

The U.S. Mortgage Crisis: Subprime or Systemic?*

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This chapter argues that the current U.S. mortgage crisis and the events leading to it are a textbook example of Minsky's analysis of capitalist economies. After briefly reviewing Minsky's framework of analysis, this chapter illustrates his theory with the trends recorded since the early 1990s. Rather than being mainly the result of granting mortgages to individuals with less than perfect creditworthiness or of the greed of home speculators, the crisis was caused by the fact that, as Minsky used to say, "stability is destabilizing." This reading of the crisis leads to specific policy recommendations that are presented briefly at the end of this chapter.

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5.1 INTRODUCTION

Most commentators have pointed at subprime lending and home speculators to explain the current financial crisis. While those trends contributed to the latter, they are only part of the story. There were much deeper forces at play that resulted in a progressive transfer toward financial deals relying more and more on liquidation and borrowing as a means to meet financial commitments. This process was at work in all parts of the mortgage industry, prime and nonprime, as well as in consumer finance and leveraged buyouts.

Minsky's theoretical framework is a good point of reference to understand the current financial crisis. He provided a detailed explanation of how "stability is destabilizing," that is, how a period of enduring economic prosperity creates a favorable environment for the emergence of what he called a Ponzi process. The forces that generated instability are not based on irrationality, greed, or market imperfections; they are intrinsic to the way the capitalist economic system works. Thus, rather than providing financial literacy, imposing a tax on financial transactions, or improving disclosure of information, Minsky emphasized the importance of orienting financial reforms toward understanding and managing systemic risk from a cash-flow perspective.

Section 5.2 reviews Minsky's framework by presenting some of the systemic forces that progressively lead to economic instability. Section 5.3 illustrates Minsky's theory by analyzing some of the trends in the financial industry that have led to the crisis. Section 5.4 describes the immediate causes of the crisis and its unfolding. Section 5.5 concludes and provides some recommendations for financial reforms.

5.2 MINSKY'S FINANCIAL INSTABILITY HYPOTHESIS

The "financial instability hypothesis" was first put forward by Hyman P. Minsky in 1964. Stated concisely, it claims that "stability is destabilizing," that is, capitalist economies, even though very innovative and productive, are intrinsically unstable (Minsky, 1986). The instability of a capitalist economy is not mainly the result of irrational choices, asymmetries of information, or other "imperfections" of markets and individuals. Instead, it is the result of psychological, sociological, economic, and policy factors that a capitalist economy tends to exacerbate. Those are presented briefly in this section; an extended explanation is provided in Tymoigne (2009a).

Minsky first notes that we live in an uncertain world (in Knight's and Keynes's sense of the term). In this context, he notes that individuals' decision-making process is quite different from the one assumed in risky environments. Indeed, probability calculus is not as reliable (or not reliable at all) and people tend to complement it (or to replace it) by simple rules like anchoring and adjustment (e.g., extrapolation of the recent past) and representativeness (e.g., chartist approach in finance). These psychological factors have been studied extensively by Kahneman and Tversky (e.g., Tversky and Kahneman, 1974). Psychological factors are complemented by sociological factors because, under uncertainty, individuals tend to look for the approval of others. This leads to the creation of economic conventions, that is, mental models commonly agreed upon by a group of individuals. Individuals more or less know that conventions do not represent the true model of an economy; however, they are used because they are essential in an uncertain environment. Indeed, conventions create a focus point by providing a reading of economic events and a view of the future, which helps to rationalize (sometime *ex post*) economic decisions. The "New Economy" of the 1990s was a famous convention.

The previous types of behavior are "irrational" if one follows the strict jacket of the New Consensus economic framework. However, the hypotheses underlying rationality in the latter framework are either those of pure and perfect competition (which implies perfect and costless information), or of risky and imperfect environments (probability distributions are well established or can be established over time with additional, albeit costly, information). In an uncertain world, in which the future is unknowable, behaving as if everything is known, or could be known, leads to dangerous consequences for individuals. In addition, in an uncertain world, more information does not necessarily lead to a better decision-making process. In fact, psychologists have shown that the quality of decisions declines above a certain amount of information and that only confidence is positively related to more information (Wärneryd, 2001: 168). Finally, information is subject to interpretation (through the psychological and social factors cited above) and the latter is what matters rather the information itself.

These psychological and sociological factors promote instability over time in several ways. First, the longer a period of expansion, the more people think recessions are a thing of the past and so the more indebted and the less liquid they are willing to be. Individuals forget the lessons from the past and become more confident to perform riskier financial

deals. A second way is the ignorance of important information, or the interpretation of negative information as positive information.

Some economic factors also promote instability. First, competition for monetary accumulation pushes economic agents to try to guess the uncertain future in order to obtain a bigger monetary profit relative to their competitors. This race toward the future is the source of the productivity of the capitalist system, but also of its instability. Indeed, it forces individuals to forget about the big picture concerning where the economy is heading, and to narrow their effort on beating the competition by all means (sometime illegal) because their own economic survival is at stake. One of this means is the use of debt; for example, managers are not rewarded for managing a stable business but for an aggressive expansion.

Second, competition is an essential ingredient in the formation of conventions and their wide use by economic agents. Indeed, given the fast pace, “in-the-present” world of entrepreneurial leadership, the previous sociological and psychological factors tend to be followed more closely. Also, competition pushes competitors to follow those who perform best, and to ignore information that is too costly to obtain or that could threaten a competitive position.

A third economic factor that promotes instability is the fact that the macroeconomy operates under rules different from the microeconomy (e.g., the paradox of thrift); therefore, things that make sense at the individual level may be fallacious for the economy as a whole. This generates positive feedback loops peculiar to the capitalist system (Minsky, 1986: 227) that individuals are unaware of, or unwilling to take into account, because they are too complex to analyze. Minsky especially emphasizes the Kalecki equation of profit, which shows that aggregate monetary profit is determined by the investment expenditures of entrepreneurs. Thus, the more entrepreneurs invest, the more they earn, and so the more their expected earnings rise which encourages additional investment. This leads to the “paradox of debt” (Lavoie, 1997) for which a higher willingness to go into debt leads to lower aggregate debt-to-equity ratio. This positive “frustration” of expectations reinforces entrepreneurs’ optimism and so increases their willingness to use leveraged positions.

A fourth economic factor that promotes instability is the shortening of the maturity of debts. According to Minsky, the proportion of short-term debts (short relative to the maturity of the operations they fund) tends to grow over a sustained economic expansion because they are less expensive and because refinancing operations grow. Shorter maturity compounds

the effect of higher interest rates on debt-service payments by increasing the speed of repayment. Shorter maturity also creates a need to refinance and so make an economic unit more vulnerable to disturbances in the financial sector.

A final economic factor that may promote instability is financial innovations. The latter are essential to maintain the profitability of financial institutions because, like for any other industry, the market for a given product always ends up saturating. Over a period of enduring expansion, innovations involve extending the use of existing financial products to more risky enterprises and the creation of financial products with higher embedded leverages. In addition, new financial products are marketed as sophisticated products that are better able to measure and/or to protect against risks associated with leverage, which tends to let people believe that the use of debt is safer than in the past (Galbraith, 1961).

Finally, at the policy level, there are, for Minsky, several factors that may promote instability. Once a capitalist economy is booming and close to full employment, it tends to promote inflation. This pushes the central bank to raise its rate of interest and so generates an increase in interest payments. This is all the more the case that debts are based on flexible interest rates and short maturity, and that a lot of refinancing operations are performed. While the central bank raises its interest rates, fiscal policy also becomes more restrictive, either for political reasons (reaching a budget surplus usually is part of the political agency of any administration) or to limit inflationary pressures. This reduces the net incomes received by private entities and so further decreases their capacity to service debts, which leads to an increasing dependence on refinancing sources. Finally, given the existing economic set up, inappropriate regulatory and supervisory institutions also will tend to promote instability. Notably, a regulatory system that is not flexible enough to account for new innovations and changes in behaviors may create competitive disadvantages and perverse incentives (e.g., regulation Q in the 1970s).

All these factors may promote economic instability (both upward (inflation and speculation) and downward (deflation and recession)) because they tend to increase the financial fragility of economic agents over an enduring expansion. Given everything else, progressively there is growing reliance on external funds and position-making operations (i.e., liquidation and refinancing). Thus, economic agents come to rely increasingly on the expected availability of some refinancing sources to repay their outstanding debts; this represents what Minsky called “speculative finance.”

Over time, this speculative financing worsens into Ponzi financing for which the servicing of a *given* amount of outstanding debts requires a *growing* amount of refinancing operations or liquidation at *rising* prices. When refinancing sources dry out, massive forced liquidations occur and the system heads toward a debt-deflation process (Fisher, 1933).

It is important to note that for Minsky, the boom phase of a business cycle is only one component of the story. Financial fragility does not need mania and irresponsible lending practices to emerge even though they compound the previous tendencies. A long period of sustained expansion (during which economic results are excellent and so optimism is justified) is the main driver of financial fragility, the boom is only there to give the *coup de grâce*. Stated another way, by acting according to the rules of the economic system and making intelligent and rational decisions within the prevailing conventions (which define the norms of behavior), economic agents may still promote economic instability.

5.3 THE ROAD TO THE CURRENT CRISIS: AN APPLICATION OF MINSKY'S ANALYSIS

Since the end of 2006, the housing sector has been in a state of limbo. As illustrated in Figures 5.1 through 5.3, foreclosure started and delinquency rates have been rising steadily and have reached historical high levels, and house prices have been dropping at an accelerating rate.

Nevada, California, and Florida lead the nation in terms of foreclosure rate according to RealtyTrac and, with Arizona, they are the states that have recorded the biggest drop in house prices with declines superior to 30%

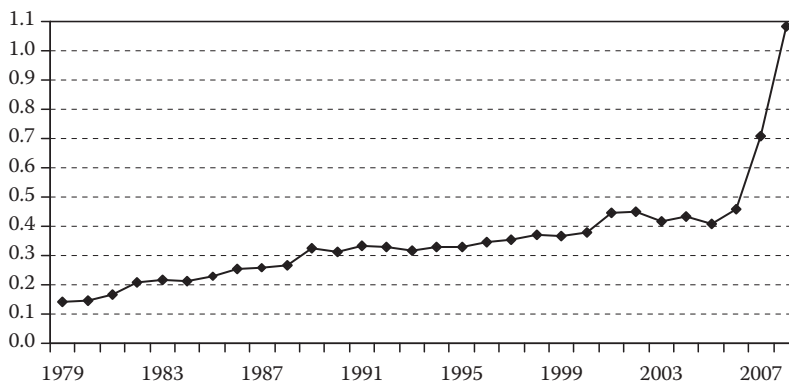


FIGURE 5.1 Rate of foreclosure started, all mortgages (percent). (From Mortgage Banker Association, Average of the first three quarters for 2008.)

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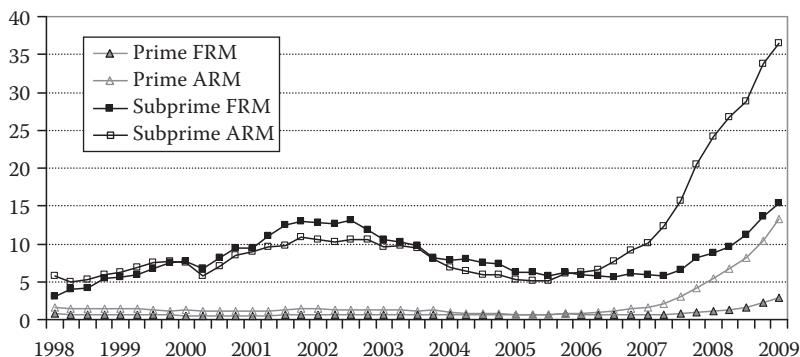


FIGURE 5.2 Percentage of single-family mortgages in serious delinquency. (Mortgage Banker Association.)

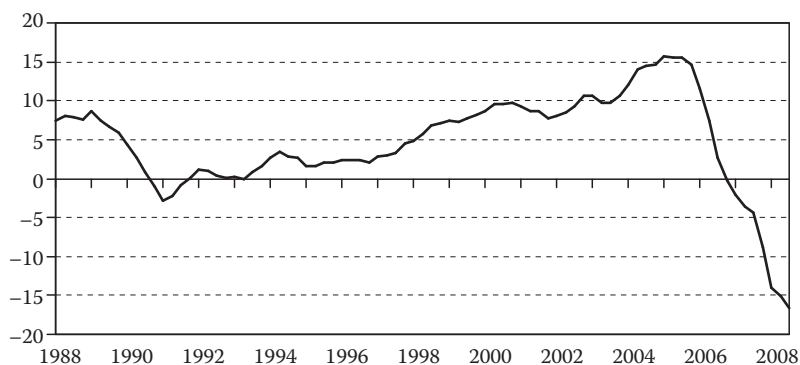


FIGURE 5.3 Annual growth rate of U.S. home price index (percent). (From Standard and Poor's.)

from the second quarter of 2006 to the third quarter of 2008 (Tymoigne, 2009b). The drop has concerned all types of single homes but is more pronounced for low-tier homes.

Most commentators have stated that the mortgage crisis is a subprime crisis but as the delinquency figures suggest, the subprime area is only part of the story. All mortgages have been performing much worse, and adjustable rate mortgages (ARM) and other nontraditional mortgages have been performing horribly whatever the creditworthiness of the mortgagors. Rather than being confined to the subprime mortgage business, the events that led to the possibility of a crisis were generalized to all sectors of the mortgage industry and were compounded by people who

truly wished to stay in their home. In order to understand why, one needs to remember that since the mid-1980s, the U.S. economy had been experiencing a long period of stability with only two minor recessions. Thus, the financial community and the public progressively became used to relatively stable default rates and rising home prices, which had three major consequences.

A first consequence was that financial institutions became willing to create complex financial products that involve higher leverage and that gave the impression that credit risk and liquidity risk can be managed more efficiently than in the past. Securitization has been the main driver of those innovations that were extended progressively to more and more esoteric activities. In addition, through subordination and other credit-enhancement methods, financial institutions were able to create investment-grade securities that contain very high embedded leverage and that are backed by nonprime mortgages and noninvestment-grade securities.

Securitization first started in the mortgage industry in the early 1970s and, from the mid-1980s until today, was progressively extended to other economic activities like auto loans, student loans, and, more recently, carbon emission allowance and nonperforming loans.

However, it is likely that there is a finite amount of illiquid receivables that can be used to create asset-backed securities (ABS), simply because there is a limited number of economic activities (or their number grows too slowly to meet the demands of financial institutions in terms of market expansion). To counter this problem, resecuritization, re-resecuritization, and so on, have been developed and have consisted in securitizing securities themselves rather than nontradable financial claims. However, piling up levels of securitization also has limits because modeling becomes extremely complex and data to evaluate the risks involved in the new securities is inexistent, which creates valuation problems that becomes acute during the crisis. To counter this barrier to market growth, synthetic securitization was developed in 1997 and it has grown rapidly since 2001. In 2000, the growth in synthetic securitization was boosted by changes in the regulatory framework described below, and it has led to a change in the main motive of securitization (Tymoigne, 2009b), which, since 2001, has been driven by portfolio arbitrages rather than by the removal of credit and liquidity risks from the balance sheets of loan originators.

The crisis has put a halt to the innovative frenzy but, surely, more innovations will emerge, by widening the number of structured products and by increasing the appeal for existing securities issued by special purpose

entities (SPE), in order to counter regulatory barriers and other limits to market growth. Das provides a nice insider view of the need for the financial sector to innovate constantly.

We need ‘innovation’, we were told. We created increasingly odd products. These obscure structures allowed us to earn higher margins than the cutthroat vanilla business. The structure business also provided flow for our trading desks. [...] New structures that clients actually wanted were not that easy to create. Even if somebody came up with something, everybody learned about it almost instantaneously. [...] Margins, even on structured products, plummeted quickly. (Das, 2006: 41)

Basel II imposes very high weights (much higher than 100%) on structured securities with a credit rating below BBB in order to provide an incentive to issue investment-grade securities (Renault, 2007: 394ff.). However, mezzanine and rated junior structured notes have been very popular among financial institutions because of the higher spread they provide relative to traditional securities with similar ratings. Thus, it is likely that financial institutions will find ways to counter this barrier put on their profitability.

A second consequence of the long period of expansion, combined with the previous developments in the financial system, has been a willingness to let financial institutions self-regulate* their activities and to let more of them participate to the securitization process. First, the Financial Modernization Act of 1999 legalized the increasing diversification of financial activities undertaken by financial companies. One of the main consequences is that financial companies have become involved in activities in which they have had limited experiences and that may not be coherent with their core business. This increases the potential financial fragility of a company as well as systemic risk. AIG and Citi are perfect examples of the danger of too much diversification toward unfamiliar activities and/or activities with a risk level incoherent with the core business. Second, the

* In addition, given the strong unpopularity of government regulation since the early 1980s, regulators like the SEC and the FDIC have been seriously understaffed and undertrained for years (if not decades), which has resulted in the incapacity to detect and to prosecute properly dangerous financial practices. The S&L crisis (Black 2005) and the recent Madoff and Co. scandals (Wayne 2009), which are only the tip of the iceberg given the reckless behaviors of all major financial institutions in the 2000s, are good illustrations of this state of affairs.

Commodity Futures Modernization Act of 2000 left credit default swaps (CDS) and, later, equity default swaps (EDS) completely unregulated by federal agencies, which, given their exclusion from state gambling laws (on the basis that they are derivatives and so are not considered gambling activities (Adelson, 2004: 5)), led to a huge boom in the CDS market from 2001. This has allowed synthetic securitization, especially for arbitrage purposes, to grow tremendously. Third, in November 2000, the Employee Retirement Income Security Act was amended to permit pension funds to buy investment-grade structured securities (independent of the rating of the underlying collateral), which was essential to widen the demand for structured securities. This, in turn, was essential to sustain the growth of mortgage lending because mortgage products, especially subprime residential mortgages, were the main source of collateral for structured securities (Bank of International Settlements, 2008: 5).

As the result of enduring expansion, innovative frenzy, and deregulation, the conditions became ideal for the emerge of a boom in the mortgage industry, which has consisted in widening lending to riskier borrowers, as well as progressively loosening underwriting procedures and consumer protection for all types of mortgage (prime and nonprime). This was essential to maintain the profitability of financial institutions and to counter limits to market growth.

From 2001 to 2003, there was a large refinancing process going on in the prime mortgage business, but, as the market dried, mortgage originators turned to non-prime borrowers, as shown in Figure 5.4. One may

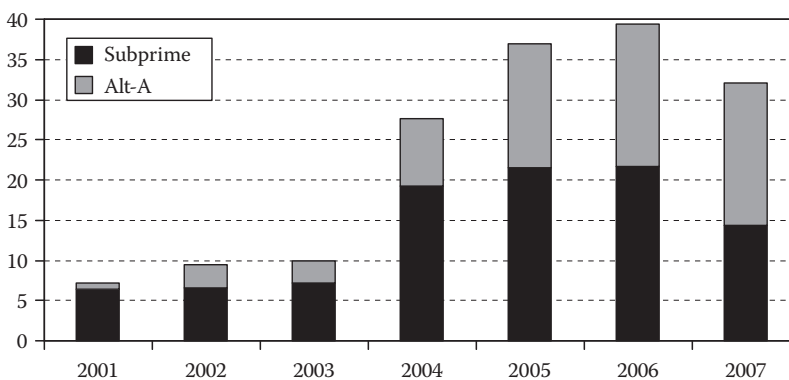


FIGURE 5.4 Share of nonprime mortgages in securitized mortgage originations (percent). (From Rosen, K.T., *Anatomy of the housing market boom and correction*, Fisher Center for Real Estate and Urban Economics, Working Paper No. 306, University of California at Berkeley, Berkeley, CA, 2007.)

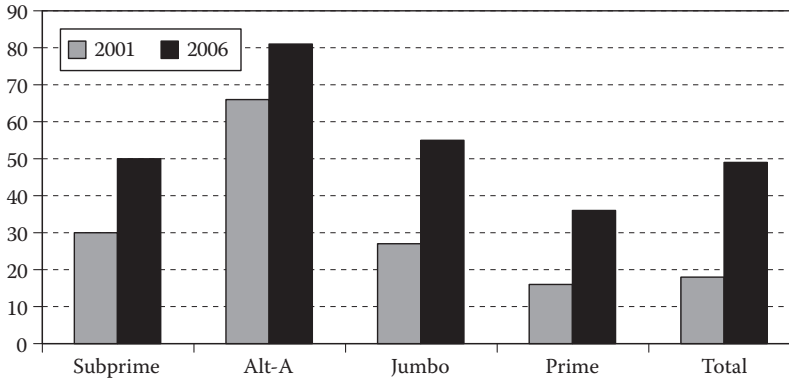


FIGURE 5.5 Distribution of low/no-doc share of purchase origination (percent of origination dollars of securitized loans). (From Zelman, I.L., *Prime conforming mortgages have 0% of no-doc mortgages*, 13, 2007.)

note that from 2005, the source of growth of nonprime mortgages was alt-A lending rather than subprime lending. As shown in Figure 5.5, this was accompanied by the proliferation of mortgages with low or no documentation (to verify borrower's income, assets, etc.) in the nonprime and prime categories. In fact, the growth of low-doc/no-doc mortgages was much higher in the prime-mortgage business from 2001 to 2006, while this was already a well-established practice in the non-prime business from 2001 (especially for alt-A mortgages).

According to Zelman (2007), in 2005 and 2006, at least 50% of all new mortgages backing private-label mortgage-backed securities (PL MBS) had a low documentation; and this proportion climbed to 77.9% in 2006 for alt-A mortgages purchased to back PL MBSs. Among PL MBSs issued in 2006, 5.8% of the jumbo mortgages backing them did not have any documentation, 3.3% for alt-A mortgages, and 0.2% for subprime mortgages.

The boost provided to mortgage lending, by extending it to non-prime borrowers and by loosening underwriting requirements was reinforced further by a large increase in frauds. The lenders compounded those problems by not verifying the information provided by borrowers even though it was very easy to do so (Morgenson, 2008). In fact, the Financial Crimes Enforcement Network finds that mortgage brokers, appraisers, and borrowers were all central parts of fraudulent schemes that consisted mainly in misrepresentation of income/assets/debts and forged/fraudulent documents (over 70% of all frauds in the mortgage industry) (Financial Crimes Enforcement Network, 2008). Fraud became a quasi-institutionalized

way of operating for all eyes to see, with Web sites advertising software that allows to print fake pay stubs and fraudulent methods to raise credit scores (Creswell, 2007).

Financial institutions further pushed back limits to market growth by advertising “low-cost” mortgages that seems attractive at first but were highly toxic for borrowers. As a consequence, the chance of default increased for any level of creditworthiness. In addition to the advertisement of teaser interest rates, the rise of nontraditional mortgages has taken several forms. One form, shown in Figures 5.6 and 5.7, has been an increase in interest-only mortgages (IO) and payment-option mortgages.

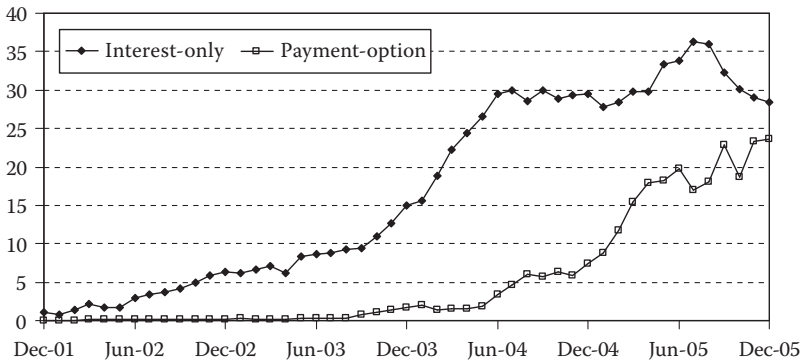


FIGURE 5.6 Proportion of nonprime mortgage originations with nontraditional characteristics (percent). (From *FDIC Outlook*, Summer 2006, <http://www.fdic.gov/bank/analytical/regional/index.html>.)

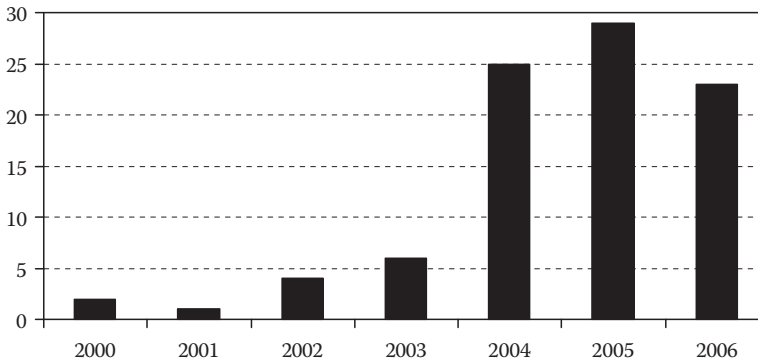


FIGURE 5.7 Share of interest-only and payment-option mortgages as a percent of all mortgage originations purchased. (From Zelman, I.L., *Mortgage liquidity du jour: Underestimated no more*, Credit Suisse, Equity Research, New York.)

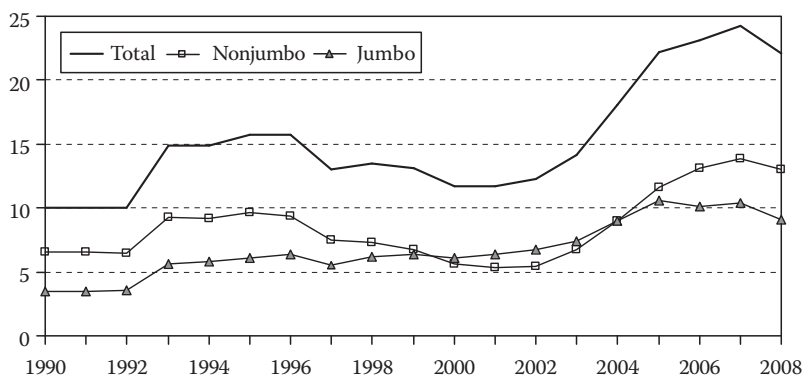


FIGURE 5.8 Proportion of conventional single-family mortgages with adjustable rate (percent). (From Office of Federal Housing Enterprise Oversight, Average of the first three quarters for 2008.)

Another form, shown in Figure 5.8, has been an increase in the proportion of ARMs because of their lower monthly cost relative to fixed-rate mortgages (FRM), at least until the end of 2006 (Tymoigne, 2009b).

The low-cost and low-doc effects were reinforced by a higher loan-to-value ratio, piggyback lending, and short-term interest reset (Zelman, 2007: 4) in order to create a large increase in origination volumes by lending to new borrowers and by encouraging existing borrowers to refinance. All this was compounded by the willingness of households (which was itself initiated and nurtured by aggressive marketing strategies) to go for those “low-cost” mortgages even though rates on traditional mortgages were already at historical low in 2003:

Finally, “we thought, why not live a little bit dangerously and do the interest only?” Mr. James said. “Why pay the principal if we don’t know how long we’re going to be there?” (Bayot, 2003).

As Bayot notes candidly about IOs:

Leaving the principal balance on a mortgage untouched, however, carries risks. [...] This is not to worry as long as home prices are appreciating [...] and owners can simply sell for more than they paid. (Bayot, 2003)

Thus, by 2003, the Ponzi process was working at full speed in the mortgage industry. As the previous quote shows, this Ponzi process was not only sustained by speculators but also by individuals who did not think that

they would stay in the house for a long time, even though they were genuinely interested in staying in the house. However, the underwriting process faulted by qualifying them on the basis of interest payments or of the introductory payments, and by taking the “long” history of rising home prices as a given. The latter trend created a feeling that selling a home is a normal and safe way to repay a mortgage.

The Ponzi process was not limited to the mortgage industry but was present also in consumer finance (Brown, 2007; Tymoigne, 2007), as well as in corporate leveraged buyouts that went on at a frenetic pace with extremely high (and rising) leverage (International Monetary Funds, 2008a: 10, n. 21.). A 2006 *New York Times* article by Duhigg clearly shows the mood of moment:

With Wall Street caught up in a wave of acquisitions, normally cautious bond investors are living like Las Vegas high rollers [...]. And for some companies, the more they borrow, the safer they are deemed. [...] The wave of recent purchases by private equity groups has pushed issuance of high-risk debt to record levels. [...] But instead of worrying that defaults will increase, debt prices are signaling that bondholders believe that companies will have few problems paying off new loans. (Duhigg 2006)

This is a classical example of the boom period analyzed by Minsky.

Overall, therefore, there is more to the story than just subprime lending, which stagnated from 2005. This threatened the continuation of the Ponzi process by making it more difficult to qualify a growing number of people and to sustain home price growth. The latter was essential because liquidation came to be seen as a normal way to service mortgage payments. In order to counter the stagnation of subprime lending and some policy events described below, mortgage brokers shifted lending toward alt-A borrowers and, as shown in Figure 5.6, toward more exotic forms of mortgage relying less on interest-rate incentives and more on payment options. In addition, lending requirements on prime and non-prime mortgages loosened significantly and fraud grew rapidly. All this allowed the Ponzi process to continue but increased the financial fragility of mortgageors. As shown later, this also increased the financial fragility of financial companies by increasing counterparty risk and by raising wishful thinking through a higher reliance on automated underwriting programs, and level 2 and level 3 valuation models.

Because of the previous trends, the broader access to homeownership and consumer lending has been associated with growing financial fragility and higher repossessions. Therefore, the gains on the real side have been short lived, and homeownership has been declining since 2005 while the homeowner vacancy rate has been rising steeply to historical highs since 2006.

5.4 THE IMMEDIATE CAUSES OF THE CRISIS AND ITS UNFOLDING

The possibility of a crisis was generated by the previous trends. The immediate causes of the crisis involve financial events as well as two policy events. On the financial side, principal payments started to kick in for IOs and teaser interest rates began to be reset upward, which has led to an increase in delinquency from the third quarter of 2006. The number of interest-rate resetting is expected to continue to rise until the end of 2011; therefore, defaults will continue to rise sharply if nothing is done (International Monetary Fund, 2007: 8). On the policy side, first, the Federal Reserve started to raise its interest rate rapidly from early 2004, which affected ARMs very rapidly and led to a significant slowdown in ARM originations from 2006. Second, from the end of 2003, the Treasury decided to reduce its deficit and planned to reach a surplus by 2012. These two policies progressively squeezed the income of the private sector (Tymoigne, 2007). Given the increasing financial fragility of the private sector induced by the previous tendencies, only a relatively small decline in income was necessary to unwind the Ponzi process in the mortgage industry. The process had been stretched to its maximum to counter those policy actions and limits to market growth, and started to unwind at the end of 2006.

As a consequence of the rise in delinquency, defaults on mortgages have started to rise sharply as the rate of foreclosure suggests. Thus, loan originators and other SPE sponsors did not receive debt service payments and so could not service the securities issued by SPEs, which greatly affected the profitability of financial institutions. This led to a decline in lending activities, which, given that the growth of home prices was based on a Ponzi process, has led to a sharp decline in house prices. The decline has been so steep that originators could not recover the outstanding principal of mortgages as they expected. All this has led to a large decline in the value of all tranches of SPE securities, senior or subordinated, and, in July 2008, BBB rated CDSs on ABSs traded on average at a 90% discount (60% for AAA ABCDS) (International Monetary Funds 2008b: 13).

Defaults and large declines in the value of securities triggered the unwinding of swap contracts and other securities affected by them (e.g., leveraged super senior notes and credit-linked notes). The unwinding has been so large that super senior tranches, that were supposed to be extremely safe, have been affected. Given the losses, monolines, pension funds, and hedge funds, who are the net sellers of credit protection (International Monetary Fund, 2008a), could not meet payments on CDSs and other securities, and their financial problems have been transmitted rapidly to others. Indeed, for example, net buyers of CDSs who thought that they had hedged their short CDS positions by buying CDSs figured out that the counterparty could not pay; therefore, those institutions could not make good on the contingent payments required by the CDSs they sold. A “long” period of stable default rates and rising home prices had given the impression that selling protections on credit risk was a safe and easy way to make money. Thus, financial institutions did not put aside any funds to meet contingent payments; or if they did, the amount put aside was too small to meet the large required payments given the size of the drop in the value of securities.

All these developments in the CDS and other markets were compounded by additional factors, which, all combined, have led to massive liquidations and spectacular failures in the financial sector. First, the crisis made it very difficult for SPEs to refinance their positions (especially asset-backed commercial paper conduits and special investment vehicles that fund their positions in long-term assets with short-term and medium-term securities),* and the automatic unwinding triggers of SPEs forced the latter to liquidate their positions. The financial difficulties of SPEs have led to a return to the originators’ balance sheet of the credit risk and liquidity risk that they wanted to avoid either through credit lines granted to SPEs or through other forms of guarantees provided to the latter. As a consequence originators’ equity capital and cash reserve were rapidly depleted, which reinforced the refinancing and liquidation pressures on the financial system. Second, monolines (especially Ambac and MBIA) were downgraded in the middle of 2008, which contributed to massive liquidations and write-downs of structured products. Indeed, their downgrading affected the strength of the third-party insurance they provided, and so

* The creation of a maturity mismatch in the funding of securitization was “encouraged by the implicit belief that ready access to [short-term] financing would always be there” (Counterparty Risk Management Policy Group III, 2008: 38). This is a clear example of the use of what Minsky called speculative finance.

affected the credit rating of securities relying on this insurance; therefore, pension funds and others required to buy only investment-grade securities had to sell some of their positions. Third, the complexity of structured notes and lack of data to value them have led to a large increase in level 3 valuation methodology, for which homemade models are created to value a security (International Monetary Funds, 2008a). Of course, level 3 can lead to large abuses, and, sometimes, financial firms used different pricing models to value financial assets for their customers and internally (Counterparty Risk Management Policy Group III, 2008: 88). With level 3, the assessment of solvency and liquidity by regulators and private companies becomes extremely difficult. The Trouble Asset Relief Program has shown how difficult it is to find a way to value those securities (probably most of them are worthless).

Combined with further actual and potential threats (e.g., the rise of margin requirements (International Monetary Funds, 2008a)), all these events brought the U.S. financial system (and with it the whole U.S. economy) on the brink of complete destruction. As a consequence, in addition to trillions of dollars of advances provided by the Federal Reserve to meet short-term liquidity needs, the federal government had to intervene in an unprecedented manner through massive lending programs, capital injections, and purchases of toxic securities for a committed amount of 7.8 trillions of dollars. For the moment, losses have concerned mainly U.S. banks with write-downs totaling around 350 billions of dollars. Worldwide the financial sector has lost about 750 billions of dollars, including 600 billions by banks and 100 billions by insurers; the losses are mostly in mortgage and leveraged-loan products and there are growing rapidly (International Monetary Fund, 2008b: 17). Given the trend of home prices, interest-rate resets, foreclosures, and delinquencies, more losses and government interventions are to be expected.

5.5 CONCLUSION

Rather than being the result of lending to less creditworthy borrowers and home speculation, the crisis is the result of a widespread loosening of underwriting criteria and of the quality of all mortgages, which has increased the financial fragility of all mortgagors. This has resulted in historical high levels of delinquency and foreclosure for all mortgages.

The decline in underwriting standards and consumer protection were the result of a long process of deregulation and unchecked financial innovations that was driven by (1) an enduring period of economic stability

(which pushed to find new ways to make money as markets saturated, and which gave the confidence to increase leverage in financial innovations and existing economic activities); (2) cutthroat competition (which pushed to innovate frenetically and promoted sloppy underwriting and rating standards); and (3) beliefs that market mechanisms and profit motive always lead to social optimal and that government should get out of the way.

This period of time was a classical example of the transfer from hedge to Ponzi financing that Minsky analyzed in detail. Once established the Ponzi process in the mortgage business has required more and more daring financial practices, which ultimately have consisted in letting borrowers choose what income to state and how much debt to service, and letting financial companies use esoteric methods to price and to rate structured securities.

All this has several implications in terms of policy and only a few of them are briefly presented here (Tymoigne, 2009a,b provide a more in-depth analysis). First, nonprime lending is not synonymous with “bad” lending and may be perfectly normal as long as the financial terms are adapted to the needs of borrowers *and* are related to their normal sources of cash inflow. Of course, default rates are much higher on nonprime loans but that is a given, and lenders who decide to enter into this business ought to be able to protect themselves. Second, the estimation of creditworthiness needs to be based on a cash-flow approach instead of just looking at credit history. Indeed, rising home prices and a long period of good credit history lower default probabilities and raise credit ratings (which allows more customers to qualify for a mortgage and so sustains house-price growth), even though the underlying creditworthiness of borrowers may be weakening and may be relying heavily on a Ponzi process (Tymoigne, 2009b). Rather than asking “will you repay on time?”, one should ask “*how* will you repay on time?” and the liquidation of a home, or the expectation that refinancing will be available, should never be a criteria to judge the *intrinsic* capacity to repay. In addition, customers should be qualified only on the basis of the full debt service payments, even if they plan to repay fully before principal servicing begins. Third, better financial literacy and better disclosure of information to financial investors will not help to prevent similar future crises. Not only because more information does not mean better decisions, but also because economic agents are willing *and are forced* to take more financial risks as the economy performs better and as financial innovations give confidence that risks can be hedged more efficiently. Fourth, the main purpose of regulation and supervision

is currently to uncover isolated “bad behaviors” and fraudulent Ponzi schemes à la Madoff, without recognizing that the system itself encourages Ponzi, albeit legal, financial practices.

Everybody may behave “wisely/cleverly” according to the norms of behavior but may generate a great deal of systemic instability. Thus, in addition to a prudential approach to regulation and supervision, we need a systemic approach that involves an aggregate analysis of cash flows and position-making channels. Fifth, financial innovations (i.e., new financial products or new ways of using existing financial products) need to be monitored by a government agency before and after they enter the economy to make sure that they are safe and do what they claim. Ponzi-inducing financial innovations should be forbidden to enter the economy even if financial companies claim this is the only way they can maintain their competitiveness, and even if it looks like those innovations improve standards of living. The new mortgage contracts and securities were praised for allowing low-income households to become homeowners. However, given their structure, those financial innovations also led to the emergence of a national Ponzi scheme, and the welfare gains *predictably* were short-lived. Some of those innovations should not have been allowed to exist and higher low-income homeownership may not be sustainable without further enhancing government programs. Sixth, competitive pressures should be alleviated in the financial industry. Many economists already have noted the destabilizing effects of compensations based on relative short-term performances. In addition, in combination with a government oversight of financial innovations, a form of patent should be provided to financial inventions that are certified safe. This would encourage financial companies to take the time to develop reliable financial products that meet the needs of their costumers and society as a whole.

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