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Market Musings

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Canadian Mortgage Market Primer

Canada's mortgage market has attracted an understandable surge of interest in recent years, motivated by the housing sector's relatively successful navigation of the global credit crisis.

This report addresses that interest by providing a detailed overview of the key building blocks of Canada's housing market, the mortgage market, the mortgage insurance system, mortgage-backed securities, the Canada Mortgage Bond program, and the Canada Mortgage and Housing Corporation. It is intended to serve as a stand-alone primer, and does not aspire to provide a specific forecast for Canada's housing or mortgage markets.

Housing Market Overview

Summary Statistics

Fully 68% of Canadian households own their homes, a level that is roughly in line with the U.S. and U.K. The U.S. is well known for its policy measures to promote home ownership, but Canada has a similar if less appreciated set of public policies to improve home affordability and the availability of mortgages.

The average Canadian home was worth $347K in April 2010, having increased notably after an earlier credit crunch-related slump.

Statistics Canada estimates that the overall housing stock – residential structures plus land – is worth about $2.78 trillion. Of this, about $920Bn was mortgaged as of December 2009. All told, mortgages represent about two-thirds of total household debt in Canada.

Home Equity

According to a CAAMP survey of homeowners, Canadian homeowners collectively have home equity worth about 70% of the housing stock, with the remaining 30% in the form of mortgages[1]. Just over half of homes are mortgage-free. For homeowners with mortgages, the average equity is slightly over half of the value of the home. No more than 1% of Canadian mortgage holders have negative equity in their home, and 4% have equity wealth of less than 5% of the home's value.

Lenders

Depository institutions held approximately 70% of Canadian residential mortgage debt at the end of 2007, with the chartered bank portion slightly above 55%. The vast majority of the remainder were in NHA mortgage-backed securities, which are discussed in more detail later in the report.

A World Economic Forum report cites Canada's banking system as the soundest in the world, and objectively the banking sector has both weathered and emerged from the credit crunch in a superior condition to most.

Mortgage brokers have not traditionally played a large role in the Canadian housing market, representing roughly one-third of the market, versus over two-thirds in the U.S. One explanation for this is that Canadian customers often obtain all of their banking services from a single financial institution, making them disinclined to shop more broadly on specific products. It is also the case that Canada's mortgage market is far

[1] These statistics do not precisely match with earlier housing stock and mortgage estimates, due to a combination of definitional differences and the inevitable imprecision of surveys.

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more concentrated than in the U.S., making it easier for borrowers to shop around themselves.

Sub-Prime Market
Canada's sub-prime mortgage market never grew particularly large during the boom years – peaking at less than 5% of total originations, versus almost triple this in the U.S. – and most of the Canadian sub-prime mortgages managed to avoid some of the more damaging practices such as NINJA loans (no income, no job or assets) or teaser interest rates. Subsequent regulatory tightening has further diminished the size of the Canadian sub-prime market.

Home Equity Withdrawal
Home equity withdrawal remains relatively contained, and Canadians have generally been disinclined to use their homes to finance discretionary spending to the extent that was once common in the U.S. That said, one in five mortgage borrowers extracted equity from their home over the past year, with the most common use to consolidate and/or repay other debt.

Delinquent Mortgages
The fraction of Canadian mortgages in arrears by three or more months rested at 0.44% in March 2010, amounting to just under 18,000 mortgages. This contrasts to a cyclical low of 0.24% pre-crunch. The current level is just slightly above the 0.42% average from 1990-2009. By contrast, the fraction of prime U.S. mortgages delinquent three or more months was 7.01% as at Q4 2009.

Canada's mortgage delinquency rate has remained low for a number of reasons. Far and away, the main reason is the lack of a housing crash and only a small sub-prime mortgage market. A conservative credit culture – both from the perspective of borrowers and lenders – has generally helped to keep the market in check. Similarly, Canada's banking sector is partially insulated from foreign competition, and this avoided the race to the bottom that U.S. banks engaged in to maintain market share. The regulatory regime is also a sound one.

Canada's mortgage lenders mostly have recourse, which discourages delinquency (more on recourse in the next section). In the event of delinquency, large Canadian banks have a clear incentive to come to a mutually agreeable payment arrangement so as not to lose a customer's deposits and investment business, too. Canada's mortgage market automatically debits payments from customer accounts. Borrowers are given the option of multiple payment options to fit paycheque frequency (for instance, monthly or bi-weekly payments). All of this helps to minimize delinquencies.

Canadian mortgage delinquencies do not typically turn into foreclosures until they are at least three months in arrears and other avenues have been exhausted. If foreclosure is unavoidable, a judicial sale of the property (in which a court supervises the home sale) occurs in British Columbia, Alberta, Saskatchewan, Manitoba, and Quebec. A power of sale (in which the lender sells the property without supervision) occurs in Ontario, New Brunswick, Prince Edward Island, and Newfoundland. Nova Scotia uses a mix of the two approaches. If the proceeds from the sale of a house are in excess of the mortgage and administrative fees, the lender may keep the excess amount in the case of a judicial sale, while the borrower keeps the excess funds in the case of a power of sale.

Recourse
The majority of Canadian mortgages are subject to recourse, meaning that in the event of a foreclosure that results in a loss to the lender, the lender can pursue the borrower's other assets and income by way of legal judgement. This provides a

disincentive for potentially weak borrowers to extend themselves beyond their means, and an incentive for current borrowers to continue making payments and avoid foreclosure. In comparison, a large number of U.S. states do not have recourse on mortgage debt, or have sufficiently disagreeable legal processes so as to proxy that condition.

There are some exceptions to this, two of which are noted here. The Province of Alberta does not always offer recourse to lenders, though this is dependent on both the vintage and nature of the loan. In Saskatchewan, recourse only applies to re-financed mortgages.

Tax Considerations

Relative to the U.S. tax treatment, the Canadian tax code creates a subtle disincentive to own multiple homes, and an incentive to pay off mortgages promptly. There is no capital gains tax on the sale of a primary dwelling, but other property sales are subject to this tax. Meanwhile, Canadian mortgage interest payments cannot be deducted from income, unlike in the U.S. where interest deductibility creates an incentive to extend payments for longer.

For real estate transactions, a pre-existing home transaction generally encounters realtor fees in the 4-6% range (this is paid by the seller and split between the buying and selling real estate agents). There are also land transfer taxes of about 1-2% (paid by the buyer to the province) in all provinces except for Alberta, Saskatchewan, and parts of Nova Scotia. The City of Toronto imposes an additional municipal land transfer tax of roughly the same amount.

A new home transaction encounters all of the above expenses, plus a 5% GST tax that is levied on the entire value of the new home. Certain provinces[2] also have a Harmonized Sales Tax (HST) that accompanies the federal GST, and new homes are subjected to these as well. There is a rebate that partially offsets this for inexpensive homes. The GST fee also applies to a substantially renovated home.

Speculation

The aforementioned transactional taxes are sufficiently onerous that flipping homes can be a costly exercise in all but the hottest of housing markets.

As in any housing market, speculation plays a role in Canada. Anecdotally, Asian investors have tended to gravitate towards Canadian properties, especially condominiums in major cities like Vancouver and Toronto. The motivation appears to be some combination of the anticipation of a robust return on investment, the desire to house a portion of their savings in a stable foreign country, good affordability relative to their home cities, and possibly the aspiration of settling in Canada someday.

An April 19, 2010 rule change requires that home buyers who do not live in the residence must make a minimum 20% downpayment, versus the usual 5%. This, along with the taxation of capital gains on non primary properties, helps to keep speculation in check.

[2] Provinces with HST are Quebec, New Brunswick, Nova Scotia, and Newfoundland. Ontario and British Columbia implement their own HST as of July 1, 2010.

Mortgage Characteristics

The Downpayment
The standard Canadian mortgage downpayment is 20% of the home's value or more. Below that threshold, the Bank Act requires that mortgage insurance must be obtained for a fee, either from the Canada Mortgage and Housing Corporation (CMHC) or a private-sector competitor. The minimum insurable downpayment is 5% of the home's value. This was increased in mid-2008 from 0%.

The average Canadian downpayment as a fraction of the home's value has generally trended downwards over the years, though the recent regulatory change may halt the progression.

The downpayment itself traditionally comes from some combination of the borrower's savings, RRSP withdrawal (up to $25K maximum), funds borrowed against proven assets, proceeds from the sale of another property, or a non-repayable gift from a relative. In some instances, a limited cash back option may be available from lenders.

Amortization Period
The traditional Canadian amortization period for a residential mortgage is 25 years. Rules permit an amortization period of as long as 35 years, reduced by the Department of Finance from 40 years in mid-2008. Among newly purchased homes, slightly over half have a 25-year or shorter amortization period. As with the trend towards a diminished downpayment, the general pattern has been towards a longer amortization period in recent years.

Mortgage Term
By far the most common mortgage term in Canada is five years, though this can range from as little as six months to as long as ten years. Regardless of the mortgage type – fixed, floating, or otherwise – the mortgage traditionally comes due every five years. For this reason, Canadian mortgages are often referred to as balloon loans, because borrowers are technically expected to pay off the remainder of their mortgages in one big payment at the end of the term.

In the vast majority of instances, borrowers are offered the opportunity to opt into another term, at fresh borrowing rates. This process repeats itself until the completion of the full amortization period.

Theoretically, it is possible for a lender to determine that a borrower is no longer a good credit risk, and to decline to refresh the mortgage term. It is a rare occurrence, however, as the tendency for home prices to rise, for home equity to increase, and for inflation-adjusted monthly payments to fall all translate into diminishing credit risk to the lender. Under normal circumstances, most lenders would only seriously consider declining to renew a mortgage if the payment history was uneven.

The borrower is not without options in this scenario, as one of the borrower-friendly options embedded in Canadian mortgages is the transferability of mortgages. At the end of a term, borrowers can take their mortgage (and the mortgage insurance with it, where applicable) to another lender without any penalty or significant fees. In this way, even when the pre-existing lender is willing to renew the contract, the borrower may find it preferable to shop around for a superior rate.

Borrowers also enjoy the option of paying down the entirety of their mortgage at the end of each term, without penalty.

Five-year Popularity

Canadian lenders and borrowers alike have traditionally favoured the five-year term on mortgages over others, such as the 30-year standard in the U.S.

A key reason for this is that the Canada Deposit Insurance Corporation (CDIC) only insures term deposits up until a 5-year maturity. Given this, depositors disproportionately tilt towards 5-year Guaranteed Investment Contracts (GICs) instead of GICs with longer maturity, and they are willing to accept a lower rate of interest. In turn, this combination of inexpensive duration-matched financing and lumpy availability encourages banks to offer their best mortgage deals for a five-year term, luring borrowers.

A second reason is that Canada's *Interest Rate Act* grants borrowers the right to prepay any mortgage with a term of greater than five years once the first five years have passed, for a penalty of no more than three months of interest. This is less costly than the usual prepayment penalty. In turn, banks must hedge against this prepayment risk, and pass the additional cost along in the form of higher mortgage rates for terms greater than five years.

Fixed versus Floating

Traditionally, the 5-year fixed rate mortgage has been the dominant mortgage in Canada. In recent years, however, floating rate mortgages have become more popular due to a falling interest rate environment (structurally since the early 1990s, and cyclically since 2007), and based on the calculation that they are cheaper on average across a full economic cycle. This trend may be starting to diminish as borrowers recognize that central bank rates will eventually begin to rise.

At present, fixed rate mortgages constitute a big (though diminished) 68% of the outstanding mortgage stock. 27% are floating rate mortgages, and 6% are some combination of the two. The flow of new mortgages in recent years has been more balanced between the two major categories.

Home Equity Lines of Credit (HELOCs) have become more popular in Canada in recent years. These offer the attraction of allowing as little as the interest on the loan to be paid each month, with unlimited capacity for prepayment. In addition, once a portion of the HELOC has been paid down, the money can subsequently be used to finance other purchases, such as home renovations or a new vehicle. This has helped to tilt the overall composition of real estate lending towards floating rate products, though there are some fixed rate HELOCs as well. HELOCs generally require a substantial downpayment, and so despite interest-only minimum payments, the risk of an underwater loan is slim.

Mortgage Payments

Canada's approach to mortgage payments has a few interesting features. As previously discussed, payments are automatically extracted from customer accounts, reducing the risk of late payment. The payment schedule can be set up in a variety of configurations (such as bi-weekly or monthly) to match paycheque frequency.

Naturally, fixed rate mortgages enjoy a constant, predictable monthly payment. However, Canada's floating rate mortgage market has a twist. Some floating rate mortgages – called Adjustable Rate Mortgages (ARMs) – conform to the U.S. standard, meaning that as interest rates rise, the monthly payment rises due to a fixed principal amount and a variable interest amount. However, a significant fraction of Canada's floating rate mortgages – as much as half – have a much more predictable trajectory. This second type of floating rate mortgage – called Variable Rate Mortgages (VRM) – allow for a constant monthly payment even in a rising rate environment[3]. This is because the natural increase in interest owed is offset by an equivalent reduction in the principal payment. In turn, the monthly payment remains unchanged, at the expense of an extended amortization period. Among Canada's Big Five banks, two mostly employ traditional ARMs, while three mostly employ VRMs.

From an economic standpoint, while the growth in the popularity of floating rate mortgages has generally increased Canadians' exposure to the risk of rising interest rates, the existence of VRMs tempers the immediate impact on Canadian household finances.

Income Tests

To establish the credit-worthiness of mortgage applicants, Canadian lenders and mortgage insurers traditionally employ two key income tests. For CMHC, the usual criteria and thresholds are as follows.

The first is the Gross Debt Service (GDS) test, which stipulates that the gross debt service ratio must be less than or equal to 32% of household income. Household income is calculated pre-tax, and the cost of gross debt servicing includes expected principal and interest payments on the home, plus property taxes, heating costs, and 50% of condominium fees.

The second is the Total Debt Service (TDS) test, which requires that the total debt service ratio must be less than or equal to 40% of household income. Household income is calculated pre-tax ,and the cost of total debt servicing includes all costs cited in the GDS test, plus payments on all other debts.

Credit scores – Canada`s equivalent to FICO in the U.S. – can also play a role in determining access to mortgage financing. Individuals with a credit score below 600 may struggle to obtain an insured mortgage. A criticism of the credit score mechanism is that Canadian lenders tend to be more protective of their borrower data than in the U.S., meaning that a borrower's mortgage payment history is often not available to be factored into the calculation.

For borrowers with very high credit scores – 680 or higher – the GDS and TDS tests are eased. In this case, both CMHC and Genworth – one of CMHC's private-sector competitors – allow no GDS limit and a TDS of as high as 44%.

For floating rate mortgages, the GDS and TDS tests are employed as though the borrower is applying for a mortgage at the posted five-year fixed rate, so as to create an affordability buffer in the event of rising interest rates. This rule was tightened in April 2010. Previously, floating rate mortgage applicants were tested against the three-year fixed rate.

These mortgage tests are broadly comparable to the U.S. The standard U.S. test is 31% for GDS and 43% for TDS. For Fannie Mae and Freddie Mac conforming loans, the requirements are slightly stricter, at 28% and 36%, respectively. However, the comparison is not apples-for-apples between the two countries, limiting the inferences that can be drawn.

Mortgage Rates

Actual Canadian mortgage rates are difficult to properly identify and can superficially appear higher than in other countries, because of a tradition in Canada of offering a significant discount off of posted rates. Discounts of 100bps or more are common, and

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[3] Principal payments cannot be negative for a VRM. In the event of an extreme increase in interest rates, it is possible that the monthly payment might have to be increased.

130-150bps is not unheard of in healthy markets. The IMF has found that Canadian mortgage rates are usually quite comparable to U.S. rates, once the veils have been swept aside. The approach offers the advantage of allowing lenders some discretion depending on the perceived credit risk of a client.

The Prepayment Option

In contrast to the U.S. market, Canadian mortgages are often perceived to have a significantly reduced prepayment option. Whether this is attractive or not depends on whether the perspective is that of the borrower (unattractive), the lender (attractive), or the MBS buyer (attractive).

In reality, Canada's prepayment option has considerable nuance, and the U.S. advantage is not nearly as large as it first seems. The IMF goes so far as to argue that the optionality of the two countries is roughly equivalent, though we feel this may be a slight stretch. The optionality is as follows:

First, by virtue of the standard 5-year balloon loan, Canadian borrowers have the option of paying off any portion of their mortgage (up to the entirety) every five years.

Second, it is standard to be granted a 15% (and sometimes as high as 20%) prepayment option per year. This means that a lump sum of 15-20% of the original principal value can be paid down in any year of the mortgage. The effect is of a "use it or lose it" nature, meaning that any unused prepayment room expires at the end of each year. Nonetheless, this allows for roughly half of a mortgage to be paid down within any three year window.

Third, the penalty for pre-payment/renegotiation may diminish in some cases as the years pass. For a five-year term, the penalty for pre-payment in excess of the stipulated limit can be fairly severe in the first three years. It amounts to the greater of three months of interest or the interest rate differential (IRD) between the locked-in rate and the market rate times the number of remaining years. This effectively neutralizes any financial incentive to renegotiate in quest of a lower borrowing rate as the cost precisely offsets the advantage. However, up until 1999 CMHC policy stipulated that for the remaining two years of a five-year term, the penalty be just the three months of interest. This rule has since been eliminated, but some lenders may still abide by it. It remains the case that for any mortgage term of greater than five years, the penalty for prepayment after the first five years cannot exceed three months of interest.

Fourth, the U.S. prepayment option is more expensive than it initially seems due to much heavier sundry fees for negotiating a new mortgage, plus the use of upfront "points" – something that has no equivalent in Canada.

Additional Flexibility

Canadian mortgage applicants are regularly granted the option of locking in a mortgage rate for as many as 60-90 days before finalizing the mortgage. If the mortgage rate falls, the borrower is able to take advantage of the lower rate. If the mortgage rates rises, the borrower is completely insulated. This is less commonly seen in the U.S.

A further option extended to Canadian borrowers is mortgage portability. They may sell their old house and buy a new house at any point during the mortgage, and – subject to certain conditions – transfer the old mortgage and interest rate to the new home. There are no significant fees associated with this.

Impact of Potential Mortgage Defaults for Lenders

Given a mortgage delinquency rate of 0.44% and the assumption of a (pessimistic) recovery rate of 80%, this means that expected mortgage portfolio losses for Canadian lenders are less than 10 basis points per year for uninsured mortgages. This is a manageable sum, and easily absorbed by the differential cost between bank funding and bank lending rates.

Unregulated Lending

The majority of Canadian residential real estate lending is conducted by depository institutions. However, there is a small fraction – worth in the tens of billions out of a market of almost $1 trillion – that is underwritten by unregulated lenders without mortgage insurance. These alternate lenders are not subject to federal regulation, and so evade the mandatory insurance requirements for high loan-to-value lending. These lenders will sometimes self-insure by hedging themselves using financial market instruments that approximately mimic the trend in mortgage delinquencies.

Unregulated lenders cater to a specific set of clients. The targeted clients include those with high wealth but low income (who might not qualify under the GDS and TDS tests), those with high income but low savings, self-employed individuals with variable income, and sometimes even those in professions with a tradition of underreporting income to the government. If the risk of lending is perceived to be higher than usual, a higher interest rate is levied.

This market was dealt a heavy blow, not just by the general downturn in the global housing market in recent years, but simultaneously by the disappearance of Canada's Non-Bank Asset-Backed Commercial Paper (Non-Bank ABCP) market. Because these lenders do not have the luxury of matching deposits against their lending, they are disproportionately reliant on financial markets for funding. The Non-Bank ABCP market had been an important vehicle for financing loans. In turn, some unregulated lenders are adapting by lending mainly in the insured mortgage space.

Mortgage Insurance

Overview Statistics

Mortgage insurance is a popular feature of the Canadian real estate landscape. It is significantly more popular in Canada (used for almost 50% of mortgages) than in the U.S. (15-30%).

The mortgages are insured under the *National Housing Act* (NHA), with about 70% of the insuring conducted by the Canada Mortgage and Housing Corporation (CMHC), a federal Crown Corporation. A few private insurers – Genworth Financial and Canada Guaranty, predominantly – insure the rest.

Borrower Motivation

Canadian borrowers have ample motivation to obtain mortgage insurance. With the exception of the small unregulated lending market, it is obligatory to buy insurance for any mortgage with less than a 20% downpayment. Officially, it is the lender that is obliged to obtain insurance a high loan-to-value ratio mortgage, but the convention is for the borrower to pay the fee.

Mortgage insurance allows borrowers to enter the market earlier than they would otherwise be capable, with a lower downpayment and a competitive interest rate. Without it, they would have to wait until they had accumulated a minimum 20% downpayment.

Lender Motivation
Canadian lenders – mostly depository institutions – benefit from mortgage insurance as well. Most obviously, it expands the mortgage market by enabling a broader set of borrowers. Equally importantly, mortgage insurance protects lenders from losses when lending to their riskiest customers (those with high loan-to-value ratios).

Less obviously but also important, mortgage insurance allows banks to more easily securitize mortgages. To securitize a mortgage as part of the NHA MBS program or to put a securitized mortgage into the Canada Mortgage Bond program (both are discussed later in detail), it is necessary that all of the underlying mortgages be insured. To achieve this, lenders will often pay the insurance fee themselves on mortgages with loan-to-value ratios of less than 80% so as to render them eligible for the program.

Although it is technically possible to securitize an uninsured mortgage in Canada, the market is vanishingly small and issuance dried up altogether once the credit crunch struck.

Finally, mortgage insurance allows banks to modify their capital structure. The capital risk weighting for an uninsured mortgage is 35-50%, whereas it falls to 0% once insured by CMHC. This means that insured mortgages do not attract any capital requirements, making it an appealing way to improve the capital ratio of a lender. There is some question whether this advantage may be eliminated under the newly proposed Basel Committee rules (despite Canadian protests), diminishing the incentive for Canadian banks to insure mortgages for balance sheet purposes. If this change were to be enacted, banks would have to securitize and sell mortgages in addition to insuring them so as to obtain the desired effect upon their capital structure. This would represent a significant shift in the way that Canada's mortgage market functions.

Availability
CMHC requires that Canadian borrowers have a minimum 5% downpayment, and that they meet the 32% GDS test, the 40% TDS test, and certain credit scores. Private-sector insurers have slightly different requirements. All of this is discussed in the earlier *Income Tests* section.

Insurers reserve the right to reject the findings of a property appraisal.

CMHC offers quite a broad range of products, including insurance on multi-residential units, retirement homes, nursing homes, and similar projects.

Coverage
In contrast to the U.S. approach, mortgage insurance in Canada covers the full loan amount (plus accrued interest), not just the initial amount necessary to get the loan-to-value ratio down to a certain threshold. The mortgage insurance generally lasts for the full life of the mortgage, and is transferable should the borrower elect to switch to another lender at any point during the amortization period.

In Canada, there is no size limit on how large a mortgage CMHC or others can insure.

Fee Structure
The standard CMHC fee structure is displayed in the accompanying table. At an extreme, the minimum 5% downpayment and a maximum 35 year amortization period costs the borrower a premium of 3.15% of the total value of the loan. This must be paid to the insurer upfront, though the lender will often add the amount onto the overall

mortgage to render it affordable (note that this effectively reduces the size of the minimum downpayment as a fraction of the total loan).

At the opposite extreme, if a lender elects to voluntarily insure a mortgage with a 35% downpayment and just a 25 year amortization period, so as to be eligible to bundle it into an NHA MBS product, the fee is only 0.50% of the total value of the loan.

Loan-to-Value Ratio	Standard Premium on Total Loan
<=65%	0.50%
65.1% to <=75%	0.65%
75.1% to <=80%	1.00%
80.1% to <=85%	1.75%
85.1% to <=90%	2.00%
90.1% to <=95%	2.75%

Note: Assumes 25yr amortization. 30yr has extra premium of 0.2%, 35yr has extra 0.4%.
Source: CMHC

Management
Even with an insured mortgage, the lending institution manages the mortgage, directly handling payment collection, foreclosure, and sale of the home, where applicable. In the event of a foreclosure, the insurer compensates the lender for any shortfall between the proceeds from the sale of the property and the remaining mortgage plus accrued interest owed. In the event that the sale generates more money than the amount owed, the insurer is uninvolved.

Mortgage-Backed Securities

Overview and Statistics
The mortgage-backed securities program for Canada is an important component of the mortgage market. However, it is not nearly as widespread as the U.S., with Canadian lenders keeping about 70% of their mortgages on their own balance sheets. Roughly 29% of Canadian mortgages are securitized, versus a much larger 60% in the U.S.

Of the roughly $275Bn in Canadian securitized mortgages, the vast majority – about $250Bn worth – are backed by CMHC. Of these, well over half ($175Bn) are in the form of Canada Mortgage Bonds, and a large fraction of the remainder have been sold into the Government of Canada`s Insured Mortgage Purchase Program (IMPP).

The remaining $25Bn or so of securitized mortgages that are not backed by CMHC are spread across “private label” securitization vehicles, including non-insured MBS, Non-bank ABCP, and Bank ABCP. These markets have shrunk in recent years, and are not expected to mount vigorous comebacks.

NHA MBS Program
The NHA MBS program represents the set of mortgage-backed securities in Canada that are fully insured under the *National Housing Act*.

The level of insurance is actually twofold. First, all eligible mortgages must be insured against default, either with CMHC or one of the private insurers. Officially, this is the responsibility of the lending institution, though the convention is that the borrower pays the insurance fee for mortgages with a loan-to-value ratio of more than 80%, while the lender usually pays this fee for the rest.

Second, the lenders must then purchase insurance for their securitized mortgages against the unlikely event that they themselves might fail. This is called a “Timely Payment Guarantee”. It costs between 0.2-0.4% of the notional value of the mortgage portfolio, and ensures that if the banks were to fail, payments would continue to the MBS holder. The insurance cost is relatively low because the risk of loss to the NHA MBS buyer is rather small. After all, the failure of a lending institution would not necessarily compromise the ability of borrowers to continue making their monthly mortgage payments.

Convexity

For investors, the convexity of mortgage-backed securities is a subject of great importance. Convexity refers to the prepayment risk embedded in most mortgages. Convexity is particular high in the U.S., as when interest rates fall, there is usually a surge in borrowers who renegotiate their mortgage to capitalize on lower lending rates. From the perspective of an MBS investor, a renegotiated mortgage is the equivalent of an unexpected early payment of principal on the bond, and the mortgage exits from the pool. It can be a challenge for investors to manage this flow of lump-sum payments. What starts as a 10-year MBS can rapidly turn into something with a duration many years shorter.

In Canada, convexity tends to be somewhat lower than in the U.S. As discussed earlier in the “Prepayment Option” section, Canada’s prepayment optionality is slightly less than in the U.S. However, Canadians appear to take advantage of their prepayment option to a notably lesser degree than in the U.S. For instance, whereas Canadian borrowers can prepay up to 15-20% of their mortgage each year without penalty, the average prepayment is less than 1%.

Insured Mortgage Purchase Program

As the worst of the credit crunch struck in the fall of 2008, an alternate form of securitization was created by the Canadian federal government. The program was named the Insured Mortgage Purchase Program (IMPP) and enabled the government to buy as much as $125Bn worth of insured mortgages directly from Canadian lenders.

The risk to the government was limited as the mortgages were already insured, and a profit has been earned to date on the spread between the cost of government financing and the return on the mortgages. We estimate that the government charged a fee of roughly 25 basis points in excess of the equivalent cost to lenders of bundling their mortgages into a Canada Mortgage Bond. In this way, the government ensured that the CMB program would not be cannibalized, and that the IMPP program would wind down naturally in the event of a market normalization. This is ultimately what happened.

The program helped to significantly alleviate pressures on the Canadian mortgage market, and is one reason among many why the provision of credit has flowed more readily from Canada than many other nations both during the credit crunch and afterwards. In the end, only a little more than 60% of the program was ever used before other funding options for lenders returned and the appetite for the program eased. The IMPP expired in March 2010, though significant mortgages remain on the books of CMHC and will presumably roll off naturally over the next five years.

ABCP
The Asset-Backed Commercial Paper (ABCP) market in Canada once provided a useful if peripheral source of funding for the mortgage market. It was particularly valued by smaller lenders, which had limited access to deposits or unsecured funding.

The Non-Bank ABCP market has subsequently closed, a casualty of the credit crunch and of the non-bank issuers that attempted to borrow short and lend long, without the safety nets or regulations built up around proper banks. This market is unlikely to return.

The Bank-backed ABCP market continues to function, though it is not nearly as large as it once was. In turn, it can safely be said that the ABCP market is no longer a major player in funding Canadian mortgages.

Canada Mortgage Bonds

Overview
Canada Mortgage Bonds (CMBs) are issued by Canada Housing Trust (CHT), a special purpose entity created and managed by CMHC. CHT buys previously insured and guaranteed NHA mortgage-backed securities from participating approved lending institutions in Canada. The CMB market is an important one, as it has grown to a large $175Bn in size, and now represents about 60-70% of all securitized mortgages and is in the range of 17-20% of all Canadian mortgages. What makes the CMB program unique – at least within Canada – is that it converts mortgage flows into bullet bond flows, with fixed semi-annual interest payments and the repayment of principal at maturity. The program also has enough guarantees associated with it to render it no riskier than Government of Canada debt.

The CMB program is designed to ensure a supply of inexpensive mortgage financing, to increase competition in the mortgage lending market, to improve cost effectiveness for Canadian households, and to aid in the expansion of the secondary mortgage financing market. It has enjoyed success in all of these endeavours, as evidenced both by the large and growing size of the market, and by a study that found the program lowered borrowing costs by about $400Mn across 2001-2006.

Guarantee
From a CMB investor's perspective, CMBs are rated `AAA'. Even though CMBs are issued by Canada Housing Trust and not CMHC itself, both the timely payment of interest as well as the principal investment associated with the products are guaranteed by CMHC. In turn, CMHC is an agency of the federal government, and all CMHC liabilities constitute direct and unconditional obligations of Canada, and are backed by the full faith and credit of the Government of Canada (more on this last part in the CMHC Structure section).

Features
A unique feature of CMBs, in contrast to more traditional mortgage-backed securities, is that they are bullet bonds. There is no repayment or prepayment risk whatsoever. Similarly, the product is guaranteed by CMHC (and by extension the federal government). As a result, investors enjoy perfect certainty regarding the stream of semi-annual coupon payments and a one-time principal payment.

Liquidity
CMBs enjoy excellent liquidity. This is due to their risk-free nature, a lack of convexity, and large benchmark size. In fact, quarterly CMB issuance – worth as much as $10-14Bn per quarter – was comparable in size to the pace of Government of Canada

issuance up until the credit crunch forced the government to step up its activity. As a result, the bid-to-offer spread tends to be only modestly wider than Government of Canada bonds, with good liquidity and turnover. CMBs are a central component of the Canadian bond market, and are featured prominently in all major bond indices. No significant liquidity premium exists.

Term

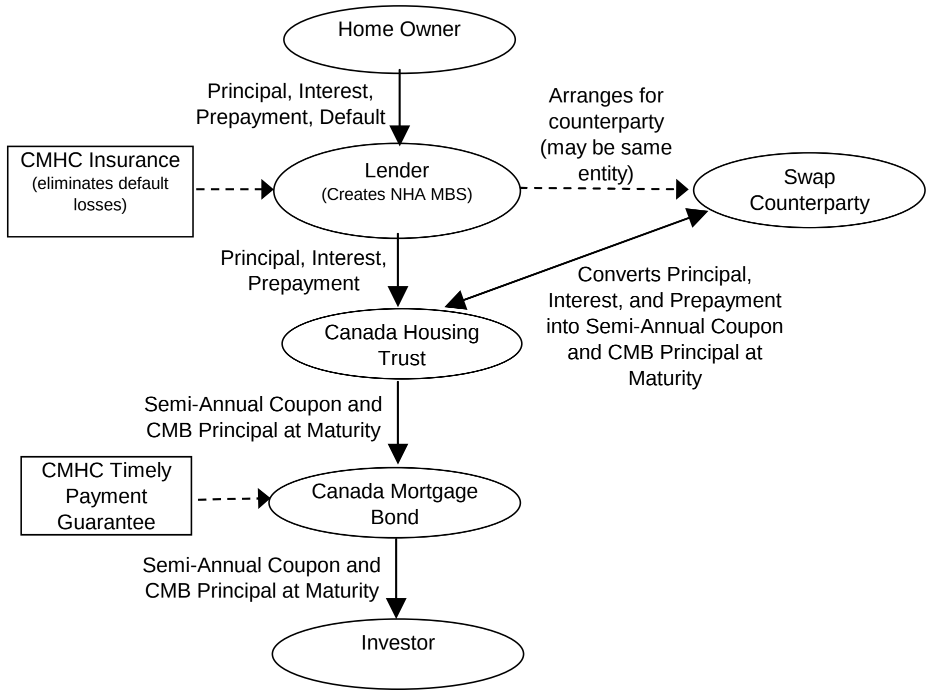
Far and away the most common CMB product is the five year fixed rate. This is a consequence of the popularity of five year mortgage terms in Canada. However, other terms have been introduced in recent years, with a 5-year floating rate product, a 3-year bond re-opening, and a 10-year bond. All are exclusively Canadian dollar-denominated, though some thought has been given to issuing in U.S. dollars in the future.

Hedging

The prepayment risk has been stripped out of CMBs, but does not magically disappear altogether. Instead, it is the underlying lending institutions that must confront the prepayment risk. They handle this by commissioning an approved swap counterparty as a credit intermediary on a specialized swap transaction with Canada Housing Trust that converts monthly mortgage interest payments, mortgage principal, and sporadic prepayments into the smooth semi-annual CMB coupon and CMB principal at maturity. Thus the originating lender retains and manages the risks of the unpredictable nature of any prepayments flows.

The lender continues to service the loan. This involves collecting monthly payments, and even pursuing an insurance claim in the event that a borrower defaults. This is then passed to Canada Housing Trust, which then exchanges the funds with the swap counterparty.

When a CMB matures, the underlying mortgages go back to the originating lenders. This corresponds roughly to the end of each underlying mortgage's term, and the lender decides whether to renew the loan to the borrower for a fresh term, and whether to introduce the mortgage back into a new CMB or some other securitization vehicle.



Fee
A timely payment guarantee fee of about 0.20%-0.40% of the notional value of the underlying mortgages is charged for inclusion of securitized mortgages into a CMB. This pays for CMHC's guarantee of timely and full payment in the event that Canada Housing Trust was unable to make good on its commitment. Note that this guarantee eliminates the need for the usual timely payment guarantee on the underlying NHA MBS.

Canada Housing Trust itself does not seek a profit. Instead, the CMB program operates on a break-even basis, with administrative fees covered by the swap counterparties. Nonetheless, there are indirect benefits that accrue to CMHC itself in that lenders are first obliged to insure and guarantee their mortgages, which is generally profitable for CMHC. Lenders would not necessarily have gone through these steps if they did not aspire to include their mortgages into a CMB.

Spread
CMBs trade at a small positive spread to Government of Canada debt. The spread tends to vary with the cycle, and was unusually wide in late 2008 when the credit crunch was at its worst. Recently, the spread has been relatively narrow, at +22 basis points for the 5-year product.

Traditional Buyers
In 2009, 77% of CMB buyers were Canadian. 18% were American, and a smaller 3% were European, with 2% Asian. Should CMBs begin to be issued in foreign currencies, the foreign share may experience growth.

Two main types of buyers dominate the market. These are banks and trusts, which hold 44%, and pension funds and advisors, which hold 38%. Others are much smaller. Insurance companies hold 5%, hedge funds hold 3%, central banks hold 2%, Canadian retail investors hold 2%, governments and agencies hold 2%, and other institutional investors hold 4%.

CMHC Structure

Overview & Guarantee
Given the well-documented struggles of Fannie Mae and Freddie Mac – the two U.S. housing agencies – it is natural that there is an unusual amount of attention on Canada's housing agency as well, despite substantial differences in their function[4].

The Canada Mortgage and Housing Corporation (CMHC) is a Crown Corporation wholly owned by the Government of Canada, and shares the same AAA credit rating as the federal government. CMHC's liabilities constitute a direct and unconditional obligation of the Government of Canada, and are backed by the full faith and credit of the government. Technically, this is a stronger commitment than a simple "guarantee" in that the only scenario in which CMHC could default on its obligations is if the Government of Canada was simultaneously defaulting on its own debt. By contrast, a simple guarantee would allow for the slim chance that CMHC could fail, and investors would then have to appeal to the federal government for full recompense.

[4] For instance, CMHC's insurance function extends to unsecuritized mortgages, whereas Fannie Mae and Freddie Mac do not. CMHC runs the IMPP and CMB programs, whereas there is no equivalent function in the U.S. Lastly, when purchasing mortgages, CMHC does not take on the interest rate or prepayment risk that Fannie Mae and Freddie Mac are exposed to.

CMHC is primarily governed by the *Canada Mortgage and Housing Corporation Act* and the *National Housing Act*. The CMHC mandate is for the promotion of housing affordability and choice, the availability of low-cost housing finance, and the well being of the housing sector.

With an eye towards the mechanics of Canada's overall mortgage market, the most relevant CMHC initiatives are its insurance program, the securitization guarantee program, and the CMB program. This report has examined each of these in detail already. In this section, they are examined from the perspective of CMHC's own viability and profitability.

Insurance Viability
For its mortgage insurance business, CMHC reported $473Bn of insurance in force for 2009. This insurance is expected to generate premiums worth $1,600Mn plus investment income worth $600Mn, against expected net insurance claim expenses of just $600Mn. There is unquestionably a time mismatch in that few borrowers default immediately after paying their insurance, but on a steady-state basis this nonetheless means that losses would have to increase by three- to four-fold to compromise the profitability of the program. Historically, the gap between premiums and claims has tended to be at least as favourable as the 2010 outlook. Another perspective is that the current mortgage delinquency rate of 0.44% would have to rise to over 1.50% for CMHC to generate a loss on its mortgage business. This would be more than double the historical peak in mortgage delinquencies going back to 1992 of 0.65%. This doesn't seem likely, even in a rising interest rate environment.

Furthermore, CMHC anticipates having $8.8Bn in insurance retained earnings as a buffer for the insurance business in 2010. While this is not a large sum when contrasted against $473Bn in insurance outstanding, it nonetheless represents more than a decade worth of insurance payouts at the anticipated 2010 rate. It is also more than twice the Minimum Capital Test set out by the Office of the Superintendent of Financial Institutions (OSFI). In turn, it is difficult to conclude anything other than that the insurance business is well designed and unlikely to mimic the problems experienced in the U.S.

Securitization Guarantee Viability
CMHC's securitization guarantee program is anticipated to cover $397Bn in securities by 2010, and is expected to earn $177Mn in fees for that year, versus no anticipated losses. This program guarantees the full and timely payments due on securitized mortgages, in the event that the original lender were to fail. It is not unreasonable to think that should a major financial institution fail, the securitization guarantee will be among the least of the anyone's worries. This is for two reasons. First, so long as borrowers continue to make their monthly payments, the only implication of a failed lender is the administrative headache of CMHC stepping in to service the loans directly. Second, each of Canada's major financial institutions present a sufficiently large systemic risk to the overall economy that the government would likely already have its fingerprints all over the dossier, helping both to reduce the risk of a failure and to blunt the implications for other financial sector participants.

CMB Program Viability
The CMB program adds very little additional risk for CMHC. The underlying mortgages are already insured by the mortgage insurance program. In its role as fiscal agent and guarantor, the guarantee fee would seem to more than cover the risks naturally arising from these roles. For example, there is a small risk associated with the possible failure of a swap counterparty, but this is truly quite small due to stiff collateral requirements

and the netting nature of swap contracts. The bottom line is that the program is not completely risk free to CMHC, but the risks are incredibly small.

As previously discussed, the CMB program is not directly profitable, and Canada Housing Trust is obliged to operate on a break even basis.

General Risks

A regular criticism of CMHC over the years is that the insurance program has been designed in such a manner that it effectively provides insurance on the lowest quality mortgages in Canada, with far less exposure to higher quality mortgages. In turn, in the event of a hypothetical sharp housing market correction, CMHC would be exposed to significant losses.

This is undeniable, despite the fact that a U.S.-sized correction is much less likely in Canada due to the predominance of recourse mortgages, stricter mortgage laws, and a variety of other beneficial traits detailed in this report.

Even still, the systemic risks are not especially great for several reasons. By virtue of the mandatory insurance on low downpayment mortgages, the greatest risk lies with CMHC, not the lender. A hypothetical correction would have to be more than twice as large as anything in the past two decades to knock CMHC's insurance business from its profitable perch, and even then it would have a substantial capital buffer. The latest (2009) annual actuarial evaluation of CMHC's insurance activity found that it should remain solvent over the long-term. OSFI sets out specific capital reserve requirements and unearned premium reserves, and CMHC currently has double the minimum capital required in its insurance retained earnings.

In the event of a U.S.-sized correction (with a giant 8%-plus mortgage delinquency rate, a low recovery rate due to falling home prices, and low insurance revenue due to sharply diminished home sales), CMHC could theoretically run through its capital buffer relatively quickly. However, the crucial distinction between CMHC and Fannie Mae and Freddie Mac in the U.S. is that CMHC has enjoyed explicit government backing from the start. This tourniquet would stop the bleeding and prevent a banking crisis. In fact, CMHC's mortgage insurance business suffered losses in the early to mid-eighties as a consequence of a convergence of several negative factors. The government stepped in with more than $200Mn to right CMHC.

A second related risk sometimes raised is that Canadian lenders do not have a strong incentive to be discerning in their approval of borrowers if they know that the entirety of the default risk on high loan-to-value ratio loans falls to CMHC and not themselves. This is why it is crucial that CMHC lending rules – as they relate to the maximum loan-to-value ratio, the maximum amortization period, and the various income tests – be well designed. They are sometimes the only line of defence against poor lending decisions. However, there is also a systemic incentive for lenders to care at least somewhat about their insured mortgage portfolio. They are responsible for managing arrears and the cost associated with this. CMHC regularly reviews lender performance and has the right to limit the ability of poor performing lenders to do business with them.

A third risk that has also surfaced is that CMHC is not very transparent, and simply does not reveal very much about the mortgages that it insures. Consequently, it is difficult to evaluate CMHC's prospects, for better or for worse. In looking at their 2009 annual report however, we can see that homeowners representing 71% of its insurance in force have equity in their homes of more than 20%.

Private Insurers
As a Crown Corporation, CMHC receives an explicit 100% Government guarantee on its insurance business. To enable equitable competition, the Government of Canada provides private insurers – currently Genworth Financial and Canada Guaranty – with a 90% Government guarantee on their mortgage insurance activity. In return, the private insurers contribute a portion of their premiums to a guarantee fund in the event of insolvency.

The differential in guarantee level between the private insurers and CMHC reflects the increased level of commercial risk and added costs CMHC incurs in fulfilling its public policy mandate of providing equitable access to housing finance to all Canadians in all parts of the country regardless of where they live. Over 40% of CMHC's total business in 2008 was in areas, or for housing options, that are less well served or not served at all by the private sector mortgage insurers. This includes rental, retirement and nursing homes, mobile housing units, rural areas, northern Canada and single industry towns. These less served markets and housing options are areas of added risk and represent increased cost for CMHC.

CMHC derives its authorities from the CMHC Act and the National Housing Act (NHA) and is not regulated by OSFI. OSFI sets the capital requirements for private mortgage insurers to ensure their on-going financial viability. Although CMHC is not regulated by OSFI, CMHC nevertheless retains more than the amount of regulatory capital required by OSFI for the private sector insurers."

More broadly, the fact that private insurers willingly seek out Canadian mortgage insurance customers suggests that it is indeed a viable business. This provides further evidence that concern regarding the sustainability of CMHC’s business model and the Canadian approach to mortgage insurance more broadly may be overstated.

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