THE SUB-PRIME MORTGAGE MESS

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INTRODUCTION

The sub-prime mortgage market consists of risky home loans made to borrowers with high credit risk. Although the exact specifications and definition of the sub-prime market may vary across institutions and agencies[1], the general characteristics of sub-prime loans are consistent. Whereas prime loans are typically made to borrowers with a strong credit history and demonstrated capacity to repay loans, sub-prime mortgages are made to borrowers who have a relatively high probability of default, or who lack a strong credit history. In addition, characteristics of the mortgage itself may place it into the sub-prime category, such as a high loan amount relative to the market value of the home.

The impact of the sub-prime market on the United States economy has been significant in a variety of ways. Homeownership, home values, the stock market, financial institutions, and home buyers have all been affected. The purpose of this paper is to provide an overview of the sub-prime mortgage mess and its impact on the United States economy.

THE DEVELOPMENT OF THE SUB-PRIME MORTGAGE MARKET

Having emerged in the 1980s, sub-prime mortgage lending blossomed in the 1990s[2]. The Federal Reserve estimates that, from 1994 to 2003, sub-prime lending increased at a rate of 25% per year. In mid-2007, the Federal Reserve estimated that 14% of all first-lien mortgages were sub-prime; near-prime loans (also known as “alt-A” loans) accounted for an additional 8% to 10% of mortgages. A variety of factors contributed to this emergence and development, including legislation promoting home ownership, financial innovation which brought increased liquidity to the mortgage markets, and finally, aggressive lending and borrowing practices.

Legislation

Politically, the American dream of home ownership has generally been vigorously supported through legislation[3]. This support has in many cases been extended to low income (generally higher risk) borrowers, through legislation designed to make mortgage financing more available. In certain cases, the legislation helped pave the way for the development of the sub-prime mortgage market.

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[1] See Lewis (2007)
[2] See Bernanke (2007)
[3] See Smith (2007)

The Community Reinvestment Act of 1977 encouraged lenders to make loans to low and moderate-income borrowers, markets which may include borrowers with a weak credit history. The 1980 Depository Institutions Deregulation and Monetary Control Act (DIDMCA) effectively eliminated states' interest rate ceilings on home mortgages where the lender has a first lien. As a result, lenders could charge higher interest rates to borrowers with low credit scores. This allowed interest rates to increase high enough to compensate the lender for the risk of lending to sub-prime borrowers. The variety of mortgages available was greatly expanded by the Alternative Mortgage Transaction Parity Act of 1982. Prior to this Act, banks could only make conventional, fixed rate amortizing mortgages. Adjustable rate mortgages, interest only mortgages, and balloon payments were all made possible by the Act. Although the Tax Reform Act of 1986 eliminated the interest deduction for consumer loans, tax benefits were continued for home owners through the allowable deduction of mortgage interest and property taxes. As a result, the Tax Reform Act gave consumers an incentive to shift from consumer borrowing to home equity borrowing. These laws encouraged home ownership and paved the way for a greater variety of mortgage products to be offered by lenders[4].

Financial Innovation – The Mortgage Bond Market

The traditional, old school way of mortgage finance was for banks (and other financial institutions) to use customer deposits for lending to homebuyers. Conventional mortgages were offered by lenders who assumed the risk of loss. Traditionally, lenders usually required a down payment of 20% on the property, resulting in a loan-to-value ratio of 80%. However, in the past 30 years, the traditional way of mortgage financing progressively gave way to the financial innovation of mortgage-backed securities, and more aggressive lending practices.

The general process of mortgage-backed security financing is as follows. A bank makes a loan to a homebuyer. This mortgage is sold to an underwriter, such as an investment banking firm, who in turn buys more mortgages. The entire mortgage pool is split into several slices through the issuance of mortgage-backed securities, with the securities divided into different categories (tranches) based on credit risk. Upper tranches, those entitled to receive the first cash flows into the mortgage pool, could receive the highest rating (AAA) even if they contained sub-prime loans. These mortgage-backed securities are sold to investors and represent an interest in the entire pool of mortgages for a given risk class. The cash flow from the mortgages is used to pay investors a coupon, with the underlying real estate acting as collateral. Although the securities could have different risk classes, nearly 80% of these bundled securities were rated “investment grade” by the rating agencies[5]. Consequently, sub-prime mortgage lenders could sell their risky debt, in turn generating more capital to originate additional mortgages.

The origination of the mortgage-backed security occurred in 1970 through a federal government agency. Congress established the Federal National Mortgage Association

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[4] For a discussion of the various types of mortgages, see “Types of Mortgage Loans” at www.Realtor.com.
[5] See Barnes (2007)

(Fannie Mae) in 1938 to add liquidity and capital to the U.S. mortgage market[6]. Fannie Mae was essentially divided into two organizations in 1968. Fannie Mae became a private stockholder-owned corporation; Ginnie Mae, an offshoot of the original Fannie Mae, remained associated with the U.S. government. Ginnie Mae provided a secondary market for government-insured mortgages through mortgage-backed securities in 1970, thus enhancing the liquidity and capital available in the mortgage market. This liquidity increases the availability of funds to homebuyers and reduces interest rates. Congress established the Federal Home Loan Mortgage Corporation (Freddie Mac) in 1970 to be a secondary market in mortgages for the savings and loan industry. Freddie Mac became privatized in 1989. Although Ginnie Mae is backed by the full faith and credit of the U.S. government and Freddie Mac and Fannie Mae are not, all were created and sponsored by the federal government and have federal corporate charters.

The mortgage market basically allows banks the opportunity to sell mortgages, and in turn use the proceeds to offer more mortgages to potential borrowers. The development of mortgage-backed securities converted non-rated, illiquid loans (mortgages) into highly liquid securities, generally viewed as having little credit risk and competitive rates of return. Relative to Treasury bonds, they offered additional return with little perceived additional risk. The offering of mortgage-backed securities created liquidity for the mortgage market and the infusion of capital from investors around the world.

Recently, in the past five years, the dominance of the mortgage-backed securities market by government sponsored agencies has been greatly reduced through the growth of private sector issued mortgage-backed securities[7], which has contributed to the growth in sub-prime mortgage financing. According to the Securities Industry and Financial Markets Association, private sector issued mortgage-backed securities accounted for approximately 11% of the mortgage bond market in 1999 and rose to nearly 20% in 2007. The U.S. mortgage bond market is worth approximately $6 trillion (Figure 1) and is the largest single part of the $27 trillion U.S. bond market.

Aggressive Lending and Borrowing Practices

Borrower characteristics, such as credit history and amount of debt relative to income, are typically used in credit scoring models to statistically determine the relationship to default. A Fair Isaac and Company (FICO) credit score is usually used by lenders to assess the credit risk of the borrower. A score below 620 is generally viewed as high risk, with the borrower not eligible for a prime loan unless a significant down payment is made. However, in 2004, it was estimated that about half of sub-prime mortgage borrowers had FICO scores above 620[8], indicating that a good credit history does not guarantee a prime loan and that the mortgage characteristics may place it in the sub-prime category.

[6] See Kolev (2004)
[7] BBC News, "The U.S. Sub-prime Crisis in Graphics"
[8] See Gramlich (2004)

Certainly, in some cases, overaggressive lenders, in an attempt to maximize profits, did not offer prudent financial mortgage advice to their clients, nor consider the risk concerns of investors. In an effort to satisfy the demand for mortgage-backed securities by investors, mortgage originators sometimes responded with a loosening of standards[9] that included weak documentation, misrepresentation, and overestimation of borrowing capacity. The ease at which risk could be transferred to investors through mortgage-backed securities contributed to the aggressiveness. Aggressive lending included the lure and effect of offering borrowers teaser rates (extremely low introductory rates), and mortgage contracts in which borrowers did not clearly understand the terms and financial risks. Certainly, in some cases, aggressive borrowers opted for larger mortgages and bigger homes than they realistically could afford by betting on the continued presence of historically low mortgage rates for several years.

THE U.S. HOUSING MARKET

A primary purpose of favorable housing legislation and increasing liquidity in the mortgage markets was to increase homeownership. According to the U.S. Census Bureau, home ownership rates generally floundered around 64% from 1970 through 1990. Coinciding with the growth in sub-prime lending, homeownership increased from 63.9% in 1990 to 68.1% in 2007.

Generally, homeownership in the U.S. was viewed as a good investment with the opportunity to build equity, benefit from the tax-deductibility of mortgage interest, and participate in consistently increasing home values. Table 2 lists U.S. median home values every ten years from 1940 through 2000. The compounded annual rate of increase for the median home value ranged from 3.63% to 10.75%, reflecting a consistently strong housing market. The trend continued after the turn of the century, with housing prices increasing at an annual rate of 9% from 2000 through 2005[10].

Recently, the historically strong housing market has reversed. According to RealtyTrac[11], U.S. foreclosure activity increased approximately 75% in 2007. In 2007, U.S. foreclosure filings totaled 2,203,295, up from 1,285,873 in 2006. The 2007 filings meant that 1.033% of U.S. households filed for foreclosure in 2007. Table 3 shows changes in key measures of the U.S. housing market between January 2007 and January 2008. Existing home sales declined 23.4%, to a seasonally adjusted annual rate of 4.89 million units in January 2008. The mean sales price of existing homes fell from $257,300 in January 2007 to $247,700 in January 2008, a decrease of 3.7%. The median sales price of existing homes declined 4.6% over the period, from $210,900 in January 2007 to $201,100 in January 2008. The months supply of housing inventory rose from 6.7 to 10.3, an increase of 53.7%. Thus, a homeowner struggling to make mortgage payments may also face a decline in the value of the home as well as an increase in the time it takes to sell the home.

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[9] See Bernanke (2007)
[10] See Bernanke (2007)
[11] www.realtytrac.com

THE SUB-PRIME MORTGAGE MESS – THE FALLOUT

The Stock Market and Sub-prime Losses

As the sub-prime mess unfolded, the stock market began to notice. After beginning 2007 at 1,416.60, the S&P 500 Index climbed over 10% to close at 1,565.15 on October 9, the highest closing point of the year. As concerns grew with sub-prime mortgage debt, the housing market, and energy prices, the toll on the stock market began. In October, a string of bad news would cause the S&P 500 to begin a significant fall. Between October 9, 2007 and March 17, 2008, the S&P 500 Index fell over 18% to close at 1,276.60 on St. Patrick's Day.

In October, Federal Reserve Chairman Bernanke warned that the sub-prime crisis and housing slump would be a significant drag on the U.S. economy. This warning became clear when several financial institutions began reporting significant losses on sub-prime mortgages[12] including Citigroup ($18 billion), Merrill Lynch ($14 billion), UBS ($13 billion), Morgan Stanley ($9 billion), HSBC ($3 billion) and Bear Stearns ($3 billion). As of March 2008, banks and insurers wrote down more than $150 billion of mortgage securities tied to sub-prime loans[13]. The write-downs also caused new and innovative ways for firms to seek financing to bolster their depleted capital. In November, the Abu Dhabi Investment Authority became the largest shareholder in Citigroup with a stake of nearly 5% by providing $7.5 billion in equity financing. In December, Morgan Stanley sold a 9.9% stake in the company to the Chinese state investment company CIC for $5 billion. In January 2008, Bank of America acquired the country's biggest mortgage lender and key player in the sub-prime mortgage market, Countrywide Financial, for approximately $4 billion.

The Federal Reserve Policy Challenge

Shortly after the turn of the century, the United States economy was in turmoil. After nearly a decade of economic growth and business expansion, the cyclical nature of the U.S. economy returned and in 2001 the U.S. entered a recession. The decline in economic growth was concurrent with a severe decline in investor wealth. The internet hype of the 1990s caused the technology laden Nasdaq index to soar, contributing to a ten-fold increase in the index over the decade. But the hype gave way to reality in the new century, and after peaking at over 5,000 in early 2000, the Nasdaq index plunged precipitously to under 1,400 by the end of 2001 after the dot.com bubble burst. Finally terrorism, through Sept. 11, caused great uncertainly in the financial and consumer markets and contributed to the U.S. economic woes.

A primary objective of the Federal Reserve is to balance economic growth with an acceptable rate of inflation. Through its monetary policy, the Fed targets a short-term interest rate, the federal (fed) funds rate, to establish a level of interest rates that will

[12] BBC News, "Timeline – Sub-prime Losses"
[13] See Mollenkamp, C. and M. Whitehouse (2008)

promote economic growth with acceptable levels of inflation. Although a short-term rate, changes in the fed funds rate generally ripple though longer term interest rates[14]. Given the economic problems of the new century, the Federal Reserve aggressively pursued a policy of lowering interest rates in an effort to spur a sputtering economy. Table 1 shows the changes in the fed funds rate from 2000 through 2007. In 2001, the Federal Reserve reduced the fed funds rate an unprecedented 11 times, reducing the rate from 6.50% at the start of January to 1.75% by the end of the year. Rate decreases occurred again in 2002 and 2003, and in June 2003 the fed funds rate was at a historical low of 1.00%. The rate decreases contributed to a general decline in mortgage rates, further increasing the attractiveness of borrowing and refinancing. As the economy rebounded, interest rates were increased to balance economic growth with the threat of inflation. The increasing interest rates posed a threat to borrowers with adjustable rate mortgages, who would face increasing mortgage payments. Figure 2 shows the 30-year mortgage rate. The figure depicts historically low rates after the turn of the century, with an up-tick in rates reflecting changes in Federal Reserve policy.

Falling U.S. interest rates contributed to the decline in the value of the dollar. Figure 3 shows the value of the dollar relative to a trade weighted index of foreign currencies. The approximate 20% decline in the value of the dollar since the turn of the century has contributed to an increased cost of U.S. purchases of foreign goods – including oil.

Thus, the Federal Reserve faces an interesting policy dilemma. Reducing interest rates can be beneficial to a weak housing market by causing a reduction in payments on adjustable rate mortgages and increasing the demand for mortgages. However, reducing interest rates may also contribute to a weak dollar, which in turn may contribute to inflation and increased energy prices.

To Bailout – or not

In March 2008, J.P. Morgan, with the support of the Federal Reserve, acquired Bear Stearns, an investment bank headed for insolvency[15]. The Federal Reserve took the unusual and extraordinary step of intervening in the free market by providing up to $30 billion of financing for the less liquid assets of Bear Stearns, in effect promoting the acquisition of Bear Stearns by J.P. Morgan. After trading at $170 per share in January 2007, Bear Stearns would be acquired by J.P. Morgan for approximately $10 per share. Bear Stearns' assets, most notably its portfolio of mortgage backed securities, were dramatically declining in value as the sub-prime mortgage mess unfolded.

The reason for the Federal Reserve intervention was to increase liquidity in the mortgage market. The fear was that decreased liquidity in the mortgage market, caused by the write down of mortgage securities and consequently bank assets, would dry up funds available for banks to lend. This had the potential to have a significant, detrimental impact on the economy. Thus, because the failure could have a large

[14] See Bahr and Maas (2008).
[15] See Sidel, Berman, and Kelly (2008)

negative impact on the U.S. economy, the Federal Reserve intervened in the financial free markets.

Bailouts pose a problem for a variety of reasons. First, there is the moral hazard issue. By intervening in the financial markets, the fear is that the bailout encourages the same behavior to occur again that originally caused the problems. Second, by selectively intervening in the market, the federal government presents a biased approached to the free market system. The mortgage market crisis is large enough to threaten the economy, so a bailout occurs for the financially troubled. Bear Stearns, and other financial institutions, did not adequately understand and assess the risks of their markets. Small businesses that do not adequately understand and assess the risks of their markets will probably not receive the same financial support from the Federal Reserve and federal government. Unfortunately, responsible borrowers, those that did not overextend their borrowing and purchased a house that they realistically could afford, will probably not receive any government bailout assistance. Third, bailouts are paid for by taxpayers. Many parties financially benefited from the housing and sub-prime market booms, including financial institutions, mortgage brokers, investors, and borrowers. Now taxpayers will provide financial support to a distressed market, in effect breaking the financial link of risk and return. Generally in financial markets, the return you can expect is a function of the risk that you are willing to accept. Government bailouts through taxpayer financing removes the risk.

CONCLUSION

A primary difficulty in the sub-prime mortgage mess is sorting out the collage of players and their contribution to the mortgage market problems. Legislation, with the primary intent of increasing homeownership, provided a mechanism for more aggressive lending and borrowing. The development of the mortgage financial markets and use of mortgage-backed securities passed through mortgage risk from lenders to investors. Although the liquidity of the mortgage markets increased, so did the potential of riskier lending practices. The mortgage-backed securities were often viewed and rated as "investment-grade"; hindsight proved that this was not always the case. In some cases, overaggressive lenders maximized profits at the expense of prudent lending. In some cases, overzealous borrowers borrowed more than they could realistically afford.

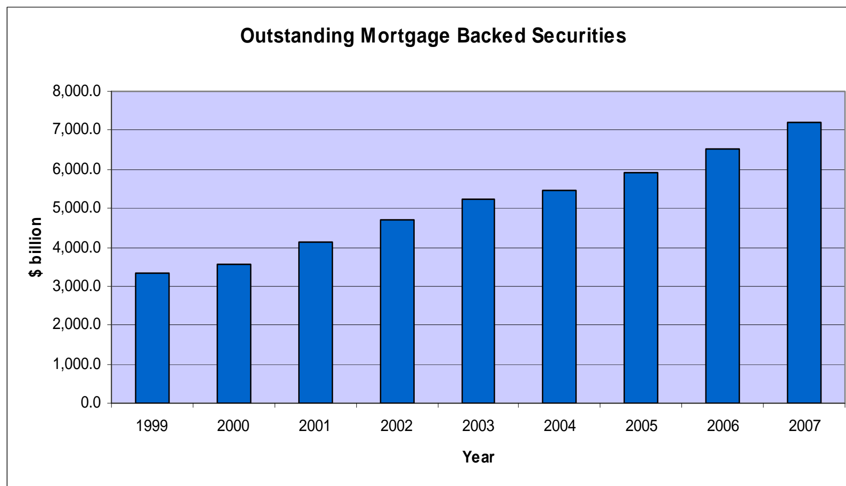
Following the Federal Reserve's intervention in the financial markets through their support of the acquisition of Bear Stearns by J.P. Morgan, various proposals were put forth by the President, Congress, and the Treasury to deal with the sub-prime mortgage market mess. The proposals included increased oversight and regulation of the mortgage market, including lenders and the loan process, as well as the government providing financial assistance to troubled institutions and borrowers facing foreclosure, essentially bailing out those in financial distress.

Future regulation of the mortgage markets should include greater and clearer disclosure of mortgage terms and consequences, and an ability to hold accountable irresponsible lenders and borrowers. Investors need to critically and accurately understand the risks

of their investments; sellers of mortgage-backed securities need to accurately portray the securities that they are selling. The link between risk and return needs to be firmly and accurately established, with bond ratings accurately reflecting default risk.

An unfortunate by-product of the sub-prime mortgage market mess includes the potential burden on taxpayers of any federal bailout. In addition, many who inappropriately profited appear poised to have little, if any, accountability for their contribution to the sub-prime mortgage problems. Any overhaul of the mortgage markets should assure that this never happens again.

Figure 1



Source: Securities Industry and Financial Market Association (SIFMA)

Figure 2

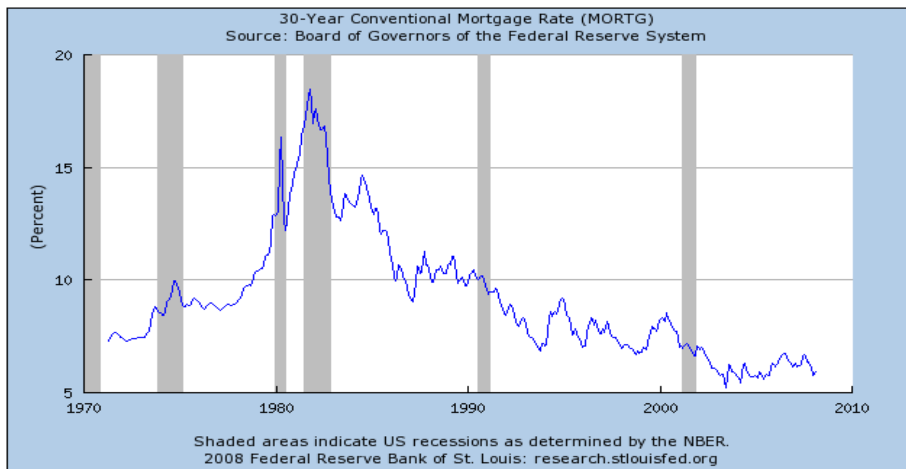


Figure 3

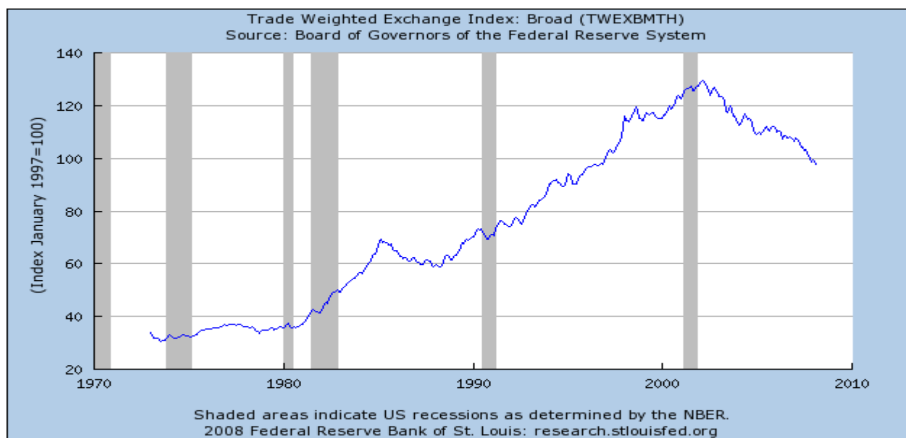


Table 1:
Fed Funds Rate Changes

Year	Number of Rate Changes	Fed Funds Rate End Of Year
2000	3 increases	6.50
2001	11 decreases	1.75
2002	1 decrease	1.25
2003	1 decrease	1.00
2004	5 increases	2.25
2005	8 increases	4.25
2006	4 increases	5.25
2007	3 decreases	4.25

Source: Federal Reserve Board

Table 2:
Median U.S. Home Values

Year	Median Home Value	Compounded Annual Rate of Change
1940	$2,938	-
1950	$7,354	10.44
1960	$11,900	4.93
1970	$17,000	3.63
1980	$47,200	10.75
1990	$79,100	5.29
2000	$119,600	4.22

Source: U.S. Census

Table 3:
The U.S. Housing Market

	January 2008	January 2007	Change
Existing Home Sales (Seasonally adjusted annual rate)	4,890,000	6,380,000	-23.4%
Avg. Sales Price	247,700	257,300	-3.7%
Median Sales Price	201,100	210,900	-4.6%
Months Supply of Housing Inventory	10.3	6.7	+53.7%

Source: National Association of Realtors

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