

Financial Innovation: Engine of Growth or Source of Instability?

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Distress in home mortgage markets, falling new home construction and falling home prices in many areas have been a focal point in the outlook for the U.S. economy for at least the past nine months. When rising mortgage defaults led to broader financial turmoil last August, forecasters began to downgrade their estimates for U.S. economic growth in 2008, and some predicted an imminent recession. Many analysts blame the distress in mortgage markets on a proliferation of exotic home mortgage products, including adjustable rate and interest-only loans that expose borrowers to more interest-rate and house-price risk than conventional fixed-rate mortgages. Others cite a lowering of underwriting standards that drew people into mortgages that they could not afford. Still others point to increased securitization of mortgages, especially of non-prime mortgages, and lapses in the evaluation of mortgage-backed securities and derivatives by rating agencies and investors. A common theme has been that instability was the product of innovations in the mortgage market that went awry.

I have said elsewhere that there is really nothing fundamentally new about the recent subprime mortgage debacle. History is full of examples of innovations that led to instability, at least initially, as financial market participants sought to exploit an innovation and failed to take adequate account of the risks involved. On the whole, however, economists are in agreement that financial innovation plays an important role in supporting economic growth. Financial innovation, like innovation in other industries, is part of the

dynamic process of “creative destruction” that drives market economies forward and raises living standards. My message today is that we should not fear financial innovation, but that we must be careful, both in designing our public policies and in making our personal financial decisions, to understand the lessons of the recent subprime mortgage turmoil and of past innovations that led to instability.

Today I will discuss why financial innovation is an important source of economic growth, but also why financial innovation, when it goes awry, can be a source of macroeconomic instability. I will describe the sources of financial innovation and discuss several examples of highly successful innovations. I will also point out why some innovations, including some associated with the subprime debacle, led to instability. Finally, I will offer some lessons suggested by those experiences.

Before proceeding, I want to emphasize that the views I express here are mine and do not necessarily reflect official positions of the Federal Reserve System. I thank my colleagues at the Federal Reserve Bank of St. Louis for their comments. David C. Wheelock, assistant vice president in the Research Division, provided special assistance. However, I retain full responsibility for errors.

THE SOURCES OF FINANCIAL INNOVATION

Financial markets are always innovating. Some innovations, such as credit cards, reflect

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technological advances. The first credit cards appeared in the 1950s, but credit cards did not come into widespread use until advances in computer and communications technology made the high-speed processing of credit card transactions feasible. Credit cards are now ubiquitous—it is hard to imagine life without them. They are a convenient, relatively safe method for making payments. They are also an efficient way of providing short-term, unsecured loans that enable households to smooth their consumption over time. Clearly, some people borrow more than they can afford. Credit cards, however, like many other payments and credit innovations, have lowered transactions costs, improved resource allocation, and thus contributed to economic growth.

Other financial innovations simply reflect quick thinking and the opportunity to make a profit. A. P. Giannini was a San Francisco banker who, at the turn of the last century, brought retail banking to the masses and made millions for himself and his shareholders in the process. Giannini hit the ground running—literally—after the San Francisco earthquake of 1906. Giannini's Bank of Italy quickly resumed operations after the earthquake even though its building had been destroyed and other banks remained closed. Giannini made character loans to individuals and small businesses when most banks shunned such clientele, and he later built a network of retail branches throughout California. Giannini's concept was highly profitable and helped establish his bank—renamed the Bank of America—as one of America's most successful banks.

Many financial innovations arise in response to regulation or other government policy actions. Money market mutual funds, for example, arose in the 1970s when inflation drove market interest rates far above the regulated rates that banks could pay their depositors. Money market mutual funds were wildly successful because they offered small savers the opportunity to earn a market rate of interest on transactions balances when interest

rates on bank and thrift deposits were capped by law.

The long-term amortizing mortgage is another innovation that got a boost from government. Before the Great Depression, home mortgages were often short-term, non-amortizing loans with a balloon payment due when the loan matured. Lenders were usually willing to refinance mortgages when they came due, but that was next to impossible during the Depression when banks and other lenders were failing in droves and unemployed homeowners were unable to qualify as good credit risks. Falling household incomes resulted in a sharp spike in delinquent mortgages. According to one estimate, as of January 1, 1934, nearly half of all urban home mortgages were delinquent.¹

The federal government responded to the logjam by acquiring some one million delinquent home mortgages and refinancing them as 15-year fixed-rate amortizing loans. Congress created the Federal Housing Administration to offer government insurance on long-term amortizing mortgages that met specific standards. Later, the Federal National Mortgage Corporation—"Fannie Mae"—was established to purchase FHA-insured mortgages, which gave a further boost to the long-term amortizing loan type that became the industry standard.

AN HISTORICAL EXAMPLE

Financial innovations have occurred throughout recorded history. Fractional-reserve banking was an early financial innovation, arising in Europe several centuries ago. In fractional-reserve banking, banks hold reserves in ready cash against their deposits of only some fraction of the deposits. The system arose naturally from market forces. Many of the earliest bankers were goldsmiths who accepted deposits of gold bullion and coin. The receipts they issued to their depositors circulated among the public as a medium of

¹ Bridewell, David A. *The Federal Home Loan Bank Board and its Agencies: A History of the Facts Surrounding the Passage of the Creating Legislation, The Establishment and Organization of the Federal Home Loan Bank Board and the Bank System, The Savings and Loan System, The Home Owners Loan Corporation, and the Federal Savings and Loan Insurance Corporation*. Federal Home Loan Bank Board, 1938, p. 172.

exchange, being more convenient than making payments with coin or bullion. The acceptance of goldsmith receipts as a medium of exchange allowed goldsmiths to evolve into banks as they discovered that they could issue more receipts than the value of the gold they held in their vaults. So long as a goldsmith held enough gold to satisfy occasional redemptions, he could profit by making loans in the form of receipts because those receipts were widely accepted as a medium of exchange. The use of goldsmith receipts as a medium of exchange greatly economized on the use of gold and other precious metals for making payments, which encouraged economic activity and trade. At the same time, the development of fractional-reserve banking promoted economic growth by facilitating the allocation of capital to productive outlets.

The story I just told involves two important and closely intertwined financial innovations—paper currency and fractional-reserve banking. Both were tremendously important for the development of modern economies. However, both have also been a source, at times, of extreme instability. Inevitably, some goldsmith bankers issued too many notes against the gold they had in their vaults, either intentionally or because of bad judgment. Then, in a time of financial stress, the bankers found that they did not have enough gold to make good on their promise to redeem their notes for gold on demand. Such a failure could trigger a panic if the public lost confidence in the notes of many banks. If sufficiently widespread, a rush to redeem notes for gold could shut down an entire banking system, with severe repercussions for the entire economy.

Over the centuries, numerous mechanisms evolved to provide stability to the banking system and prevent the deleterious effects of banking panics. Most bankers were conservative in their note issuance because they cared about their reputation and had a personal stake in their business. Still, crises occasionally happened when bad behavior or simply bad luck on the part of a few banks caused the public to lose confidence in bank notes. During the 19th century, banks in U.S. cities formed clearinghouse associations to

settle payments among their members. Clearinghouse associations worked to limit crises by demanding conservative practices among their member banks and by pooling their resources when panics did occur. Governments also attempted to prevent crises through regulations, such as required reserve ratios, and by creating central banks to serve as lenders of last resort to the banking system.

The innovation of paper money sometimes led to another problem—inflation. The problem of inflation became especially acute when governments took over the printing press. Governments that issued currency to finance wars or other adventures often found that the more currency they issued, the less it was worth. Extreme inflation—hyperinflation—has never occurred except when a country prints money to finance a massive budget shortfall. Governments have never abandoned paper currency or reverted to a purely gold-based monetary system because the benefits of a modern fiat money system are too great. However, to discourage excessive growth of their money stocks, countries have increasingly sought both to insulate their central banks from political interference and to mandate price stability as the paramount objective for monetary policy.

MORE RECENT EXAMPLES

Let's now consider some more recent financial innovations. One is the Eurodollar market, which developed in London in the early 1960s. At that time, the United States had a growing international payments deficit and faced a mounting stock of short-term official dollar claims, some of which were converted into gold. To stem further outflows, the Kennedy and Johnson Administrations imposed a number of controls and taxes to limit the flow of dollars abroad. U.S. banks responded by setting up subsidiaries in London, which they used to take deposits and make loans in U.S. dollars. A Eurobond market also developed where borrowers issued bonds in dollars and other currencies. The Eurodollar market has continued to exist long after the United States eliminated cap-

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ital controls and remains an important global financial market. The market has contributed to the globalization and integration of world financial markets and promoted efficient allocation of capital across international borders.

Turning back to the United States, another example of financial innovation is the so-called junk bond market. The junk bond market expanded rapidly in the 1980s, primarily as a source of funding for corporate mergers and acquisitions. Before the development of a liquid junk bond market, corporate takeovers were typically financed with loans from banks or other financial institutions. The junk bond market attracted much of this business by providing a less expensive and less restrictive source of funds. The capital markets were better able to absorb these risky loans than were banks. Without doubt, the takeover wave of the 1980s was disruptive for many managers and employees of companies that were targets of corporate raiders. On the other hand, many of these companies were poorly run firms with entrenched management and inefficient operations. Takeovers could make such firms more competitive.

We can think of the junk bond phenomenon as an example of a broader type of financial innovation known as “securitization.” Securitization is the process of converting nonmarketable credit instruments into publicly traded securities. Mortgage-backed securities, of course, are an example of a securitized credit instrument. Other types of credit instruments, such as auto loans and credit card receivables, have also been securitized.

Mortgage-backed securities can take many forms. A common form is the mortgage pass-through security. These are securities backed by a pool of mortgage loans in which monthly payments of principal and interest are paid by the mortgage originator or servicer to the security’s holders.

In the 1980s, mortgage-backed securities known as collateralized mortgage obligations were created. Typically, the underlying collateral for a CMO is either a pool of mortgages or a mortgage pass-through security. CMOs are created by carving the cash flow from the underlying asset into

various categories, or tranches, with different maturity or risk characteristics. Investors can then purchase the obligation that best suits their appetite for risk or duration.

BACK TO THE SUBPRIME DEBACLE

With that brief introduction to mortgage-backed securities, let me turn to some of the problems inherent with subprime lending and securitization that may have played a role in the recent mortgage market debacle.

Subprime mortgage lending began to grow rapidly in the mid-1990s, spurred by technological innovations that lowered the cost of collecting information about the creditworthiness of potential borrowers. Frequently, subprime loans were sold by their originators to financial intermediaries, which in turn formed mortgage pools and sold the cash flows from those pools as CMOs. CMOs were bought predominantly by banks, hedge funds and other institutional investors.

Default rates on subprime mortgages began to rise in 2006, when the growth in house prices began to slow. As default rates rose, some holders of mortgage-backed securities took substantial losses when promised cash flows failed to materialize. Investors then called into question the values of asset-backed securities in general, precipitating the flight to quality that began last August. The Federal Reserve and other central banks have been working ever since to relieve financial market strains and minimize the impact of the financial distress on the real economy.

In a recent speech, I reviewed five major mistakes that led to the subprime meltdown. There is plenty of blame to go around. Many borrowers took on mortgages that they could not afford. Mortgage lenders put too many borrowers into unsuitable mortgages, in many cases without adequate verification of borrower income. In particular, mortgage originators made too many adjustable rate loans without an adequate assessment of the borrower’s ability to service his loan after the interest rate on the loan reset. Underwriting standards slipped badly in many instances

where mortgage lenders sought to collect fees from originating loans that they then re-sold.

It appears that many purchasers of mortgages and mortgage-backed securities in the secondary market also failed to adequately assess the quality of the underlying assets or understand the risks associated with the securities they purchased. Information problems abound in credit markets. Lenders generally have more information about the creditworthiness of their borrowers than do secondary market participants. This information asymmetry gives lenders an incentive to hold the lowest-risk loans in their portfolios and sell off those with high default-risk. Recognizing this incentive, investors sometimes demand that loan originators maintain a stake in the loans they sell, or otherwise guarantee the credit quality of those loans.

Too often, however, it appears that investors in securities backed by subprime mortgages failed to appreciate the inherent risks of investing in assets secured by subprime mortgages. Perhaps investors trusted too much the ratings assigned to mortgage-backed securities by the rating agencies. The rating agencies placed AAA ratings on many securities backed by subprime mortgages. Apparently the agencies looked in the rear-view mirror and assigned ratings based on the low default rates on mortgage-backed securities before 2006, rather than on a forward-looking analysis of the likely ability of borrowers to repay in a less favorable market environment.

LESSONS FROM THE SUBPRIME DEBACLE AND OTHER FINANCIAL INNOVATIONS GONE AWRY

What are the lessons we can draw from the subprime debacle and other episodes about the underlying causes of instability associated with financial innovation? One lesson concerns the role of capital in overcoming information problems and incentives for excessive risk taking. Capital both serves as a cushion against financial losses and encourages prudent behavior. The

more capital that a financial intermediary has at stake, the more prudently it will behave. We saw in the 1980s that savings and loan associations assumed greater and greater risks as their net worth deteriorated—that is, as the leverage of their portfolios increased. The “zombies” that had no real capital and were kept alive only by regulator forbearance took extreme risks that ultimately added billions to the cost of cleaning up the S&L debacle.

There is a role for government in regulating the capital positions of banks. However, a lesson of the subprime episode is that the first line of defense against excessive risk taking is market discipline. Mortgage originators that sell their loans with little or no recourse have less incentive to maintain prudent underwriting standards than do originators that put their own capital at stake. Market participants need to understand the incentives their transaction counterparties have for laying off risk and demand appropriate risk premiums and credit enhancements. Further, the episode has taught us that rating agencies don't always get it right.

Underlying many episodes of financial instability are mismatches in the maturities of the assets and liabilities in lender portfolios. Mortgage loans are long-term assets that all too often are funded with short-term liabilities. S&Ls suffered heavy losses in the 1970s when inflation and rising interest rates drove the cost of funds above the return on the fixed-rate mortgages that comprised the portfolios of most S&Ls. Adjustable-rate mortgages then became popular because they reduce the exposure of lenders to interest-rate risk. However, as we have seen recently, adjustable-rate mortgages expose borrowers to interest-rate risk that they may not be equipped to handle. In the subprime market, all too many lenders and borrowers were extremely shortsighted as the very common 2/28 mortgage would reset to a much higher rate in only two years. These interest-rate resets have increased payment amounts beyond the means of many subprime borrowers. At the same time, falling house prices are wiping out homeowner equity and, in many cases, pushing the current value of the house below the outstanding mortgage balance.

What should we learn from all of this? For the individual or the firm, the lessons are clear—educate yourself about the potential risks of any investment or financial transaction; understand the incentives of counterparties in those transactions; avoid putting at risk money that you cannot afford to lose. If an investment seems too complicated to understand, it is probably too complicated to own. The public policy lessons are perhaps more varied and complex, but they include the importance of economic and financial education, adequate disclosure of the terms of loan contracts, and regulations that minimize conflicts of interest in financial transactions.

We should not forget the importance of financial innovation in promoting economic growth. Successful financial innovations—those that meet the market test over the long term—promote the efficient allocation of capital and contribute to raising our standard of living. The challenge for policymakers is to write rules that promote financial stability without discouraging productive innovations.

LOOKING AHEAD

Mortgage securitization is an important financial innovation and will survive the current financial turmoil. The subprime market is at risk. At present, lenders are originating practically no subprime mortgages. That is unfortunate because many of those with weak credit ratings can service mortgages. Some are young people just beginning their careers. Their low credit scores may be more a reflection of their limited borrowing history than their inherent creditworthiness. Others may have spotty borrowing records but with discipline can become prime borrowers in due time. We should not want the mortgage market to be permanently closed to such borrowers.

The public policy problem is the danger that, with the sad record of so many mistakes and abuses in recent years, regulatory burdens

designed to end the abuses will do so but only at the cost of making subprime lending so costly and risky to lenders that they will have no interest in restoring this market. We should not forget that market discipline imposed by lenders who have suffered extremely large losses is already making it very difficult for anyone to originate subprime mortgages. In time, if new regulatory burdens do not become too great, we should expect to see new practices become standard. Mortgage originators might, for example, retain an interest in the mortgages they issue, providing some assurance to the capital market absorbing securitized mortgages that incentives are properly aligned to assure sound underwriting. Mortgage brokers with a good record of sound underwriting should be able to get a premium in the market when they securitize their mortgages. After recent experience, the reputation of a first-class mortgage broker should matter more than the rating assigned by a rating company.

In any event, my view is that we should regard recent events in the mortgage market as reflecting the normal process of innovation. The lessons have been expensive and painful, and the pain is not yet over. As with the dot-com bust, where many firms went bankrupt but some sound business models survived, we should expect that successful innovations behind the subprime market will also survive. In time, I believe, we will find that the subprime sector of the mortgage market will be as normal as any other part of the mortgage market. Some of the innovations in underwriting automation, which reduce labor costs, will survive. The subprime mortgage market will become as accepted as fractional reserve banking, money market mutual funds, credit cards, equity index mutual funds and a host of other financial practices and services we now take for granted.

And, I can assure you that policymakers will be very pleased when this innovation is thoroughly digested!