

# Studies in Insurance Policy



February 2010

## Mortgage Finance Reform Protecting Taxpayers from Liability

by Neil Mohindra



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## Executive summary

On September 7, 2008, the United States government placed the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac) into conservatorship, an event that resulted in the government taking on over US\$5 trillion in credit guarantees issued and loans in exposure to the US mortgage finance market. This development occurred when the government was facing other fiscal strains from an economy in recession and its efforts to stabilize financial markets and the banking system.

The takeover of Fannie Mae and Freddy Mac prompts the question as to whether a mortgage finance industry can function effectively in normal times (in other words, outside a period of extreme financial stress) while both achieving housing objectives (in particular, promoting home ownership), and minimizing the vulnerability of taxpayers to adverse developments in the mortgage finance market. This study examines this question by focusing on secondary markets and mortgage insurance in a review of US experience, including historical experience, in mortgage finance. It also looks at models used in other countries.

History shows that the residential US mortgage finance market is prone to catastrophic losses from time to time. This suggests that creating a regulatory environment that can prevent future crises is unrealistic. Hence, it is important to focus on resilience as well as prevention. Second, many features of the US mortgage market prior to the crisis were a legacy of past events. The regulatory structure for private mortgage insurers reflected the impact on the industry of the results of the Great Depression. The structure and role of Fannie Mae and Freddie Mac reflected the need to fund mortgages during a time when financial institutions struggled to attract funding because of the low rates they could offer on deposits given regulatory restrictions.

The regulatory structure in the US for mortgage insurers was designed to ensure that mortgage insurers are resilient to catastrophic loss levels. The experiences of private mortgage insurers through the 2007-2009 financial turmoil demonstrated that this regulatory structure, including high levels of regulatory capital, worked well for this industry and its customers as it continued to function through 2008. Private mortgage insurers were battered hard, and some insurers may not survive depending on future conditions in the US housing market. However, by the end of 2008, the insurers were making their payments, and most of them continue to underwrite new business, although the industry did not receive the government support that banks and investment dealers did during this period.

## Canada

The Canadian system is unique: the government of Canada has a significant explicit exposure to mortgage finance. Forty-three percent of mortgages (including all loan-to-value mortgages over 80 percent) are covered by guarantees backed by the government, leaving Canadian taxpayers highly vulnerable to this sector of the economy. The Canadian system also includes an unlevel playing field for mortgage insurance because it favours the dominant, government-owned mortgage insurer at the expense of private insurers. This study recommends that the Canadian government reduce taxpayer vulnerability, including withdrawing government guarantees from all mortgage insurers—public and private—and privatizing the Canada Mortgage and Housing Corporation's mortgage insurance business.

## Australia

In contrast to the Canadian system, Australia's experience shows that a mortgage finance market with no government involvement in mortgage insurance or mortgage securitizing can operate successfully and contribute to high levels of home ownership comparable to those seen in the US and Canada. Australian state governments initially established the conditions for a secondary market in order to facilitate their own schemes. But after the state schemes faltered, the private sector successfully entered the market, and by the late 1990s, Australia had the second most active securitized market outside of the US. The Australian government's direct involvement in the mortgage insurance market ended with the privatization of a government-owned mortgage insurer in 1997. Shortly before the privatization, a review of the Australian financial system concluded that there was no public-interest reason for continued government ownership of the insurer, and that privatization would enhance competitiveness.

Despite the dominance of the private sector in the Australian securitization market, and the departure of the federal government from the mortgage insurance business in 1997, homeownership rates in the following period show no adverse effects. In fact, the proportion of homeowners relying on mortgage finance increased. In addition, housing quality improved over this period as shown by reduced density and larger dwelling size.

## **Covered Bond Model**

This study also examines the use of covered bonds as an alternative to mortgage-backed securities as a source of funding mortgages, as US policymakers have promoted covered bonds as a way for US banks to diversify funding sources. Used extensively in Europe, covered bonds remain on the balance sheet of the issuing bank, and give investors recourse both to a special pool of assets and to the issuing bank itself. However, covered bonds are a poor substitute for the existing US model in that taxpayers remain vulnerable to adverse developments, though through different channels (federal deposit insurance and the tendency by government to bail out or provide financial support to financial institutions).

## **Mortgage finance models**

US policymakers are considering various models for reforming mortgage finance, including those with and without government support. The Australian experience shows that, outside of highly stressed conditions, a secondary market for mortgage-backed securities can operate effectively without any form of government guarantee and contribute towards meeting such housing objectives as a high level of home ownership.

History shows that catastrophic losses and highly stressed conditions in the residential mortgage finance market will occur from time to time. However, this only reinforces the importance of governments avoiding a build-up of their exposure in normal conditions. This build-up of exposure allows governments to consider interventions in high stress periods with a clean slate—no legacy exposures. History also shows that periods when residential mortgage finance is experiencing catastrophic losses will likely coincide with economic downturns. Those downturns create fiscal stress as tax revenues fall and program expenditures rise. That these two circumstances happen in combination reinforces how important it is for governments to avoid building up their exposure to the mortgage finance market in normal times.

# Introduction

Prior to September 2008, the vulnerability of US taxpayers to the mortgage finance market through Fannie Mae and Freddie Mac was a question of debate. The vulnerability of taxpayers has proven to be real as the two institutions were taken into conservatorship on September 7, 2008 because of the deterioration of their financial condition.

This development prompts the question as to whether a mortgage finance industry can function effectively in normal times (in other words, outside a period of extreme financial stress) while both achieving housing objectives (in particular, promoting home ownership), and minimizing the vulnerability of taxpayers to adverse developments in the mortgage finance market.

Taxpayer vulnerability to residential mortgage finance has many dimensions. For instance, taxpayers are exposed to losses in the banking system through deposit insurance and bank bailouts. This paper examines this issue with a focus on one facet: credit enhancement (insurance and guarantees that mitigate the losses of lenders and investors) and secondary markets (where mortgages are sold to investors). Both the private and public sectors have played roles in the provision of credit enhancement and secondary markets both in the US and other countries, and it is where governments have been directly engaged in these activities where significant taxpayer exposure is created. This paper describes secondary markets and credit enhancement in the US in detail and describes these elements of the Canadian and Australian mortgage finance models. From these, the paper tries to determine what model minimizes risk to taxpayers while achieving housing objectives.

The paper begins with a description of secondary markets and mortgage insurance in the US residential mortgage finance market. An examination of the history of this market follows to draw out insights from past events, including previous crises, on the market structure leading up to the 2007-2009 financial turmoil. It then compares the impact of the 2007-2009 turmoil on Freddie Mac and Fannie Mae to the impact on private mortgage insurance. Finally, it examines the Canadian and Australian models to ascertain what they can offer to an optimal model, as well as covered bonds, an instrument that has become common in Europe for financing residential mortgages. US policymakers have pointed to these latter securities as a way of diversifying funding for mortgages away from government-sponsored enterprises, or GSEs.



## The US mortgage finance market

The residential mortgage industry in the United States is complex, consisting of lenders, mortgage originators, investors, and insurers amongst others. Because this paper focuses on “credit enhancement,” three elements of the industry will be discussed in this section—Fannie Mae and Freddie Mac, private mortgage insurers, and white label originations. A full description of these elements, including their regulatory environments, sets the stage for an analysis of how policymakers can develop a model that minimizes taxpayer vulnerability to future adverse events while nevertheless achieving housing outcomes.

### Fannie Mae and Freddie Mac

Two key players are the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corp. (Freddie Mac). Both are “government-sponsored enterprises” (GSEs); they were created by Congress to achieve specific policy objectives but are privately owned. As GSEs, they enjoy tax and regulatory advantages unavailable to wholly private firms. For example, Fannie Mae and Freddie Mac are exempt from state and local income taxes.

These enterprises supply funds to the mortgage market by purchasing loans from mortgage originators, and packaging these loans into mortgage-backed securities, which are subsequently sold to investors. The GSEs guarantee the principal and interest payments on the mortgage backed securities issues. The GSEs also acquire mortgages and mortgage backed securities to hold in their own portfolios (including securities from other originators).<sup>1</sup>

As government-sponsored enterprises, Fannie Mae and Freddie Mac are able to borrow money at below-market interest rates. They use these funds to buy existing mortgages that then generate higher interest revenue. The difference in rates generates income for the enterprises to purchase more mortgages.

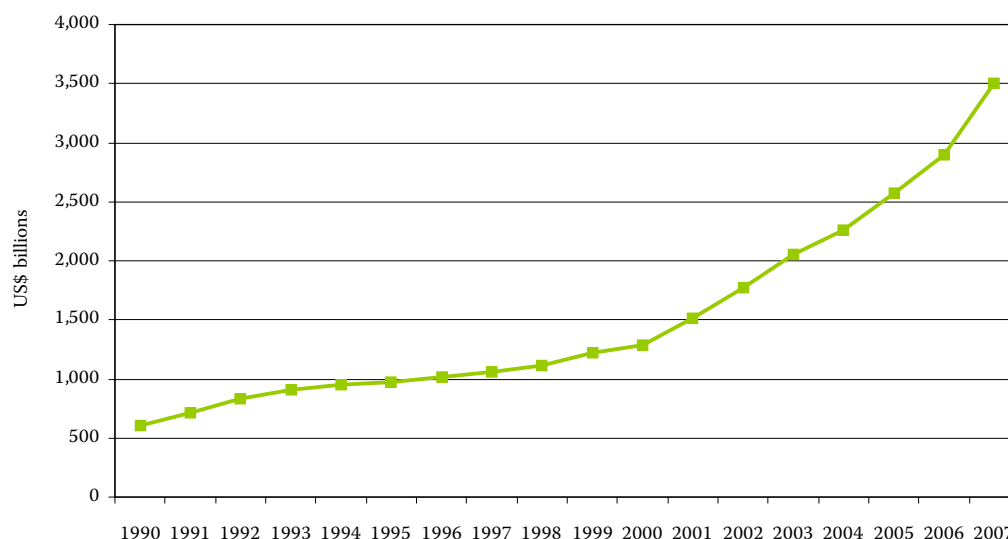
Prior to 2008, there was no formal guarantee by the federal government to repay investors in the event that Fannie Mae or Freddie Mac failed to generate enough income to do so. However, it was widely presumed that securities sold by government-sponsored enterprises were indeed backed by taxpayers, thereby making them nearly as safe an investment as Treasury Bills (Jeske and Krueger, 2005). Several factors contribute to this perception of low risk, including:

- ❖ Fannie Mae and Freddie Mac have access to a line of credit from the US Treasury.
- ❖ The securities sold by Fannie Mae and Freddie Mac may substitute for government bonds in financial transactions between public entities.
- ❖ There have been two previous government bailouts of housing-related government-sponsored enterprises: Fannie Mae in the early 1980s and the Farm Credit System in the late 1980s.
- ❖ The mortgage portfolios of Fannie Mae and Freddie Mac are so large that the failure of either one would cause major disruptions in the housing market. Investors thus conclude that the government will not allow them to fail.

Figure 1 shows the combined value of Fannie Mae's and Freddie Mac's mortgage-backed securities, which are the bundled mortgages sold to investors and repaid by homebuyers. Outstanding mortgage-backed securities grew from US\$600 billion in 1990 to just over US\$3.5 trillion by 2007.

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**Figure 1: The combined value of Fannie Mae's and Freddie Mac's mortgage-backed securities (US\$ billions)**



Source: United States, Office of Federal Housing Enterprise Oversight, 2008d.

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## Pre-crisis regulatory structure

The regulatory structure for Fannie Mae and Freddie Mac prior to the 2007-2009 financial crisis was created in 1992 with the passage of the Federal Housing Enterprises Financial Safety and Soundness Act. Among other things, the law prescribes minimum capital requirements to sustain the solvency of the government-sponsored enterprises and provides a framework for the housing goals that are supposed to govern GSE financing practices. The Act also established the Office of Federal Housing Enterprise Oversight (OFHEO) as the safety and soundness regulator for the government-sponsored enterprises.

To achieve the country's housing goals, the act directs the Secretary of Housing and Urban Development (HUD) to establish annual goals for Freddie Mac and Fannie Mae in the area of housing for low and middle-income families (s. 4561) as well as for under-served areas (Art. 12 s. 4564). Table 1 outlines the financing goals for Fannie Mae and Freddie Mac as set by the US Department of Housing and Urban Development for 2000-2007. Prior to 2005, the financing goals were based upon specific proportions of the GSE's overall financing activities. Sub-goals included specific dollar

**Table 1: Housing objectives set by the United States Department of Housing and Urban Development**

	2000	2001- 2004	2005	2006	2007
<b>Housing goal</b>					
Low- and moderate-income	42%	50%	52%	53%	55%
Under-served areas	24%	31%	37%	38%	38%
Special affordable	14%	20%	22%	23%	25%
<b>Special affordable multifamily sub-goal (US\$ billions)</b>					
Fannie Mae	1.29	2.85	5.49	5.49	5.49
Freddie Mac	0.99	2.11	3.92	3.92	3.92
<b>Home purchase sub-goals</b>					
Low- and moderate-income			45%	46%	47%
Under-served areas			32%	33%	33%
Special affordable			17%	17%	18%

Notes: Low- and Moderate-Income: families with incomes at or below area median income.

Under-served area: Low-income and high-minority census tracts.

Special affordable goals: very low-income families (those with incomes no greater than 60 percent of area median income) and low-income families living in low-income neighborhoods.

Source: United States, Department of Housing and Urban Development, 2008 (revised).

amounts to be made available for the purchase of multifamily dwellings. In 2004 additional sub-goals were introduced to “encourage the GSEs to facilitate increased residential financing for families and neighborhoods targeted by federal housing goals, particularly first-time homebuyers” (United States, Department of Housing and Urban Development, 2006).

## Criticisms of Fannie Mae and Freddie Mac

Concerns about the financial viability of Fannie Mae and Freddie Mac predate the 2007-2009 crisis. Critics long have argued that government-sponsored enterprises operate without the fiscal discipline that helps to keep private firms solvent. For example, the perception that GSE securities are backed by taxpayers, as well as their access to discounted interest rates, have enabled Fannie Mae and Freddie Mac to assume far more debt relative to their capitalization<sup>2</sup> than private firms (Wallison, Stanton, and

**Table 2: Capital held by the GSEs and 10 largest US financial institutions (in US\$ millions, December 31, 2002)**

Companies Ranked by Assets	Balance Sheet Assets	Stockholders' Equity	Capital Ratio: Equity to Assets
Citigroup Inc	\$1,097,190	\$86,718	7.90%
Fannie Mae	887,515	16,288	1.80%
Federal Home Loan Bank System	763,631	36,324	4.80%
JP Morgan Chase & Co	758,800	42,306	5.60%
Freddie Mac	752,249	31,330	4.20%
Bank of America Corp.	660,458	50,319	7.60%
Wells Fargo & Co	349,259	30,358	8.70%
Wachovia Corp	341,839	32,078	9.40%
Bank One Corp	277,383	22,440	8.10%
Washington Mutual Inc.	268,298	20,134	7.50%
FleetBoston Financial Corp	190,453	16,833	8.80%
US Bancorp	180,027	18,101	10.10%
American Express Company	157,253	13,861	8.80%
Average all companies			7.20%
Average GSEs			3.60%
Average excluding GSEs			8.20%

Source: United States, Office of Management and Budget, 2004.

Ely, 2004). Under federal law,<sup>3</sup> Freddie Mac and Fannie Mae are subject to capital requirements, but these have been criticized as too lax to ensure solvency.

A comparison by the US Office of Management and Budget shown in table 2 illustrates how the housing GSEs' capital ratio compares to that of other large US financial institutions. The average for the GSEs is less than half that for all the other financial institutions in the comparison.

In addition to weak regulatory capital constraints, other criticisms of the GSE's pre-crisis safety and soundness regulation have been made. For example, a 2008 report

### **Box 1: Weaknesses in the GSE regulatory structure**

Unlike bank regulators and the Federal Housing Finance Board (FHFB), the Office of Federal Housing Enterprise Oversight (OFHEO), which oversees Fannie Mae and Freddie Mac, does not have the authority to issue "cease and desist" orders relating to "unsafe and unsound" business practices. Moreover, the OFHEO is not empowered to prohibit actions by the GSE officers and directors, or to remove them.

Bank regulators have authorities that can take prompt corrective action. They are arguably more robust and proactive than those of the OFHEO and FHFB. These authorities require bank regulators to take specific supervisory actions when bank capital levels fall to specific levels, or provide the regulators with the option of taking other actions when other specified unsafe and unsound actions occur. Although OFHEO has statutory authority to take certain actions when Fannie Mae or Freddie Mac capital falls to predetermined levels, the authorities are not as proactive or broad as those of the bank regulators. OFHEO also has established regulations requiring specified supervisory actions when unsafe conditions are identified that are not related to capital adequacy, but OFHEO's statute does not specifically mention these authorities.

While bank regulators may place insolvent banks into receivership, the OFHEO is limited to placing Fannie Mae or Freddie Mac into a conservatorship. Thus, it is not clear that OFHEO has sufficient authority to fully resolve a situation in which Fannie Mae or Freddie Mac is unable to meet its financial obligations.

The fragmentation of authority between the Department of Housing and Urban Development (HUD) and OFHEO amplifies the significant concerns that Fannie Mae and Freddie Mac are not adequately regulated. The ability of a regulator to assess the tradeoffs between achieving housing goals and maintaining solvency—particularly during periods of market turmoil—is especially important. HUD officials have acknowledged that they lack sufficient staff and resources to conduct adequate oversight of the GSEs.

Source: GAO Testimony, March 6, 2008.

by the US General Accountability Office identified weaknesses in GSE oversight, as outlined in box 1. The report found that the Office of Federal Housing Enterprise Oversight did not possess the robust powers that banking regulators wield. It also noted that there is no central authority to determine whether the financial risks taken by Fannie Mae and Freddie Mac are sound, or whether the enterprises are accomplishing their missions.

The lack of regulatory safeguards coupled with the dominance of Fannie Mae and Freddie Mac in the mortgage market represents a systemic risk to the economy, some analysts have concluded (Wallison, Stanton, and Ely, 2004).

## **The GSE subsidy**

There is general agreement that the preferential tax and regulatory treatment enjoyed by Fannie Mae and Freddie Mac constitutes a subsidy. However, there has been significant debate over the size of the subsidy, the distribution of the subsidy (i.e. among homeowners, the GSEs, other stakeholders), and the impact on mortgage rates. There are further questions as to whether the subsidies distort the efficient allocation of credit, and whether the portion of the subsidy that reaches homeowners is benefiting the home buyers or the home sellers through higher home prices. Critics of the status of the GSEs, including their implied guarantees, have argued the portion of the subsidy that reaches homeowners in the form of slightly lower interest rates does not outweigh the risks to American taxpayers (Reiss, 2008). These issues are covered in more detail in Appendix A.

## **Private mortgage insurance**

Mortgage insurance protects lenders from losses related to defaults, i.e., when borrowers fail to make the required repayments. These losses may include interest charges, legal fees, home maintenance and repair expenses, real estate brokerage fees, closing costs, and losses on the sale of foreclosed properties. The most prevalent product offered by private mortgage insurers is primary mortgage insurance, which typically covers the top 20 to 30 percent of the claim amount on first mortgages. When a default claim is filed, a mortgage insurer either may pay the lender the entire claim amount and take title to the property, or pay a percentage of the loss as stipulated by the specific insurance coverage on the property. Primary mortgage insurance may be written either for an individual mortgage (flow), or for a portfolio of mortgages (bulk).

Besides the loss mitigation provided by primary mortgage insurance, lenders have two further incentives to acquire this product. The charters of both Freddie Mac

and Fannie Mae require credit enhancements, such as mortgage insurance on all loans that originate with low down payments. For mortgages with loan-to-value ratios higher than 80 percent, the two agencies generally require that lenders obtain insurance coverage on the amount of the loan that exceeds 70 percent of the property value.

In the event that banks and other depository institutions retain a mortgage with a loan-to-value ratio above 90 percent, interagency guidance states that credit support, such as mortgage insurance or collateral should be in place. If that credit support isn't available, the mortgage should be subject to a "risk weighting" of 100 percent (instead of 50 percent) in determining capital adequacy (whether the institution has adequate capital relative to regulatory requirements).

Mortgage insurance also is available for pools of mortgages, so that they can be sold in the secondary market with an investment grade rating. Pool insurance typically includes a liability limit for the insurer of 5 to 25 percent. "Modified pool insurance" includes a coverage limit on each individual loan as well as a "stop loss" feature for the entire pool of loans.

Private mortgage insurers compete with government insurance offered by the Federal Housing Administration (FHA) and the Department of Veteran Affairs (VA). The government mortgage insurance programs offer 100 percent loss coverage, but restrict the size of loans that may be insured. The share of mortgages insured by the FHA and VA combined was 2.7 percent of all single family loans originated in 2006 (United States, Office of Federal Housing Enterprise Oversight, 2007: 11). The value of insured mortgages under these programs increased from US\$80 billion in 2006 to US\$120 billion in 2007 (United States, Office of Federal Housing Enterprise Oversight, 2008d: 15).

Mortgage insurers are also active in "reinsurance," that is, when an insurer transfers risk to another insurer. Depending on their business strategies, US mortgage insurers both assume risk (take on risk from another insurer) and cede risk (transfer it to another insurer). US mortgage insurers often set up "captive" reinsurance programs. Under a captive reinsurance arrangement, a mortgage lender typically establishes a reinsurance company that assumes part of the risk associated with the portfolio of that lender's mortgages insured with a mortgage insurer. In return for the reinsurance company's assumption of a portion of the risk, the insurer cedes a portion of the mortgage insurance premiums paid by the lender to the reinsurance company.

Table 3 includes aggregate statistics on six of the seven US mortgage insurers, excluding Radian Guaranty, which had US\$955.1 million in net written premiums in 2007.

Mortgage insurers are restricted by regulation in most states to aggregate insurance premiums not exceeding capital by 25 times. As table 3 shows, mortgage insurers have maintained risk-to-capital ratios at levels that satisfy the guidelines set by Fannie Mae and Freddie Mac for "Type I" insurers (those that qualify to provide the full range



**Table 3: Mortgage Insurance Companies of America member risk and capital (\$US millions)**

	2003	2004	2005	2006	2007
Net premiums written	3,483	3,411	3,480	3,542	4,180
Net primary risk in force	138,830	141,645	141,278	149,196	185,360
Net pool risk in force	13,417	10,831	8,715	8,822	8,417
Total net risk in force	152,247	152,477	149,993	158,018	193,777
Policyholders surplus	3,087	5,591	5,646	3,470	3,243
Contingency reserve	12,358	10,593	11,198	14,018	11,109
Total capital	15,445	16,184	16,844	17,488	14,352
Risk-to-capital ratio	9.86	9.42	8.91	9.04	13.5

Note: Data includes AIG United Guaranty, Genworth Mortgage Insurance Corporation, Mortgage Guaranty Insurance Corporation, PMI Mortgage Insurance Co., Republic Mortgage Insurance Company, and Triad Guaranty Insurance Corporation.

Source: Mortgage Insurance Companies of America (2007-2008) and (2008-2009).

of GSE services) through 2007. The guidelines require all mortgage insurers doing business with the GSEs to maintain a rating of at least “AA-” by Fitch and S&P, and “Aa3” by Moody’s.

The regulatory structure for mortgage insurance in the US is unique compared to other lines of property insurance because of the potentially catastrophic nature of losses. As Jaffe notes:

The high and fluctuating loss ratios are the basis for describing mortgage insurance as a catastrophe line, in obvious contrast with the low and controllable risks associated with title insurance. The catastrophic nature of mortgage insurance arises because falling house prices create the potential for insurance losses, and house price declines tend to affect many properties simultaneously in a geographic region, such as a city, a state, or possibly the entire country. This means that mortgage insurance claims tend to come in bunches, affecting an entire region, such as Texas and other oil regions during the 1980s, or the entire country as during the Great Depression. This pattern can be contrasted with more traditional lines of casualty insurance, such as auto insurance, where the probability of a large number of cars simultaneously crashing in one city is extremely low (Jaffee, 2004: 10).

The capital requirements for life and property insurers in the US are set by the National Association of Insurance Commissioners.<sup>4</sup> A risk-based capital formula



includes specific capital charges against certain types of risk such as credit, underwriting, and business risk. The charges are summed up and adjusted for correlations that exist between the types of risk.

In contrast, mortgage insurers are subject to a unique regulatory regime that reflects their unique risk profile. Mortgage insurers must operate as “monolines,” i.e., they cannot write any other type of insurance. Therefore, capital and reserves cannot be shared with any other insurance line. To prevent additional exposure to the residential mortgage market, mortgage insurers are restricted from investing in residential mortgage-related investments. As described in Box 2, other elements of state regulatory regimes include liability limits, contingency reserves, and individual loan limits.

Under state and federal tax codes, “contingency reserves” hold special tax status. Companies that write insurance on mortgage securities insurance can deduct the funds set aside against adverse economic cycles.<sup>5</sup>

## Private label mortgage-backed securities

“Private label” mortgage-backed securities refer to bundled mortgages that are sold by originators other than Fannie Mae, Freddie Mac, or Ginnie Mae.<sup>6</sup> Because their cost of capital is greater, private-label firms do not compete with government-sponsored enterprises (Reiss, 2008).

### Box 2: New York State laws for mortgage insurers

Mortgage insurers cannot have a total outstanding liability exceeding 25 times their capital (New York State Law, s. 6502(3)).

Mortgage insurers must contribute to the contingency reserve 50 percent of earned premiums, after establishing unearned premium reserves. Contributions to the reserve must be maintained for 10 years, except for withdrawals made in a year in which losses exceed 35 percent of the corresponding earned premiums. These withdrawals require approval from the New York superintendent of insurance (New York State law, s. 6502(2)).

In addition to the capital and reserve requirements, there is a restriction on how much insurance mortgage insurers can provide on any individual mortgage loan. Mortgage insurers providing coverage on loans secured by a first lien on real estate must limit coverage (net of applicable reinsurance) to a maximum of 25 percent of the mortgage loan (New York statutes (s. 6503(3))). When a mortgage insurer underwrites a “junior” lien, coverage (net of reinsurance) is limited to 25 percent of the combined indebtedness of all outstanding mortgage loans.

Three types of mortgages are bundled in private label securities: jumbos, sub-prime, and Alt-A. Jumbos are mortgage loans that exceed the allowable size limit for conforming mortgages. Sub-prime mortgages are loans with a lower probability of repayment based on the borrower's credit record and score, debt-service-to-income ratio, and/or mortgage loan-to-value ratio. Alt-A mortgages are loans to borrowers with good credit records but who generally have limited income or asset verification, or no employer. Alt-A loans are considered to be higher quality than sub-prime.

Several legal milestones facilitated the development of the sub-prime market (Kiff and Mills, 2007). For example, the preemption of state interest rate caps by federal legislation in 1980 permitted lenders to offer adjustable-rate mortgages. Furthermore, amendments to tax legislation in 1986 left mortgages as the only consumer loan that was tax deductible.

Automated underwriting (computer generated loan decisions) and advances in credit scoring also contributed to development of the private label market (Kiff and Mills, 2007).

Private sub-prime lending displaced some guaranteed lending offered by the Federal Housing Administration because the government agency was less aggressive than private lenders and lacked the flexibility to adapt to changing market conditions (Kiff and Mills, 2007).

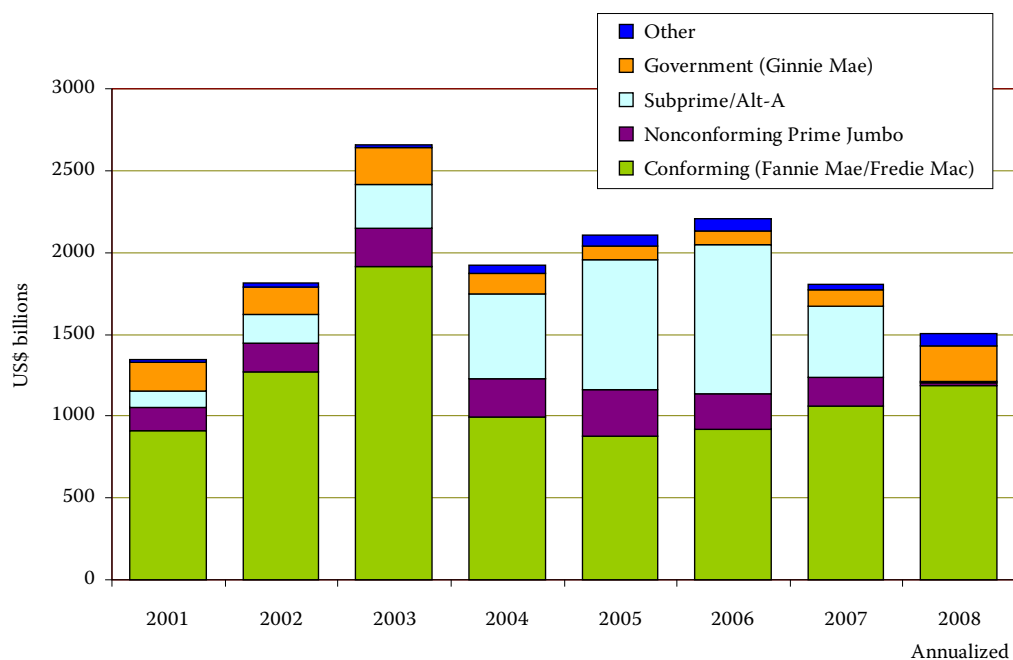
Private label mortgage-backed securities are structured like other asset-backed securities. The originator sets up a "special purpose vehicle" such as a non-profit trust into which assets are deposited. The special purpose vehicle then issues securities that are linked to the performance of its assets. The securities are typically divided into various categories of risk. The "senior" tranches bear the least risk, and thus carry the strongest credit rating. Only after more "junior" tranches are exhausted would defaults impair the senior tranches. The most subordinate tranche is typically retained by the originator or sold to hedge funds or others willing to take on higher risk.

Other common features of mortgage securitization include "credit enhancements." These may be guarantees or lines of credit against default by an insurer or bank, or "over-collateralization," which occurs when the value of the assets bundled in a security is greater than the market value of the security itself.

Originations of private mortgage securities grew sharply between 2001 and 2006, at an annual growth rate of 36.3 percent. As figure 2 shows, private originations comprised 51 percent of all originations before declining in 2007 and early 2008. Sub-prime and Alt-A loans amounted to US\$914.3 billion, while jumbo loans totaled US\$219 billion.

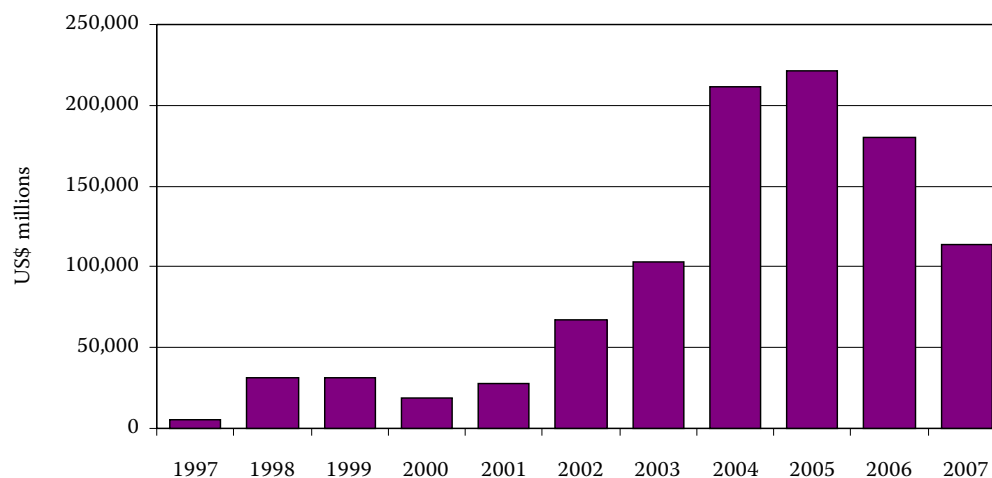
Several factors contributed to this growth of private originations. For example, the rising prices of homes meant more mortgages did not meet the criteria for backing by the government-sponsored enterprises. Innovations in securitization techniques also increased the availability of private mortgage securities, as did accounting/gover-

**Figure 2: Mortgage securitizations (US\$ billions)**



Source: IMF Financial Stability Report, October 2008.

**Figure 3: Combined Freddie Mac and Fannie Mae private label securities purchases**



Source: United States, Office of Federal Housing Enterprise Oversight, 2008d.

nance issues that forced Fannie Mae and Freddie Mac to contract their mortgage purchase operations (Kiff and Mills, 2007). The rapid growth in private label securities was also facilitated by demand for new vehicles from investors chasing higher yields through higher risk (Ellis, 2008).

Government-sponsored enterprises purchase private label securities for their own portfolios. Figure 3 shows the amount of these securities in their portfolios as of 2007. The combined holdings peaked at US\$221.3 billion in 2005 before declining to US\$113.6 billion in 2007.

# History of the US mortgage finance industry

Reviewing the history of mortgage financing in the United States offers valuable insights. First, it reveals the extent to which the US mortgage finance industry has been prone to crises over time, and the impacts of these crises. Secondly, it increases our understanding about how the various elements of the mortgage finance market took shape.

## Up to the 1970s

Prior to the 1930s, US residential mortgages had a basic structure. They were short-term loans of five to 10 years with variable interest rates, low ratios of loan-to-value (50 percent or less), and payments of principal set at the expiration of the loan.

In 1904, New York became the first state to authorize mortgage insurance, and a significant mortgage market emerged in the 1920s. Because mortgage insurance was considered a low-risk venture, the firms were virtually unregulated (Mortgage Insurance Companies of America [2008]).

The Great Depression caused property values nationwide to decline by 50 percent relative to peak values, which prompted a wave of foreclosures as borrowers defaulted on their payments and lenders were unwilling to renegotiate mortgage terms. The plunge in real estate values during the Great Depression in the early 1930s caused the collapse of New York's entire mortgage insurance industry.

The US federal government intervened in the housing finance market with the establishment of a number of new institutions. The first was in 1932 with the creation of the Federal Home Loan Banking System, to provide funds to building and loan associations.

In 1933, Congress established the Home Owner's Loan Corporation (HOLC) to raise funds through government-backed bonds to acquire defaulted mortgages. Once acquired, the mortgages were reinstated as fixed rate 20-year amortized loans. The HOLC was disbanded in 1936.

That same year, the federal government created the Federal Housing Administration to stimulate housing construction by encouraging mortgage investment. Home loan insurance offered by the Federal Housing Administration provided full

repayment to lenders if borrowers defaulted on their mortgages. The FHA implemented the standard of fixed-rate, self-amortizing (where payments over the course of the loan include both interest and repayment of principle) long-term mortgages.

The Federal National Mortgage Association (Fannie Mae) was created in 1938 to facilitate a secondary market for FHA-insured mortgages. The government's role in mortgage insurance expanded further after World War II, with the creation of a Veterans Affairs mortgage guarantee program to help veterans in their transition to civilian life.

The first modern private mortgage insurance company, Mortgage Guaranty Insurance Corp., was created in 1956, following the passage of a comprehensive mortgage insurance law by the Wisconsin legislature.

The modern regulatory structure for mortgage insurance was largely influenced by a study commissioned by the state of New York after the collapse of the mortgage industry in the 1930s. The "Alger Report" recommended restrictions against conflicts of interest; stringent capital and reserve requirements; and the adoption of appraisal, investment, and accounting standards.

Demand for private mortgage insurance was effectively created by restrictions on the size of loans the FHA could insure. Private mortgage insurers allowed lenders to make down payments below the limits set by FHA. Private insurers also provided the credit enhancements required by Freddie Mac and Fannie Mae for purchasing (or guaranteeing) mortgages with loan-to-value ratios above 80 percent. Unlike the FHA and Veterans Affairs, private mortgage insurers covered only 20 to 30 percent of a claim rather than the full balance.

In 1968, Fannie Mae was split into two organizations: the Government National Mortgage Association (Ginnie Mae) and the privately-held Fannie Mae. This was prompted by liquidity challenges two years earlier, when rising Treasury yields prompted savings to flow from bank deposits into Treasuries, thus limiting the availability of mortgage funds. The reconfigured Fannie Mae was authorized to buy and sell non-government-backed mortgages to raise additional funds for mortgage originators. Freddie Mac was established in 1970 to securitize mortgages issued by savings and loan associations.

## **The 1980s and 1990s**

The 1980s were tumultuous for the US mortgage finance industry, marked by the savings and loan crisis, a severe spike in losses among mortgage insurers, and financial stress at Fannie Mae. The crises were prompted by increases in nominal interest rates, which were pushed up by inflation throughout the 1960s and 1970s. Moreover, gov-

ernment restrictions on the interest rates offered by banks caused deposits to move to higher-yield US treasuries (Green and Wachter, 2005).

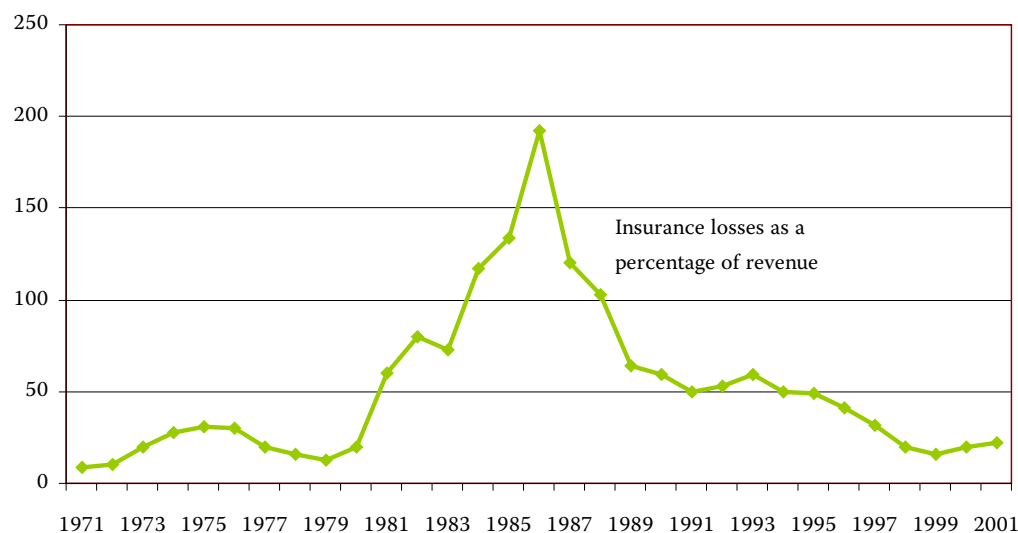
### ***Savings and loan associations***

US savings and loan associations (S&Ls) historically accepted deposits and originated mortgage loans. But rising interest rates produced substantial losses for S&Ls, because their balance sheets held long-term fixed rates mortgages. In the early 1980s, short-term interest rates exceeded long-term rates, which forced savings and loans to pay substantially higher rates to depositors than they were receiving on their assets, which largely consisted of long-term, fixed-rate mortgages (Barth, Tong, Phumiwasana, and Yago, 2007). Between 1980 and 1982, for example, 118 S&Ls with assets of US\$43 billion failed (Federal Deposit Insurance Corporation, 1997). Banks subsequently became reluctant to hold fixed rate loans when there was a risk that nominal interest rates would rise. Consequently, many lenders sold their fixed-rate mortgages to the government-sponsored enterprises while only holding their adjustable rate mortgages (Green and Wachter, 2005).

### ***Mortgage insurers***

The resilience of the mortgage insurance industry was tested during the volatile 1980s and 1990s, according to the Mortgage Insurance Companies of America (MICA):

The 1980s wrote a new chapter in the history of mortgage insurance. The first challenge of the early '80s was helping homeowners, lenders, real estate agents and builders cope with double-digit interest rates and inflation in a period of severe recession. To help qualify more borrowers, conventional low down payment loans were paired with experimental adjustable-rate mortgages and features such as initially discounted “teaser rates,” negative amortization and graduated payment increases. By 1984, more than half of all insured mortgage loans had down payments of less than 10 percent, and many of these were adjustable-rate mortgages. As economic conditions deteriorated—particularly in energy oriented regions of the country—defaults began to rise, resulting in numerous foreclosures. The mortgage insurance industry paid more than \$6 billion in claims to its policyholders during the 1980s. Policyholders included commercial banks, savings institutions, institutional mortgage investors, mortgage bankers, Federal Deposit Insurance Corp., Federal Savings and Loan Insurance Corp., Fannie Mae, and Freddie Mac. Mortgage insurance protected all these mortgage and capital providers from extensive losses on high ratio loans. Even in the prosperous economic times of the 1990s, the mortgage insurance industry paid more than \$8 billion in claims, once again demonstrating its ability to

**Figure 4: US mortgage insurance loss ratio**

Source: Jaffee, 2004.

function as designed in both good and bad economic climates. (Mortgage Insurance Companies of America [2009])

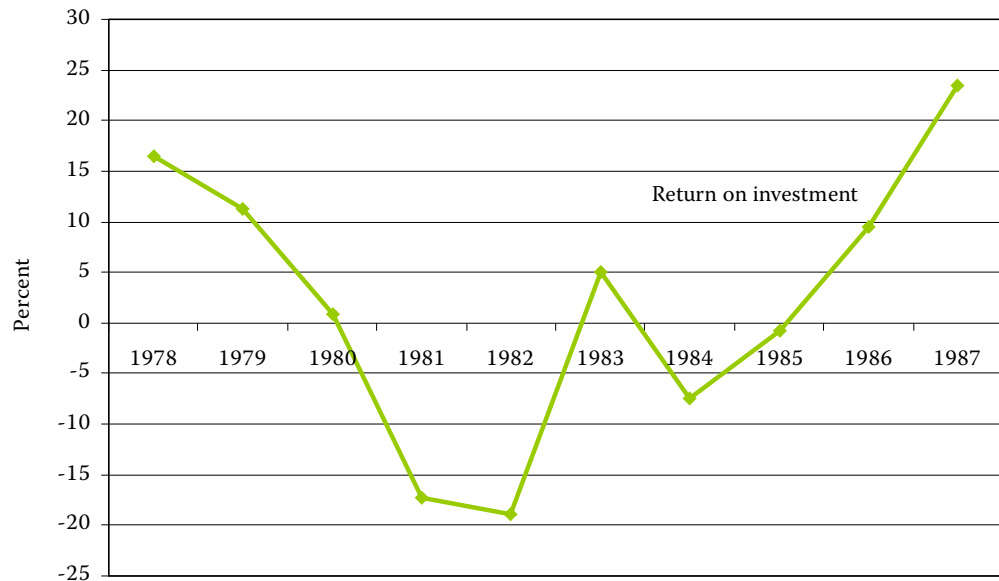
Figure 4 shows historical “loss ratios” (i.e., insurance losses as a percentage of revenue). The ratio, which had been just over 10 percent in 1980, peaked at about 190 percent in 1987.

### ***Fannie Mae***

The rise in interest rates also adversely affected Fannie Mae. As figure 5 shows, Fannie Mae’s return on equity dropped sharply in the early 1980s, and did not begin to recover until 1986. As noted by the Government Accountability Office: “During the 1980s, the federal government provided financial assistance to both Fannie Mae and the Farm Credit System (another GSE) when they experienced difficulties due to sharply rising interest rates and declining agricultural land values, respectively” (United States, Government Accountability Office, 2008: 3).

Despite insolvency in the early 1980s, Fannie Mae was still able to obtain financing in capital markets because of its implicit backing by the US Government (Wallison, Stanton, and Ely, 2004).



**Figure 5: Fannie Mae return on equity**

Source: United States, Office of Federal Housing Enterprise Oversight, 2008d.

## What history shows

The history of the US mortgage finance market offers several useful insights into how to minimize taxpayer vulnerability. First, the residential mortgage finance market in the United States is prone to catastrophic losses from time to time regardless of regulations. Therefore, it is important to focus on resilience as well as prevention.

Second, many features of the US mortgage market are a legacy of past events. The regulatory structure for private mortgage insurers reflects the government's response to the Great Depression. The structure and role of the government-sponsored enterprises reflects the need to create an alternative funding model during a time when lenders struggled to attract deposits because of the low interest rates they were able to offer.

## **The 2007-2009 financial turmoil: impacts on the GSEs and private mortgage insurers**

This section addresses the impact of the financial crisis on government-sponsored enterprises and private mortgage insurers.

In August 2007, developments in the market for sub-prime mortgage securities ignited a global financial crisis. Financial markets seized up after financial institutions reported unexpected losses related to sub-prime mortgages, and after credit rating agencies took action to downgrade securitization vehicles. The losses resulted from an escalation of defaults in 2006, which were prompted by falling house prices and rising interest rates.

Adjustable-rate mortgages were particularly problematic. Typically, these types of mortgages offer a low “teaser” rate initially followed by higher rates over the adjustable rate period. The combination of rising interest rates and flat (or falling) home prices prompted borrowers to default. The financial crisis extended into asset-backed commercial paper because some of the underlying assets included sub-prime mortgages.

The problems in the sub-prime market have been described as the “trigger” for the broader market turmoil that followed (Ellis, 2008).

The financial crisis has prompted significant government interventions in the US and globally, including the nationalization of some banks, government-backed acquisitions of financial institutions, and publicly funded capital injections into financial institutions. Many countries have extended blanket guarantees on bank deposits. Central banks have made funds available to the financial system on a number of occasions, often acting in concert. Central banks also have expanded the types of collateral they will accept.

Both the range of problems resulting from the financial turmoil in the US and the interventions by the US Federal Reserve, the US Department of the Treasury, and the Federal Deposit Insurance Corporation, have been extensive. These include injecting liquidity into the financial system, bailing out financial institutions, injecting capital into the banking sector, guaranteeing money market funds, purchasing asset-backed securities, temporarily increasing deposit insurance coverage, and guaranteeing debt issued by financial institutions.

## The impact on the GSEs: Fannie Mae and Freddie Mac

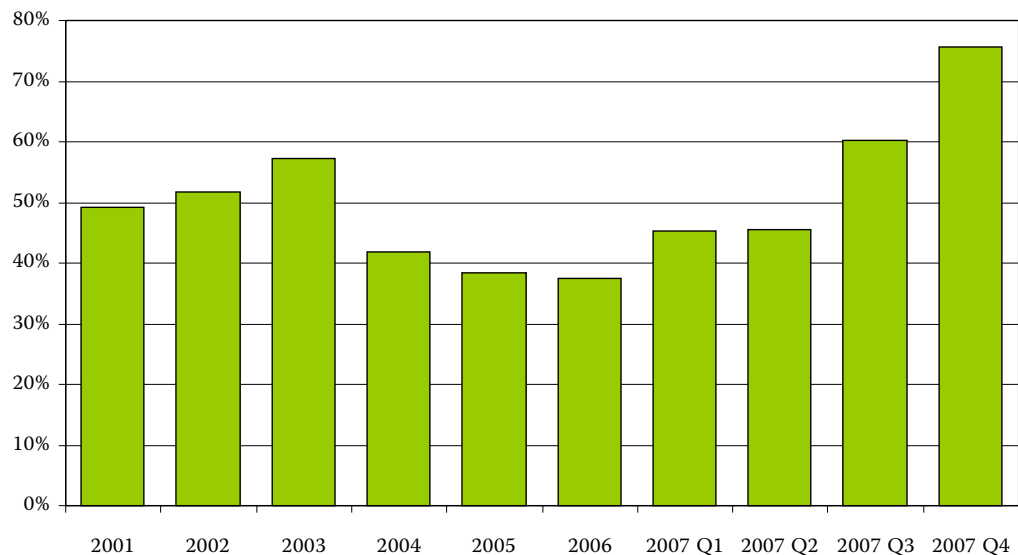
The crisis initially prompted a resurgence of Fannie Mae and Freddie Mac as their market share of new mortgage originations grew. As figure 6 shows, their market share had reached a low of 37.4 percent in 2006, but climbed to 75.6 percent by the end of 2007.

Despite earnings losses in 2007 and early 2008 (see table 4), policymakers considered Fannie Mae and Freddie Mac to be part of the solution to problems in the mortgage market, rather than part of the problem.

In February 2008, Congress approved the Economic Stimulus Act to address “short-term economic uncertainties.” The statute authorizes recovery rebates to individuals, incentives for business investment, and higher caps on mortgages that are backed by the Federal Housing Administration and those that may be purchased by government-sponsored enterprises (United States, Government Printing Office, 2008a). For Fannie Mae and Freddie Mac, the new cap applies to loans originated between July 1, 2007 and December 31, 2008 (Sec. 201). The limit was increased from US\$417,000 to 125 percent of the median home price in the area of the mortgaged property<sup>7</sup> (not to exceed US\$730,000).

On March 1, 2008, caps on the growth of Fannie Mae and Freddie Mac were eliminated. The decision to allow the government-sponsored enterprises to hold more

**Figure 6: Fannie Mae and Freddie Mac market share**



Source: United States, Office of Federal Housing Enterprise Oversight, 2008e.

**Table 4: Fannie Mae and Freddie Mac quarterly earnings (US \$ millions)**

	<b>Fannie Mae</b>	<b>Freddie Mac</b>
2006 Q1	2,026	2,009
Q2	2,058	1,397
Q3	-629	-715
Q4	604	-480
2007 Q1	961	-133
Q2	1,947	729
Q3	-1,399	-1,238
Q4	-3,559	-2,452
2008 Q1	-2,186	-151
Q2	-2,300	-821
Q3	-28,994	-25,295

Source: Fannie Mae, 2008; Freddie Mac, 2008f.

mortgages in their portfolios followed the release of their audited financial statements for 2007. The restrictions on growth had been imposed after both agencies failed to release in a timely fashion audited financial statements for several years. On March 19, 2008, the Office of Federal Housing Enterprise Oversight reduced its capital requirement for Fannie Mae and Freddie Mac from 30 to 20 percent above the statutory capital requirement of 2.5 percent.<sup>8</sup> The change was intended to increase liquidity and capital in the US mortgage market by providing up to US\$200 billion of immediate liquidity for mortgage-backed securities.

In easing the regulations, the oversight agency noted that “Fannie Mae and Freddie Mac have a specific and counter-cyclical role of providing liquidity, stability, and affordability to the mortgage market” (United States, Office of Federal Housing Enterprise Oversight, 2008c).

Concurrently, officials of Fannie Mae and Freddie Mac vowed to raise additional capital and to maintain levels in excess of requirements to ensure market confidence and fulfill their public mission.<sup>9</sup> In May 2008, Fannie Mae raised US\$7.4 billion in additional capital.

Public officials continued to express confidence in the government-sponsored enterprises into the summer of 2008. A statement issued by the oversight agency on July 10, 2008 noted that Fannie Mae and Freddie Mac were adequately capitalized and holding capital well in excess of requirements.

In testimony before the Senate Banking Committee on July 15, 2008 (United States, Department of the Treasury, 2008a), Treasury Secretary Henry M. Paulson, Jr.

proposed changes to the regulation of Fannie Mae and Freddie Mac to increase market stability and support for housing finance, including:

- ❖ A temporary increase (of 18 months) in the authority of the Department of the Treasury to make credit available to Fannie Mae and Freddie Mac;
- ❖ A grant of temporary authority (18 months) to the Department of the Treasury to purchase equity in either Fannie Mae or Freddie Mac, if necessary;
- ❖ Authorization of the Federal Reserve to perform a consultative role in setting new capital requirements and other prudential standards for the government-sponsored enterprises.

Mr. Paulson noted in his testimony that the proposed reforms were not prompted by any sudden deterioration in the financial conditions of either Fannie Mae or Freddie Mac.

### ***The Housing and Economic Recovery Act of 2008***

The Housing and Economic Recovery Act of 2008 was enacted on July 30. The Act created a new regulatory structure for Fannie Mae and Freddie Mac by establishing the Federal Housing Finance Agency (FHFA) as the new oversight authority. The new agency assumed responsibility for the safety and soundness of the government-sponsored enterprises from the Office of Federal Housing Enterprise Oversight (s. 1101) as well as the authority over affordable housing goals from the Office of Housing and Urban Development (s. 1122, 1125).

The regulatory powers of the new Federal Housing Finance Agency for ensuring the safety and soundness of government-sponsored enterprises include the authority to prescribe minimum capital requirements (s. 1111) and standards for the prudential management of risks, such as internal controls and interest rate risk exposures (s. 1313). FHFA also is authorized to impose temporary cease and desist orders, suspend or remove officers and directors, and impose civil money penalties (s. 1152). The FHFA also has the power to place a critically undercapitalized institution into mandatory receivership (s. 1367). The director of FHFA is required to consult the chairman of the Federal Reserve before issuing any regulations related to safety and soundness (s. 1118).

In setting housing goals, the Housing and Recovery Act specifies that only conforming loans qualify (s. 1332, 1333). Separate goals must be established for conforming mortgages used to purchase homes and to refinance homes. In assessing compliance, the FHFA cannot consider segments of the market determined to be unacceptable or contrary to good lending practices, inconsistent with safety and soundness, or unauthorized for purchase by the GSEs. The GSEs can petition the FHFA to reduce goals or sub-goals on the basis of market and economic conditions,

the financial conditions of the GSEs, or if markets would be adversely affected in the areas of liquidity or over-investment.

### **Conservatorship**

On September 7, 2008, the US Department of the Treasury announced that both Freddie Mac and Fannie Mae would enter “conservatorship,” the legal process whereby they would be managed by an appointed entity until a return to solvency (United States, Department of the Treasury, 2008d).

Under the conservator arrangement, the powers of the directors, officers, and shareholders of Fannie Mae and Freddie Mac were transferred to the Federal Housing Finance Agency. The action was taken, according to the Federal Housing Finance Agency, because a review of the government-sponsored enterprises indicated they could not operate safely and soundly or fulfill their mission based on the following factors:

- ❖ Current capitalization;
- ❖ Current market conditions;
- ❖ The financial performance and condition of each company
- ❖ The inability of the companies to fund themselves according to normal practices and prices; and
- ❖ The critical importance each company has in supporting the residential mortgage market.

As conservator, the Federal Housing Finance Agency was charged with preserving the assets and property of Fannie Mae and Freddie Mac, and to return both to sound and solvent condition. The agency appointed new chief executives for Fannie Mae and Freddie Mac, but the existing management teams otherwise remained intact. To conserve capital, dividends for common and preferred shares would be discontinued. Debt interest and principal payments would continue to be made. Fannie Mae and Freddie Mac would be allowed to grow their mortgage-backed securities without limit, and continue to purchase replacement securities for their portfolios without capital constraints.

The Department of the Treasury entered into a “Senior Preferred Stock Purchase Agreement” of \$100 billion for both Fannie Mae and Freddie Mac to ensure that they maintained a positive net worth and to protect debt holders. The terms of the agreement are described in box 3. The Treasury noted in its announcement that it had a responsibility to take this action because ambiguities in Congressional charters created a perception of government backing that led to the systemic risk to the financial

system posed by the breadth and scale of the holdings of GSE debt and mortgage backed securities.

The US Department of the Treasury also established a “Government Sponsored Enterprise Credit Facility” to ensure the availability of credit for Fannie Mae and Freddie Mac. The new agency offers liquidity, if needed, through December 31, 2009. Funding is provided directly by the US Department of the Treasury from its general fund in exchange for collateral in the form of guaranteed mortgage-backed securities and advances made by the Federal Home Loan Banks.

On September 7, 2008, officials of the US Department of the Treasury announced the “GSE Mortgage Backed Securities Purchase Program,” which is

### **Box 3: US Department of the Treasury and GSEs senior preferred stock purchase agreement: terms**

- If the Federal Housing Finance Agency determines that a GSE’s liabilities have exceeded its assets under generally accepted accounting principles, the US Department of the Treasury will contribute cash capital to the GSE in an amount equal to the difference between liabilities and assets. An amount equal to each such contribution will be added to the senior preferred stock held by the Department of the Treasury, which will be senior to all other preferred stock, common stock or other capital stock to be issued by the GSE.
- In exchange for entering into these agreements with the GSEs, the Department of the Treasury will immediately receive the following compensation:
  - » US\$1 billion of senior preferred stock in each GSE
  - » Warrants for the purchase of common stock of each GSE representing 79.9 percent of the common stock of each GSE on a fully-diluted basis at a nominal price.
- The senior preferred stock shall accrue dividends at 10 percent per year. The rate shall increase to 12 percent if, in any quarter, the dividends are not paid in cash, until all accrued dividends have been paid in cash. Beginning March 31, 2010, the GSEs shall pay the Department of the Treasury on a quarterly basis a periodic commitment fee that will compensate the Department of the Treasury for the explicit support provided by the agreement. The secretary of the Treasury and the conservator shall determine the periodic commitment fee in consultation with the chairman of the Federal Reserve. This fee may be paid in cash or may be added to the senior preferred stock.

Source: US Treasury Department of Public Affairs, *Fact Sheet: Treasury Senior Preferred Stock Purchase Agreement*, September 7, 2008.

intended to promote the stability of the mortgage market through government purchases of mortgage-backed securities from Fannie Mae and Freddie Mac (United States, Department of the Treasury, Office of Public Affairs, 2008e).

### ***Post-conservatorship results***

As table 4 shows, Fannie Mae and Freddie Mac incurred losses through the last two quarters of 2007 and the first two quarters of 2008. Since entering conservatorship in September 2008, Fannie Mae reported a loss of US\$29 billion (or US\$13.00 per diluted share). The press release announcing the loss noted that the results were driven by a non-cash charge of US\$21.4 billion to establish a valuation against deferred tax assets, as well as US\$9.2 billion in credit-related expenses from the deterioration in mortgage credit conditions and declining home prices. Fannie Mae's net worth thus dropped from US\$41.4 billion on June 30, 2008 to US\$9.3 billion on September 30, 2008.

Freddie Mac announced a third quarter 2008 loss of US\$25.3 billion (or US\$19.44 per diluted share) driven primarily by a non-cash charge of US\$14.3 billion for a partial valuation allowance against the company's deferred tax assets, security impairments of US\$9.1 billion on available-for-sale securities, and US\$6.0 billion in credit-related expenses. The loss for the quarter wiped out all of Freddie Mac's equity, creating a deficit in stockholder equity of US\$13.8 billion.<sup>10</sup> Freddie Mac also announced its request to the Department of the Treasury for US\$13.8 billion, under the terms of the stock purchase agreement.

According to the Congressional Budget Office, the takeover of Fannie Mae and Freddie Mac resulted in the US government taking on more than US\$5 trillion in credit guarantees by the end of 2008, with a cost on a net present value basis (current value of a set of future cash flows) of US\$200 billion (United States, Congressional Budget Office, 2009: 11). The budget office also estimated a cost of US\$38 billion for 2009.

### ***Homeowner affordability and stability plan***

On February 18, 2009, the US Department of the Treasury announced the "Homeowner Affordability and Stability Plan" (United States, Department of the Treasury, 2009). Among other measures, the plan increased the limits on the Preferred Stock Purchase Agreements with Fannie Mae and Freddie Mac to US\$200 billion each from the original US\$100 billion each, and increased the size of their retained mortgage portfolios by US\$50 billion (to US\$900 billion), along with corresponding increases in allowable debt outstanding. The plan also allowed homeowners with eligible loans guaranteed by Fannie Mae or Freddie Mac to refinance, and authorized the government-sponsored enterprises to monitor lenders assisting struggling home owners.



## The impact on private mortgage insurers

Inevitably, private mortgage insurers were adversely affected as the downturn in the housing market prompted an escalation in defaults and reduced opportunities to offset the cost of claims because of rising inventories of unsold homes.

Table 5 shows a sharp deterioration in the performance of private mortgage insurers in 2007. While net premiums revenue was strong in 2007, growing 18 percent from the previous year, the loss ratio of private insurers grew by 330 percent. Further, the risk-to-capital ratio, i.e., the proportion of capital required to maintain specific levels of investment risk, increased by 49 percent (to 13.5) in 2007 but still remained below the regulatory requirement of 25.

The impact on the financial stability of individual mortgage insurers, although negative in all cases, varied among companies depending on factors such as business mix (e.g., prime versus sub-prime mortgages), underwriting practices, and risk management strategies, as well as their ability to obtain new capital. Some common actions taken by mortgage insurers included seeking capital internally and externally, as well as moving towards more conservative underwriting practices.

**Table 5: Selected financials on US mortgage insurers  
(US\$ millions, except ratios)**

	2003	2004	2005	2006	2007
Net premiums written	3,482.50	3,411.10	3,480.20	3,541.60	4,180.20
Net premiums earned	3,385.40	3,476	3,454.20	3,584.30	4,019.40
Losses	870.9	1,336.60	1,251.60	1,461.20	5,412.20
Expenses	787.6	820.3	842.5	858.6	807.6
Underwriting income (loss)	1,375.40	1,319.10	1,360.20	1,264.40	-2200.40
Loss ratio	25.72%	38.45%	36.23%	40.77%	134.65%
Expense ratio	22.62%	24.05%	24.21%	24.24%	19.32%
Combined ratio	48.34%	62.50%	60.44%	65.01%	153.97%
Risk-to-capital ratio	9.86	9.42	8.91	9.04	13.5

Note: Data include AIG United Guaranty, Genworth Mortgage Insurance Corporation, Mortgage Guaranty Insurance Corporation, PMI Mortgage Insurance Co., Republic Mortgage Insurance Company, and Triad Guaranty Insurance Corporation.

Source: Mortgage Insurance Companies of America, 2007-2008 and 2008-2009.

## **Fannie Mae and Freddie Mac versus private mortgage insurers**

The US government took over the thinly capitalized Fannie Mae and Freddie Mac because the two GSEs did not have the capacity to absorb the losses they experienced through 2007 and into 2008. In the process, the US government incurred US\$5 trillion in exposure to credit guarantees and loans.

Private mortgage insurers, which entered the financial turmoil of 2007-2009 highly capitalized, also experienced significant losses. Those losses caused the industry to experience a deterioration of capital and rating downgrades. Private mortgage insurers face an uncertain future into 2009.<sup>11</sup> However, the industry as a whole operated through 2008 without government support, and reduced the problems faced by others in the mortgage finance industry, including the GSEs, by soaking up significant losses.<sup>12</sup>

Some private insurers fared better than others depending upon their business strategy. For example, one insurer stopped writing new business in 2008, but others wrote more business. Appendix B provides detail on the impacts of these changes on individual mortgage insurers.

## The explicit government support model: Canada

This and the following two sections of the study examine other countries' mortgage finance models to assess which features can contribute to the success of housing objectives and minimize taxpayer vulnerability. The Canadian model, examined first, is unique in that the government of Canada has an explicit role in both mortgage insurance and secondary markets.

### Mortgage insurance

Mortgage insurance in Canada differs from that of private insurers in the US in that traditional "flow" insurance in Canada covers 100 percent of the losses associated with a default rather than just the top 20 to 30 percent. In addition, mortgage insurance premiums on flow insurance are paid in a lump sum rather than in monthly payments. In addition to single-family home loans, mortgage insurance can cover duplexes, condominiums, and rental properties.

The Canadian mortgage insurance market is dominated by the Canada Mortgage and Housing Corporation, a Crown corporation established in 1946 to run national housing programs. In addition to its mortgage insurance business, the corpo-

**Table 6: Canada Mortgage and Housing Corporation mortgage insurance selected financials (CA\$ millions)**

	2003	2004	2005	2006	2007
Insurance in force	230,000	243,800	273,700	291,400	333,775
Premium and fees received	1,203	1,446	1,492	1,383	1,740
Premium and fees earned	947	1,135	1,224	1,234	1,421
Net Insurance claims expense	188	51	119	209	315
Net income	602	875	951	981	1,022
Equity of Canada	2,237	3,112	4,063	5,044	6,530

Source: CMHC Annual Reports, various years.

ration is engaged in securitizing insured mortgages, and it operates government housing programs and conducts research.

Between 2003 and 2007, the Canada Mortgage and Housing Corporation posted solid growth in revenue and earnings, as table 6 shows. Claims expenses had grown since 2004, but remained under 20 percent of premiums and fees received in 2007.

Canada's second largest mortgage insurer is the Genworth Financial Mortgage Insurance Company Canada (Genworth Financial Canada), a subsidiary of the US company Genworth Financial. Genworth Financial Canada offers both primary flow insurance and portfolio credit-enhancement insurance. As table 7 shows, net premiums written by Genworth increased in 2007 by 66 percent over the previous year. However, the first three quarters of 2008 indicate that a decline in net written premiums for the entire year is likely.

## Incentives for acquiring mortgage insurance

In addition to managing mortgage risks, there are three other reasons Canadian lenders acquire mortgage insurance. First, federal law requires insurance for residential "high-ratio" mortgages. Until recently, high-ratio mortgages were defined as those with loan-to-value ratios higher than 75 percent of the value of the property at the time of loan origination. However, that requirement was amended following a 2006 review of financial institutions legislation so that insurance is only required on residential mortgage loans that exceed 80 percent of the value of the property.

Second, mortgage insurance eases capital requirements for lenders. Prior to implementation of the Basel II international standards for banks, capital requirements were based on a risk weighting of 50 percent. However, the requirement was waived for mortgages insured by the Canada Mortgage and Housing Corporation.

**Table 7: Genworth Canada selected financials (CA\$ millions)**

	2003	2004	2005	2006	2007	2008 Q1	2008 Q2	2008 Q3
Net premiums written	380.4	496	461.3	594.2	983.6	131.1	200.2	222.5
Net premiums earned	162.6	213.6	277.5	336.7	423.6	122	125.3	132.6
Net claims and adjustment expenses	10.6	25.8	34.5	46	79.2	35.4	29.9	36.3
Net income	122.5	152.1	205.5	250.5	308.2	73.2	104.6	86.6
Equity	588.4	876.8	1,082.20	1,351.20	1,772.40	1,895.00	1,931.40	1,991.20

Source: Office of the Superintendent of Financial Institutions Financial Data, web site database queries.

With implementation of Basel II,<sup>13</sup> capital requirements for residential mortgages declined to 35 percent under the standardized approach in which standard capital factors are applied to assets. Under more advanced Basel II approaches, bank internal models determine capital factors. The Canada Mortgage and Housing Corporation mortgage insurance continues to eliminate capital requirements. Mortgages insured by a private insurer still must meet some capital requirements because the government guarantee for private insurers is 90 rather than 100 percent.

Third, insurance is required for mortgages to be securitized through the Canada Mortgage and Housing Corporation (as detailed later in this paper). The Bank of Canada's December 2008 *Financial Stability Report* states that because banks also often purchase insurance on conventional mortgages to facilitate their future securitization, 46 percent of Canadian residential mortgages are insured.

## **Regulatory structure for mortgage insurers**

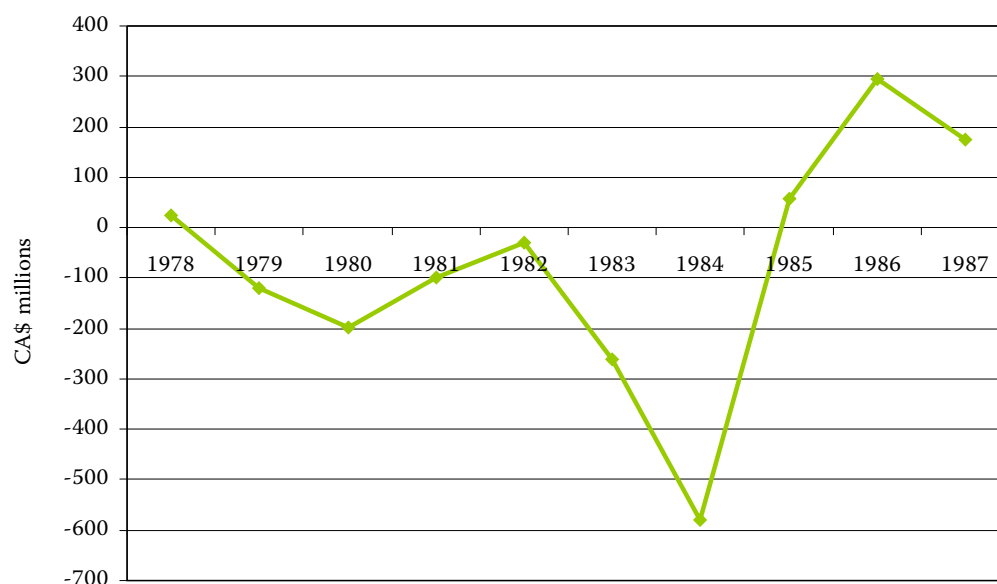
Private mortgage insurers are supervised by the Office of the Superintendent of Financial Institutions and subject to the requirements of the Insurance Companies Act. The act covers the establishment, operation, and wind-up of insurance companies that operate nationwide. The guidelines of the supervising agency cover capital adequacy requirements, prudential limits and restrictions, accounting, and sound business and financial practices.

The Office of the Superintendent of Financial Institutions administers a “minimum capital test” for property and casualty insurance companies (Canada, Office of the Superintendent of Financial Institutions, 2007a). The test specifies capital factors for various risks faced by property and casualty insurers, including balance sheet assets, policy liabilities, and off-balance sheet exposures. While the test sets minimum capital requirements, the Office of the Superintendent requires insurers to set target capital levels above the requirements set by the minimum capital test.

While mortgage insurers have the same capital requirements as other property and casualty insurers for some risks, there are some unique requirements related to policy liabilities.

## **History of Canadian mortgage insurance**

Mortgage insurance was introduced in Canada by amendments to the National Housing Act in 1954. The insurance program was modeled on that of the US Federal Housing Administration. In 1970, Canadian lenders were allowed to make high-ratio conventional mortgage loans provided they were insured by a private or public mort-

**Figure 7: CMHC mortgage insurance fund net income (loss)**

Source: CMHC Annual Reports, various years.

gage insurer. The Mortgage Insurance Company of Canada was incorporated in 1963, and its business increased considerably with the changes in federal law in 1970. In 1972, the Sovereign Mortgage Insurance Company became the second private mortgage insurer to enter the market. It was followed by Insmor Mortgage Insurance Company in 1973. In 1978, Sovereign and Insmor merged, and that entity was subsequently merged into the Mortgage Insurance Company of Canada.

### **The 1980s**

In the 1980s, the Canadian mortgage insurance market experienced a difficult period, as did the US mortgage insurance market, which saw a spike in losses. The mortgage insurance fund of the Canada Mortgage and Housing Corporation experienced a sharp downward shift, as figure 7 shows, with losses reaching CA\$581 million in 1984 before recovering significantly in 1985.

In testimony before Parliament, the president of the Canada Mortgage and Housing Corporation stated that the government of Canada put in more than CA\$200 million to eliminate the deficit stemming from the significant losses incurred in the 1980s (Canada, House of Commons Standing Committee on Finance, 2006: 17).

### **The 1988 Basel Accord**

An international framework for bank regulation was established as the Basel Accord in 1988 (Basel Committee on Banking Supervision, 1988) and subsequently implemented in the guidelines of Canada's Office of the Superintendent of Financial Institutions (Canada, Office of the Superintendent of Financial Institutions, 2001). This had significant implications for the mortgage insurance market.

The accord provided flexibility in how regulators apply risk weights to public sector entities. In Canada, the Office of the Superintendent of Financial Institutions permitted a zero risk weight for public sector entities, including Crown corporations. The accord also required that a guarantee by a public sector entity have a risk weight similar to that of a direct claim on the guarantor. Thus, claims against the Canada Mortgage and Housing Corporation, as a public entity, are weighted as 0 percent; any obligation guaranteed by the corporation is also risk-weighted at 0 percent, including guarantees extended through the provision of mortgage insurance.

Implementation of the Basel Accord created a policy dilemma for the Canadian government. Under the rules of the Office of the Superintendent of Financial Institutions, banks could effectively reduce their capital requirements to zero through mortgage insurance from the Canada Mortgage and Housing Corporation, which was backed by Crown credit. However, this put the Mortgage Insurance Company of Canada, as a private entity, at a competitive disadvantage because its customers would not receive relief from capital requirements under the Basel Accord. The government's response was to establish a federal guarantee for the private insurance company.

The Canadian government's guarantee for the Mortgage Insurance Company of Canada was set at 90 percent, which meant that insurance from the private company would only reduce the risk weighting for banks to one-tenth of that for uninsured residential mortgages, rather than zero, as set for government-insured mortgages. The 10 percent difference is in recognition of the supposed policy benefits associated with the mandate of the Canada Mortgage and Housing Corporation (Canada, House of Commons Standing Committee on Finance, 2006: 20). After the demise of the Mortgage Insurance Company of Canada in the mid-1990s, the guarantee was subsequently acquired by General Electric, which established a mortgage insurance business in Canada that later became Genworth Financial Canada.

### **New entrants**

In 2006, the federal government allowed guarantees for new entrants into the mortgage insurance market, and increased the amount of business that can be covered under the government's authority from CA\$100 billion to CA\$200 billion. The increase under the authority was made to keep pace with increases in housing prices and the

**Table 8: US insurers seeking entrance to Canadian mortgage insurance market**

<b>Insurer</b>	<b>Notice of application for letters patent</b>	<b>Receipt of letters patent/ order to carry on business</b>	<b>Status by Q3 2008</b>
AIG United Guaranty Insurance	October 8, 2005	August 1, 2006	Active
PMI Mortgage Insurance Company	July 8, 2006	April 26, 2007	Withdrawal announced August 7, 2008
Triad Guaranty Incorporated	July 15, 2006	May 29, 2007	Withdrawal announced February 13, 2008
MGIC Investment Corporation	August 25, 2007		Application dropped

Source: Canada Gazettes, various company press releases; Kirchen, 2008.

growth of the mortgage market (Canada, Department of Finance, 2006: 88). The policy rationale for allowing new entrants was to promote greater choice and innovation in the mortgage insurance market, thereby benefiting consumers and promoting home ownership.

Four US mortgage insurers subsequently applied to enter the Canadian market (see table 8), and three were authorized. However, three of the insurers withdrew from the Canadian market in 2008 due to flagging US operations.

The remaining US entrant, AIG United Guaranty, generated CA\$60.1 million in 2007 in net written premiums, and a net loss of CA\$2.2 million. In the first three quarters of 2008, AIG United Guaranty generated CA\$64.3 million in net written premiums and a net income of CA\$400,000. In July 2008, AIG United Guaranty noted it had established a customer base of more than 30 lending partners (AIG United Guaranty, 2008).

## Mortgage finance innovation in Canada

Prior to the 2007-2009 financial turmoil, some common developments emerged in mortgage finance globally, including increased loan-to-value ratios, a reduction of credit restrictions, and a wider array of loan contracts offered to borrowers (Committee on the Global Financial System, 2006). These developments allowed new categories of households to enter the housing market.

Table 9 lists some of the mortgage products that lenders introduced after the Canada Mortgage and Housing Corporation broadened insurance criteria.



**Table 9: CMHC innovations in the Canadian mortgage market**

<b>Date</b>	<b>Mortgage Product Facilitated</b>
February 25, 2006	<ul style="list-style-type: none"> <li>• 30-year mortgages insured on pilot basis</li> </ul>
June 28, 2006	<ul style="list-style-type: none"> <li>• 30-year amortization mortgages offered on an ongoing basis</li> <li>• 35-year amortization mortgages</li> <li>• Mortgages that are interest-only for up to first 10 years</li> </ul>
Fall 2006	<ul style="list-style-type: none"> <li>• 40-year amortization mortgages</li> <li>• No-down-payment mortgages</li> </ul>
Winter 2007	<ul style="list-style-type: none"> <li>• Flexibility to use additional sources of down payments such as borrowed funds or lender incentives</li> <li>• Removal of minimum borrower credit score guideline for amortization periods in excess of 35 years</li> <li>• 95 percent loan-to-value refinancing</li> </ul>
March 6, 2007	<ul style="list-style-type: none"> <li>• Mortgage product for self-employed that have difficulty documenting their income.</li> </ul>
September 21, 2007	<ul style="list-style-type: none"> <li>• For 1 to 4 unit rental property purchases</li> <li>• No-down-payment mortgages</li> <li>• Loan-to-value ratios up to 95 percent for refinancing.</li> </ul>

Sources: CMHC, 2006b, 2006c, 2006d, 2007b, 2007c, 2007d.

Genworth Financial Canada played an active role in innovation as well, introducing new products before the Canada Mortgage and Housing Corporation did. For instance, Genworth introduced a mortgage product for the self-employed who had difficulty documenting their income (Genworth Financial Canada, 2006a). Genworth also introduced a program for those who had experienced a credit setback but had started to rehabilitate their credit profile. In addition, Genworth debuted a program for new Canadian residents (Genworth Financial Canada, 2006b).

In July 2008, the government of Canada announced the rule changes for government guaranteed mortgages to reduce the risk of a housing bubble (Canada, Department of Finance, 2008):

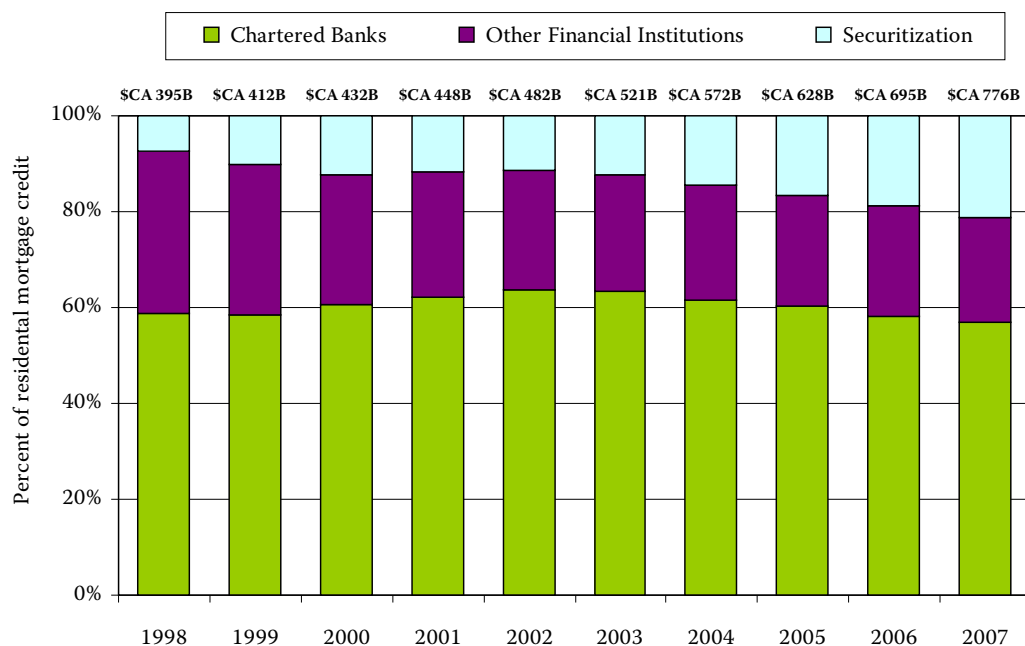
- ❖ Fixing the maximum amortization period for new government-backed mortgages to 35 years;
- ❖ Requiring a minimum down payment of 5 percent for new government-backed mortgages;
- ❖ Establishing a consistent minimum credit score requirement; and
- ❖ Introducing new loan documentation standards.

## Securitizing residential mortgages

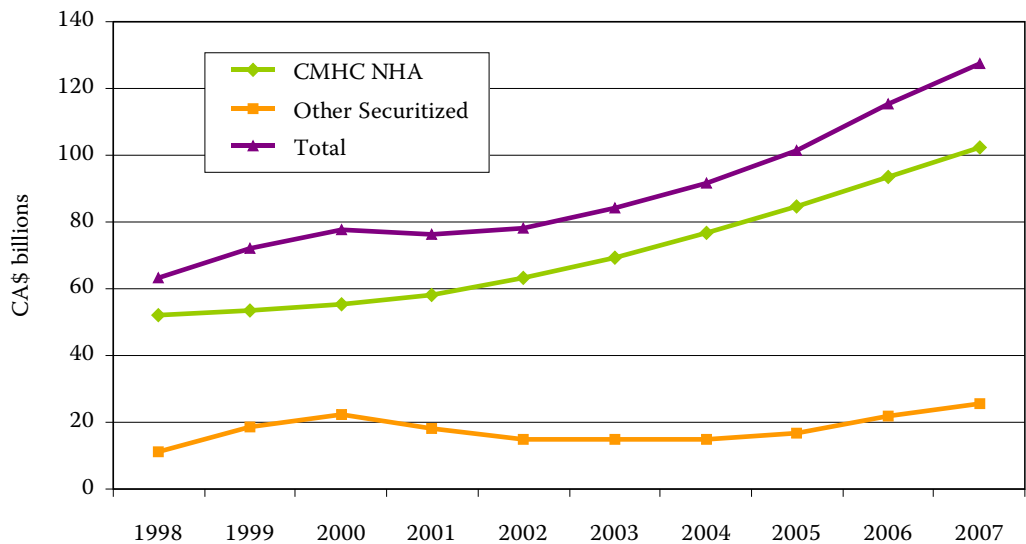
Between 1998 and 2007, securitization was an increasingly important supply of residential mortgage credit in Canada, as figure 8 shows. Total outstanding balances of mortgage credit in 1998 were CA\$395 billion, and securitizations represented 7.3 percent of that total. Outstanding balances reached CA\$776 billion by 2007, of which securitization represented 21.1 percent. Private mortgage originations remained flat during this period, as shown in figure 9, but securitizations issued under the Canada Mortgage and Housing Corporation doubled during the same period. By 2007, the Canada Mortgage and Housing Corporation covered 80 percent of the securitization funding to residential mortgage credit in Canada.

The Canada Mortgage and Housing Corporation guarantees the timely payment of both interest and principal for pools of insured residential mortgages issued by approved financial institutions, including banks, trust companies, insurance companies, loan companies, credit unions, and caisses populaires). In return, the financial institutions pay the housing corporation an application fee and a guarantee premium. The mortgage securities are sold to both institutional and retail investors.

**Figure 8: Canadian residential mortgage credit percentage of outstanding balances**



Source: Author calculations based on data from CMHC *Canadian Housing Observer*, 2008.

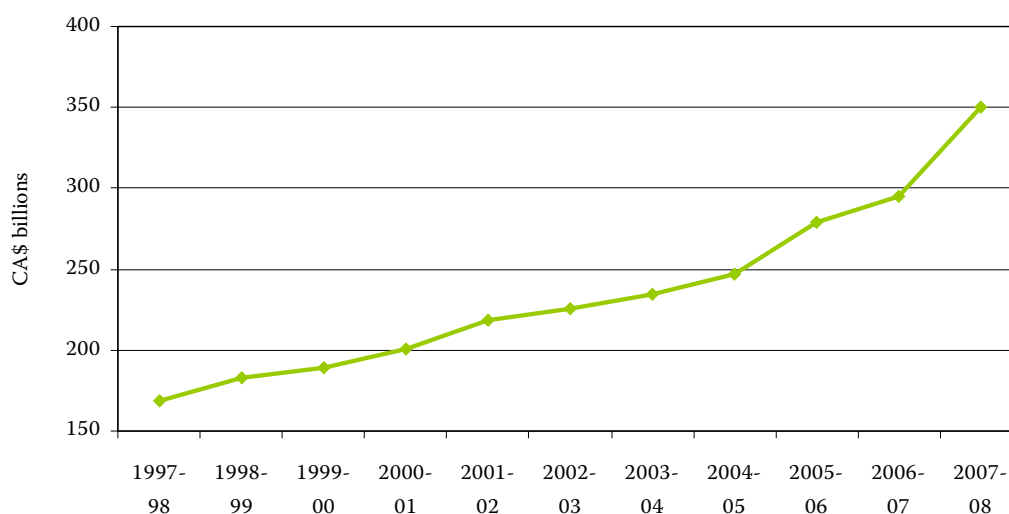
**Figure 9: Securitized residential mortgages**

Source: CMHC *Canadian Housing Observer*, 2008.

In 2001, the Canada Mortgage and Housing Corporation created “Canada Mortgage Bonds.” The “Canada Housing Trust” was established to issue bonds, the proceeds of which are used to purchase mortgage-backed securities authorized under the National Housing Act. Investors receive semi-annual interest payments and the return of principal at the specified maturity date. The Canada Mortgage and Housing Corporation extends a guarantee by the government of Canada of timely payment of interest and principal. Initially, the bonds were offered for a term of five years. However, the Canada Mortgage and Housing Corporation introduced 10-year maturities in July 2008. In 2007, a total of CA\$35.7 billion was issued by the Canada Housing Trust, compared to CA\$25 billion in 2006.

## Government exposure

Because of the guarantees, the Canadian Government’s exposure to the mortgage insurance market grows with insured values. As noted earlier, 46 percent of Canadian residential mortgages are insured. Figure 10 shows that insured values of the Canada Mortgage and Housing Corporation have reached CA\$349.8 billion as of March 31, 2008, more than doubling over a 10-year period.

**Figure 10: Canada Mortgage and Housing Corporation insured values**

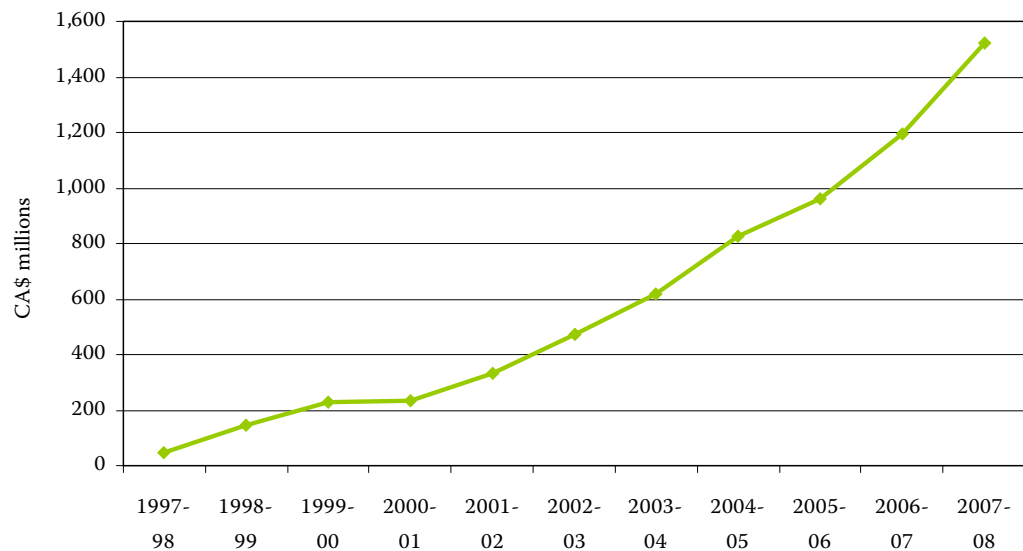
Source: Public Accounts of Canada, various years.

Canada's public accounts treat private insurers differently from the CMHC in that contingent liabilities rather than insured values are reported.<sup>14</sup> A contingent liability is defined as a potential debt which may become an actual financial obligation if certain events occur (or fail to occur). The government of Canada's exposure to private mortgage insurers is indirect; the equity of the private insurer (and a guarantee fund which private insurers are required to contribute to as a condition of their guarantee) would have to be extinguished before the government would be liable for covering losses.

The contingent liability of Genworth Financial Canada grew over the 10-year period ending March 31, 2008, from CA\$45.4 million to CA\$1.5 billion, a 33-fold increase, as shown in figure 11. The public accounts also showed a contingent liability for the recent entrant and other private insurer, AIG United Guaranty, of CA\$53.9 million as of March 31, 2008.

## The competitive playing field

Private insurers compete on an unlevel playing field with the Canada Mortgage and Housing Corporation. The most significant advantage of the Crown corporation is the 100 percent government guarantee compared to the 90 percent guarantee on private insurance. The difference in this guarantee means financial institutions insured by private insurers face stricter capital requirements.

**Figure 11: Genworth Financial Canada's contingent liability**

Source: Public Accounts of Canada.

Officials of the Canada Mortgage and Housing Corporation contend that their competitive advantage reflects their public policy mandate, and serves the needs of lenders who are not adequately served by private insurers (Canada, House of Commons Standing Committee on Finance, 2006, May 29: 17). Such arguments are challenged by private insurers. For example, a submission to a Competition Policy Review Panel noted that the areas served only by the Canada Mortgage and Housing Corporation include First Nations Reserves for which mortgages insured by the Canada Mortgage and Housing Corporation are guaranteed under another government program, and single industry towns where co-insurance arrangements with the community, company, or province are in place (PMI Canada, 2008: 6). Hence, the Canada Mortgage and Housing Corporation does not need preferential treatment to achieve public policy goals.

The Canada Mortgage and Housing Corporation also enjoys easier and less costly access to capital, exemption from regulation (including the costs associated with supervision by the Office of the Superintendent of Financial Institutions), less financial reporting and disclosure requirements, and exemption from provincial income taxes.

A further disadvantage faced by private mortgage insurers relates to a mortgage-backed securities program that CMHC operates under the National Housing Act through which mortgage lenders can securitize portfolios of insured mortgages. While privately insured mortgages portfolios are eligible for securitization under the pro-

gram (subject to the private insurer being approved by CMHC), privately insured mortgages are subject to an additional fee of .06 percent per annum (or 0.005 percent per month). And, the Canada Mortgage and Housing Corporation is authorized to obtain proprietary information on private sector competitors. Private insurers must provide information to the corporation that “demonstrates that they have the technological and operational capabilities to carry out the business of mortgage insurance and meet the verification, reporting, administrative, and operational requirements” of federal law (Canada Mortgage and Housing Corporation, 2006: I-6).

## 2007-2009 financial market turmoil

According to the Bank of Canada’s December 2008 *Financial System Review*, the Canadian financial system proved to be relatively resilient throughout the recent economic crisis. But it has not been immune to spillover effects, including strains on Canadian wholesale funding markets.<sup>15</sup> The resilience is attributed to the fact that Canadian financial institutions were leveraged less, had lower exposure to asset-backed products, and followed more conservative lending practices than institutions elsewhere.

In response to the market turmoil, the Bank of Canada increased liquidity through a number of measures such as easing collateral requirements to include securities such as commercial paper and corporate bonds. The government of Canada has established guarantees for wholesale borrowing by eligible financial institutions and life insurers in exchange for a fee, acquired insured mortgage pools through the Canada Mortgage and Housing Corporation, and arranged for the purchase of securities backed by loans and leases on vehicles and equipment. The government of Canada also has created new powers for the Canada Deposit Insurance Corporation, including a high borrowing limit with the government, and allowing the corporation to own shares in member institutions (subject to approval by the Minister of Finance).

There are signs that the mortgage insurance industry in Canada performed well through the first three quarters of 2008. The Bank of Canada’s December 2008 *Financial System Review* noted that arrears on loans and bankruptcies increased only modestly from historically low levels. As shown earlier in table 7, Genworth Financial Canada continued to be profitable through the first three quarters of 2008 although claims and adjustment expenses were rising.

The impact of the financial turmoil on the securitization of residential mortgages in Canada was mixed. Private label securitizations contracted through the first three quarters of 2008, as shown in table 10, although there was growth in the securitizations under the Canada Mortgage and Housing Corporation program. However, yields of government of Canada Mortgage Bonds exceeded 50 basis points in

**Table 10: Annualized quarterly growth in residential credit (percent)**

	<b>10-year Average</b>	<b>Pre-Crisis Trend</b>	<b>2007H2</b>	<b>2008H1</b>	<b>2008Q3</b>
Residential	8.2	10.8	13.2	12.9	9.4
Securitized (non-National Housing Act mortgage backed securities)	18.5	21.5	5.3	-11.2	-6.1
National Housing Act mortgage backed securities	27.5	20.5	36.6	42.4	23.3
Bank	7.6	9.2	12.2	5.1	12.4

Source: Bank of Canada, 2008.

March 2008 compared to 10 basis points in June 2007, the higher premiums indicating that markets were still under some stress despite government guarantees.

## A high taxpayer-vulnerability model

At first glance, the Canadian model appears attractive because of its performance through the 2007-2009 financial turmoil, including the relatively good financial performance of mortgage insurers and a relatively stable mortgage securitization market.

However, a critical weakness is the depth of the vulnerability of Canadian taxpayers. US taxpayers are now on the hook for a significant level of losses because of the conservatorship of Fannie Mae and Freddie Mac, as well as other steps taken to stabilize markets. However, risk was dispersed across the US mortgage finance system. Losses were shared by investment banks, lending institutions, insurance companies, and hedge funds in the US and around the world. In contrast, in Canada the government holds the risk. Indeed, the governor of the Bank of Canada confirmed this point, stating that he is not worried about a US-style mortgage crisis because most of the home loans issued in Canada are backed by the government (Carmichael, 2009, Feb 18).

Some private mortgage insurance capital exists in Canada by virtue of the presence of two private mortgage insurers. But taxpayers are still liable if the losses of these insurers exceed their capital and balances in guarantee funds.

## The Australian model

Australia's experience with residential mortgage securitization and credit enhancement contrasts with the experiences of the US and Canada in that intervention by federal and state governments has been scaled back or eliminated.

### Securitization of residential mortgages

Securities backed by home mortgages in Australia are commonly referred to as “residential mortgage-backed securities.” These have a number of similarities with US “white label” mortgage-backed securities. Special purpose vehicles issue securities backed by a pool of mortgages. Australian mortgage-backed securities are almost always bundled based on varying degrees of “subordination,” that is, the degree to which the creditor forfeits rights to payment under specified conditions.

Mortgage insurance commonly serves as a credit enhancement on residential mortgage-backed securities in Australia, either at the individual mortgage level or through a mortgage pool policy taken out by the originator. Australian mortgage-backed securities typically are structured as corporate bonds or commercial paper, with interest paid quarterly or semi-annually at a fixed or variable rate. Because Australian mortgages are predominantly variable rate or adjustable rate, hedging arrangements are used to manage the risk associated with the mismatch of variable and fixed rates. The most significant purchasers are institutional investors such as authorized deposit taking institutions, insurance companies, and pension funds.

The secondary market for residential mortgages emerged in Australia much later than in the US. A number of institutional barriers existed that made the emergence of this market difficult (Lange, 2004), including:

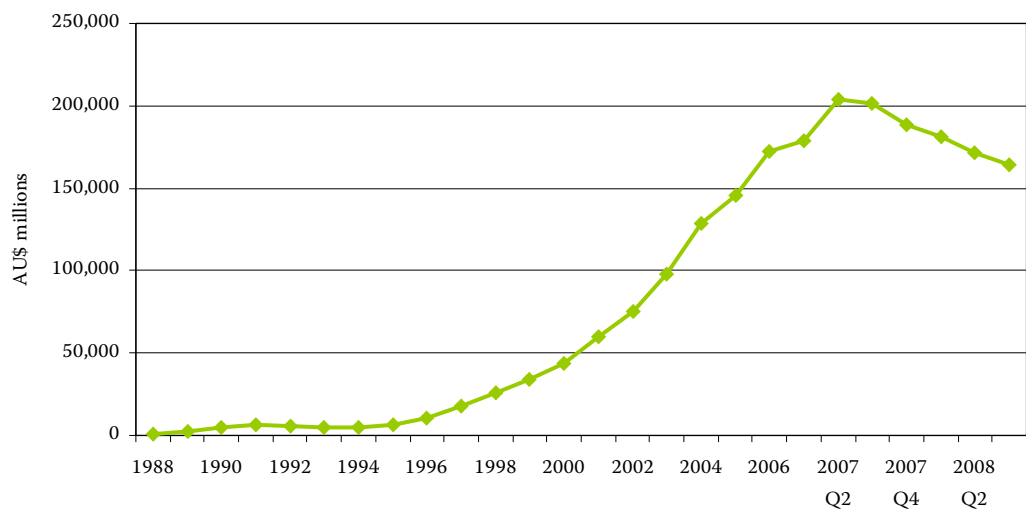
- ❖ Legislation and regulation inappropriate for securitization including stamp duties (taxes) on mortgage transfers;
- ❖ Lack of availability of pool insurance;
- ❖ Provisions within statutes covering bankruptcy, securities, trustees, contracts, and property transfers;
- ❖ The added complexity of state laws;
- ❖ The regulatory treatment of financial institutions.



In 1984, the Australian states of Victoria and New South Wales took action to increase the viability of a secondary mortgage market, including eliminating taxes on the transfer of mortgages. Both states established securitization schemes that included shared ownership with the private sector. The agency established by New South Wales, First Australian National Mortgage Acceptance Corporation, launched an AU\$50 million issue in December 1986 to securitize residential mortgages originating with cooperative housing societies (Rajapaske, 2006). However, the new entities could only generate limited business until they started relying on state government housing assistance programs. This resulted in a short period of success in the mortgage securitization market, which lasted until 1992, but stalled thereafter (Lange, 2004). A recession in the late 1980s and early 1990s led to losses in government securities schemes and a loss of confidence by the investment community in mortgage-backed securities.

Changes in economic and market conditions prompted the private sector to become active in securitizing mortgages by the end of the 1980s. The losses incurred by Australian banks in the previous recession prompted them to keep interest rates high on housing loans despite the fact that interest rates in general were historically low and declining from 1992 through 1998. There was growing demand for investment-grade securities because of reduced government bond issues and increased funds under management. A relaxation of bank regulations that had discouraged securitization, such as a 100 percent risk weighting, allowed banks to engage in securitization and, by 1998, they held a dominant position in that market. Innovations in the

**Figure 12: Australian securitized residential mortgage assets**



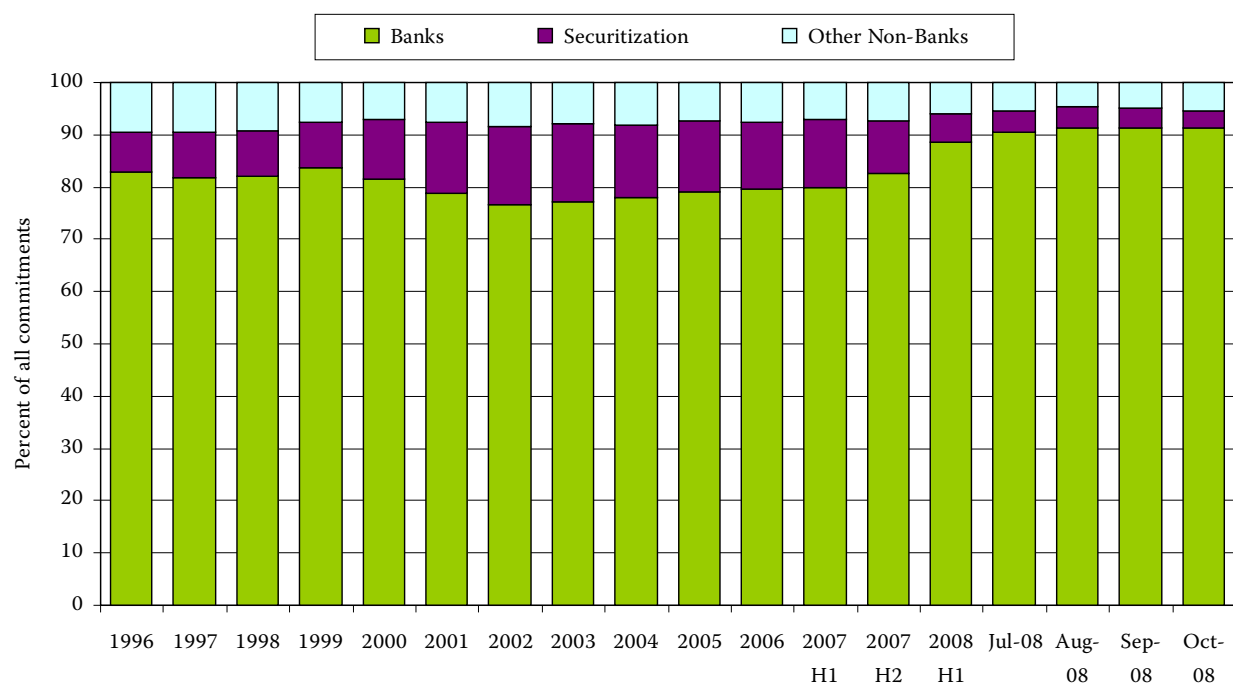
Source: Australia Bureau of Statistics, Series A2149466A.

1990s created new methods to manage securitization risks associated with variable rate assets and fixed rate liabilities. By the late 1990s, Australia had the second most active securitized market outside of the US.

The competition from mortgage managers able to fund themselves through wholesale markets and securitization resulted in lower mortgage interest rates (Ellis, 2006). The mortgage managers initially offered rates that were well below the standard variable interest rate advertised by major Australian banks. The banks responded to this competition, and margins on mortgage rates narrowed considerably (relative to the cash rate). The advertised rates by mortgage managers and banks have since shown a reasonably stable spread, but discounting of rates has increased.

As shown in figure 12, Australia's market in residential mortgage-backed securities continued to grow to more than AU\$2 billion in assets in the first half of 2007. During the same period, as figure 13 reveals, slightly more than 13 percent of the value of owner-occupied housing commitments<sup>16</sup> was made by securitization vehicles, a decline from a peak of 15 percent in 2002. The Reserve Bank of Australia noted that the spreads on the most highly rated tranches of residential mortgage-backed securities had declined to under 20 basis rates above the prevailing bank bill rate in 2005 (Australia, Reserve Bank of Australia, 2006).

**Figure 13: Owner occupied housing finance commitments market share**



Source: Author calculations based on data from Australia Bureau of Statistics, Series 5609.0, table 3, "Housing Finance Commitments (Owner Occupation) by Lender."

## The mortgage insurance market

Australia's mortgage insurance market consists of two major independent mortgage insurers—PMI Australia and Genworth Australia—as well as a number of insurance subsidiaries of Australian banks. A large proportion of the banks' mortgage insurance business is reinsured through the independent mortgage insurers. The existing market structure reflects consolidation in the Australian market, which previously featured five independent mortgage insurers in 1999. PMI Australia was formerly a subsidiary of the US PMI Group, but it was sold in 2008 to QBE Insurance Group Limited, an international general insurer based in Australia. In November 2007, the US mortgage insurer MGIC was licensed to offer mortgage insurance in Australia, but left the market in 2008 because of challenges in the US market.

The Australian mortgage insurance market is similar to Canada's in that 100 per cent of the mortgage exposure is insured (rather than the top 20 to 30 percent with private insurers in the US). Premiums are also in the form of a single, up-front payment rather than monthly payments on an ongoing basis for the duration that the mortgage is insured. Mortgage insurance covers the unpaid loan balance, as well as the costs related to the sale of the security property. As in both the US and Canada, mortgage insurers in Australia operate as monolines, offering only mortgage insurance. In addition to flow insurance, Australian mortgage insurers also offer insurance as a credit enhancement on portfolios of loans underlying residential mortgage-backed securities.<sup>17</sup>

**Table 11: ADI risk-weights under Basel II standardized approach**

Loan-to-value ratio (%)	Standard eligible mortgages		Non-standard eligible mortgages	
	Risk weight (no mortgage insurance) %	Risk weight (with at least 40% of the mortgage insured by an acceptable mortgage insurer) %	Risk weight (no mortgage insurance) %	Risk weight (with at least 40% of the mortgage insured by an acceptable mortgage insurer) %
0 – 60	35	35	50	35
60.01 – 80	35	35	75	50
80.01 – 90	50	35	100	75
90.01 – 100	75	50	100	75
>100.01	100	70	100	100

Source: Australia Prudential Regulatory Authority, January 2008.

**Table 12: Mortgage insurance industry premiums and claims (AU\$ millions)**

	2005	2006	2007
Gross premium revenue	625	849	1,055
Reinsurance expense	128	145	122
Net premium revenue	497	704	932

Source: Australia Prudential Regulatory Authority, general insurance half-yearly publications, various editions.

Mortgage insurance is not mandatory in Australia for mortgages with low down payments. However, regulations on authorized deposit-taking institutions create an incentive to use mortgage insurance. Prior to the implementation of the Basel II international standards, mortgages with high loan-to-value ratios (above 80 percent) attracted a 100 percent risk weight for purposes of calculating capital adequacy. However, mortgage insurance allowed authorized deposit-taking institutions to qualify for a 50 percent risk weight on covered loans.

Under the Basel II framework, mortgage insurance continues to provide deposit-taking institutions with relief from regulatory capital requirements. As table 11 shows, the risk weights under the standardized approach are more refined; they are affected by loan-to-value ratios and standards related to the borrower's capacity to repay, valuation, and marketability. For authorized deposit taking institutions that adopt the internal ratings-based approaches for determining regulatory capital, the degree of relief offered by mortgage insurance depends on their internal models.

**Table 13: Genworth Australia financials (AU\$ thousands, except ratios)**

	2005	2006	2007
Gross premium revenue	354,969	490,196	547,910
Outwards reinsurance expense	21,562	48,513	53,217
Net premium revenue	333,407	441,683	494,693
Gross incurred claims	149,097	254,487	264,371
Net incurred claims	148,739	240,034	236,443
Net income after tax	154,271	161,471	193,772
Capital surplus	596,237	58,405	367,463
Solvency coverage	2.37	1.05	1.32

Source: Australia Prudential Regulatory Authority, general insurance half-yearly publications.

**Table 14: PMI Australia financials (AU\$ thousands, except ratios)**

	2005	2006	2007
Gross premium revenue	204,355	232,904	252,202
Outwards reinsurance expense	8,952	4,279	9,156
Net premium revenue	195,403	228,625	243,046
Gross incurred claims	59,315	74,819	98,178
Net incurred claims	59,437	66,592	99,846
Net income after tax	104,572	105,271	88,671
Capital surplus	495,372	289,784	295,151
Solvency coverage	2.98	1.39	1.3

Source: Australia Prudential Regulatory Authority, general insurance half-yearly publications.

The aggregate gross premium income of Australian mortgage insurers grew significantly between 2005 and 2007, exceeding AU\$1 billion in 2007. As shown in table 12, the portion of gross premium revenue that was reinsured ranged from approximately 12 to 20 percent.

The bulk of the aggregate gross premium revenue was generated by Genworth Australia and PMI Australia. Both companies continued to be profitable through 2007, although gross incurred claims grew in 2006 and 2007 (see tables 13 and 14).

## Regulatory framework for mortgage insurers

Mortgage insurers had been regulated by the Australian Prudential Regulation Authority just as general insurers. However, the authority adopted new regulations for mortgage insurers effective January 1, 2006. The new framework was prompted by a 2003 “stress test” indicating that authorized deposit-taking institutions could withstand a substantial increase in housing loan defaults and losses without a material deterioration in financial soundness.

The stress test also revealed that a significant portion of counterparty default risk (the risk that the counterparty will not fulfill its contractual obligations) was transferred to mortgage insurers, thereby raising the question of how the insurers would fare in a severe housing downturn. The stress testing was extended to mortgage insurers, and the Australian Prudential Regulation Authority identified inadequacies in the capital and reporting framework as well as inconsistencies in the supervision of mortgage insurers and authorized deposit-taking institutions (Australian Prudential Regu-

lation Authority, 2004). The new regulatory regime for mortgage insurers includes higher capital requirements designed to ensure that mortgage insurers can withstand a three-year loss scenario.

## **Government activity in securitization and credit enhancement**

Historically, government intervention in the housing sector in Australia focused on the provision of public housing rather than on stimulating the private housing market (Lange, 2004). However, two notable exceptions were the establishment in 1964 of a mortgage insurance agency by the Australian government and the creation of securitization agencies by a number of Australian state governments in the 1980s.<sup>18</sup>

### ***State securitization agencies; a test-tube version of the US sub-prime debacle***

As noted earlier, state government securitization agencies established in the 1980s lost their significance by 1992. It is worth noting in detail a program established by First Australian National Mortgage Acceptance Corporation (the agency created by the government of New South Wales) that had similarities to the US sub-prime market.

The Home Fund program was established in 1986 to mitigate long waiting lists for public housing (Ferris, 2008). Under the program, the government corporation issued bonds, and lent the proceeds to low-income borrowers.

The interest on loans under the program was set at a fixed rate. However, payments were structured to be lower in the earlier years, and set at 27 to 30 percent of the borrower's net income. There were no prepayment penalties, and borrowers had to provide a down payment of at least 10 percent of the purchase price.

In terms of issuance, the program was a success, with bonds amounting to more than AU\$4.3 billion. The program eventually financed 17 percent of all new home lending in the state, and made approximately 57,000 loans before the program was ended in 1993.

The program created negative amortization, as the payments charged in the early years were too low to cover interest charges. A downturn in the economy depressed housing prices, and many Home Fund borrowers incurred negative equity, where real estate values dropped so low that their mortgages become worth more than their homes. Although interest rates fell, HomeFund borrowers could not take advantage of the "no prepayment penalty" feature to refinance because traditional lenders would not lend to them money for two key reasons: (i) many were sub-prime borrowers and (ii) most had negative equity in their existing HomeFund loans. The govern-

ment of New South Wales ultimately compensated investors and provided borrowers with the opportunity to restructure their loans—with the government picking up the costs. The official costs to taxpayers was AU\$400 million plus an additional AU\$75 million to settle a class action suit by Home Fund borrowers.

### ***Mortgage insurance***

The Australian federal government established the Housing Loan Insurance Corporation (HLIC) in 1964 to facilitate the development of an Australian secondary mortgage market. It was unable to accomplish this objective because of many market and legal impediments that existed at the time (Lange, 2004).

The Australian government in 1997 sold the Housing Loan Insurance Corporation to Genworth Financial. It dominated the Australian mortgage insurance market in this period with a 40 percent market share. The balance of the market was split among three other private insurers.

The privatization of the Housing Loan Insurance Corporation was recommended in a 1997 report of the Wallis Inquiry, a review of financial sector regulations undertaken to ensure that government policy would promote market outcomes (Australia, Minister for Finance and Administration, 1997, December 22).

The inquiry recommended that government guarantees be withdrawn from the Housing Loan Insurance Corporation to ensure that the mortgage market operated on competitively neutral terms. The guarantees provided the government corporation a competitive advantage over private insurers, the inquiry concluded, and there was no public interest rationale for government ownership (Australia, Treasury, 1997: 526).

## **A successful mortgage finance model**

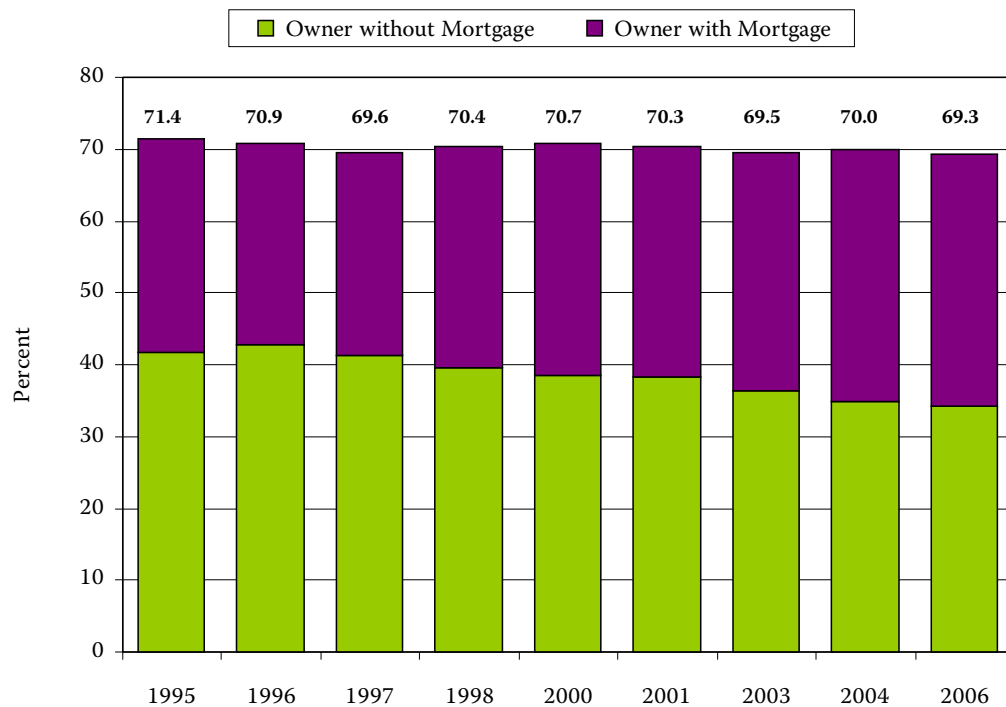
Based on her analysis of the Australian secondary mortgage market, Lange (2004) concluded that government intervention is not required for mortgage securitization to succeed. State governments in Australia established the legal and institutional structures for securitization in order to facilitate their policy goals. However, after these schemes faltered, the private sector dominated residential mortgage securitization when the right market conditions emerged.

The government of Australia abandoned its intervention in the mortgage securitization market in 1997. Although the government left the securitization market and the private sector dominated it, the proportion of homeowners with mortgages increased and housing quality improved, as indicated by reduced population density and larger dwelling size.

**Table 15: Homeownership rates in the US, Canada, and Australia**

	US	Canada	Australia
2001	67.8	65.8	70.3
2002	67.9		
2003	68.3		69.5
2004	69		70
2005	68.9		
2006	68.8	68.4	69.3
2007	68.1		
2008	67.8		

Sources: United States Census Bureau, 2008; Canada Mortgage and Housing Corporation, 2008a; Australia, Bureau of Statistics, 2007.

**Figure 14: Housing occupancy in Australia**

Source: Australia, Bureau of Statistics, 2007.



Table 15 shows homeownership rates for the US, Canada, and Australia. In the years since 2001 for which the Australia Bureau of Statistics has reported figures, Australia has had a slightly higher rate of homeownership than either the US or Canada.

Figure 14 shows housing ownership levels in Australia from 1994/95 to 2005/06, delineating the percentages of homeowners with and without mortgages. Home ownership rates for the period are consistent with the historical average of 70 percent for the 40 years ending in 2006 (ABS 2007). The percentage of owners with a mortgage declined from 29.9 percent in 1994-1995 to 28.1% in 1995-1996, before rising consistently through 2003-2004, when it reached 35.1 percent.

Over the same period, the Australian Bureau of Statistics reported that the number of people living in private dwellings in Australia increased by 13 percent. There was a 21 percent increase in the number of households over this period. The average household size decreased from 2.69 to 2.51 persons per household, while the average dwelling size increased from 2.88 to 3.06 bedrooms per dwelling.

Despite the dominance of the private sector in the securitization market, and the exit of the federal government from the mortgage insurance business in 1997, the increase in the proportion of homeowners with mortgages suggests that mortgage finance helped maintain Australia's home ownership rate in a period with significant growth in the aggregate number of people living in private dwellings. In addition, housing quality improved, as is shown by reduced density and larger dwelling size.

## **2007-2009 financial turmoil**

According to the Reserve Bank of Australia's 2008 *Financial Stability Report*, the Australian financial system was one of the more resilient during the financial turmoil of 2007-2008. The report also noted the system is soundly capitalized; the banks have high credit ratings and relatively little exposure to US sub-prime related assets or risk from trading activity. The rates of housing loan arrears have risen modestly following increased costs for borrowers and the easing of credit standards over the past decade. The non-conforming housing loan market has remained very small (less than one percent of outstanding mortgages).

However, with the global financial crisis, the banking sector has experienced funding challenges, and the Australian government and central bank have initiated actions similar to those in other countries. On October 8, 2008, the Reserve Bank of Australia announced assistance to authorized deposit-taking institutions in managing their liquidity. This included relaxing a restriction that prevented an institution from using residential mortgage-backed securities and asset-backed commercial paper of a related party as collateral in its repurchase operations <sup>19</sup> with the Reserve Bank (Australia, Reserve Bank of Australia, 2008a).

On October 28, 2008, the Australian government announced a guarantee of deposits and a guarantee facility for authorized deposit-taking institutions' wholesale funding (Australia, Treasury, 2008).

The Reserve Bank of Australia's 2008 *Financial Stability Report* noted that Australian mortgage insurers reported solid profits because of the relatively good performance of the housing market. As shown earlier in tables 13 and 14, both Genworth Australia and PMI Australia continued to be profitable in 2007. The credit ratings of these companies were adversely affected by downgrades of their US parents, although Genworth Australia was subsequently separated from its US parent by its sale to QBE.

However, consistent with global trends, the conditions for securitized Australian assets (including residential mortgage-backed securities) became difficult. As figure 14 shows, the amount of securitized residential assets has been declining since the second half of 2007. The Reserve Bank's *Financial Stability Report* indicates a number of small issuances, but activity remains well below previous levels, with quarterly issuance averaging around AU\$2.5 billion since mid-2007 compared to AU\$18 billion the previous year. Spreads on RMBS issuances, which had been below 20 basis points over the bank bill rate prior to the market turmoil, increased to 110-130 basis points. The report also discusses the impact of the financial turmoil on the competitive environment. Bank lending has increased the market share of new loans from 80 to 90 percent at the expense of mortgage originators.

On September 26 2008, the government of Australia announced the purchase by the Australian Office of Financial Management of AU\$4 billion in residential mortgage-backed securities from banks and other authorized lenders (Australia, Treasurer of the Commonwealth, 2008). On October 12, 2008, the Australian government announced the additional purchase of AU\$4 billion in residential mortgage-backed securities (Australia, Prime Minister, 2008). The reasons cited for the latter move were to ensure the non-bank sector would have access to funds and to create a level playing field for non-bank lenders who do not have the benefit of the government guarantee of the term funding facility.

## Role of government

The Australian experience shows that governments need not expose taxpayers to risk through either secondary markets or mortgage insurance to achieve housing objectives. Instead, it is sufficient for governments to set the right conditions for these elements of the mortgage market to operate.

## The residential mortgage covered bond model

In July 2008, the US Department of the Treasury announced measures to encourage “covered bonds” as an additional source of financing for mortgages. Covered bonds have already emerged as a key source of mortgage financing in Europe. The Treasury press release included a statement by Secretary Henry M. Paulson, Jr.: “As we are all aware, the availability of affordable mortgage financing is essential to turning the corner on the current housing correction. And so we have been looking broadly for ways to increase the availability and lower the cost of mortgage financing to accelerate the return of normal home buying and refinancing activity... We are at the early stages of what should be a promising path, where the nascent US covered bond market can grow and provide a new source of mortgage financing.”

Covered bonds differ from mortgage-backed securities in that the assets that secure the bonds remain on the issuer’s balance sheet, typically in a special pool, rather than being sold to investors. Covered bonds typically pay fixed rates and payment of the principal at maturity. Covered bonds differ from unsecured debt in that investors have recourse to both a specific pool of assets as well as full recourse to the individual issuer. The European Covered Bond Council describes the essential features of covered bonds as follows:

- 1 The bond is issued by—or bondholders otherwise have full recourse to—a credit institution which is subject to public supervision and regulation;
- 2 Bondholders have a claim against a cover pool of financial assets in priority to the unsecured creditors of the credit institution, pool or special purpose entity;
- 3 The credit institution has the ongoing obligation to maintain sufficient assets in the cover pool to satisfy the claims of covered bondholders at all times;
- 4 The obligations of the credit institution in respect of the cover pool are supervised by public or other independent bodies.

As of 2007, “outstandings” for mortgage covered bonds for Europe, the US, and Canada, that is, bonds that have been issued but have not yet matured or been redeemed, exceeded €1 trillion, as shown in figure 15.

Most European jurisdictions have implemented a legal framework for covered bonds, while in other jurisdictions covered bonds are issued under general law. Common bonds are over-collateralized in most jurisdictions. In other words, the value of

**Figure 15: Mortgage covered bonds, total outstanding and issuance in Europe, Canada, and the US**



Source: European Covered Bond Council, *Covered Bonds Outstanding*, various years.

the assets held in the pool exceeds the value of the covered bonds. Where there is a special framework, the minimum level of over-collateralization is prescribed, although the level is often set higher under contract. To ensure that the value of the assets in the cover pool are at least equal to the value of the covered bonds at all times, the issuer may be required to add further assets to compensate for matured or defaulted assets.

Covered bonds date back to a 1770 issuance in Prussia, but the modern covered bond market began in 1995 with the issuance of a “jumbo” covered bond by a syndicate of German banks. The jumbo model became the European standard for the issuance of new bonds (Aveses, Pascual, Ribakova 2007). Features of the jumbo model include: a minimum size of €1 billion, fixed coupons with payments in arrears, official listing on an organized market, and a minimum of three market makers that offer bid/ask prices.

Two pieces of EU legislation have influenced development of what have emerged as the common features of specialized legislative frameworks. The first is Article 22(4) of the EU Directive for Collective Investments in Transferable Securities (European Economic Council, 1985: 3). The second is the EU Banking Consolidation Directive (European Parliament and Council of the European Union, 2006).

The EU *Directive for Collective Investments in Transferable Securities* sets a 5 percent maximum for investment in the same body. Article 22(4) allows member states to raise this limit as high as 25 percent for covered bonds issued by a credit insti-

tution which has its registered office in a member state and is subject by law to special public supervision. To qualify for the 25 percent limit, proceeds from the bonds issue must be invested in assets capable of covering the bond claims in the event of the issuer's failure.

The Banking Consolidation Directive outlines which assets can back covered bonds in order for banks to obtain lower regulatory capital requirements when holding covered bonds rather than unsecured debt. These assets include loans to public sector entities, residential mortgages, commercial mortgages, and loans secured by ships. The directive sets out qualifying criteria for each type of asset.

The adequacy of a cover pool has never been tested in court because there has not been a recent failure of a bond issuer. However, the credit worthiness of covered bond issuances has shown resilience when tested. A study by the Bank of International Settlements found that the credit quality of covered bonds can be robust even in the event of very pronounced declines in issuer creditworthiness, and when significant changes in the quality of the covered pool are perceived to have occurred (Packer, Stever, and Upper, 2007).

There are some significant differences in how covered bonds are structured and regulated from country to country in Europe. To provide more clarity on how covered bonds work, and illustrate the differences, the models of Germany, Spain and the UK are described in Appendix C.

## The US experience

To date, there have been two issues of covered bonds in the United States. In September 2006, Washington Mutual issued US\$5.1 billion of Euro-denominated covered bonds. The Bank of America, N.A., followed in March 2007 with the issuance of US\$5.35 billion in covered bonds. In both cases, the transactions were structured through a "special purpose vehicle."

The US Department of the Treasury in July 2008 released a document on best practices for residential covered bonds to establish a standard structure for issuances (United States, Department of the Treasury, 2008b). Concurrently, the Federal Deposit Insurance Corporation published in the Federal Register a policy statement for covered bonds (Federal Deposit Insurance Corporation, 2008).

The *Best Practices* document notes that the Department of the Treasury regards covered bonds as a complementary source of funding for the residential mortgage market rather than a replacement of other funding sources. Issuers must maintain an over-collateralized value of at least 5 percent of the outstanding principle balance of the covered bonds. Table 16 outlines the collateral requirements for the cover pool.

**Table 16: Collateral requirements for cover pool assets**

- Performing mortgages on family residential properties of between one and four units
- Mortgages shall be underwritten at the fully-indexed rate.
- Mortgages shall be underwritten with documented income.
- Mortgages must comply with existing supervisory guidance governing the underwriting of residential mortgages, including the *Interagency Guidance on Non-Traditional Mortgage Products*, October 5, 2006, and the *Interagency Statement on Subprime Mortgage Lending*, July 10, 2007, and such additional guidance applicable at the time of loan origination.
- Substitution collateral may include cash and Treasury and agency securities as necessary to prudently manage the cover pool.
- Mortgages must be current when they are added to the pool and any mortgages that become more than 60 days past due must be replaced
- Mortgages must be first lien only.
- Mortgages must have a maximum loan-to-value ("LTV") of 80 percent at the time of inclusion in the cover pool.
- A single Metro Statistical Area cannot make up more than 20 percent of the cover pool.
- Negative amortization mortgages are not eligible for the cover pool.
- Bond holders must have a perfected security interest in these mortgage loans.

**Source:** Federal Deposit Insurance Corporation (2008).

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The Federal Deposit Insurance Corporation's statutory authority over covered bond transactions is applicable when a financial institution is in conservatorship or receivership (Federal Deposit Insurance Corporation, 2008: 43754). In cases where the FDIC becomes the conservator or receiver for a depository institution, it may continue to make the covered bond payments as scheduled, pay off the covered bonds in cash, or allow liquidation of the pledged collateral to pay off the covered bonds.

The maturity of covered bonds can range from 1 to 30 years. While the two existing covered bond issues by US banks used a special purpose vehicle structure, such a structure is not required.

Opinions are mixed on the regulatory approaches taken by the United States. Some commentators argue that long-term covered bonds will allow mortgage lenders to safely hold fixed-rate mortgages while giving lenders a powerful incentive to make good decisions because they will be stuck with their errors (Ely, 2008). Others argue that covered bonds will not reduce risk, but transfer it to US taxpayers through the FDIC when a bank fails (Coy, 2008).

## Covered bonds and the 2007-2009 financial turmoil

The Chairman of the Federal Reserve discussed the potential for covered bonds at length in a speech given in October 2008 (Bernanke, 2008). He noted that the issuance of covered bonds in Europe have not been unaffected by the financial turmoil, and at times interest rate spreads relative to government debt have risen, but European banks have been able to find purchasers for these bonds, the issuance for which exceeded US\$16 billion in September 2008. Developments subsequent to the chairman's speech were less rosy. The European Central Bank noted in its December *Financial Stability Report* that by late November 2008, demand for financial institution bonds had spilled over to the Euro area covered bond market, so that it was characterized by low liquidity and significantly impaired issuance conditions.

Government interventions in Europe that provided broad support to major banks may have played a role in the willingness of investors to continue to acquire bank debt issuances into the fall of 2008. A number of European governments directly injected capital into banks. These injections have created further capital to which covered bond investors would have recourse, should cover pool assets be inadequate in an insolvency. The injections also show the willingness of governments to take further actions to prevent bank failures.

European governments also expanded deposit insurance coverage, in some cases to 100 percent, and established guarantees for wholesale debts. For example, on September 30, 2008, the Irish government announced a guarantee safeguarding all deposits, covered bonds, and senior and subordinated debt of six Irish banks. Although many of these guarantee arrangements did not explicitly include covered bonds as Ireland did, the expansion of the guarantees increase the costs for governments associated with bank failures, thus increasing the probability that bailouts will be the preferred policy option for insolvent banks.

## Taxpayer vulnerability

The actions of governments in Europe and the United States in rescuing or providing financial support to banks in response to the 2007-2009 financial turmoil shows that covered bonds can expose taxpayers to risk through the banking system. Hence, it is not a sound substitute for the GSEs from a taxpayer vulnerability perspective.



# Mortgage finance post-turmoil

This paper has focused on identifying features of secondary markets and mortgage insurance in a mortgage finance model that can function effectively in normal times while both achieving housing objectives and minimizing the vulnerability of taxpayers to adverse developments should they occur. Insights from both US history and the experiences of other countries both before and into the financial turmoil provide a case for avoiding policies that build up vulnerability to taxpayers to the mortgage finance sector.

## The US experience

Regardless of how the US mortgage finance industry is structured and regulated, crises will occur in the future. The financial turmoil reaffirmed that the mortgage finance industry remains prone to periods of catastrophic losses. It is a reasonable conclusion from historical experience that regardless of how the US mortgage finance industry is structured and regulated in the future, crises will happen again and unfold differently each time. The Mortgage Insurance Companies of America described the 1980s as “the test” of modern mortgage insurance because of the severe spike in losses. Some of the innovations in mortgage finance (i.e. teaser rates, low down payment, negative amortization) that became common in the run-up to 2007 were also prevalent in 1984. Rising nominal interest rates also contributed to the problems in both periods. However, the events of 2007-2009 had unique characteristics, such as the development of structured products, the dominance of government-sponsored enterprises, and the high level of adjustable rate and sub-prime mortgage loans.

The regulatory structure for private mortgage insurers was designed to ensure that these insurers are resilient to catastrophic levels of loss. The experiences of private mortgage insurers through the 2007-2009 financial turmoil demonstrated that this regulatory structure, including high levels of regulatory capital, worked well as it continued to function through 2008. Private mortgage insurers were battered, and performed badly from a shareholder perspective. However, by the end of 2008, insurers were making payments, and most of them are continuing to underwrite new business even though the industry did not receive government support as did banks and other investment institutions. Differences in the business strategies of private insurers contribute to the resilience of this sector.



In contrast, the US government had to take the thinly capitalized government-sponsored enterprises into conservatorship as financial losses made them unviable.

The structure of the US mortgage finance industry going into the 2007-2009 financial turmoil is a legacy of past government initiatives originally created to deal with temporary problems. Several of the institutions currently in place draw their origins from the 1930s. The need for Freddie Mac and Fannie Mae in their forms prior to the 2007-2009 financial turmoil resulted from the constraints on the abilities of depository institutions to raise funds in the 1960s and 1970s in rising interest rate markets, a problem exacerbated by regulatory restrictions on interest rate caps on deposits.

Because the US mortgage finance industry has been dominated by Fannie Mae and Freddie Mac, the US government must deal with the problems in mortgage finance that emerged in 2007-2008 from an exposed position rather than a clean slate.

US experience also shows that the private sector, in normal times, has the capacity to securitize mortgages without the aid of the government-sponsored enterprises. This was demonstrated by the development of a substantial market in white-label securities for non-conforming mortgages when private insurers were unable to compete against Fannie Mae and Freddie Mac in the conforming market.

## **Canada**

Underlying Canada's residential mortgage finance system is massive taxpayer exposure through government guarantees to insured and securitized assets. While taxpayers have remained unscathed to date because of conservative underwriting practices and a smaller sub-prime market than in the US, Canadian taxpayers nevertheless remain vulnerable. Future crises in mortgage finance will occur and will unfold differently, so existing characteristics of mortgage finance in Canada may not insulate taxpayers.

Rather than serve as a model for others, Canada should reduce taxpayer vulnerability. It should remove competitive inequities between private and public mortgage insurers. The capital held by private insurers serves as a buffer for taxpayers against losses. A competitively neutral environment would help to reduce Canada Mortgage and Housing Corporation's market share and increase private insurers' share, thus increasing the buffers of private capital for taxpayers against losses.

While a level playing field would help reduce taxpayer vulnerability, the existence of government guarantees ensures that taxpayer vulnerability remains high. Following Australia's example, the privatization of Canada's Mortgage and Housing Corporation and eliminating government guarantees would be the most effective approach to reducing that vulnerability. To the extent that there are market segments

that the private sector cannot or will not be active in (i.e. First Nation Reserves), targeted programs can be implemented.

Another approach would be to terminate the guarantees, retain CMHC as a Crown Corporation, and direct OSFI to add CMHC to the list of public sector entities in competition with the private sector for which a risk weight consistent with the private sector is applied. This approach is less clean given an implicit guarantee may continue to exist for CMHC. However, it may serve as an appropriate interim step while waiting for the right market conditions for a privatization. Either of these two approaches would result in Canadian regulated financial institutions being required to hold more regulatory capital, hence raising the need for transitional adjustment time.

## Australia

Australia entered the period of financial turmoil in a different position than the US and Canada. The Australian government did not have exposure to the residential mortgage market. Australia's mortgage market was able to operate successfully in achieving housing objectives without government involvement.

Because of adverse conditions in the global market resulting from the extreme liquidity stress, the Australian government did intervene in 2008. However, because Australia had no legacy exposure to mortgage finance, it was able to do so in a controlled manner with limited risk to taxpayers. Australia's approach (purchasing mortgage backed securities) also has a low risk for creating a permanent institutional legacy existing long after the problem is gone, so it will leave the country better positioned for future crises.

## Covered bond models

Covered bonds are a poor substitute for the current system in that taxpayers remain vulnerable to adverse developments, though through different channels (federal deposit insurance and the tendency by government to bail out or provide financial support to financial institutions). In Europe's case, government actions taken in response to the financial turmoil such as nationalizations, liquidity support, debt guarantees, and capital injections expanded government exposure to the liabilities of banks for which on-balance sheet assets are dedicated to covered bonds and hence unavailable to other creditors.

## Conclusions

The Chairman of the US Federal Reserve discussed options for reforming mortgage finance in his October 31, 2008 remarks (Bernanke, 2008). In addition to discussing the potential for covered bonds, the Chairman discussed both privatization of the GSEs and a model with closer ties between the GSEs and government. He noted that while privatization would solve several problems with the current GSE model, including eliminating the conflict between private shareholders and public policy and likely diminish systemic risks, he also questioned whether the GSE model was viable without at least implicit government support, noting almost no mortgage securitization is occurring today in the absence of a government guarantee. He also noted a greater concern is whether mortgage securitization would be able to continue under highly stressed conditions.

The Australian experience shows that, outside of highly stressed conditions, a secondary market for mortgage-backed securities reinforces the lack of need for government involvement. Moreover, private securitization helped Australia attain housing objectives such as increased rates of home ownership and housing quality. Even under stressed conditions, the securitization market continued to operate to a lesser degree.

The US experience in securitization reinforces the drawbacks of government intervention. The private sector achieved significant success in securitizing less attractive assets, including sub-prime mortgages, prior to the 2007-2009 financial turmoil. Flaws in the model that are believed to have contributed to the financial turmoil have been identified and options for correction are under consideration.

The elimination of government guarantees may also contribute to financial stability by leveling the playing field between competing sources of mortgage financing. As Federal Reserve Chairman Ben Bernanke noted in an October 2008 speech, the existence of Fannie Mae and Freddie Mac, in their current form, inhibit the use of other funding sources such as covered bonds.

History shows that catastrophic losses and highly stressed conditions in the residential mortgage finance market will happen from time to time. However, this only reinforces the importance of avoiding a build-up of government exposure in normal conditions. Australia found itself in a position to consider intervention with a clean slate—no exposures on its books. In contrast, the US government felt the need to make good on its implicit support to the GSEs thus resulting in much greater exposure to the US mortgage finance market in combination with other interventions.

Periods where residential mortgage finance experiences catastrophic levels of loss coincide with economic downturns. Economic downturns create fiscal stress as tax revenues fall and program expenditures, such as employment insurance claims, rise. For instance, the US Congressional Budget Office noted that spending on unemployment insurance and the Supplemental Nutrition Assistance Program, automatically increases during a recessions (United States, Congressional Budget Office, 2009: 4). This is all the more reason to minimize government exposure to residential mortgage finance.

## Appendix A: The GSE subsidy

The advantage of government-sponsored enterprises in attracting financing has been estimated in a variety of studies by comparing interest rates on GSE debt with those of other large financial institutions, as shown in Table A1. The advantage of the GSEs generally ranges from 30 to 40 “basis points” (Quigley, 2005).<sup>20</sup>

A study by the Congressional Budget Office (CBO, 2001) estimated that the funding advantage of the GSEs was 41 basis points. The CBO study also estimated the dollar value of the subsidy (a total of US\$13.6 billion in 2000). While the implicit guarantee on GSE debt issues was the largest source of the subsidy, US\$1.2 billion of the subsidy resulted from tax and regulatory exemptions.

Empirical studies have also estimated the benefits of the subsidy to homeowners and home buyers. The common methodology for these studies is to compare rates on conforming mortgages with jumbo mortgages (i.e., mortgages that exceed the maximum loan size for Fannie Mae and Freddie Mac). These comparative studies find that the funding advantage of the GSEs results in lower mortgage costs by 16 to 25 basis points (Quigley 2005). Reasons why the subsidy is not entirely passed on to homeowners include imperfect competition (both GSEs have a large share of the conforming market, thus providing them with market power), and the advantage that mortgage originators have in deciding which newly issued mortgages to sell to Fannie Mae and Freddie Mac.

The CBO (2001) study also examined the distribution of the subsidy and concluded that only part of the mortgage cost subsidy is passed through to mortgage borrowers in the form of lower interest rates and lower fees on mortgages. The GSEs retain a portion of the subsidy as do Federal Home Loan (FHLB) stakeholders.<sup>21</sup> In those years for which the CBO examined the level and distribution of the subsidy, it found that the mortgage borrowers received between 47 and 56 percent of the subsidy.

Based on a comparison with jumbo rates, the CBO estimated that the subsidy resulted in a reduction in rates for conforming mortgages of 25 basis points. Although the CBO study did not make estimates of the indirect benefits or costs related to the subsidy, it did note that two indirect impacts were:

- ❖ Credit that is diverted from other markets to the conforming mortgage market tends to raise costs to borrowers in those markets (i.e., the US Treasury market and businesses investing in capital goods).
- ❖ The subsidies may increase the price of housing if home buyers use the savings on their mortgages to increase the bid price for housing.

On the latter point, the reduction in rates effected by Fannie Mae and Freddie Mac may be of more assistance to home sellers than home buyers as the lower interest rates allow sellers to increase prices (Wallison, Stanton, and Ely, 2004).

**Table A1: Estimates of the GSE advantage in financing**

Author	Data	Comparison	Spread in basis points
US Treasury (1996)	Bloomberg	Agency vs. A Financials	53 to 55
Ambrose and Varga (1996)	Fixed Income Research Program	Fannie Mae vs. AA Financials	37 to 46
		AA Corporate	38 to 39
		A Financials	56 to 72
		A Corporate	55 to 65
Freddie Mac (1996)	Lehman Relative Value	Freddie vs. AA&A	39
		AAA	23
Toevis (2000)	Lehman Bond Indices	Fannie Mae vs. AA-Indexes	37
Pearce and Miller (2001)	Bloomberg	Agency vs. AA Financials	37
Ambrose and Varga (2002)	Fixed Investment Securities Database	Freddie and Fannie vs. AA Banks	25 to 29
Nothaft, et al. (2002)	Fixed Investment Securities Database	Freddie and Fannie v.s AA Debentures	30
		A Debentures	45
		AA Medium Term Notes (MTNs)	27
		A MTNs	34
Passmore, et al. (2005)	Bloomberg Lehman	Freddie and Fannie vs. AAA & AA Financials:	
		68 Firms	41
		44 Firms	38
		15 Firms	38

Source: Quigley, 2005.

**Table A2: Estimates of reduction in mortgage interest rates attributable to GSEs**

Author	Time Period	Region	Reduction in basis points
Hendershott and Shilling (1989)	1986	California	24 to 39
ICF (1990)	1987	California	26
		7 States	23
Cotterman and Pearce (1996)	1989-1993	California	25 to 50
		11 States	24 to 60
Pearce (2000)	1992-1999	California	27
		11 States	24
Ambrose, Buttner, and Thibodeau (2001)	1990-1999	Dallas	16 to 24
Naranjo and Toevs (2002)	1986-1998	US	8 to 43
Passmore, Sparks, and Ingpen (2002)	1992-1999	California	18 to 20
CBO (2001)	1995-2000	US	25
McKenzie (2002)	1986-2000	US	22
	1996-2000	US	19
Ambrose, La Cour-Little, and Saunders (2004)	1995-1997	US	6
Woodward 1996-2001 (2004b)	1996-2001	US	35 to 52
Passmore, Sherlan, and Burgess (2005)	1997-2003	US	15 to 18

Source: Quigley, 2005.

**Table A3: Distribution of subsidies by intermediary and beneficiary, 1995-2000 (US\$ billions)**

	1995	1996	1997	1998	1999	2000
Passed through to conforming mortgage borrowers (present values) <sup>a</sup>	3.7	4.2	4	7	7.4	7
Retained by <sup>b</sup>						
Fannie Mae	1.2	1.3	1.4	2.2	2.2	2.3
Freddie Mac	0.7	0.9	0.7	1.7	1.7	1.6
FHLB stakeholders <sup>c</sup>	1.3	1.1	2	2.6	4.3	2.7
Sub-total	3.2	3.3	4.1	6.5	8.2	6.6
Total	6.8	7.4	8.1	13.5	15.6	13.6
Percentage of subsidies retained by conforming mortgage brokers	54%	56%	49%	52%	47%	51%

<sup>a</sup>The estimates assume that conforming mortgages finance by FHLB members were a constant share of members' portfolios from 1995 to 2000.<sup>b</sup>Retained subsidies are gross subsidies less the amounts passed through to conforming mortgage borrowers.<sup>c</sup>Includes member institutions, the federal government, non-conforming-mortgage borrowers, and other borrowers. Source: CBO, 2001.

## Appendix B: The impacts on the major US private mortgage insurers following the downturn in the housing market<sup>22</sup>

### Triad Guaranty

Triad Guaranty entered 2007 with a significantly higher risk-to-capital ratio than the industry average. The risk-to-capital ratio increased further over 2007, which Triad Guaranty attributed to both significant increases in its risk-in-force (from US\$9.4 billion to US\$12.9 billion) as well as its operating losses in the last two quarters of 2007. Triad Guaranty's 2007 *Annual Report* indicated it was examining proposals that involve structures under which Triad would implement a "run-off" plan and a newly formed mortgage insurer would be established to acquire certain of Triad's employees, infrastructure, sales force, and insurance underwriting operations.

Triad Guaranty's losses, reported in table B1, declined in the first quarter of 2008 but its risk-to-capital ratio continued to deteriorate. Triad Guaranty's losses increased

**Table B1: Triad Guaranty selected financials (US\$ millions, except ratios)**

	Net premiums written	Earnings	Loss ratio	Risk-to-capital ratio
2006 year	210.6	65.6	44.70%	12.5
2007 Q1	65.7	17.3	50.90%	13.8
Q2	70.2	12	60.10%	16
Q3	72.6	-31.9	148.20%	17.8
Q4	74.8	-75		
2007 year	283.2	-77.5	133.90%	20.5
2008 Q1	73.4	-56.9	307.00%	27.7
Q2	69.1	-198.8	419.00%	42.7
Q3	64.2	-160.1	352.10%	39.7

Source: Triad Guaranty, various financial statements.



significantly into the second quarter and its risk-to-capital ratio deteriorated sharply to the extent it significantly exceeded regulatory limits.

On June 19, 2008, Triad Guaranty announced it had ended negotiations with Lightyear Capital to form a new mortgage insurance company. Triad Guaranty was suspended effective the same day by Fannie Mae and Freddie Mac as an approved mortgage insurer. On July 15, 2008, Triad Guaranty announced it had ceased issuing new commitments for mortgage guaranty insurance and had entered into a voluntary run-off of its remaining insurance business, under which it was no longer writing new insurance and serving existing policies only.

## Mortgage Guaranty Insurance Company (MGIC)

MGIC followed a similar pattern to other mortgage insurers in that its earnings deteriorated in the second half of 2007 as shown in table B2. In the third quarter of 2007, MGIC's losses included an impairment charge of US\$466 million from the write-off of its entire investment in a joint-venture called C-BASS, which was principally engaged in the business of investing in the credit risk of subprime single-family residential mortgages.

MGIC took similar actions to other mortgage insurers in reducing the risk in its business. Its 2007 annual report notes that MGIC raised credit score requirements, and eliminated virtually all business classified as A-, reduced documentation (Alt-A)

**TableB2: Mortgage Guaranty Insurance Company selected financials  
(US\$ millions, except ratios)**

	Net premiums written	Earnings	Loss ratio	Risk-to-capital ratio
2006 annual	1,217	564.7	51.70%	7.5
2007 Q1	304	92.4	60.80%	7.5
Q2	321	76.7	76.70%	7.7
Q3	340.2	-372.5	187.60%	9.1
Q4	380.5	-1,466.60		
2007 annual	1,346.00	-1,670.00	187.30%	11.9
2008 Q1	368.5	-34.4	200.20%	11.7
Q2	371.8	-97.9	196.40%	12.7
Q3	365	-113.3	230.30%	13.9

Source: Mortgage Guaranty Insurance, various financial statements.

and equity finances. Market conditions prompted MGIC and Radian Guaranty to mutually agree to terminate a proposed merger between the two companies.

In March 2008, MGIC raised additional capital through the sale of debentures and the issuance of common shares. The debentures raised US\$365 million while the issuance of common shares raised a further US\$460 million after offering expenses. Despite the capital injections, MGIC's risk-to-capital ratio continued to deteriorate through 2008 as losses continued to be incurred. In April 2008, Freddie Mac announced that MGIC would be required to submit a remediation plan after Standard and Poor's downgraded the insurer from AA- to A with a Negative Outlook.<sup>23</sup> Freddie Mac announced in June 2008 that it would continue to treat MGIC as a Type 1 insurer following a review of its remediation plan. On October 23, 2008 MGIC announced the elimination of its dividend on its common stock.

## Radian Guaranty

Radian Guaranty is a mortgage insurer that is a segment of the Radian Group, which specializes in credit enhancement.

Radian Guaranty's losses through 2007, shown in table B3, prompted a significant deterioration in its risk-to-capital ratio. On April 8, 2008, Standard and Poor's lowered its rating on Radian Guaranty from AA- to A, triggering the requirement to submit a remediation plan to the GSEs. The Radian Group submitted a plan two days later to the GSEs on how it would restore profitability and an AA rating to Radian Guaranty.

**Table B3: Radian Guaranty selected financials (\$US millions, except ratios)**

	Net premiums written	Earnings	Loss ratio	Risk-to-capital ratio
2006 year	849.1	282.8	42.90%	10.4
2007 Q1	206.4	44.7		
Q2	197.6	-28.2		
Q3	249.5	-375.3		
Q4	301.6	-336.6		
2007 year	955.1	-695.4	142.49%	14.4
2008 Q1	211.3	-226.4		
Q2	199	-434.2		
Q3	188.6	-47		

Source: Radian Guaranty, various financial statements.

The details of the plan were announced when the Radian Group released its second quarter statements. Another subsidiary of the Radian Group, Radian Asset Assurance, paid a dividend to the Radian Group which allowed it to inject US\$100 million into Radian Guaranty. Radian Asset Assurance is a financial guaranty insurer which the Radian Group announcement noted has significantly less exposure to mortgage and mortgage related assets compared to other financial guaranty insurers. The Radian Group also announced that in the next quarter, a US\$960 million in statutory surplus from Radian Asset Assurance would be contributed to Radian Guaranty. Radian Asset Assurance's contribution would result in Radian Guaranty's risk-to-capital ratio being 10.3-to-1 on a pro forma basis at June 30, 2008.

The second quarter announcement also noted that Radian Guaranty had increased prices and revised its underwriting guidelines. The Radian Group's third quarter 2008 statement noted that approximately 98.4 percent of new mortgage insurance business production in the third quarter of 2008 was prime rather than insurance of higher risk mortgage loans, which the announcement described as representing a dramatic shift during the past year, and a trend that is expected to continue into 2009. Freddie Mac announced in June 2008 that it would continue to treat Radian as a Type 1 insurer following a review of its remediation plan.

## **Republic Mortgage Insurance Company**

The Republic Mortgage Insurance Company (RMIC) is a segment of the Old Republic International Corporation, which has two other major segments: general (property and liability insurance), and title insurance.

Republic Mortgage's performance followed a similar pattern to that of other mortgage insurers, shown in table B4, of deteriorating earnings results, including losses in the second half of 2007, with further losses through 2008. Net premium revenue grew in 2007 by 16.6 percent over 2006, which Old Republic attributed to higher persistency of business underwritten in prior years, and greater production of traditional insurance products in 2007. In July 2008, Freddie Mac announced that RMIC would be required to submit a remediation plan after Moody's Investor Services downgraded it to A1 from Aa3.

**Table B4: Republic Mortgage Insurance Company selected financials (US\$ millions, except ratios)**

	Net premiums earned	Pre-tax earnings	Loss ratio
2006 annual	444.3	228.4	42.80%
2007 Q1	118	48.3	54.40%
Q2	125	36.8	65.90%
Q3	133.9	-83	161.90%
Q4	141.3	-112.5	
2007 annual	518.2	-110.4	118.80%
2008 Q1	147.6	-122.3	181.10%
Q2	149.1	-140.7	192.50%
Q3	148.4	-152.8	203.10%

Source: Old Republic International Corporation financial statements.

## PMI Mortgage Insurance Co.

PMI Mortgage Insurance is a segment of the PMI Group, which also has international and financial guarantee segments.

As shown in table B5, PMI Mortgage Insurance's financial results deteriorated through the second half of 2007 and into 2008. In April 2008, Freddie Mac announced that PMI would be required to submit a remediation plan after Standard and Poor's downgraded the insurer from AA to A+ following poor earnings results. Freddie Mac announced in June 2008 that it would continue to treat PMI Mortgage Insurance as a Type 1 insurer following a review of its remediation plan.

The PMI Group sold off assets, or closed or reduced operations in its international segment over the course of 2008. In August 2008, PMI announced an agreement to sell its Asian unit for approximately US\$52 million. The Asian unit provided mortgage reinsurance in Hong Kong. The PMI Group also announced in August 2008 that it would close its recently established Canadian mortgage insurance operation, which, once completed, would allow the repatriation of approximately US\$60 million in capital. In October 2008, the PMI Group sold its Australian mortgage insurance operation for approximately US\$920 million. The PMI Group reconfigured its European mortgage insurance and credit enhancement operations to conserve capital and ceased to assume any new risk in this segment other than in respect of existing commitments.

The PMI Group also secured capital internally during the third quarter of 2008 for its mortgage insurance operation through PMI Guaranty, a discontinued financial

**Table B5: PMI Mortgage Insurance selected financials (US\$ millions, except ratios)**

	Net premiums written	Earnings	Loss ratio	Risk-to-capital ratio
2006 annual	658.6	290.3	23.20%	10.8
2007 Q1	195.9	68.9	47.90%	11.9
Q2	189.2	41.5	68.80%	8.6
Q3	214.4	-65.2	169.50%	9.6
Q4	200.2	-236		
2007 annual	799.7	-190.8	22.50%	8.1
2008 Q1	205	-172.5	258.40%	8.3
Q2	196.1	-225.9	271.30%	12.6
Q3	173.9	-137.1	193.70%	15.7

Source: The PMI Group, various financial statements.

guaranty subsidiary, which paid approximately US\$152 million of its excess capital to the PMI Group holding company, of which US\$144 million was reinvested in US mortgage insurance operations. The PMI Group expects to merge PMI Guaranty into its US mortgage insurance operations during the fourth quarter of 2008 pending regulatory approval.

## Genworth Mortgage Insurance Corporation

Genworth Financial has three principle segments: retirement and protection, US mortgage insurance, and international (which includes mortgage insurance and payment protection). Genworth's mortgage insurance operation performed stronger than its competitors through 2007. It earned a net income of US\$171 million in 2007 with a loss ratio of only 68 percent. Genworth Financial attributed its better than average performance in US mortgage insurance to a predominantly prime-based insured loan portfolio.

Net premiums written increased substantially in 2007 by 31 percent over the previous year (see table B6), which Genworth attributed to growth in primary insurance in-force (the sum of policy face values), higher policy persistency, and an increase in more new insurance written resulting from a shift by low down-payment homebuyers to fixed rate mortgages from those with adjustable rates. The first three-quarters of 2008 indicate that net written premiums are continuing to increase.

**Table B6: Genworth Mortgage Insurance Corporation selected financials (US\$ millions, except ratios)**

	<b>Net premiums written</b>	<b>Earnings</b>	<b>Loss ratio</b>
2006 annual	493	262	29%
2007 Q1	140	65	38%
Q2	152	66	41%
Q3	167	40	78%
Q4	188	0	
2007 annual	647	171	68%
2008 Q1	202	-35	142%
Q2	214	-59	155%
Q3	193	-149	163%

Source: Genworth Financial Inc., various financial statements.

Financial performance deteriorated in 2008 with losses in the first three quarters. On September 30, 2008, Genworth Financial announced it was considering strategic alternatives for its US mortgage insurance business, including a possible spin-off, while reaffirming that the company was on sound financial footing and noting that its mortgage insurance business was the only one left in the US with an AA rating. Genworth Financial's third quarter 2008 SEC filing indicates it intends to take actions to reduce its risk profile including implementing a rate increase, and eliminating virtually all new insurance of A minus, Alt-A, and 100 percent loan-to-value. As a whole, Genworth Financial experienced a loss in this quarter because of a number of factors, and announced it was suspending common stock dividends and its share repurchase program. On November 16, 2008 Genworth Financial announced it had filed a savings-and-loan holding company application with the Office of Thrift Supervision, and applied to the US Treasury's Capital Purchase Program. In December 2008, Freddie Mac announced that Genworth Financial would be required to submit a remediation plan after Standard and Poor's downgraded the insurer from AA+ to A+.

## Appendix C: Selected European covered bond models

### Germany

The use of covered bonds (Pfandbriefes) in Germany dates back to the 1700s. As shown in figure C1, outstanding bonds covered with mortgage assets were €206 billion in 2007 down from just over €250 billion in 2003. Banks that issue Pfandbriefes are called Pfandbriefs.

Germany introduced a new regulatory framework for covered bonds in 2005 with the Pfandbrief Act that replaced the German Mortgage Bank Act, which originally dated back to 1899. To qualify as an institution that can issue covered bonds (a Pfandbrief), banks need to be approved by Bafin, the German supervisory authority. Banks must adhere to conditions prescribed in the Pfandbrief Act including having core capital of at least €25 million, and the capacity to manage the risks associated with cover pools.

The act requires the total volume of the Pfandbriefe outstanding of one type to be covered at their nominal value by assets of at least the same amount and with at least the same interest yield (s. 2 (41)). The net present value of the cover assets must be, on an ongoing basis, in excess of the total face value of liabilities by two percent. The excess cover must be comprised of securities issued by German or other prescribed public authorities, bonds guaranteed by the same prescribed public authorities, or deposits with the European central bank or central bank of an EU member state (s. 2 (4-2)).

The act provides for three types of Pfandbriefes: issues backed by mortgages, public bodies, or ships (s. 3). For mortgage Pfandbriefes, the property must be located in one of the following: an EU member state; a state contracting to the area of the European Economic Area (i.e., European Union members plus Iceland, Liechtenstein, and Norway); in Switzerland, the US, Canada, or Japan (s. 3 (13-1)). Eligible mortgages are capped at a 60 percent loan-to-asset value, and properties must carry property insurance (s. 3 (14-1)). The valuation of properties must be undertaken by a qualified person not involved in the loan decision (s. 3 (16-1)). Cover assets can also include (up to prescribed limits) claims against the EU central bank and central banks of member states as well as public sector entities (s. 3 (19-2)). Derivatives transactions that meet prescribed criteria can also be included (s. 3 (19-4)).

**Figure C1: Value of German mortgage covered bond outstanding and issuance**

Source: European Covered Bond Council statistics.

A cover pool monitor and at least one deputy must be appointed for each Pfandbriefe bank by the supervisory authority after hearing representations from the bank (s. 2 (7-1, 7-3)). The monitor is required to report findings on examinations of cover pool assets to the supervisory authority (s. 2 (7-4)). The monitor is entitled to inspect the bank's records (s. 2 (10-1)) and the bank must provide information on repayments related to the assets covered and other changes related to the cover assets (s. 2 (10-2)).

Pfandbriefs must publish quarterly data on the volume of outstanding covered bonds (by type) including corresponding cover pools at nominal value, net present value and risk adjusted net present value (s. 4 (28-1)). Quarterly disclosures for all Pfandbriefs also include maturity structures and the share of derivative structures included in the pools. Mortgage Pfandbriefe disclosures also include breakdowns by size of tranche, location, and type of property (s. 4(28-2)).

In the event of insolvency proceedings, the Pfandbrief's assets recorded as cover are not included in the insolvent estate, but used to cover the claims of the covered bond holders (s. 5 (30-1)). The court will appoint, at the request of the supervisory authority, cover pool administrators to manage the assets of the covered pool (s. 5 (30-2)). Assets recorded as cover that are obviously not required as cover, including excess cover, will be surrendered to the insolvent estate (s. 5 (30-4)). If there is a default



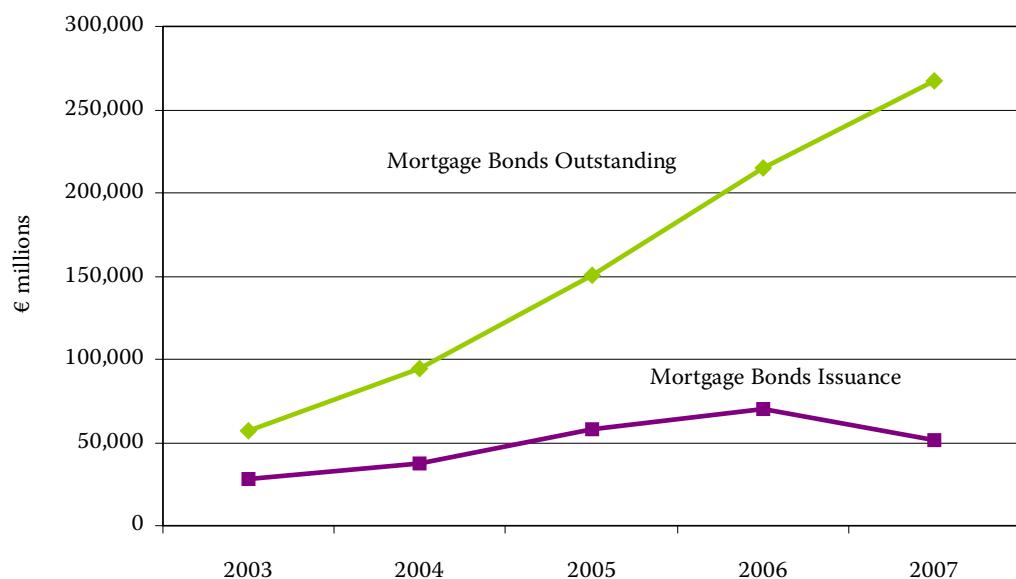
or over-indebtedness of the cover pool, the supervisory authority can initiate insolvency proceedings, which may allow for acceleration of the repayment of the covered bonds. If the recorded assets are not adequate to cover the claims of the covered bond holders, the covered bond holders can assert their claims on the general estate up to the amount resulting from the default (s. 5(30-6)).

## Spain

Spanish covered bonds are known as Cédulas Hipotecarias (CHs). CHs are different from other covered bond structures in that the collateral backing the covered bonds is not established in a special fund if the issuer goes bankrupt. Instead, all the qualified assets on the issuer's balance sheet form the collateral pool so that covered bond investors have a preferential claim on the whole mortgage portfolio. In 2007, outstanding covered bonds backed by mortgage assets reached €267 billion, as figure C2 illustrates, showing substantial growth over a five-year period.

Issuance of CHs is capped at 90 percent of the issuer's collateral pool. Hence, by law, the minimum level of overcollateralization is 11 percent, although the actual level is much higher in practice. Issuances of CHs require the authorization of the Ministry

**Figure C2: Value of Spanish mortgage covered bond outstanding and issuance**



Source: European Covered Bond Council statistics.

of Economy and Finance, and listings must be approved by the National Stock Market Commission.

Qualifying assets include first lien mortgages capped at a loan-to-value ratio of 90 percent for residential mortgages and 70 percent for commercial mortgages. No assets other than mortgages are permitted, including as substitute collateral. All properties collateralizing eligible mortgage loans must be valued by surveyors authorized by the Bank of Spain. Eligible mortgages must be backed by properties registered in the national property register, which limits properties to those located in Spain.

Spanish insolvency law stipulates the non-interruption of principal and interest on CHs during insolvency proceedings.

Smaller credit institutions can tap markets through the joint issuance of CHs backed by a common pool of mortgages.

## **United Kingdom**

Prior to 2008, UK issuances of covered bonds were made under general legislation. However, in March 2008, the Regulated Covered Bonds Regulations came into force as a special law-based framework in line with EU legislation. To date, covered bonds have not been as significant a source of mortgage finance in the UK as in Germany or Spain, with outstandings of €82 billion in 2007 as shown in figure C3.

UK covered bonds do not need to be issued under the new framework. However, issuance under the framework can benefit from higher investment limits for collective investment schemes or a more favorable credit risk weighting for investment banks. The objective of introducing the regulations was to establish a level playing field for UK covered bonds through a framework that is compliant with EU legislation, which takes into account the existing structure of UK covered bonds.

Covered bonds have been issued in the UK since 2003, and have largely been backed by local authority and mortgage assets. The UK covered bond issuances have a number of standard features. Issuances have all been made through a special purpose vehicle (SPV) structure, and the SPVs have all been limited liability partnerships. The credit institution issues the covered bond, and the proceeds are used to make a loan to the SPV, which uses the proceeds to purchase collateral assets from the issuer. The SPV is over-collateralized by the assets injected into the SPV being greater than the aggregate principal of the covered bonds. If the issuer defaults on its obligations on the covered bonds, notice is served on the SPV to make payments of scheduled interest and principal to the covered bond holders. Over the life of the covered bond, the SPV is obliged to maintain a pool of assets in an amount that covers the claims of covered bondholders. Asset coverage is tested on a monthly basis.

Under the new Regulated Covered Bond Regulations, the UK Financial Services Authority (FSA) is responsible for implementing and supervising the regulated regime for covered bonds, which requires authorized credit institutions to register covered bonds or covered bond programs with the FSA. On application for registration, the FSA requires information on the asset pool, asset capability, program structure, key features of the program, issuer and owner eligibility, systems and controls, and confirmation that appropriate third-party advice and reports have been obtained to demonstrate the ability of the issuer and the covered bond to comply with the regulatory regime.

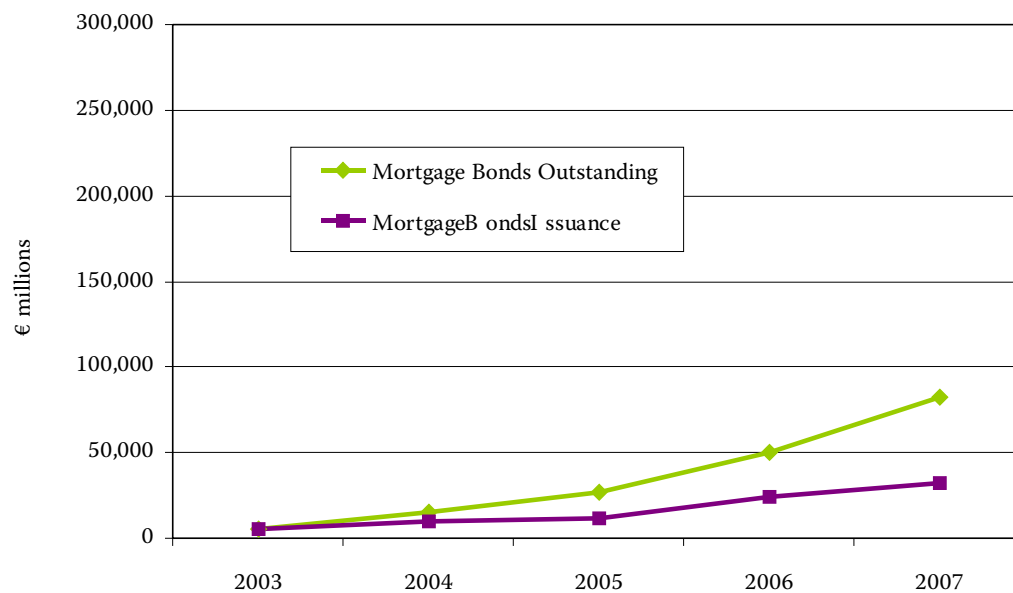
There are ongoing disclosure requirements including bond issues, and material changes to the contractual terms of regulated covered bonds. The FSA also requires the issuer or SPV to provide a quarterly report on its asset pool.

Regulated covered bond programs must be structured through SPVs. Feedback from public consultation questioned whether a sufficiently robust ring fence could be set up without an SPV given the UK's existing solvency law, and this issue will be further studied and reconsidered one year after the implementation of the regulations (United Kingdom, HM Treasury, 2008a: 12).

The UK regulations on covered bonds require that the arrangements with the SPV must include the maintenance of a record of each asset in the asset pool, sufficient assets in the pool to cover claims and operating expenses for the duration of the covered bond, and timely payment of claims to covered bondholders. The assets in the pool must be of sufficient quality to give investors confidence that in the event of the failure of the issuer, there will be low risk of default in the timely payment of the claims of the covered bondholders. To meet these requirements, the FSA has stated it will expect the issuer to demonstrate that it has in place appropriate systems, controls, and procedures and policies, including in relation to risk management, underwriting, arrears, and valuation. The FSA will also expect the issuer to demonstrate that the cash flows generated by the assets would be sufficient to meet the payments due in a timely manner, including under conditions of economic stress and in the event of the failure of the issuer.

The regulations take a broad approach to eligible property by allowing any property specified in the EU Banking Consolidation Directive but with some additional prescribed conditions intended to improve transparency and give investors confidence in the assets securing the covered bonds. In addition to property specified in the EU Directive, the UK regulations also allow social housing as eligible property. Eligible property must be situated in a European Economic Area state, Switzerland, the US, Japan, Canada, Australia, New Zealand, the Channel Islands, or the Isle of Man.

Should the issuer of covered bonds become insolvent, the SPV must make arrangements for the maintenance and administration of the asset pool, and provide information on these arrangements as well as the composition of the asset pool to the

**Figure C3: UK mortgage covered bond outstanding and issuance**

Source: European Covered Bond Council statistics.

FSA. If the SPV is wound up, the claims of relevant persons have priority to its asset pool above all other creditors. In this context, “relevant persons” include covered bond holders, providers of services for the benefit of bondholders, counter-parties to hedging instruments necessary for the maintenance and administration of the regulated covered bonds, and providers of loans to the SPV to enable the SPV to meet the claims of other relevant persons.

## Endnotes

- 1 Some restrictions apply to the type of mortgages that may be purchased by Fannie Mae and Freddie Mac, including loan size, the ratio of a mortgage holder's debt to their income (debt-to-income ratio) and documentation requirements.
- 2 Capitalization is the market value of all outstanding shares of the enterprise.
- 3 The Federal Housing Enterprises Financial Safety and Soundness Act of 1992.
- 4 NAIC is the organization of insurance regulators from the 50 states, the District of Columbia and the five US territories.
- 5 Mandatory tax-free reserves were advocated after Hurricane Katrina as a means of assisting property insurers with meeting the requirements of a major disaster without insolvency, and to increase the availability of disaster insurance (Brumbaugh and King, 2005).
- 6 The Government National Mortgage Association (Ginnie Mae) is a GSE that guarantees payment of principle and interest on MBSs insured by the FHA or the Department of Veteran Affairs.
- 7 Areas and area median prices were to be determined by the Secretary of Housing and Urban Development (s. 201) and published within 30 days of enactment of the Act (s.202).
- 8 In 2004, the Office of Federal Housing Enterprise Oversight directed Freddie Mac to maintain a mandatory target capital surplus of 30 percent over the minimum capital requirement. Fannie Mae received a similar direction in 2006.
- 9 The deterioration in financial results prompted Freddie Mac to raise US\$6 billion in preferred equity in November 2007, and to cut its dividend by half.
- 10 The Federal Housing Finance Agency announced in October 2008 that its regulatory capital requirements would not be binding during the conservatorship.
- 11 On February 13, 2009, Moody's Investor Services announced credit ratings downgrades on several mortgage insurers including MGIC, Radian and Genworth (Shwiff, 2009).
- 12 Genworth Financial announced a proposed transaction that would make it eligible in the future to apply to the US Department of the Treasury's Troubled Asset Relief Program. However, its application was still pending at the end of 2008.
- 13 In June 2004, the Basel Committee on Banking Supervision published a revised version of the Basel Accord, commonly referred to as Basel II. Basel II is intended to "further

strengthen the soundness and stability of the international banking system while maintaining sufficient consistency that capital adequacy regulation will not be a significant source of competitive inequality among internationally active banks” (Basel Committee on Banking Supervision, 2006).

- 14 A submission to the Competition Review Panel by PMI Canada stated that Genworth Financial Canada’s insured values as of September 30, 2007 were CA\$172 billion.
- 15 One early exception to this resilience was the disruption in August 2007 of the Canadian non-bank-sponsored asset-backed commercial paper market.
- 16 This includes secured finance commitments for the construction or purchase of owner occupied dwellings. Also included are the outstanding values of housing loan assets to individuals held by lenders at the end of each reference month.
- 17 In 2007, 39.3 percent of PMI Australia’s net insurance written was residential mortgage-backed securities, compared to 49.5 percent in 2006.
- 18 The Australian federal and state governments had a broader role in the Australian financial sector through the ownership of banks and insurance companies. However, following the report of the Campbell Inquiry, an inquiry on the Australian financial system announced in 1979, the state and federal governments proceeded to sell off these financial institutions as recommended in the report.
- 19 Repurchase agreements are when two parties agree to the sale and repurchase of a security at specified dates and prices.
- 20 One basis point equals 1/100th of a percentage point.
- 21 The FHL Bank system is a government-sponsored enterprise (GSE) chartered by Congress in 1932. Its purpose is to support residential mortgage lending and community investment at the local level. This is accomplished by providing primary mortgage liquidity (direct loans) to member financial institutions. Each member (typically a bank or Savings & Loan) is a shareholder in one or more of 12 regional FHL Banks, which are privately capitalized, separate corporate entities.
- 22 Please note that AIG United Guaranty was not included in this appendix as information was drawn from public financial statements and AIG does not report segment data for mortgage insurance.
- 23 Prior to February 2008, a mortgage insurer would automatically lose its top tier eligibility requirement with the GSEs if its ratings were downgraded below the GSE’s standards. However, the GSEs changed their policy so that insurers will not be automatically re-classified provided a remediation plan is submitted within 30 days.

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