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Money for Nothing and Checks for Free: Recent Developments in U.S. Subprime Mortgage Markets

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Western Hemisphere Department and Monetary and Capital Markets Department

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Abstract

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After a number of warning signs, the U.S. “subprime mortgage crisis” became a headline issue in February 2007. Notwithstanding the bankruptcy of numerous mortgage companies, historically high delinquencies and foreclosures, and a significant tightening in subprime lending standards, the impact thus far on core U.S. financial institutions has been limited. This paper reviews the history and structure of the subprime market. The results suggest that new origination and funding technology appear to have made the financial system more stable at the expense of undermining the effectiveness of consumer protection regulation. Potential solutions to the management of this trade-off are then explored.

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Table of Contents

	Page
I. Introduction	3
II. Origins and History of the Subprime Mortgage Market	3
III. The Rapid Recent Expansion of Subprime Lending.....	6
IV. What Prompted the Subprime “Crisis?”	7
V. The Impact on Financial Institutions	9
VI. The Impact on Households	10
VII. Risk Management and Consumer Protection in the Securitization Model	11
VIII. Resolving the Policy Trade-off: Palliatives versus Future Reforms.....	12
A. Palliatives	13
B. Future Reforms.....	14
IX. Conclusion	15
 Figures	
1. Homeownership Rate.....	4
2. Subprime and FHA Mortgage Originations.....	4
3. All Mortgage Originations.....	6
4. Declining Mortgage Holdings of Depository Institutions	7
5. ARM Delinquencies and Foreclosures	8
6. Subprime Delinquencies by Mortgage Vintage Year	8
7. Delinquency Rates for Adjustable-Rate and Fixed-Rate Mortgages.....	9
8. Early Payment Defaults	9
 Boxes	
1. Twisting by the Pool: The Mechanics of Mortgage Securitization	5
2. Brothers in ARMs: Hybrids, Options, IOs, Neg-Ams, and Teasers	8
 References.....	 17

I. INTRODUCTION

After a number of warning signs, the U.S. “subprime mortgage crisis” became a headline issue in February 2007. Notwithstanding the bankruptcy of numerous mortgage companies, historically high delinquencies and foreclosures, and a significant tightening in subprime lending standards, the impact thus far on core U.S. financial institutions has been limited. And while some structured credit hedge funds have suffered large losses, mortgage securitization appears to have helped disperse the impact throughout the financial system, in contrast to the Savings & Loan crisis of the early 1990s. The credit cycle is thus largely playing out in the securities and derivatives markets, rather than on bank balance sheets.

This paper reviews the history and structure of the subprime market. The results suggest that new origination and funding technology appear to have made the financial system more stable at the expense of undermining the effectiveness of consumer protection regulation. Potential solutions to the management of this trade-off are then explored.

II. ORIGINS AND HISTORY OF THE SUBPRIME MORTGAGE MARKET

Subprime mortgages are residential loans that do not conform to the criteria for “prime” mortgages, and so have a lower expected probability of full repayment. This assessment is usually made according to the borrower’s credit record and score, debt service-to-income (DTI) ratio, and/or the mortgage loan-to-value (LTV) ratio. Borrowers with low credit scores, DTIs above 55 percent, and/or LTVs over 85 percent are likely to be considered subprime. So-called “Alt-A” loans fall into a gray area between prime and subprime mortgages. These began as a more flexible alternative to prime loans, mainly for borrowers who met all of the credit score, DTI, and LTV prime criteria, but did not provide full income documentation.

Several legal milestones facilitated the development of the modern subprime mortgage market. Interest rate caps imposed by states were preempted by federal legislation in 1980 while lenders were allowed to offer adjustable-rate mortgages from 1982. Also the Tax Reform Act of 1986 left residential mortgages as the only consumer loans on which the interest was tax deductible. This made home equity withdrawal (for instance, through “cash-out” refinancing of a mortgage) a preferred means of financing home improvements and personal consumption, relative to other forms of consumer loans (Klyuev and Mills, 2006).

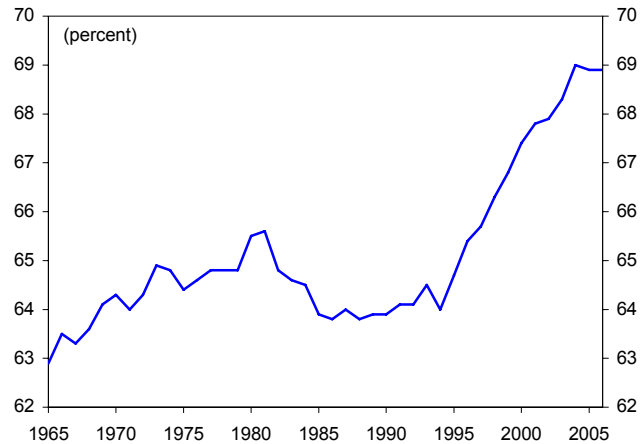
Automated underwriting and securitization were also key developments in reducing the cost of subprime mortgage lending. Automated underwriting (using computer models rather than loan officer judgment) has made loan origination more cost efficient, while advances in statistical credit scoring have led to more accurate and consistent assessments of borrower

credit risk.² Securitization also facilitated market growth by dispersing risk, providing investors with a supply of highly-rated securities with enhanced yield, and opening up the origination business to non-depository specialty finance companies (Box 1).

Consequently, subprime lending developed as a specialist loan class in the mid-90s and facilitated a substantial expansion of home ownership (Figure 1).³ These developments allowed a relaxation of credit rationing for borrowers—such as the poor, or those in minority communities—previously considered too risky by traditional lenders.⁴

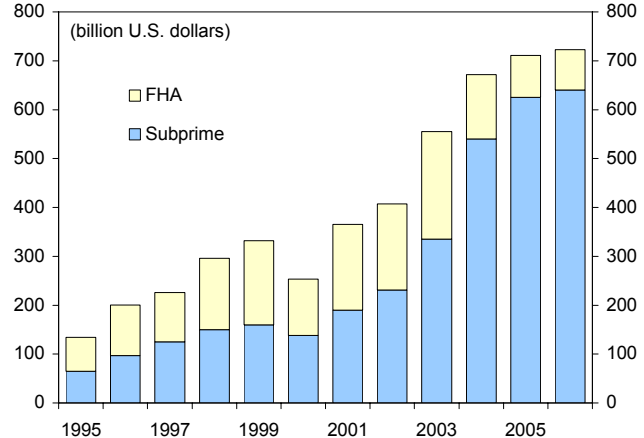
Loans for subprime borrowers were once predominantly guaranteed by the Federal Housing Association (FHA). However, subprime loans have displaced FHA-guaranteed lending (Figure 2) due to the FHA's less aggressive product mix, its lack of flexibility to changing market conditions, and its low lending limits.⁵ Mortgage originators also complain that the fees that they earn on FHA-guaranteed mortgages do not adequately compensate for their higher processing costs.

Figure 1. Homeownership Rate



Source: Census Bureau.

Figure 2. Subprime and FHA Mortgage Originations



Source: Inside Mortgage Finance.

² LaCour-Little (2000) estimates that savings of up to three percent of total loan values are associated with automated underwriting, and Davis (2001) put the savings at \$916 on each loan. However, none of the model parameters that underlie these systems have been tested by a serious consumer-led recession (Bies, 2003).

³ “The obvious advantage of the expansion of subprime mortgage credit is the rise in credit opportunities and homeownership. Because of innovations in the prime and subprime mortgage market, nearly 9 million new homeowners are now able to live in their own homes, improve their neighborhoods, and use their homes to build wealth” (Gramlich, 2004). See also Doms and Motika (2006).

⁴ See Aggar and Calder (2005). According to the U.S. Census Bureau, whereas the national homeownership rate rose from 64.7 percent in 1995 to 68.8 percent in 2006, the rise was greater among African American (42.7 to 47.9 percent) and Hispanic households (42.1 to 49.7 percent). According to the Federal Reserve’s Survey of Consumer Finances, the rise in homeownership from 1995 to 2004 was six percent in lower-income census tracts, versus four percent in higher-income tracts.

⁵ See Quigley (2006) and Kogler and others (2006).

Box 1. Twisting by the Pool: The Mechanics of Mortgage Securitization

Subprime mortgages are predominantly securitized in the form of mortgage-backed securities (MBS).¹ These securities are enhanced with mechanisms to protect higher-rated tranches from shortfalls in cash flows from the underlying collateral (for instance due to defaults or lower than expected interest income). These mechanisms include various kinds of explicit insurance, for instance as provided by mortgage insurers. However, most of the credit enhancement comes from structural features such as subordination, over-collateralization, and excess spread:

- **Subordination:** Losses from defaults of the underlying mortgages are applied to junior tranches before they are applied to more senior tranches. Only once a junior tranche is completely exhausted will defaults impair the next tranche. Consequently, the most senior tranches are extremely secure against credit risk, are rated AAA, and trade at lower spreads.
- **Overcollateralization:** The excess of outstanding mortgage loans over the par value of the outstanding securities is used to make up any shortfalls in cash flows for the other tranches, and thus serves as a form of internal credit insurance.
- **Excess spread:** A preset amount of interest is explicitly set aside from the servicing of the collateral each month, and is used to enhance the initial overcollateralization. A “residual tranche” also collects unused excess spread and overcollateralization.²

The AAA-rated “Class A” tranches, which comprise about 80 percent of a typical transaction, enjoy a broad investor base among high-grade bond investors, including the GSEs. However, there are few natural end investors for the “Class M” mezzanine tranches, which comprise most of the other 20 percent of a typical mortgage securitization structure (10 percent AA, 5 percent A and 5 percent BBB+ and below), and these are typically resecutitized into collateralized debt obligations (see below). The below-mezzanine tranches are usually either retained by the originator or sold to hedge funds and investment bank proprietary desks.

Collateralized debt obligations (CDOs) are a key subprime MBS investor constituency, particularly for the mezzanine tranches, due to the yield pick-up available. According to J.P. Morgan Securities, about \$244 million of ABS-backed CDOs were issued in the U.S. in 2006, about \$98 billion of which were “mezzanine” ABS CDOs (backed mainly by mezzanine MBS tranches, most of which are subprime or home equity loans).

There has been some speculation that if the “CDO bid” for subprime MBS mezzanine tranches dries up, the volume of available subprime mortgage financing could shrink dramatically (Mason and Rosner, 2007a). The idea is that, because 80 percent or so of the Class A securities cannot be sold without also selling the 20 percent or so of mezzanine and lower tranches, falling CDO demand will have a leveraged effect on the availability of mortgage loans. This leverage is said to be amplified by similar structural factors in the CDO market itself – i.e., there is no natural market for their A- and BBB-rated mezzanine tranches, which typically comprise about five to ten percent of a transaction. Hence, the mezzanine tranches are usually resecutitized in other CDOs.

¹ Asset-backed securities (ABS) backed by home equity loans are also referred to as subprime MBS.

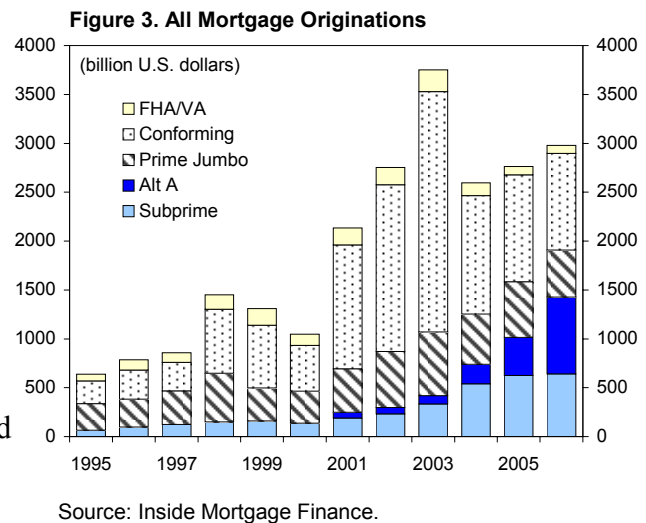
² Excess spread is also characterized as the difference between the net interest rate on the underlying mortgage loans and the weighted-average coupon on the securities. After covering current period losses, the excess spread is used to over-collateralize the senior tranches. Typically, excess spread is used to over-collateralize the senior tranche only up to a certain point (e.g., three percent of notional) over a certain period of time (e.g., three years). If, after the predefined time period, the over-collateralization has attained the target level, some of the excess spread can be released to the residual tranche.

Despite advances in credit scoring techniques, the subprime market experienced its first “crisis” in 1998-99. Subprime loan delinquencies transpired to be higher than anticipated by the new models while the East Asian and LTCM crises reduced investor appetite for higher-risk mortgage securities. As a result, the majority of the largest subprime lenders went bankrupt.⁶

III. THE RAPID RECENT EXPANSION OF SUBPRIME LENDING

Until 2003, the majority of mortgage originations were “prime conforming” loans. These were then purchased by two government-sponsored housing enterprises (GSEs - Fannie Mae and Freddie Mac). However, by 2006, over half of all originations did not meet the GSEs’ “conforming” criteria.

Consequently, the share of mortgage originations represented by subprime or Alt-A loans rose rapidly (Figure 3). The transformation of the market was such that, of 2006 originations, only 36 percent were conforming loans, 15 percent were prime “jumbo” loans (which exceeded the ceiling for conforming mortgages), three percent comprised of loans guaranteed by the FHA and the Department of Veterans Affairs (VA) while the remainder comprised “nonprime” loans—Alt-A (25 percent) and subprime (21 percent).

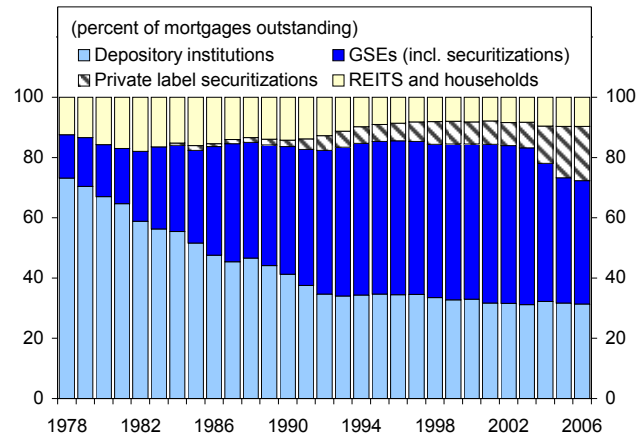


There are several reasons for the rapid recent expansion in non-conforming mortgage lending. Conforming single-family loans are currently capped at \$417,000, and there are strict requirements on DTI and LTV ratios, and required proof-of-income documentation. As the rapid rise in U.S. house prices stretched affordability, more loans fell outside the conforming criteria as individuals stretched to buy a house. Simultaneously, accounting and governance issues forced the GSEs to contract their mortgage purchase operations while innovative securitization techniques provided private label originators with lower costs of funding.

⁶ Chomsisengphet and Pennington-Cross (2006).

Depository institutions still originate half of all mortgages, but given increased securitization, they hold only 30 percent of outstanding loans (Figure 4). About 38 percent of end-2006 outstanding mortgages were held by GSE securitization pools (plus the three percent held directly by the GSEs), 18 percent by non-GSE (“private label”) securitization pools, five percent by finance companies, and most of the remainder by real estate investment trusts (REITS) and households.

Figure 4. Declining Mortgage Holdings of Depository Institutions



Source: Board of Governors of the Federal Reserve System.

IV. WHAT PROMPTED THE SUBPRIME “CRISIS?”

Recent subprime lending growth was boosted by more highly leveraged lending against a background of rapidly rising house prices. Housing affordability dropped to the point where a significant proportion of borrowers were financially overstretching via risky “affordability products” (see Box 2), with many apparently lying about their financial resources to get loans. Also, speculative borrowers obtained loans on the basis of expected collateral appreciation, with little account taken of their ability to make the requisite mortgage payments. Although average subprime borrower credit scores have been rising, so have their LTVs and DTIs, especially as a result of increased use of second lien loans, which need not necessarily be declared to the primary mortgage lender.⁷

At the same time, strong investor appetite for higher-yielding securities in 2005–06 probably contributed to looser underwriting standards. Safeguards ensuring prudent lending were weakened by the combination of fee-driven remuneration at each stage of the securitization process and the dispersion of credit risk which weakened monitoring incentives. Hence, intermediaries were remunerated primarily by generating loan volume rather than quality, even as the credit spreads on the resulting securities shrank.

The rapid deterioration of 2006 vintage loans has resulted largely from a slowing of house price appreciation. While prices were rising, distressed borrowers had the equity to sell their homes and prepay their mortgages. However, as interest rates rose and house prices flattened and then turned negative in a number of regions, many stretched borrowers were left with no choice but to default as prepayment and refinancing options were not feasible with little or no housing equity.

⁷ Zimmerman (2007).

Box 2. Brothers in ARMs: Hybrids, Options, IOs, Neg-Ams, and Teasers

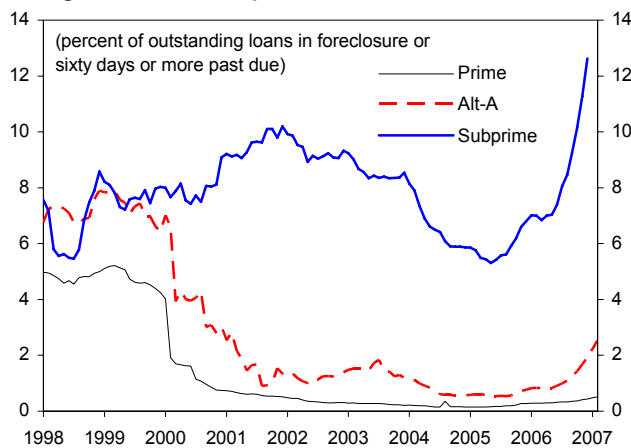
Most ARMs are actually hybrid products that combine floating and fixed rates. For example, about two-thirds of recent ARM originations were “2/28” hybrids, which are effectively two-year FRMs that convert to 28-year ARMs at the end of the second year.¹ The initial fixed rate is often a below-market (i.e., “teaser”) rate, so that “reset shock” can be substantial when the adjustable-rate period starts, although various caps often protect the borrower from rapid and sharp increases in payments. In addition, interest-only and negative amortization loans comprise the bulk of subprime and Alt-A ARM origination. In an interest-only mortgage, payments cover just the interest accruals in the first years (usually two or three in the case of ARMs and up to ten for FRMs), and in a negative amortization mortgage, the payments do not even cover the interest accruals. Typically, the accumulated negative amortization is subject to a 15 to 25 percent cap, relative to the original loan amount. When the cap is hit, the loan converts to a full-interest loan. At the end of every five years, the loan is recast and payments are computed on the new higher loan balance.

Also popular are option ARMs, which give borrowers a variety of payment options each month, including interest-only and negative amortization options. Typically, the options remain open until five years into the mortgage (the “recast date”) or the outstanding balance reaches 110 percent of the original principal. In addition, interest accrues at a deeply discounted interest rate until the recast date, after which full principal and interest payments start. Although option ARMs have been available for decades, originations have surged since 2003, from around 10 percent of Alt-A origination to about 40 percent more recently (Barclays Capital, 2006). Option ARM delinquency rates remain very low, compared to those of other ARMs, but that may change when the post-2003 issuance starts to hit recast dates after 2007.

¹ Most ARMs adjust every month and are indexed to a publicly-available interest rate index such as one of the Constant Maturity Treasury indices, a Cost of Savings Index, or the 11th District Cost of Funds Index. For more on mortgage mechanics see mortgage-x.com or mtgprofessor.com.

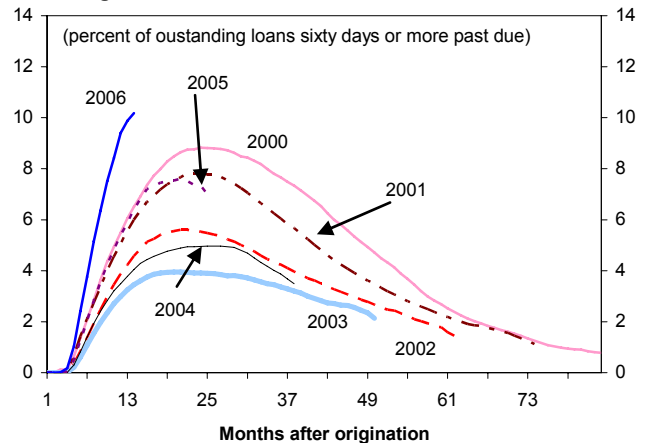
As a result, delinquencies and defaults on subprime mortgages originated in 2006 have soared, despite a benign economic backdrop (Figures 5 and 6). Adjustable-rate mortgages (ARMs) have been particularly distress-prone, while fixed-rate mortgages (FRM) have generally fared better (see Figure 7). Even more striking has been the speed of the deterioration, as measured by the volume of “early payment defaults,” in which the borrower

Figure 5. ARM Delinquencies and Foreclosures



Source: Citigroup.

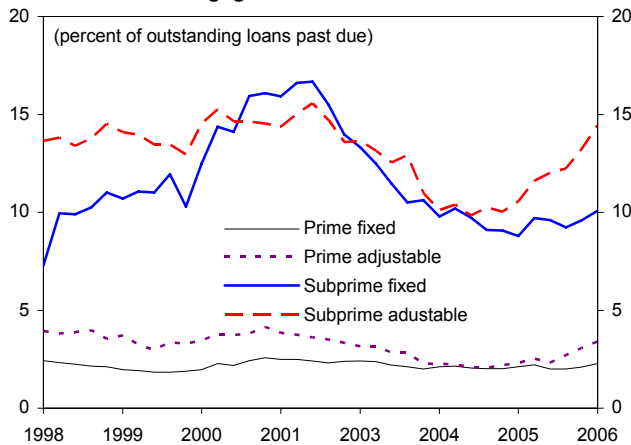
Figure 6. Subprime ARMs: Delinquencies by Mortgage Vintage Year



Sources: Merrill Lynch; and Intex.

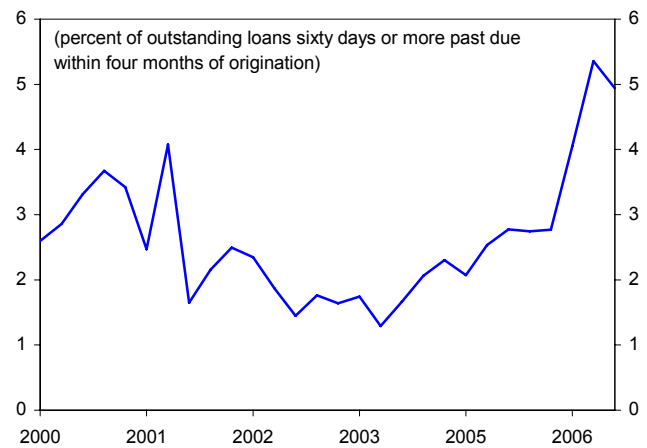
misses one or two of the first three monthly payments (Figure 8).⁸ Fraud appears to have played a key role in accelerating the deterioration, which resulted in the failure of a number of originators in 2006–07 as securitizers exercised “put-back” options—forcing lenders to take back delinquent mortgages.

Figure 7. Delinquency Rates for Adjustable-Rate and Fixed-Rate Mortgages



Source: Mortgage Bankers Association.

Figure 8. Early Payment Defaults



Sources: Credit Suisse; and LoanPerformance.

The highest delinquency rates are associated with “affordability products” such as “hybrid” and “option” ARMs. These require interest-only payment at fixed “teaser” rates that can result in negative amortization during the first few years. According to Freddie Mac, ARMs comprise about 90 percent of recent subprime home-purchase loan originations, most of which incorporate affordability features (Box 2). In addition, the worst performing loans involved risk “layering”—high LTV loans to high DTI borrowers who offered little income verification.

V. THE IMPACT ON FINANCIAL INSTITUTIONS

The subprime crisis has so far affected mostly banks with subprime-specialist subsidiaries (e.g. HSBC) and a number of specialty finance companies. Since mid-2006 such non-depository, poorly capitalized firms, representing about 40 percent of 2006 subprime originations, have either closed down operations, declared bankruptcy, or been bailed or bought out. Some investment banks may be holding residual interests in the subprime securitization transactions that they have arranged, but losses announced thus far have been limited and may have been offset by gains on hedge transactions (e.g., ABS-backed credit

⁸ Early payment default definitions vary, but the one used here defines it as any loan that became 60 or more days delinquent in the first four months of the loan’s life (Credit Suisse, 2006).

default swaps and short positions in the ABX, a tradable basket of 20 liquid ABS-backed credit default swaps).

Losses are likely to appear at the end of the securitization chain among the holders of unrated and lower-rated MBS and CDO equity and mezzanine tranches. The size of these realized losses will depend on the dollar volume of defaults among the underlying mortgage loans and on the timing of loss realizations, over which there is some uncertainty. Not all delinquent loans eventually default and there can be a long lag from when a default is registered to when MBS and CDO principal payments are impacted, because the foreclosure process can take up to 18 months to complete. During this period, the loan servicer continues to make the principal and interest payments to the MBS pool, although it then has a claim on the foreclosure proceeds.⁹ Finally, it can take weeks for constituent MBS rating downgrades to be reflected in CDO ratings, so triggering mark-to-market revaluations (Mason and Rosner, 2007b).

Nevertheless, losses are beginning to crystallize in hedge funds specializing in lower-rated subprime ABS and CDOs. The lag between rising subprime delinquencies and resulting ratings downgrades means that exposed ABS and CDO investors need not necessarily revalue their portfolios to make losses apparent. However, recent investor withdrawals and margin calls have forced some hedge funds to liquidate holdings and crystallize losses. The speed with which other investors are forced to do so will be heavily dependent on rating agency downgrades of ABS and CDO securities.

Assuming flat house prices, \$18-\$25 billion of mark-to-market losses may accrue on about \$350 billion of outstanding MBS-backed CDOs. Assuming house prices fall 5 percent, mark-to-market losses are estimated to rise to approximately \$60 billion.¹⁰

VI. THE IMPACT ON HOUSEHOLDS

Looking ahead, the combination of interest rate resets will create significant payment shocks for borrowers in 2007–09. Cagan (2007) estimated that 59 percent of all 2004–06 ARM originations will see payment increases of 25 percent or more in 2007 and beyond, and on 19 percent of loans, payments will increase by 50 percent or more. In addition, about 13 percent, or 1.1 million, of these ARMs could foreclose as a result of payment reset during

⁹ A payment is considered delinquent by servicers when it is 15 days late, but not until 90 days have passed is the loan considered “non-recoverable”, at which point workout or liquidation proceedings begin. Until the loan becomes non-recoverable, the servicer must cover the missed payments. Workouts may include forbearance (temporarily reduced payments) or loan modifications (interest rate reductions and term extensions). Liquidation takes the form of either a voluntary title transfer (“deed-in-lieu” or pre-foreclosure “short sale”), which takes an average of about 12 months to resolve; or a foreclosure, which takes about 18 months.

¹⁰ Lehman Brothers (2007). Citigroup (2007) has estimated that undiscounted losses on all mortgages will amount to about \$275 billion, \$175 billion of which will be on securitized mortgages.

the next seven years, assuming flat house price appreciation. By comparison, the Mortgage Bankers Association estimated that about 800,000 mortgages foreclosed in 2006.

In the recent past, subprime borrowers were able to limit payment shocks by refinancing, which will now be significantly harder. If subprime borrowers maintain a complete payment history for the first two or three years of the loan, they may qualify as prime borrowers when refinancing. However, the more marginal borrowers (low credit scores and high LTV/DTIs) with blemished payment histories will find refinancing difficult in 2007–08, as lenders tighten standards and house prices fall.

Their ability to do so will also be hampered by heavy prepayment penalties more prevalent among subprime borrowers with low credit scores.¹¹ Even though prime loans are at least as likely to prepay as subprime loans, less than two percent of them contain prepayment penalty provisions (Goldstein and Son, 2003, and Engel and McCoy, 2007).¹²

VII. RISK MANAGEMENT AND CONSUMER PROTECTION IN THE SECURITIZATION MODEL

The originate-to-distribute model is driven by fee generation, facilitated by risk dispersion and compartmentalization. The pursuit of fee income along the entire origination-to-funding chain brings with it potential incentive conflicts. For example, because few lenders retain the mortgages they originate, incentives for diligent underwriting and monitoring are diminished. Recourse and collateral substitution clauses, such as early payment default “put-backs,” go some way towards aligning originator and investor incentives, but their value is diminished by the limited period to assess early payment defaults and, in some cases, thin originator capitalization. The latter results in originator insolvencies when delinquencies rise, reinforcing moral hazard. In turn, due diligence incentives at the securitization end of the chain are diminished by risk dispersion, compartmentalization, and remoteness from legal liability for predatory lending. Finally, the perceived need for investor due diligence is diminished, particularly for those investors in the less risky AAA- and AA-rated MBS and CDO tranches that are immune to all but the most catastrophic loss scenarios. Such investors delegate the evaluation and monitoring of their MBS and CDO holdings to credit rating

¹¹ A typical prepayment penalty is effective for up to three years after the origination date, and amounts to up to six months of interest on 80 percent of the remaining balance. The proportion of subprime mortgages with prepayment penalties peaked at about 80 percent of originations in 2000-02, but has since declined to about 60 percent, after the Office of Thrift and Supervision effectively reduced the ability of specialty finance companies to impose them in 2002.

¹² Prime borrowers are usually motivated by opportunities to refinance when interest rates fall, whereas subprime borrowers are more often incentivised to refinance by improving credit scores (i.e., “curing”) (Pennington-Cross, 2003). Going forward, delaying payment shocks on hybrid and option ARMs may become an important motivation for prepayment. Also, Chari and Jagannathan (1989) show that “points” serve effectively as prepayment penalties, when explicit penalties are forbidden. Lenders frequently let borrowers pay points to lower the interest rate on their mortgage. Each point costs one percent of the mortgage amount, and is paid up front (or rolled into the loan and pay over time). In return, the loan's interest rate drops permanently, often from one-eighth to one-quarter of a percentage point for every point paid.

agencies, who also in turn have a vested interest in the continuation of the securitization process to generate fees.

The dispersion of credit risk to a broader and more diverse group of investors has nevertheless helped to make the U.S. financial system more resilient. The magnitude and scale of losses being currently experienced in subprime mortgage markets would have materially impacted some systemically-important U.S. financial institutions in the traditional originate-and-retain business model. But, thus far, most subprime losses have been borne by, and contained in, the origination network's periphery of thinly-capitalized specialty finance companies, lower-rated ABS and CDO tranches, and some hedge funds. A proportion of the loss is no doubt accruing to foreign investors.

In the move to a securitized loan market, U.S. borrower protections have been weakened. If borrowers become over-extended, they now have limited legal recourse if they have been wronged. Hence, if borrowers now try to sue for redress for fraud or some other consumer protection violation, the originator could very well be bankrupt, and, in any case, the legal complexity and expense would be daunting. "Whereas forty years ago, a borrower might need to serve one party [the "creditor"], to bring the full range of legal claims and defenses to bear on a securitization conduit can require serving ten or more different businesses" (Peterson, 2007). MBS investors are not responsible for fraudulent or illegal practices that may have been employed in loan origination as they are "holders in due course," so avoiding liability for the actions of the mortgage lenders (Eggert, 2007).

In addition, current Federal laws designed to protect borrowers from predatory lending are limited in their scope regarding current subprime lending practices. The Truth in Lending Act (1968) and subsequent Home Ownership and Equity Protection Act (HOEPA) (1994) regulate "creditor" behavior with regard to exploitative lending practices and customer disclosure. However, most subprime loans are handled by a chain of intermediaries that do not constitute a single "creditor." Also, Federal Reserve regulations enacted under HOEPA currently only apply to loans with an annual percentage rate in excess of 8 percent over the comparable maturity Treasury yield. Consequently, they failed to apply to the vast majority of subprime originations of recent vintages, made at a lower rate.

Federal banking regulators have recently tightened guidance on extending nontraditional mortgages and for hybrid ARM lending. However, the fragmented nature of U.S. financial regulation means that observance and enforcement of such standards is not uniform. The five regulators can enforce compliance by their regulated institutions but, since non-bank lenders and loan brokers are state-regulated, such initiatives also rely on consistent state-level enactment and enforcement.

VIII. RESOLVING THE POLICY TRADE-OFF: PALLIATIVES VERSUS FUTURE REFORMS

Policy responses to the rise in subprime foreclosures have been either palliatives for distressed borrowers or proposed reforms to the subprime market. Responses of the first type,

which aim to ameliorate the servicing problems faced by existing subprime borrowers, are worthwhile for the households concerned but are, as yet, unlikely to be of macroeconomic significance given the potential numbers of households affected nationwide. The second type seeks to ensure that similarly lax or predatory lending standards do not recur. These are well-intentioned, but caution is warranted to avoid unintended consequences for both future mortgage availability and the attractiveness of U.S. capital markets to foreign investors.

A. Palliatives

The proposed interventions range from borrower subsidies to lender forbearance. Some state bodies (e.g., the Ohio Housing Finance Agency), GSEs, national community groups, and commercial banks are offering distressed subprime borrowers debt counseling and refinancing assistance through subsidized fixed rate loans. While valuable in keeping some overstretched borrowers from foreclosure, such programs are thus far of insufficient scale to have a significant impact on the million or so anticipated additional foreclosures. Also, unless carefully targeted, such subsidies risk keeping some borrowers in houses that they ultimately cannot afford.

Regulators are also encouraging lenders and servicers to exercise restraint in foreclosing on mortgages. Such actions may reduce, or at least postpone and smooth, the rise in subprime foreclosures, so softening the immediate negative impact on house prices from distress sales. The best servicers already make contact with borrowers approaching payment resets and, if meeting the higher rate is problematic, can offer a range of modifications to the loan rate, term, or principal if the borrower wishes to remain in the home. If they do not, or such options are impractical, servicers may consider a “short” sale to crystallize a loss of principal if this is likely to be less costly than a full foreclosure process.¹³ Incentives to minimize losses are most closely aligned when the loan’s origination, servicing, and securitization is conducted by the same institution, which then retains a share of the riskier ABS tranches.

However, a number of factors may constrain the degree of flexibility servicers can show to avoid foreclosure. First, if remunerated purely on a fee-basis, servicers are likely to be reluctant to incur the costs of applying more flexible workout arrangements. (They may be similarly reluctant in the case of smaller loans, against which workout costs could be *relatively* bigger.) Second, servicers’ discretion to modify the terms of loans in a securitized pool may be constrained by the terms of the document governing the securitization. This often specifies that the loans modified must be limited to 5-10% of the original value of the loans outstanding. Third, the governing document usually states that modifications can only be made if they are in the “best interest of investors,” without specifying which class(es) of investors’ interests are paramount.

¹³ However, a subprime borrower may be liable to pay tax if they benefit from a short sale, or other element of principal forgiveness in a loan modification.

If widespread loan modification changes the expected cashflow differentially to different ABS tranches, modifications could give rise to conflicts between investors (Scholtes, 2007). In addition, accounting rules can require that substantially modified pools are taken back on the originator's balance sheet. Given the stated belief of the rating agencies that loan modifications are likely to be in the general interests of ABS investors, it is unlikely that such actions in themselves would prompt widespread rating downgrades. Nevertheless, there remain a number of potential hurdles to servicers adopting widespread restraint within the securitization model.

B. Future Reforms

Some politicians and states' attorneys-general have advocated passing the liability for predatory lending to the investment banks and rating agencies involved in securitizing such loans. These calls reflect frustration that, given the widespread bankruptcy of subprime originators, there are few solvent parties liable to pay restitution for such misdemeanors within the securitization chain. If, as may have been the case, investment banks have inadequately monitored the pools of securitized mortgages for predatory loan features, a possible solution would be to adopt a capped liability of the mortgage assignee for predatory features of mortgage loans—as currently happens for loans originated in five U.S. states (Engel and McCoy, 2007). As long as liability were capped at a reasonable level, such a retention would incentivize securitizers to monitor the quality of loans they buy from originators more rigorously and screen out those with characteristics that put borrowers clearly at risk. Although this transfer would raise the cost and reduce the supply of subprime lending, it would align incentives to monitor loan quality with ability and expertise to do so. However, if potential liability were uncapped, there is a danger that few if any subprime loans would be originated or securitized (as happened in Georgia in 2002).

An even greater threat to the securitization model would be to make investors liable for damages from predatory or fraudulent loans within the pools backing their securities, as some have suggested. Not only have such investors already suffered market losses, but such a move would also place the obligation for monitoring the loan origination process on investors who have insufficient information to perform this function. Such a move would substantially raise the risk premium on such securities, and hence subprime borrowing costs. In addition, extension of liability to ABS investors could also significantly reduce the attractiveness of such markets to foreign investors, so making the financing of the U.S. current account deficit less easy.

Moves to reassign liability appear unnecessary to tighten current lending standards. Already, subprime standards have been tightened sharply given greater scrutiny from investors, rating agencies, and regulators, and risk layering features of securitized mortgages have declined as a result.¹⁴ In addition, Fannie Mae and Freddie Mac will soon only buy subprime securities

¹⁴ Federal Reserve Board, *Senior Loan Officer Survey*, April, 2007, question 9.

whose loans adhere to the new guidance from Federal regulators on non-traditional and hybrid mortgage lending, and have also reduced their purchases of low- and no-documentation loans. Given that the two GSEs buy about 25 to 30 percent of MBS AAA-rated tranches, their influence could effectively raise lending standards to conform to regulatory guidance across the market. In addition, rating agencies are moving to increase the degree of overcollateralization required in subprime ABS structures to achieve a particular rating and are refining their models so as to penalize mortgage pools with the risk-layering features that have correlated with high delinquencies. If anything, with a high level of loan resets and refinancing demand in 2007–08, the danger to subprime borrowers and dependent housing markets is that lending standards are being tightened too much, not too little.

The Federal Reserve is reviewing the appropriateness of the regulations it has established concerning loan disclosure and outlawed lending practices. While rules under HOEPA have the advantage that they apply to all mortgage lenders, not just regulated depository institutions, enforcement still relies on one of the five federal regulators of depository institutions, the Federal Trade Commission, or state mortgage lending regulators. Hence, consistent application of any new restrictions will be difficult to achieve. Also infringements not only leave lenders open to regulatory enforcement action but also to private lawsuits for redress, and so striking the balance between sufficient consumer protection and the continuing availability of subprime mortgage credit will be a delicate operation (Bernanke, 2007).

Reform of the FHA loan guarantee program is currently receiving bipartisan support as a response to subprime mortgage problems. Current proposals are designed to allow a larger number of borrowers to qualify for an FHA loan guarantee by: increasing the maximum mortgage size that can be FHA-guaranteed to each local markets' median home price; simplifying FHA down-payment rules, and allowing for minimal or zero down-payments for qualified applicants; allowing the FHA to charge for guarantees according to the credit risks the underlying mortgages represent; and allowing the FHA to offer more innovative loan products to keep pace with private market developments, such as a 40-year term.

If a market failure exists in lower quality mortgage insurance, then these reforms are necessary to ensure availability of such assistance to all borrowers. However, the provision of federal guarantees to zero down-payment mortgages and extending FHA guarantees to refinance subprime loans that would otherwise be in distress risks guaranteeing speculative loans and bailing out irresponsible or fraudulent borrowers at the general taxpayers' expense. Ideally, distressed subprime borrowers should not be artificially kept in houses that they cannot ultimately afford.

IX. CONCLUSION

The recent experience in the subprime market is a case study in the costs and benefits of financial innovation in an environment of shifting asset price dynamics. On the one side, the

cost of risky mortgages has fallen, allowing for the expansion of homeownership—especially among minority groups—and default risks have been dispersed away from core depository institutions to the capital markets. On the other, the viability of the riskiest mortgages and mortgage-related securities became reliant on continuing house price appreciation, and lending standards were relaxed to generate high-yielding loans to meet securitization demand. Moreover, lending standards may also have suffered because fee-remunerated intermediaries within the securitization process had insufficient incentive to monitor and maintain long-term loan quality. Less sophisticated investors were content to outsource the risk management of their positions to the credit rating agencies, who initially appeared slow to respond to deteriorating mortgage performance. It is questionable whether the extreme version of this business model, which satisfied demand for high risk loans from nonviable borrowers at the top of the housing market, should have a future.

With lending standards already tightened, the policy response should balance greater consumer protection with maintaining the viability of the securitization model. Most of the actual and anticipated losses from subprime delinquencies have been suffered by bankrupt originators, on-balance sheet lenders, or investors in the riskier ABS and CDO tranches. Appropriately, lending standards have been tightened and ratings models are being strengthened but subprime credit is still readily available—at a price—while no depository institution has failed as a result. When considering future policy changes, regulators and lawmakers need to balance carefully the need to limit future predatory lending excesses, while preserving a model that has successfully dispersed losses from higher-risk mortgages away from the banking system and maintaining the ability of stretched but viable subprime borrowers to refinance when confronted with reset payment shock. This is a challenging task within a regulatory and legal framework ill-suited to provide consumer protection in an originate-to-securitize financial system.

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