Financial crises and the challenges for future research

Le crisi finanziarie e le sfide per la ricerca

The main causes of the crisis could be ascribed to the global liquidity equilibrium, political interference in the credit market, bank credit standards, securitization and credit ratings. In order to better understand the crisis development and effects, the infectious leverage and the role of the financial innovation had to be considered. When house prices grow and financial intermediaries work in a competitive environment, a financial crisis will be more probable and so a better supervisory approach is necessary.

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Le principali cause della crisi finanziaria evidenziate in letteratura sono legate alla liquidità, all'interferenza della politica nel mercato del credito, agli standard di affidamento delle banche, alla cartolarizzazione e ai rating.
Un'analisi più completa del fenomeno deve però considerare anche il meccanismo di contagio attraverso la leva finanziaria e il ruolo dell'innovazione finanziaria. In un contesto di prezzi degli immobili crescenti e di elevata competizione tra banche, la probabilità di una crisi finanziaria cresce e, di conseguenza, è necessario un meccanismo di vigilanza più attento ed efficace.

Questo contributo, anche in versioni differenti e/o aggiornate, potrebbe essere pubblicato in altre sedi

The article, in an updated and/or revised version, could have been published elsewhere

1 Introduction

The current global financial crisis has raised serious questions about the underlying causes of financial crises and the implications of these for future research. In fact, the May 16 2009 issue of *The Economist* even suggested that the crisis had seriously compromised the credibility of much of Economics as a field. Whether it is too extreme a characterization of the potential implications of the crisis may be subject to debate. But what is not debatable is that the crisis has had a profound effect on global financial markets whose severity was not predicted by our theories and it has also highlighted numerous questions for which we either do not have answers or our answers are highly incomplete.

The article covers three areas: the global financial crisis (Section II), the commonly-ascribed causes and my own perspective (Section III), and the implications for Finance research in the future (Section IV).

2 The global financial crisis

The current crisis is often portrayed by politicians as the biggest crisis since the Great Depression of the 1930s, suggesting that it is a largely discrete and dramatic event, something quite unprecedented. While the magnitude of this crisis certainly makes many previous crises pale by comparison, financial crises are by no means unprecedented or even infrequent. Eichengreen and Bordo (1999) report that there were 38 financial crises during 1945-1971, and 139 financial crises during 1973-1997. So the frequency of financial crises has increased in the more recent decades relative to what it was in the past. It is an interesting question for future research why this has happened.

As we all know, the numbers related to the current crisis are ugly. Global lending in the syndicated loan market plunged 27% between the first quarter of 2008 and the first quarter of 2009. The numbers in the Us are even worse-lending declined by 42% between the first quarter of 2008 and the first quarter of 2009. Numerous banks have failed and many others-banks and non-banks alike-have teetered on the verge of bankruptcy and some have been acquired by healthier institutions, often with government assistance. Bank balance sheets are weighed down by toxic assets, and there has been a dramatic rise in bank reserves held with the Federal Reserve. News about the health of the financial system still remains a mixed bag.

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3 The commonly-ascribed causes of the crisis: the standard story

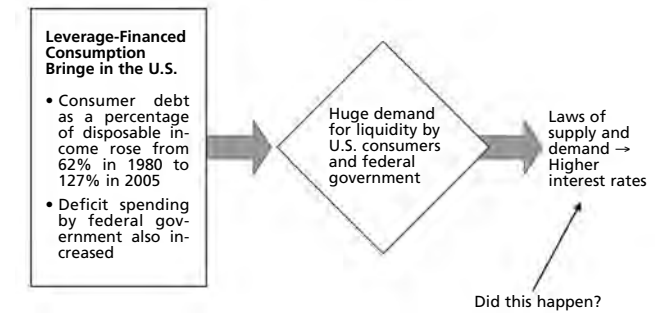
In what follows, I describe what I refer to as the «standard story» of how this crisis came about. It is a collection of five forces that worked in concert to create the crisis. The term «standard story» is a bit of a stretch since I have never actually seen this story in its entirety either in press or in a presentation by anyone. So in that sense, it is very much my «personal story» about what caused the crisis. However, I refer to it as the «standard story» because I have seen various elements of the explanation either in published accounts of the crisis or in presentations at conferences.

I mentioned that my explanation of the crisis is built around five forces that worked together to create the crisis. These are: a global liquidity equilibrium involving an excess supply of liquidity to the Us, political interference in credit allocation, increasingly lax credit standards by banks, easing of credit requirements by Fannie Mae and Freddie Mac, and inaccurate credit ratings. I now discuss each in turn.

1 Global liquidity equilibrium. In the past few decades, there has been what I call a «leverage-financed consumption binge» in the US, as both consumers and the government have significantly increased consumption, and have financed this higher consumption with higher leverage. As figure 1 shows, consumer debt as a percentage of disposable income rose from 62% in 1980 to 127% in 2005.

Figure 1

The «standard story» of the crisis

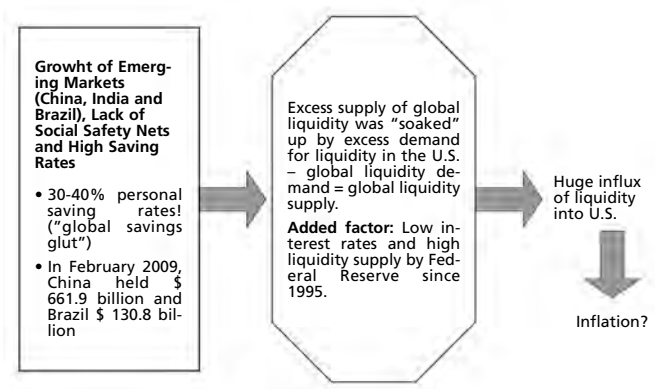


Deficit spending by the federal government also increased during this time. This increase in leverage fed and further stimulated a huge demand for liquidity by Us consumers and the federal government. Ordinarily this would lead to higher interest rates. But this did not happen. Why?

The answer, as indicated in figure 2, is that the growth of emerging markets in India, China and Brazil, combined with the relative lack of safety nets in these countries, led to very high personal savings rates that, in turn, engendered a huge *supply* of liquidity from these countries.

Figure 2

Why Us liquidity demand did not lead to higher interest rates



This liquidity supply enabled the liquidity demand in the Us to be satisfied. In other words, the «global savings glut» – arising largely from high savings and accumulated reserves in emerging-market countries-was soaked up by the very high demand for liquidity in the Us, enabling the attainment of equilibrium in the global market for liquidity. As a small piece of evidence, in February 2009, China, Japan and Brazil held approximately $1.6 trillion in Us Treasury bonds.

Under normal circumstances, this huge influx of liquidity into the Us would have caused inflation to heat up. But this too did not happen. Why?

The answer lies, once again, in the changes that were occurring in the emerging markets. Whenever inflation reared its head, Us companies outsourced the manufacturing of

goods to China and the provision of services to countries like India and the Philippines. Prices of goods and services in the US and other western countries stayed low.

Now, one asset class for which this argument does not work is real estate. You cannot move real estate from one country to another. Thus, the influx of liquidity into the Us caused real estate prices to rise steeply as a large amount of liquidity chased various forms of real estate. The monthly housing price index zoomed about 70% between 1999 and 2007. And real estate loans and Fdic-insured commercial banks increased from $2 trillion in 2002 to $3.6 trillion in 2007. Thus, we had the first cause of the crisis-equilibrium in the global liquidity market led to a huge influx of liquidity into the US and generated a housing price bubble.

2 Political interference in credit markets. For at least 12 years or so leading up to the onset of the crisis in 2007, the executive as well as legislative branches of the US government were periodically intervening in credit allocation through various legislative initiatives.

It began with the strengthening of the Community Reinvestment Act (CRA) in 1995. This increased the pressure on banks to make subprime loans. Later, Congress passed the American Housing Rescue and Foreclosure Prevention Act of 2008. It included $300 billion in mortgage guarantees, unlimited financial support for Fannie Mae and Freddie Mac, and significant tax credits for first-time home buyers. Even before this, the Housing and Urban Development (HUD) department was pushing Fannie and Freddie to buy and securitize more subprime mortgages. Moreover, there was political pressure on banks to be more aggressive in low-income loan originations and less aggressive in foreclosures after delinquencies in repayments. In 1996, the probability of foreclosure on a home conditional on 90-day delinquency was 70%. By 2003, this had dropped to 25%. And then there was legislation in 2006 to «encourage» Moody's Investor Service and Standard & Poor's to provide more lenient ratings and be «consistent» with Fitch Ratings in rating collateralized debt obligation (CDO) tranches.

So we have the second cause of the crisis-excessive political interference in credit allocation.

3 Increasingly lax credit standards by banks. Partly as a consequence of these developments, banks started to lend increasingly to people with poor credit histories, e.g. by offering adjustable-rate mortgages (ARMs) with low «teaser rates» promising they could refinance later at again a low rate. This was in part caused by the new «originate to distribute» securitization model: banks originated loans and sold them to Fannie and Freddie. This may have caused moral hazard (misalignment of incentives). Some evidence of this moral hazard is provided in Keys, Mukherjee, Seru and Vig (forthcoming). This paper shows securitized loans have higher default risk than otherwise-comparable loans that are retained on the books of originators. So we have our third cause-banks began to adopt increasingly lax credit and foreclosure standards.

4 Securitization agencies began to ease credit requirements. Due to a variety of factors, not the least of which was political pressure, the principal institutions for securitizing mortgages, Fannie Mae and Freddie Mac, began to ease their credit requirements for mortgages that qualified for securitization. This fourth factor contributed to the crisis by making it easier for banks to originate high-risk (and often difficult to easily determine) loans and get them off their books via securitization.

5 Inaccurate credit ratings. A lot of criticism has been directed at rating agencies for having assigned overly-generous ratings to the tranches of securitization portfolios. Many have pointed to conflicts of interest arising from the growing stream of revenues for credit rating agencies from rating securitization tranches. A bit overlooked though is the role of hubris. Rating agencies were experienced in rating securitization tranches associated with prime mortgages, and for these products the benefits of diversification operated the way classic portfolio theory suggests-mortgage defaults across different geographies exhibited low correlations. However, subprime borrowers had such high leverage ratios that they were «living on the edge». Even relatively small macroeconomic shocks-those that would have left prime borrowers largely unaffected-had the potential to induce *correlated* defaults among subprime borrowers. Diversification was conse-

quently far less effective with subprime mortgage pools, and portfolio risk was higher than that one would assess based on the historical default data related to prime mortgages. So part of the problem that the rating agencies may have had in rating tranches of subprime mortgage pools is the lack of reliable historical data for estimating risk.

So here is the bottom line of the standard story-large influx of liquidity in the Us that led to a housing price bubble, political interference in credit allocation, increasingly lax credit standards by banks, easing of credit requirements by the major securitization institutions, and inaccurate credit ratings represented five forces that came together to generate the «perfect storm,» a storm that exploded into a raging wildfire that is the current global financial crisis.

4 Is there more to it?

While the standard story is informative, I believe it is incomplete. It leaves unanswered some important questions. Why has the frequency of financial crises gone up so much? Are financial crises likely to occur again even if we do not encounter the same forces that led to this crisis? In this section, I offer some thoughts on additional elements that may move us in the direction of a more complete understanding. What I discuss are two research ideas that I am currently pursuing: infectious leverage and the inevitability of financial crises. I discuss each briefly below.

Infectious Leverage. In a recent paper, Goel, Song and Thakor (2009), we observe that an interesting feature of the current crisis is that both borrower leverage and bank leverage spiked up prior to the crisis (see, for example, Gerardi, Lehnert, Sherland and Willen (2008)). We ask why. We also enquire into why the leverage choices of banks tend to be correlated in the cross-section.

To address these questions, we develop a theory in which borrowers' leverage choices, banks' leverage choices and house prices are all endogenously determined. Our main finding is that when house prices are high, borrowers and banks simultaneously exhibit high leverage ratios. Borrowers have high leverage because their wealth endowments are fixed and they need to borrow more in order to purchase more expensive houses. For banks, the reasoning is a bit more complicated. With expected returns that are independent of the level of the house price, a high house price in this period is an indication of a high probability of a high house price next period. Since the house the borrower purchases serves as collateral for the loan that finances the house purchase, the bank perceives lower credit risk when the future expected house price is higher. Consequently, the bank reduces the amount of equity it keeps to absorb credit risk when the house price in the current period is high. Thus, we have high bank leverage accompanying high house prices.

This suggests that the financial system is exposed to multiplicative fragility when house prices are high. Banks are more likely to default on their own debt obligations because they are more highly levered at higher house prices. And banks are also more likely to default at higher house prices because they face increased credit risk stemming from their borrowers choosing higher leverage ratios. One implication is that there is a need for financial service regulators to be more vigilant when house prices are higher.

Financial Innovation. In an unrestricted-entry, competitive financial services industry, the profits of financial intermediaries («banks» for short) get driven down to zero due to (Bertrand) competition. To generate positive expected profits, banks need to innovate. However, unlike innovations in real-product markets, financial innovations are *not* patentable. Consequently, profitable innovations will be imitated, driving down profits for the lead innovator.

In a recent working paper, Thakor (2009), I posit that one approach to protecting the rents from innovation is for the lead innovator to choose an innovation that has a low degree of familiarity for other banks-the less familiar the innovation to potential competitors, the less likely it is to be imitated. This pushes the lead innovator in the direction of choosing relatively unfamiliar innovations. But lack of familiarity also has two disadvantages. One is that unfamiliar-

ity could also cause the *financiers* of the bank to lose confidence in the innovation and lead to short-term funding not being renewed at an interim date. Another disadvantage is that, conditional on short-term funding not being renewed, the probability that the bank can sell the loan in the secondary market is also lower when the innovation is less familiar. So the bank faces a tradeoff between the higher profitability due to lower competition associated with less familiar innovations and the higher liquidity risk associated with less familiar innovations. It ends up choosing an innovation with intermediate familiarity that is mimicked by some, but not all, banks.

Now, if banks' asset portfolios are sufficiently opaque to the investors who fund banks, there is a positive probability that when investors lose confidence in the innovation, they will refuse to renew short-term funding for all banks because they are unable to precisely determine each bank's balance-sheet exposure to the innovation. A financial crisis consequently ensues.

The message of the theory is that the probability of a financial crisis is always positive in a competitive financial services industry. The only way to eliminate the probability of a crisis is to eliminate the possibility of financial innovation!

Thus, one interpretation of the current crisis is that it was caused by financial innovation. But there is no denying that the five factors discussed earlier added substantial fuel to a crisis that may have occurred in any event due to financial innovation incentives and competition.

4 Conclusion

What this crisis, and the research it has spawned, have taught us is that we need to go back to the basics and re-examine some fundamental principles. One has to do with the value of leverage. Our theories about the impact of tax subsidies in a with-corporate-taxes Modigliani and Miller world have suggested to practitioners that higher leverage enhances value creation if only the agency problems associated with high leverage can be resolved. The literature is replete with papers wondering why firms are so underlevered and why banks keep so much excess capital. We have viewed with suspicion firms that keep cash on the balance sheet. It may be time to revisit these views.

Leverage may be far more pernicious than our research has acknowledged so far. Capital may be far more valuable than has been recognized thus far [e.g. Mehran and Thakor (forthcoming)]. And stockpiling liquidity may have benefits that have not been appreciated enough. These issues represent a rich agenda for future research.

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