 1960s, much of the economics profession interpreted Keynes in a way that brought him into line with the Smithian view of markets. Minsky disagreed, and outlined an alternative interpretation in his 1975 book *John Maynard Keynes* (Minsky 1975). The book is a major American contribution to what these days is called post-Keynesian economics, a label that scholars like Minsky came to accept as a way of distinguishing themselves from economists who held on to the mainstream view of Keynes.

Minsky's reading of Keynes rests on Keynes's appreciation of the distinction between risk and uncertainty. A situation involving *risk* is one where probabilities can be assigned with confidence. A situation involving *uncertainty* is different—there are no precise probabilities to rely on. According to Keynes, in a situation characterized by uncertainty, our knowledge is based on a “flimsy foundation” and is “subject to sudden and violent changes” (Keynes 1937, pp. 214–15).

In Minsky's book on Keynes, the stress is on the central role that uncertainty plays in economic life. This is especially true in the accumulation of wealth, which is the aim of all capitalist investment activity. Minsky's emphasis is consistent with an article Keynes wrote summarizing his *General Theory of Employment, Interest, and Money* (1936), in which he states: “The whole object of the accumulation of wealth is to produce results, or potential results, at a comparatively distant, and sometimes at an indefinitely distant, date. Thus, the fact that our knowledge of the future is fluctuating, vague and uncertain renders wealth a peculiarly unsuitable subject for the methods of classical economic theory” (Keynes 1937, p. 213). In other words, investment depends heavily on conventional judgments and the existing state of opinion, but ultimately, investment sits on an insecure foundation.

Another fundamental element in Minsky's 1975 book is that *investment* is given a central role in understanding a nation's aggregate output and employment. This emphasis is also rooted in Keynes's summary of his *General Theory*, in which, while admitting that investment is *not the only* factor upon which aggregate output depends, he stresses that “it is usual in

a complex system to regard as the *causa causans* that factor which is most prone to sudden and wide fluctuation” (Keynes 1937, p. 221).

## Financial Instability versus Market Efficiency

While Keynes clearly stated that he thought conventional economics was unsuitable for studying the accumulation of wealth, the dominant view in contemporary finance and financial economics is an extension of the approach Keynes rejected. A core concept of conventional finance, for example, is the “efficient market hypothesis.” According to that hypothesis, even if individual decision makers get asset prices or portfolio values wrong, the market as a whole gets them right, which means that financial instruments are driven, by an invisible hand, to some set of prices that reflect the underlying or fundamental value of assets. As finance professor Hersh Shefrin writes, “Traditional finance assumes that when processing data, practitioners use statistical tools appropriately and correctly,” by which he means that, as a group, investors, lenders, and other practitioners are not predisposed to overconfidence and other biases (Shefrin 2000, p. 4).

Instead of believing in the efficient market hypothesis, Minsky developed what he dubbed the *financial instability hypothesis* (FIH). According to Minsky’s theory, the financial structure of a capitalist economy becomes more and more fragile over a period of prosperity. During the buildup, enterprises in highly profitable areas of the economy are rewarded handsomely for taking on increasing amounts of debt, and their success encourages similar behavior by others in the same sector (because nobody wants to be left behind due to underinvestment). Increased profits also fuel the tendency toward greater indebtedness, by easing lenders’ worries that new loans might go unpaid (Minsky 1975).

In a series of articles that followed his 1975 book, and in a later book titled *Stabilizing an Unstable Economy* (1986), Minsky fleshed out aspects of the FIH that come to the fore during an expansion. One of these is evolution of the economy (or a sector of the economy) from what he called “hedge” finance to “speculative” finance, and then in the direction of “Ponzi” finance. In the so-called *hedge* case (which has nothing to do with hedge funds), borrowers are able to pay back interest and principal when a loan comes due; in the *speculative* case, they can pay back only the interest,

and therefore must roll over the financing; and in the case of *Ponzi* finance, companies must borrow even more to make interest payments on their existing liabilities (Minsky 1982, pp. 22–23, 66–67, 105–06; Minsky 1986, pp. 206–13).

A second facet of the FIH that received increasing emphasis from Minsky over time is its attention to lending as an innovative, profit-driven business. In fact, in a 1992 essay, he wrote that bankers and other intermediaries in finance are “merchants of debt, who strive to innovate with regard to both the assets they acquire and the liabilities they market” (Minsky 1992b, p. 6). As will be discussed in more detail below, both the evolutionary tendency toward Ponzi finance and the financial sector’s drive to innovate are easily connected to the recent situation in the U.S. home loan industry, which has seen a rash of mortgage innovations and a thrust toward more fragile financing by households, lending institutions, and purchasers of mortgage-backed securities.

The expansionary phase of the FIH leads, eventually, to the Minsky moment. Trouble surfaces when it becomes clear that a high-profile company (or a handful of companies) has become overextended and needs to sell assets in order to make its payments. Then, since the views of acceptable liability structures are subjective, the initial shortfall of cash and forced selling of assets “can lead to quick and wide revaluations of desired and acceptable financial structures.” As Minsky writes, “Whereas experimentation with extending debt structures can go on for years and is a process of gradually testing the limits of the market, the revaluation of acceptable debt structures, when anything goes wrong, can be quite sudden” (Minsky 1982, p. 67).

Without intervention in the form of collective action, usually by the central bank, the Minsky moment can engender a meltdown, involving asset values that plummet from forced selling and credit that dries up to the point where investment and output fall and unemployment rises sharply. This is why Minsky called his FIH “a theory of the impact of debt on [economic] system behavior” and “a model of a capitalist economy that does not rely upon exogenous shocks to generate business cycles” (Minsky 1992b, pp. 6, 8).

## Understanding the Crunch from Minsky's Perspective

This brief is not the place for a comprehensive application of Minsky's FIH to the 2007 credit crunch. Fleshing out and connecting all the details are beyond what can be accomplished and presented here. Moreover, the event is still ongoing as of this writing. Nevertheless, it is possible to identify some of the key elements that must play a role in a Minsky-oriented account of this crunch.

Start with the housing boom, which began around the year 2000. After the "dot-com" bubble burst at the dawn of the new millennium, real estate seemed the only safe bet to many Americans, especially since interest rates were unusually low. At the same time, lenders became more and more creative, and enticed new and increasingly less creditworthy home buyers into the market with exotic mortgages, such as "interest-only" loans and "option adjustable rate" mortgages (option ARMs). These loans involve low payments at the outset, but then are later reset in ways that cause the minimum payments to skyrocket. Banks do not have to report how many option ARMs they write, but the best estimates are that they accounted for less than 1 percent of all mortgages written in 2003, but close to 15 percent in 2006. In many U.S. communities, however, option ARMs accounted for around one of every three mortgages written in the past few years (Der Hovanesian 2006).

Also add to the mix new players: unregulated mortgage brokers. In late 2006, brokers accounted for 80 percent of all mortgage originations—double their share from a decade earlier. Brokers do not hold the loan, and they do not have long-term relationships with borrowers: commissions are what motivate brokers. Many brokers pushed option ARMs hard because they were structured to be highly profitable for banks, which in turn offered the brokers high commissions on such loans (*ibid.*).

This leads us to another piece of the puzzle: securitization of mortgages. In plain English, this means that bankers bundle dozens of mortgages together and sell the bundles to investment funds.<sup>5</sup> Among the biggest purchasers of such structured packages have been hedge funds, which took advantage of their largely unregulated status and used these mortgage bundles as collateral for highly leveraged loans—often using the loans to buy still more mortgage bundles. According to *BusinessWeek* Banking Editor Mara Der Hovanesian (2006), the idea was that buyers of these bundles are pros at managing the risk. Minsky, however, would say that Der Hovanesian

has put her finger on the source of an important part of the current problem: the mortgage bundles, financial derivatives (such as futures and options trading), and other investment tools widely used by these investment funds involve a lot more Keynesian *uncertainty* than probabilistic risk.

This points to yet another element that plays a role in the current crunch: the credit rating agencies, such as Standard & Poor's. These agencies rate debt packages for the banks that sell them, and their ratings are supposed to be a guide to the likelihood of default. However, the rating agencies are paid by the issuers of the securities, not by investors, so they are always under pressure to give good ratings unless not doing so is absolutely unavoidable—offering less-than-favorable ratings can mean losing business to other rating agencies. And these agencies have made a great deal of money in commissions on such work since 2001 (Coggan 2007).

The contribution of credit rating agencies to the credit crunch, however, involves more than the conflict of interest among the agencies and those they rate. On September 1, 2007, Christopher Huhne—a member of the British Parliament and an economist who worked for a number of years at a rating agency—discussed the agencies and the credit crunch on the British Broadcasting Corporation's *World Business Review*. After acknowledging that conflicts of interest are a perennial problem, he shifted the focus in a Minskyan direction: "The real problem [is] that financial markets fall in love. They fall in love with new things, with innovations, and the [important] thing about new things is that it is very difficult to assess the real riskiness of them because you don't have a history by definition" (Huhne 2007).

There's also a matter of "garbage in, garbage out." Because the rating agencies do not verify the information provided by mortgage issuers, they base their ratings on the information they are given. That brings us back to the commission-driven mortgage brokers, who have often steered borrowers to high-cost and unfavorable loans (Morgenson 2007), and to home appraisers, who do not usually get steady business unless they confirm the home prices that realtors want to hear (Morici 2007).

When the aforementioned elements (which are not meant to be a comprehensive list of factors contributing to recent financial-market events) are mixed together, one needs only to hit "fast-forward" to arrive at the observed wave of defaults by homeowners, highly leveraged mortgage lenders, and



holders of mortgage-backed securities. In other words, the eventual destination is the credit crunch or Minsky moment, which hit in midsummer of 2007. At that point, borrowing and lending—and the hiring of additional workers—became more cautious across the board.

This new cautiousness was partly due to panic, but it was also partly due to recognition of the fact that precarious borrowing had woven its way into the entire system—indeed, into the global financial system—and nobody really knew exactly where the greatest dangers were.<sup>6</sup> For example, here is an excerpt from the Annual Report of the Bank for International Settlements, released in late June of 2007:

Who now holds [the risks associated with the present era's new investment instruments]? The honest answer is that we do not know. Much of the risk is embodied in various forms of asset-backed securities of growing complexity and opacity. They have been purchased by a wide range of smaller banks, pension funds, insurance companies, hedge funds, other funds and even individuals, who have been encouraged to invest by the generally high ratings given to these instruments. Unfortunately, the ratings reflect only expected credit losses, and not the unusually high probability of tail events that could have large effects on market values (Bank for International Settlements 2007, p. 145).

Today, these “large effects” are being felt on both Wall Street and Main Street. Industry estimates suggested in late April 2007, before Bear Stearns lost \$20 billion on its own, that investors holding mortgage-backed bonds could lose \$75 billion as a result of home loans given to people with poor credit. It has also been widely reported that more than two million holders of these so-called “subprime” mortgages could lose their homes to foreclosure (Pittman 2007). Indeed, U.S. mortgage foreclosure notices hit a record high in the second quarter of 2007—the third, record-setting quarterly high in a row (Associated Press 2007).<sup>7</sup>

Despite the arrival of a Minsky moment, a meltdown is not likely to follow. On both sides of the Atlantic Ocean, central banks have stepped in as “lenders of last resort” to help maintain orderly conditions in financial

markets and to prevent credit dislocations from adversely affecting the broader economy. Through action taken in August and September of 2007, for example, the Fed reduced the discount rate it charges banks, lowered the quality threshold on collateral used by banks to secure overnight borrowing, infused cash into the financial system, and engineered a decline in private sector interest rates by cutting the federal funds rate. Fed Chairman Ben Bernanke has also endorsed proposals for quick and temporary legislative action designed to protect some mortgage holders via government-backed enterprises, such as Fannie Mae and Freddie Mac (Thomson Financial 2007).<sup>8</sup> All of these responses to the credit crunch are consistent with what Minsky would have advised, though he would also have stressed acting to preempt financial-market excesses by means of more rigorous bank supervision and tighter regulation of financial institutions (Minsky 1986, pp. 313–28).<sup>9</sup>

Nevertheless, the housing difficulties at the root of much of the credit crunch are likely to continue for some time. Layoffs among lending institutions are expected to be up sharply in the next few months. The peak in the upward resetting of monthly payments for holders of option ARMs is also expected to come toward the end of the year; and the resets will continue throughout 2008 (Nutting and Godt 2007). Since there is already a glut of homes on the market, the construction industry will most likely remain in a severe slump, and home prices can be expected to continue to fall.<sup>10</sup>

### **Conclusion: “I Told You So”**

This brief demonstrates that the 2007 credit crunch can be understood as a Minsky moment. It should also be stressed, however, that pulling out Minsky’s ideas only during a crisis, then letting them fall back into obscurity when the crisis fades, does a disservice to his contributions, and to us all. Regardless of whether one is a student or a scholar, a policymaker or a private citizen, Minsky’s writings continue to speak to us in meaningful ways about the financial system and economic dynamics.

Although Minsky’s career ended in 1996, his ideas are still relevant. His scholarship challenges a belief in the inherent efficiency of markets. As a consequence, it also challenges a *laissez-faire* stance toward economic policy.

His ideas draw attention to the value of evolutionary and institutionally focused thinking about the economy.

Having worked with Minsky on a daily basis at the Levy Institute, I know that he would not have been surprised at all by the 2007 credit crunch and its impact on the U.S. employment report. While the reaction of mainstream economists was “I’m shocked,” Minsky would likely have just nodded, and the twinkle in his eyes would have gently said, “I told you so.”

### **Acknowledgments**

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## Notes

1. See the *Wall Street Journal* article on this topic by Justin Lahart (2007).
2. This brief presents a way of thinking about the current credit crunch. It is offered as a starting point for detailed analyses, not as a comprehensive dissection of the crunch or as a summary of such a dissection. The brief is motivated by the author's long familiarity with Minsky's perspective and a belief that studies of the contemporary financial realm would benefit from building on Minsky's ideas.
3. Hedge funds are huge players on the contemporary financial scene. In 2000, it is estimated that global hedge fund investments totaled \$324 billion, but the amount exceeded \$1 trillion by early 2005 and was still growing in 2006 (Financial Services Agency 2006).
4. As Anwar Shaikh of The New School recently reminded me, Minsky's distinction between Smith and Keynes relies on a caricature of the former. Minsky's view of Smith may conform to the conventional wisdom (a colleague of mine calls this the "neoclassical interpretation of the Smithian view"), but it is not fully consistent with a close look at Smith's ideas; see, for example, Viner (1927), Rosenberg (1960), Heilbroner (1973), and Nolan (2003).
5. Here are some figures that indicate the magnitude of U.S. mortgage securitization: in early 2007, about 65 percent of mortgages were being turned into bonds via securitization, up from 40 percent in 1990; and, in the years 2004–06, nearly \$100 billion per year in option ARMs were sold to investors (Pittman 2007; Der Hovanesian 2006).
6. The Bank of England's need to bail out the British financial institution Northern Rock (which has both depositors and shareholders fleeing at this writing) is an example of the international scope of the U.S. housing-driven financial crunch (see, for example, Larsen and Giles 2007). For a broader discussion of international dimensions of the 2007 crunch, see the article "Crunch Time," posted August 9, 2007, at *Economist.com* (2007).
7. For an estimate of the long-term economic impact of the decline in the U.S. housing market during the first quarter of 2007—and a brief discussion of the U.S. real estate crisis from a Minskyan perspective—see Papadimitriou, Hannsgen, and Zezza (2007).

8. The proposals Bernanke endorsed would raise the limit (which is currently at \$417,000) on the size of the home loan these government-sponsored enterprises can make. Another proposal would enable the Federal Housing Administration to help subprime borrowers who have fallen behind in their payments to refinance (Thomson Financial 2007). Just a day before Bernanke's remarks, the Bush administration announced it would let Freddie Mac and Fannie Mae increase their loan limits (which total about \$1.5 trillion) by 2 percent in the fourth quarter of 2007 (Tyson and Shenn 2007).
9. Although Minsky saw instability as inherent in capitalism, he also believed that steps could be taken to achieve greater stability and more consistent economic growth. His reform agenda included: a *monetary policy* component, which stressed the Federal Reserve's need to serve as lender of last resort to prevent a financial crisis from spreading and becoming an economic (aggregate demand, output, and employment) crisis; a *fiscal policy* component, which emphasized the countercyclical use of federal budget deficits to sustain aggregate demand in the face of faltering private investment; an *employment policy* component, which involved government serving as the "employer of last resort" (by making public service employment available for the jobless); and a *corporate reform* component, which included greater government supervision and regulation of financial markets and an antitrust policy oriented toward placing size (asset and/or employment) limits on corporations. Minsky saw these elements as an integrated and mutually reinforcing whole. For example, his corporate reforms were designed to reduce the need for lender-of-last-resort interventions and to avoid situations in which specific corporations would be seen as "too big to fail" (Minsky 1986, pp. 48–50, 250–53, 287–333; Minsky 1982, pp. 198–202).
10. Even more than hedge funds, the "poster child" (some would say the "Enron") of the recent housing-driven credit cycle is the United States' leading mortgage lender, Countrywide, which was one of the most profitable companies in the financial industry early in 2007, but by late August had burned through its entire credit line and was being kept afloat by a loan from Bank of America (ElBoghdady 2007; Reckard, Douglas, and Petruno 2007).

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Whalen has served as associate economics editor at *BusinessWeek* and as a resident fellow at the Levy Institute, where he worked with Hyman Minsky. He is editor of *Political Economy for the 21st Century: Contemporary Views on the Trend of Economics* (M. E. Sharpe, 1996) and has written extensively for academic and nonacademic audiences on U.S. economic trends, federal budget policy, and workforce insecurity. His publications include “Integrating Schumpeter and Keynes: Hyman Minsky’s Theory of Capitalist Development,” *Journal of Economic Issues*, December 2001; and “Economic Insecurity and the Institutional Prerequisites for Successful Capitalism” (with H. P. Minsky), *Journal of Post Keynesian Economics*, Winter 1996–97. He holds a Ph.D. in economics from The University of Texas at Austin.

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