

# The Residential Mortgage Market in Canada: A Primer

Allan Crawford, Césaire Meh and Jie Zhou

## Introduction

The recent financial crisis illustrated how vulnerabilities emanating from residential mortgage markets can lead to financial instability and severe contractions in economic activity. These vulnerabilities built up in a number of countries before the crisis, with stretched housing valuations, an overbuild of housing and increasing household indebtedness. These imbalances were fuelled by mortgage-financing arrangements that permitted lending standards to become more lax and financing structures more fragile. When the ensuing growth in household debt proved to be unsustainable, losses on mortgages and securitized mortgage assets resulted in a marked deterioration in the condition of banks and the broader financial system.

In contrast, the Canadian household sector did not build up similar imbalances before the financial crisis, and Canada's mortgage market continued to function well through the crisis and the ensuing recession. Although the number of mortgages in arrears increased as the global economic slowdown spread to Canada, losses among Canadian lenders were relatively low compared with those of many of their international counterparts, and the flow of mortgages to creditworthy borrowers was sustained with the assistance of public liquidity support.

Since the crisis, the low interest rate environment has contributed to significant increases in mortgage debt in Canada. Because vulnerabilities are constantly evolving, authorities continue to closely monitor the financial situation of the household sector and the housing market, as well as the exposure of financial institutions to vulnerabilities in these areas.<sup>1</sup> Ongoing review of the arrangements for housing finance is also essential to ensure that they continue to support financial stability.

This report assesses how the Canadian regulatory and supervisory framework has helped to shape lending practices and contributed to the resilience of Canada's system of housing finance. Lessons from the crisis—and how they have guided changes in the policy framework to mitigate the risk of future instability—are also examined.

## An Overview of Lenders and the Policy Framework

The system of housing finance in Canada is composed of three sets of institutions: mortgage originators, mortgage insurers and the suppliers of funding. We begin by discussing the interactions among these groups, as well as the role of the policy framework.<sup>2</sup>

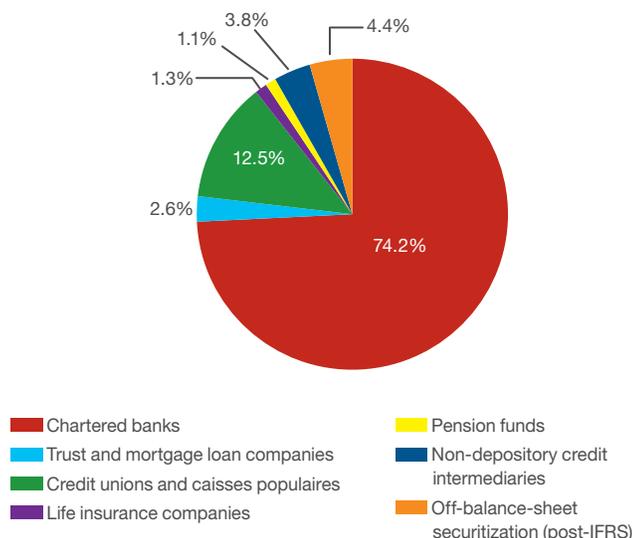
The Canadian residential mortgage market is dominated by banks, which together hold approximately 75 per cent of the value of outstanding mortgages (Chart 1). In turn, bank lending is dominated by the five largest banks, which account for about 65 per cent of the total market. These large banks have diversified their lending across all the major regions of Canada. Non-bank holders of mortgage assets include trust and mortgage loan companies, credit unions and caisses populaires, life insurance companies, pension funds, and non-depository credit intermediaries. While these non-bank institutions have a lower market share than banks, some credit unions and caisses populaires account for a sizable proportion of the mortgages in regional markets.<sup>3</sup>

<sup>1</sup> An in-depth assessment of current vulnerabilities is beyond the scope of this article. The Bank's updated view is presented in each issue of the *Financial System Review*.

<sup>2</sup> See Traclet (2010) and Kiff, Mennill and Paulin (2010) for previous discussions of Canada's housing finance system.

<sup>3</sup> For example, caisses populaires accounted for about 40 per cent of Quebec's mortgage market in 2012.

**Chart 1: Residential mortgages outstanding, by funder, as of 2013Q2**



Note: Off-balance-sheet securitization represents National Housing Act Mortgage-Backed Securities and private securitization that are considered to be off the balance sheet under the International Financial Reporting Standards.

Source: Bank of Canada

## Impact of the policy framework on residential mortgage lending

The regulatory and supervisory framework has a strong impact on the underwriting standards of lenders and the types of mortgage products available in Canada. About 80 per cent of mortgages are originated by lenders that are federally regulated by the Office of the Superintendent of Financial Institutions (OSFI). This total includes all banks and some non-banks.<sup>4</sup> Many of the other institutions that issue mortgages—including credit unions and caisses populaires—are provincially regulated. Over the past decade, the market share of the remaining unregulated mortgage lenders is estimated to have been relatively stable at almost 5 per cent. The unregulated sector includes a number of non-depository credit intermediaries and some of the off-balance-sheet securitization shown in **Chart 1**.

The federal policy framework has two major components. First, in addition to capital and other regulatory requirements, all federally regulated lenders are subject to OSFI’s principles-based supervision, which focuses on the institution’s risks and the quality of its risk management. A critical element of this approach is the use of supervisory “guidelines,” which establish principles that are to be applied by financial institutions. The principles-based strategy is more adaptable to changes

in market conditions and is less susceptible to regulatory arbitrage than a rules-based approach.<sup>5</sup>

In June 2012, OSFI issued “Guideline B-20,” which outlines fundamental principles that federally regulated lenders are expected to follow for their mortgage-underwriting activities.<sup>6</sup> The new guideline complements previous supervisory arrangements and provisions in the formal legislation governing the activities of lenders. Rather than relying unduly on the collateral value of the housing asset, the guideline indicates that the primary basis for a loan decision should be the borrower’s demonstrated willingness and capacity to make debt payments on a timely basis (OSFI 2012). It incorporates a number of other principles as well, including the requirement for each lender to adopt practices ensuring effective risk management and oversight.

The second key feature of the federal policy framework is the legal requirement for federally regulated lenders to insure “high-ratio” mortgages, defined as mortgages with a loan-to-value (LTV) ratio that is over 80 per cent. This insurance is backed by an explicit guarantee provided by the federal government (**Box 1**). In addition to offering protection to the lender in the event of borrower default, the insurance program acts as an important policy lever for controlling risk, since characteristics of the mortgage and of the borrower must satisfy minimum underwriting standards to qualify for the insurance. Between 2008 and 2012, the government tightened these qualifying rules on four occasions to support the long-term stability of the mortgage and housing markets. With these changes, the current insurance rules for new high-ratio mortgages:<sup>7</sup>

- (i) set a maximum amortization period of 25 years and a maximum LTV ratio of 95 per cent for new purchases;<sup>8, 9</sup>
- (ii) restrict the maximum LTV ratio for mortgage refinancing and purchases of investment (non-owner-occupied) properties to 80 per cent (compared with 95 per cent previously);

<sup>5</sup> See Northcott, Paulin and White (2009) for further discussion of OSFI’s approach to supervision and regulation.

<sup>6</sup> Guideline B-20 builds on the Financial Stability Board’s Principles for Sound Residential Mortgage Underwriting Practices, which were published in 2012. It applies to all loans secured by residential property (including home-equity lines of credit) and to all activities related to both mortgage underwriting and the acquisition of residential mortgage loan assets.

<sup>7</sup> See Bank of Canada (2012, Box 2) for a complete list of the changes and their timing.

<sup>8</sup> In these cases, the tightening of qualifying rules reversed changes that had been introduced by mortgage insurers in 2006, which (i) lengthened the maximum amortization period from 25 to 40 years and (ii) raised the maximum LTV ratio to 100 per cent for some borrowers. For a mortgage with a 25-year amortization, a credit score of at least 680 was needed to qualify for a 100 per cent LTV ratio.

<sup>9</sup> Some uninsured (low-ratio) mortgages have a 30-year amortization period.

<sup>4</sup> Federally regulated non-bank institutions include most trust and mortgage loan companies and life insurance companies, as well as some non-depository credit intermediaries.

## Box 1

## Residential Mortgage Insurance in Canada

Federally regulated lenders and most provincially regulated financial institutions are required by law to purchase insurance for mortgages that exceed 80 per cent of the value of the residential property (i.e., with a down payment that is less than 20 per cent of the purchase price). Premiums are determined by the insurers and vary with the LTV ratio of the mortgage. The cost of the premium is typically passed on to the borrower. Subject to allocation limits, lenders can also purchase insurance for portfolios of previously uninsured low-ratio mortgages.

Approved mortgage insurers are designated by the Minister of Finance after consulting with the Office of the Superintendent of Financial Institutions (OSFI). The largest insurer, Canada Mortgage and Housing Corporation (CMHC), is a federal government agency that is operated on a commercial basis. Under legislation enacted in 2012, OSFI is responsible for supervising CMHC's mortgage-insurance and

securitization programs.<sup>1</sup> CMHC-insured mortgages have an explicit government guarantee that provides 100 per cent coverage on net claims by the lender in the event of the insurer's insolvency. Two private insurers, which account for about 25 per cent of outstanding mortgage insurance, are regulated and supervised by OSFI. Since a lender holding government-backed insured mortgages benefits from the zero risk weight of these mortgages for bank capital purposes, the obligations of private insurers also have a government guarantee (covering 90 per cent of the original mortgage) to enable them to compete with CMHC. Private insurers pay a premium to the government for these guarantees.

The total value of mortgage insurance from both public and private insurers must not exceed maximum amounts set by the federal government. Currently, the limits are \$600 billion for CMHC-insured mortgages and \$300 billion for private mortgage insurers.

<sup>1</sup> Previously, OSFI monitored CMHC activities under less formal arrangements.

- (iii) establish maximum gross and total debt-service ratios (DSRs) of 39 per cent and 44 per cent, respectively;<sup>10</sup> and
- (iv) require borrowers to satisfy these debt-service criteria using the greater of the contract rate or the posted rate for a 5-year fixed-rate mortgage if they select a variable-rate mortgage or a term that is less than five years.

In addition, borrowers must have a credit score that is above a specified minimum level to qualify for insurance. Loan-documentation standards for property valuations and income were also strengthened as part of the rule changes in 2008.

The supervisory framework and minimum qualifying standards for mortgage insurance have supported the resilience of the Canadian mortgage market. Depending on their underwriting policies, mortgage insurers may also apply more-stringent requirements than the minimum standards.<sup>11</sup> The effectiveness of the policy framework is explored further in a later section.

## Other characteristics of mortgage products

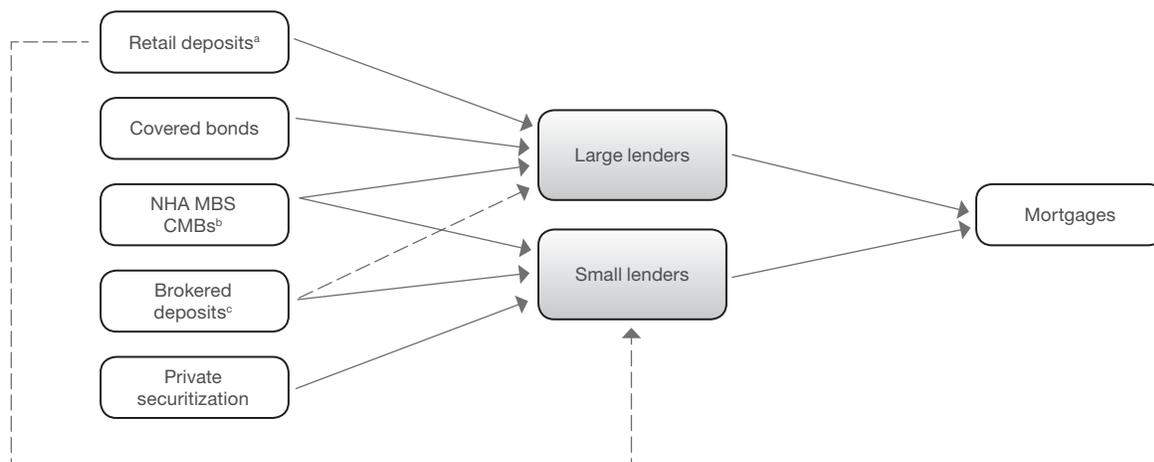
The most common mortgage in Canada has a fixed interest rate for a 5-year term, although there is a range of alternative mortgage products. Over 95 per cent of mortgages have a term of between six months and five years, and approximately one-third of outstanding mortgages have a variable interest rate. Since the standard amortization period is 25 years, borrowers are exposed to the risk of higher interest rates at renewal.

Kiff, Mennill and Paulin (2010) suggest that the infrequency of mortgages with terms beyond five years reflects a number of factors. Retail deposits are an important funding source for many lenders, and only deposits with maturities of up to five years qualify for deposit insurance. To secure deposits at longer horizons, lenders must offer higher rates, and the higher funding costs are passed on as higher borrowing rates for longer-term mortgages. Mortgage rates at terms longer than five years will also be higher to compensate lenders for prepayment risk, since federal law allows borrowers to prepay these mortgages after five years with a penalty of only three months of interest. The frequency of longer-term mortgages is also constrained by the desire of lenders to limit maturity mismatches between assets and liabilities.

<sup>10</sup> The gross DSR is the ratio of the carrying costs of the home (mortgage payments, property taxes and heating costs) to the borrower's income. The total DSR includes these housing-related expenses and all other debt obligations.

<sup>11</sup> For example, the Canada Mortgage and Housing Corporation imposes a lower maximum DSR for borrowers with credit scores below 680 (CMHC 2012a, Figure 2-3).

**Figure 1: Funding of mortgages, by lender type**



a. Small lenders with branch networks may also rely on retail deposits.  
b. NHA MBS = National Housing Act Mortgage-Backed Securities; CMBs = Canada Mortgage Bonds  
c. Large lenders rely on brokered deposits much less than small lenders.

## Financing Mortgage Lending

Mortgage lenders rely on a variety of funding sources, including conventional retail deposits and capital market instruments, such as covered bonds and securitizations (Figure 1).<sup>12</sup> Mortgage securitization is the process by which financial institutions package mortgages and sell them to investors as mortgage-backed securities (MBS), thereby allowing lenders to access funding for new loans.

Traditionally, Canadian deposit-taking institutions have relied primarily on retail deposits to fund mortgages. Many of these deposits are insured by the Canada Deposit Insurance Corporation, making them a stable and cost-effective source of funding.<sup>13</sup>

Mortgage securitization has nonetheless grown in importance in Canada over the past two decades, primarily through two programs offered by the Canada Mortgage and Housing Corporation (CMHC): National Housing Act Mortgage-Backed Securities (NHA MBS) and Canada Mortgage Bonds (CMBs) (Box 2).<sup>14</sup> NHA MBS funding reached 20 per cent of outstanding residential mortgages just before the global financial crisis (Chart 2). Issuance grew strongly between 2008 and 2010, partly in response to the Insured Mortgage Purchase Program (IMPP), which provided mortgage lenders with an addi-

tional source of liquidity during the crisis.<sup>15</sup> Although the IMPP was discontinued in 2010, the stock of NHA MBS has continued to grow in absolute size and currently accounts for about 34 per cent of residential mortgages.

Small lenders generally have fewer options for funding mortgages than large banks and have increasingly relied on CMHC’s securitization programs (see Box 2 in the “Key Risks” section on page 22). According to CMHC, the share of CMB issuance by participants other than the six largest banks increased from 19 per cent to 51 per cent between 2006 and 2013Q1–Q3. In addition to NHA MBS and CMBs, many smaller lenders obtain significant funding from brokered deposits.<sup>16</sup> While this source of financing has increased competition in the mortgage market, the business model is potentially vulnerable to shifts in the availability of brokered deposits, which are a less-stable source of funding than retail deposits.

Some lenders also obtain funding through private mortgage securitization (e.g., MBS and asset-backed commercial paper (ABCP)). Private securitization peaked at 5 per cent of outstanding mortgages in 2000, but largely disappeared following the crisis (Chart 2).

<sup>12</sup> Covered bonds currently represent only 5.5 per cent of total residential mortgages outstanding.

<sup>13</sup> Indeed, rates on 5-year guaranteed investment certificates (GICs) have generally been lower than the rates on 5-year Government of Canada bonds.

<sup>14</sup> See Gravelle, Grieder and Lavoie (2013) for further discussion of mortgage securitization in Canada.

<sup>15</sup> Under the IMPP, the federal government purchased NHA MBS from Canadian financial institutions.

<sup>16</sup> Brokered deposits are acquired by deposit-taking institutions through broker-dealers and wealth managers that represent investment clients seeking a higher return on their deposits.

Box 2

## Canada Mortgage and Housing Corporation Securitization

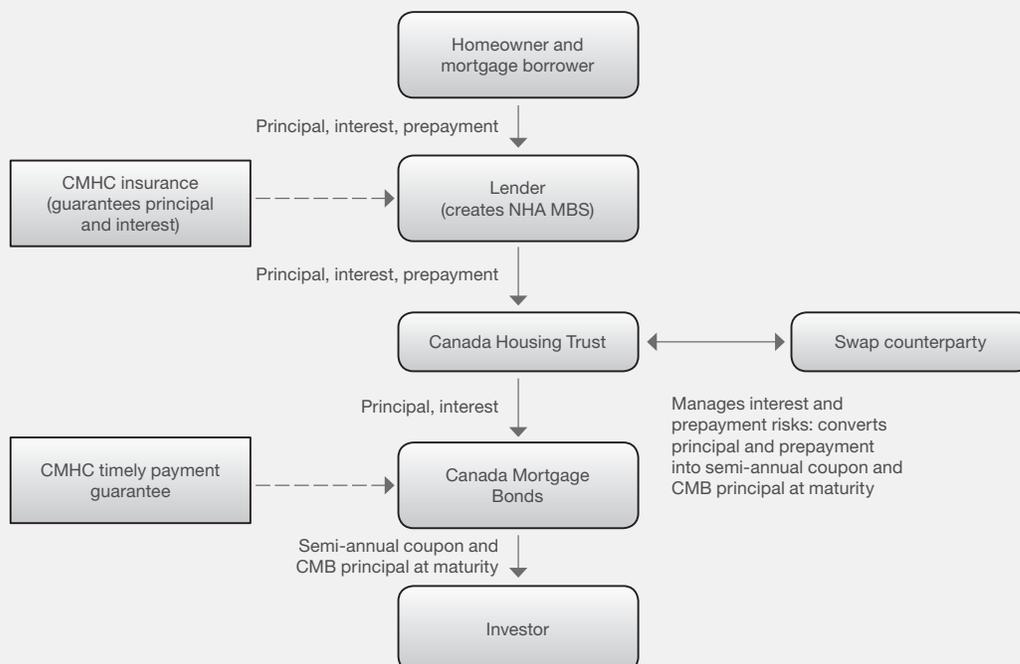
The Canada Mortgage and Housing Corporation (CMHC) has two securitization programs to provide cost-efficient funding sources to Canadian mortgage lenders: National Housing Act Mortgage-Backed Securities (NHA MBS), introduced in 1986, and Canada Mortgage Bonds (CMBs), introduced in 2001 (**Figure 2-A**).

**NHA MBS** are securities backed by pools of residential mortgages insured either by CMHC or private insurers. High-ratio mortgages and low-ratio mortgages (insured through either portfolio insurance or on a transactional basis) are eligible for the pools. NHA MBS investors benefit from an explicit guarantee (through CMHC) by the Government of Canada, since the underlying mortgages are insured against default by the borrower. There is also a government guarantee of timely payment of interest and principal for NHA MBS pools. Despite these protections, NHA MBS investors are subject to prepayment risk, since their cash flows are reduced if borrowers make full or partial prepayments on their mortgages. Under the CMB program, financial institutions may sell the NHA MBS to capital market investors or to the Canada Housing Trust.

**Canada Mortgage Bonds (CMBs)** are issued by the Canada Housing Trust, a special-purpose trust created by CMHC to sell these bonds to investors and use the proceeds to buy NHA MBS. The CMB program enhances the NHA MBS program because CMBs are structured to eliminate prepayment risk. Specifically, the interest rate risk and prepayment risk inherent in the underlying mortgages are managed through swap transactions and investments in permitted securities. The low risk and investor-friendly structure of CMBs attract a broad investor base in Canada and abroad. More than 70 per cent of CMBs have been held by banks, insurance companies and pension funds in recent years.

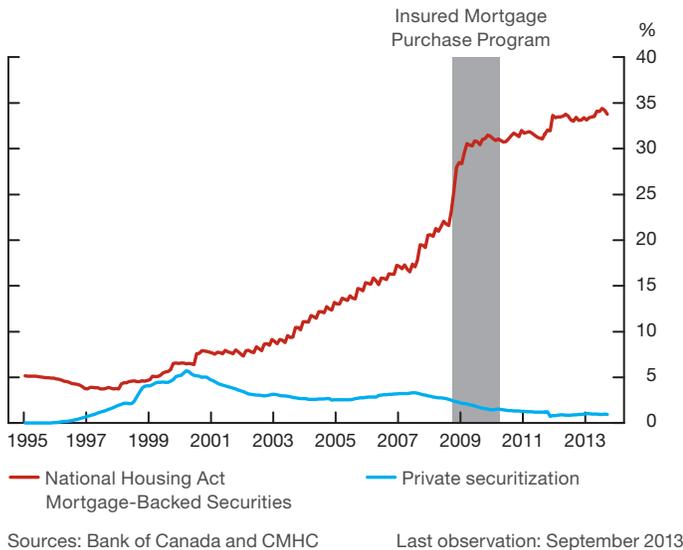
Portfolio insurance was used extensively by mortgage lenders during the financial crisis to obtain funding through CMHC programs. It has also been used for other purposes, such as liquidity and capital management. To restore government-backed mortgage insurance to its original purpose of funding mortgages, the 2013 federal budget announced plans to limit the use of portfolio insurance to mortgages that will be used in CMHC securitization programs, and to eliminate the use of any government-backed insured mortgages as collateral in securitization vehicles that are not sponsored by CMHC.

**Figure 2-A: The NHA MBS and CMB securitization process**



Note: NHA MBS = National Housing Act Mortgage-Backed Securities; CMB = Canada Mortgage Bond  
Source: Adapted from Chapman, Lavoie and Schembri (2011)

**Chart 2: Mortgage securitization in Canada as a percentage of total residential mortgages**



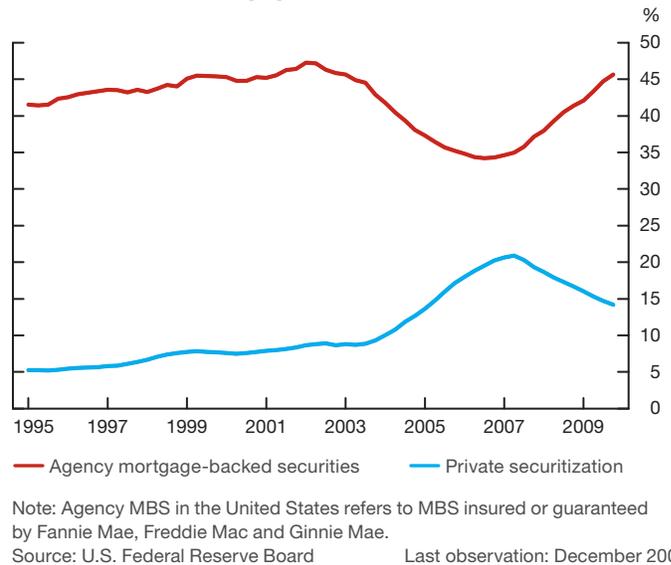
Although total mortgage securitization in Canada has risen to 35 per cent of outstanding residential mortgages since the crisis, it remains below the 60 per cent rate of securitization in the United States.<sup>17</sup>

### Incentives and underwriting standards

The deterioration of underwriting standards in the United States in the years preceding its housing crisis, which occurred partly in response to incentives created by the type of securitization that was permitted, contributed significantly to the onset and spread of the housing crisis.<sup>18</sup> It is thus useful to compare these features of the pre-crisis United States to those in Canada. While government guarantees in both countries help to channel financing into the housing market, there are important differences in the institutional arrangements surrounding those guarantees.

Government-sponsored enterprises (GSEs, such as Fannie Mae and Freddie Mac) have traditionally accounted for the majority of U.S. mortgage securitization (Chart 3). Until they came under government conservatorship during the crisis, GSEs were operated

**Chart 3: U.S. mortgage securitization as a percentage of total residential mortgages**



for private profit but benefited from an implicit guarantee by the U.S. government. However, since it was only an implicit guarantee, GSEs faced little supervision, and could therefore engage in riskier activities and operate with lower screening standards. Moreover, consistent with the goal of U.S. federal policy to increase the rate of home ownership, Fannie Mae and Freddie Mac were required to support mortgages to low-income borrowers in specific geographic areas, as well as to other high-risk groups (CMHC 2013; Rajan 2010). According to Calabria (2011), about 30 per cent of the loans purchased by GSEs were categorized as subprime in 2006, and GSEs purchased almost 40 per cent of the newly issued subprime MBS. In contrast, CMHC benefits from an explicit guarantee and is therefore subject to a stronger supervisory framework, which promotes prudent business practices.<sup>19</sup> For example, all NHA MBS issuers must be approved by CMHC based on eligibility criteria. This additional level of scrutiny of the risk-management practices of issuers complements the supervision of prudential regulators. Moreover, since NHA MBS issuers continue to be responsible for servicing the mortgages backing NHA MBS, they have an incentive to engage in prudent lending.

The differences in incentives were even greater in private (sometimes referred to as “private-label”) securitization markets. Between 2003 and 2007, the market share of private securitization in the United States increased from around 10 per cent of outstanding residential mortgages to nearly 21 per cent (Chart 3), whereas private

<sup>17</sup> Bordo, Redish and Rockoff (2011) argue that the regionally fragmented U.S. banking system—including the lack of national branch-banking networks with a stable deposit base—has traditionally made U.S. mortgage lenders more reliant on capital market funding (including securitization) than on retail deposits. The depth of the long-term capital market and the involvement of the U.S. government in the housing market help to explain the existence of 30-year fixed-rate mortgages in the United States. Government-sponsored enterprises (GSEs) purchase these mortgages and provide a guarantee to the MBS that they issue. The terms of securitization in the United States can be as long as 30 years, while most NHA MBS in Canada are issued for a term of five years or less. Deeper capital markets and government guarantees allow GSEs to fund these long-term mortgages.

<sup>18</sup> See Traclet (2010), BCBS (2011) and Keys et al. (2010) for further discussion of the contribution of securitization to the global financial crisis.

<sup>19</sup> As privately owned companies, Fannie Mae and Freddie Mac strive to maximize shareholder returns. In contrast, CMHC does not seek to maximize profit through its activities, but rather to generate a return that is consistent with its overall mandate. All of these returns accrue to the Government of Canada.

securitization in Canada was small both before and after the crisis. Lightly regulated U.S. originators, such as mortgage brokers, accounted for a large share of private securitization. Since these lightly regulated lenders followed an “originate-to-distribute” model, in which the securitized assets were moved off their balance sheets, the incentives for rigorous screening and monitoring practices were reduced (BCBS 2011). These brokers contributed much of the growth in U.S. subprime mortgages.<sup>20</sup> However, mortgages arranged through the broker channel in Canada are generally insured and/or issued by federally regulated financial institutions, which ensures that most of these mortgages are subject to the underwriting standards for mortgage insurance and OSFI’s Guideline B-20.

In summary, compared with the United States, Canada’s securitization market was subject to a stronger policy framework that underpinned the quality of the underlying mortgage assets.

## Mortgage Outcomes

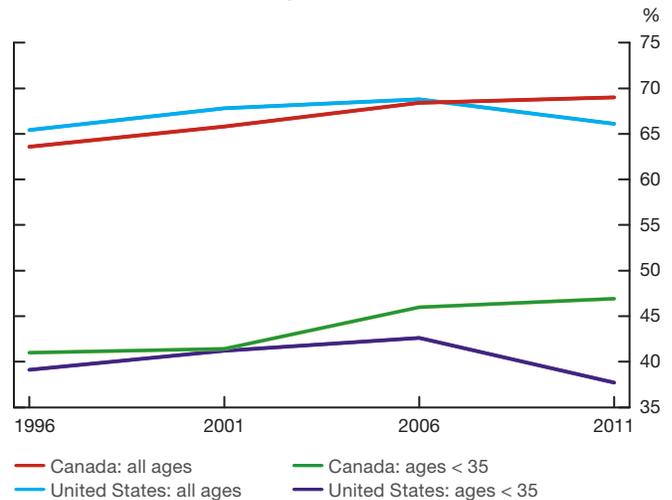
The discussion so far has considered how minimum lending standards and funding conditions are affected by public sector policies. To provide a broader perspective, this section examines actual mortgage outcomes, including the types of households that are able to access mortgage credit. Stylized facts on the balance sheets of mortgage holders provide additional insight as to how the policy and legal frameworks affect mortgage outcomes and the vulnerability of these households to adverse shocks.

### Access to mortgage credit

The rate of home ownership in Canada has risen since the early 1990s and, by 2006, was approaching the level in the United States (Chart 4). More recently, the Canadian rate continued to edge up, while the U.S. rate declined as the household sector experienced significant stress following the onset of the crisis.

The high rate of home ownership suggests that Canadian households have relatively broad-based access to mortgage credit. Indeed, aggregate measures of household indebtedness have risen to levels that are relatively close to the U.S. peak before the crisis.<sup>21</sup> These observations raise the question of whether the gains in home ownership were obtained at the cost of an easing in underwriting standards that increased the riskiness of borrowers. To address this issue, it is par-

Chart 4: Home-ownership rates



Sources: U.S. Census Bureau, CPS/HVS and Statistics Canada

Last observation: 2011

ticularly informative to consider the situation of households headed by individuals younger than 35 years old, since this group accounts for a sizable share of first-time homebuyers. Home ownership has risen noticeably for this age group since 2001 (Chart 4), but most of the increase occurred among higher-income households, which tend to be less risky.<sup>22, 23</sup>

Another indicator of riskiness is the distribution of credit scores for new borrowers.<sup>24</sup> According to CMHC data for insured high-ratio mortgages, the distribution was stable until 2008 and then shifted toward households with higher credit scores (Chart 5). Relatively few borrowers had scores below 600, and insured loans in this range were eliminated following the tightening of mortgage insurance rules in 2008. Equifax data, which cover both insured and uninsured mortgages, show that 4 per cent of mortgage holders had a current credit score of 600 or less in 2013. While credit scores and loan performance will deteriorate for some borrowers in the event of worsening economic conditions, the distribution of

<sup>20</sup> In 2005, approximately 65 per cent of U.S. subprime mortgages were originated by independent mortgage brokers (Berndt, Hollifield and Sandås 2010).

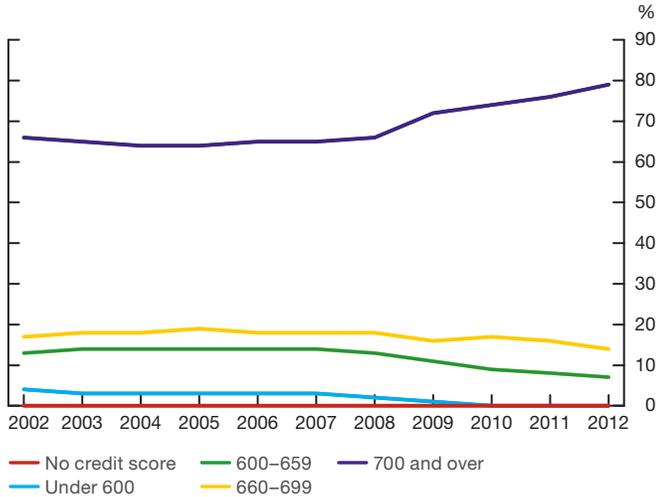
<sup>21</sup> Measured on a comparable basis, the ratio of household debt to disposable income is currently 152 per cent in Canada, compared with a peak of about 165 per cent in the United States. See Bank of Canada (2012, Box 1) for an explanation of the adjustments required to construct comparable series.

<sup>22</sup> Between 2001 and 2011, the increase in the home-ownership rate for the top two income quintiles was double the increase for the bottom two quintiles.

<sup>23</sup> In the United States, the rate of home ownership was supported by laws promoting mortgage lending to low-income households (Rajan 2010).

<sup>24</sup> Credit-reporting agencies in Canada use a scale from 300 to 900 to represent the distribution of credit scores across different households. The distribution is constructed by identifying how the likelihood of delinquency varies with the characteristics of borrowers and then assigning 3-digit credit scores to the various levels of delinquency. Higher credit scores indicate lower credit risk. U.S. credit-rating agencies follow a similar procedure. However, since the mapping between expected delinquency rates and the credit score is different in the two countries, specific numerical levels of Canadian and U.S. credit scores are not directly comparable.

**Chart 5: Distribution of credit scores at origination (CMHC high-ratio mortgages)**



Sources: CMHC (2012a, b)

Last observation: December 2012

scores at origination tends to be an important predictor of the overall performance of mortgage portfolios under such conditions.<sup>25</sup>

A third set of indicators focuses more closely on households that are riskier than “prime” borrowers. Although no standard international definition exists, “non-prime” or “non-conforming” borrowers are generally characterized as having weaker documentation of income (i.e., are classified as Alt-A), less capacity to make debt payments or an imperfect credit history. There is a continuum of risk for non-prime loans, ranging from Alt-A and near-prime to the highest-risk subprime segment. CIBC (2012) estimates that total non-prime loans represented about 7 per cent of outstanding mortgages in Canada in 2012. This share is up marginally from 5 per cent in 2005, but it is significantly below the estimated pre-crisis level of about 20 per cent in the United States. In addition to the non-prime market being smaller in Canada, the risky non-traditional products offered in the United States (e.g., negative amortization and interest-only mortgages) are either unavailable or are very limited in Canada.

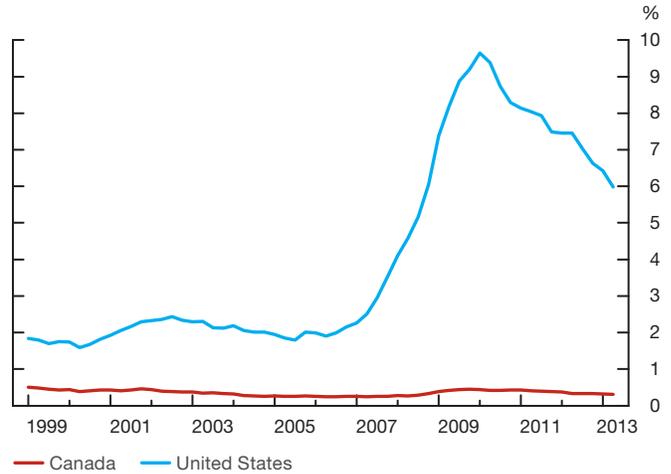
The expansion in the U.S. subprime market was a significant factor underlying the sharp increase in mortgage arrears in the United States since 2007.<sup>26</sup> However, the overall arrears rate has also been consistently lower in Canada than in the United States before, during and

<sup>25</sup> Elul et al. (2010) show that U.S. mortgage defaults depend on a range of factors, including the credit score at origination, the LTV ratio, the credit card utilization rate and the change in the unemployment rate.

<sup>26</sup> Mayer, Pence and Sherlund (2009) document the rapid increase in originations of U.S. subprime and Alt-A loans between 2003 and 2006.

**Chart 6: Mortgage arrears**

Mortgages in arrears 90 days or more, as a percentage of total residential mortgages



Sources: U.S. Mortgage Bankers Association and Canadian Bankers Association

Last observation: 2013Q2

after the financial crisis (Chart 6), suggesting that a broader set of institutional features has contributed to historical differences in mortgage loan performance.

Overall, these measures suggest that underwriting standards were higher in Canada than in the United States before the crisis. In more recent years, standards have strengthened in both countries.<sup>27</sup>

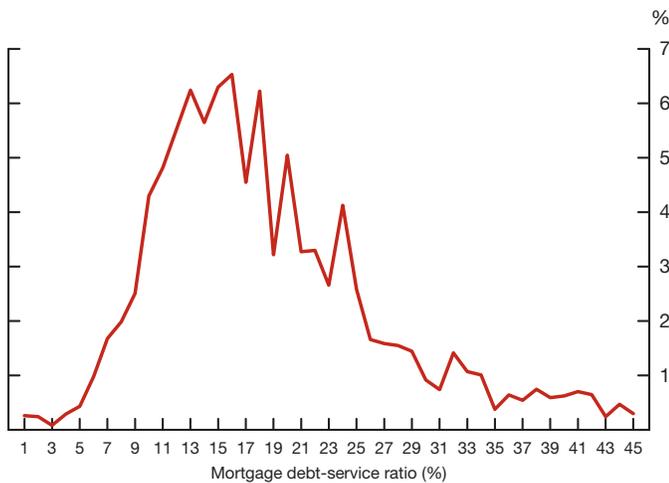
### Balance sheets of households with mortgages

Increases in mortgage arrears are closely related to loss of employment and income, which leaves households unable to meet debt payments. All else being equal, the higher the debt-service burden of households, the more vulnerable they are to adverse shocks (such as a period of unemployment). As shown in Chart 7, most homeowners with an outstanding mortgage have a debt-service ratio (DSR) for their mortgage payments that is well below the maximum gross DSR for new high-ratio mortgages. The distribution of the DSR (and therefore the vulnerability of the household sector to shocks) is also affected by other institutional and behavioural factors that determine how quickly households pay down their debt.

In this respect, it is interesting to note that the percentage of homeowners with a mortgage decreases more rapidly with age in Canada than in the United States (Chart 8), which suggests that the incentive to pay down debt is stronger in Canada. A common explanation is that mortgage interest payments are not tax deductible in Canada, unlike in the United States. Another potential factor is that

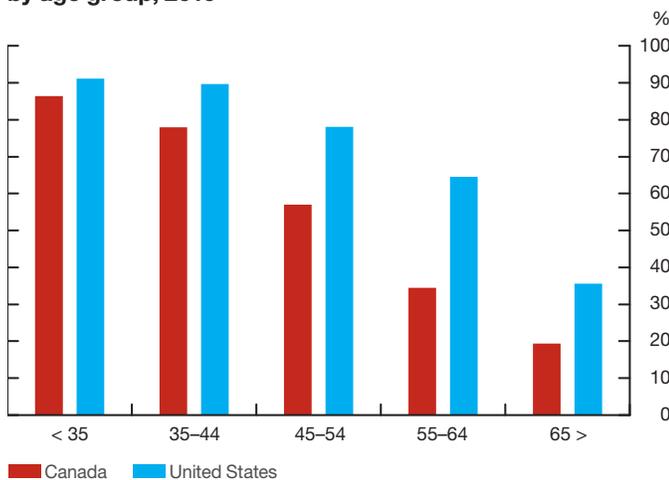
<sup>27</sup> Since 2008, there has been a sharp decline in the proportion of U.S. first-time mortgage borrowers with low credit scores (Duke 2013).

**Chart 7: Distribution of mortgage debt-service ratio for mortgage holders, 2012**



Source: Canadian Financial Monitor

**Chart 8: Percentage of homeowners with a mortgage, by age group, 2010**



Sources: Survey of Consumer Finances and Canadian Financial Monitor

almost all mortgages in Canada have recourse provisions, whereas some U.S. states have non-recourse laws.<sup>28</sup> This legal difference provides a greater incentive for Canadian households to reduce their mortgage principal. Consistent with these incentives, the effective

<sup>28</sup> Recourse allows lenders to seek repayment from income and non-housing assets of the defaulting borrower if proceeds from the sale of the house do not cover the outstanding mortgage balance and interest payments. Other than the revenue from the sale of the property, there is generally no legal recourse for mortgages with either high or low LTV ratios in Saskatchewan, or for mortgages with low LTV ratios in Alberta.

amortization period in Canada is often shortened by households making additional payments.<sup>29</sup>

An elevated DSR also heightens the risk that a sharp increase in interest rates will impair the ability of some households to service their mortgages. Mortgage insurance rules mitigate this risk, since borrowers selecting a variable-rate mortgage (or a fixed term that is shorter than five years) must satisfy the qualifying limits for DSRs using the greater of the contract rate and the posted 5-year fixed rate. This requirement provides a significant cushion, since the qualifying rate has averaged between 200 and 250 basis points above the prevailing variable rate in recent years.<sup>30</sup> Nonetheless, during this period of historically low interest rates, these qualifying limits likely understate the interest cost over the full amortization period. Interest rate risk is also mitigated by adjustments in borrower behaviour. As the spread between the cost of variable-rate and 5-year fixed-term mortgages narrows (e.g., owing to expectations of future increases in rates and changes in the slope of the yield curve), Canadian households tend to lock in their borrowing costs by switching from variable to fixed interest rates or by lengthening the term of fixed-rate mortgages at renewal.<sup>31</sup>

The LTV ratio is another important balance-sheet measure, since a decrease in house prices may cause some households to enter a negative equity position. The most vulnerable households would be recent homebuyers with high LTV ratios at origination, since they have had little time to pay down the mortgage principal.<sup>32</sup> Legal conditions also affect the vulnerability of the financial system to changes in house prices. Non-recourse laws in some U.S. states have led to “strategic defaults” by households, even though they had the income to make payments (Ghent and Kudlyak 2011). In contrast, the standard full recourse provision for Canadian mortgages significantly reduces the incentive for households with negative housing equity to default, which implies lower direct risk to the financial system from a potential correction in house prices. However, such a correction could still have indirect effects on

<sup>29</sup> According to a survey reported in CAAMP (2013), about one-third of mortgage holders either voluntarily increased their regular payments or made additional lump-sum payments during the previous year. The shorter amortization period in Canada (25 years, compared with 30 years in the United States) will also contribute to faster repayment of the mortgage principal.

<sup>30</sup> This difference reflects two factors: (i) interest rates typically increase for longer terms; and (ii) the qualifying interest rate is based on the posted 5-year rate, rather than the actual 5-year rate, which often includes a significant discount from the posted rate.

<sup>31</sup> Since households are generally unable to lock into a fixed-rate mortgage for more than five years, this behaviour does not eliminate interest rate risk for later renewals.

<sup>32</sup> In 2012, 13 per cent of outstanding insured high-ratio mortgages had an LTV ratio greater than 90 per cent, based on current house prices (CMHC 2012b).

lenders, since economic conditions could deteriorate if a significant percentage of households reduce their spending in an attempt to restore their wealth positions.

## Conclusion

Canada's policy framework for the residential mortgage market, which includes an effective regulatory and supervisory regime that applies to most lenders, contributed to the relatively good performance of Canada's system of housing finance during the recent financial crisis. Underwriting standards were maintained for loan originations, and incentives affecting mortgage securitization were better structured than in some other countries. Other provisions, such as recourse laws and the non-deductibility of mortgage interest payments, also reduced financial system vulnerabilities by providing incentives for households to pay down their debt and build equity. Looking forward, these factors will increase the resilience of both the financial system and the housing market in Canada in the face of adverse economic or financial shocks.

Nevertheless, the global financial crisis revealed the high economic costs that can arise from instability in the mortgage and housing markets, and highlighted

the importance of maintaining well-designed lending practices and policy frameworks to mitigate this risk. These lessons have led Canadian authorities to take a number of steps to enhance the resilience of these markets. The minimum standards for government-backed mortgage insurance have been progressively tightened, and OSFI's new B-20 supervisory guideline will help to ensure that lenders follow effective underwriting and risk-management practices. Legislative changes in 2012 enhanced the governance and oversight of CMHC in various areas, including through the addition of the formal objective of ensuring that its insurance and securitization activities contribute to the stability of the financial system and the housing market (CMHC 2012a).

The global financial crisis also demonstrated the need for ongoing monitoring by authorities to ensure that the housing finance system is not itself a source of instability, and to assess how elevated household indebtedness affects the vulnerability of the financial system to an adverse macroeconomic shock. The Bank of Canada's updated assessments of potential imbalances in the housing and mortgage markets are reported regularly in the *Financial System Review*.

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