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Revisiting the Canadian Mortgage Market – The Risk is Minimal (Update from January 2010 Report)

Prepared for:

**Canadian Association of
Accredited Mortgage Professionals**

By:

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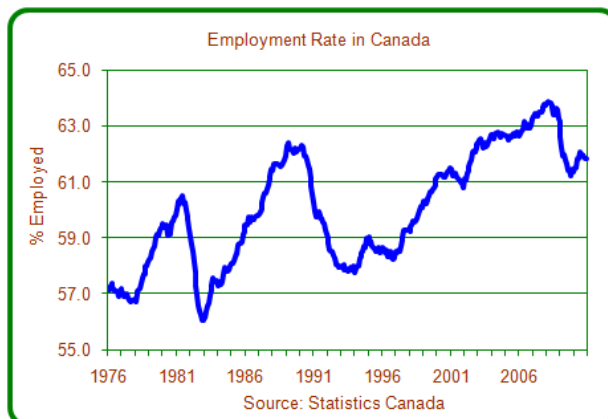
Summary

Findings of this report are based mainly on a dataset of mortgages that were funded during 2010. The dataset consists of 59,000 insured mortgages for home purchase (representing a total of \$16 billion) as well as 26,500 mortgages for refinance (totaling \$6.6 billion). A large majority (97%) is high ratio (loan-to-value ratios exceed 80%); these represent the highest risk mortgages. For the entire population of mortgages that were funded in 2010 (or earlier) risks are lower than in this dataset.

Rapid Expansion of Mortgage Credit

Residential mortgage credit in Canada has expanded very rapidly in Canada during the past decade, at an average of about 10% per year. This growth has understandably raised fears about the level of risk in the mortgage market and possible consequences for the broader economy. The US experience has provided a sobering illustration of the possible repercussions of mortgage risk run amok.

The rapid growth in Canadian mortgage debt is related to a very strong economy. The “employment rate” – the percentage of adults who have jobs – rose rapidly in the second half of the past decade, and reached all-time record levels during 2007 and 2008. This resulted in a need and demand to rapidly expand the housing stock. The expansion of the housing stock was the primary driver of the rapid growth of mortgage debt.



The employment rate data indicates that the recent recession was relatively mild in Canada. In its aftermath, the employment rate remains relatively high in historic terms. This is supporting the continuation of relatively strong housing demand (which is discussed further and illustrated in a chart below).

In the US, the housing market and mortgage market meltdown was worsened by an excess of investment and speculation – estimates by this author suggest that in the US at the market peak about one-quarter of housing activity was due to a “speculative motive”: over-building compounded the other difficulties that emerged. For Canada, on the other hand, the data suggests that housing demand in Canada has been justified by the strength of the economy: there is very little evidence that there has been a speculative mindset and no evidence of excess housing development in Canada.

Prudence by Canadians

The essential finding of this research report is that Canadians – lenders and borrowers – have been highly prudent in the mortgage market. The dataset used here, which concentrates on the highest risk mortgages, indicates that a vast majority of borrowers have left themselves considerable room to absorb increases in interest rates. This is not a new conclusion. Previous research by the Canadian Association of Accredited

Mortgage Professionals has repeatedly found prudent behavior by Canadian mortgage borrowers.

In this dataset, 79% of the mortgages have fixed interest rates and mostly for terms of five years or longer; 21% have adjustable or variable rates and therefore have greater exposure to changes in interest rates.

For variable rate mortgages (for home purchase) that were funded in 2010:

- The average gross debt service (“GDS”) ratio (based on the contracted interest rates) was 19.6% - far below typical lender standards of 32% or 35%. Lenders used higher rates to “qualify” the borrowers.
- The average total debt service (“TDS”) ratio was 28.9%, far below 45% standard.
- Based on the interest rates that lenders used to qualify borrowers, the calculated average GDS ratio was 25.9% and the calculated qualifying TDS ratio averaged 35.2%. These calculated figures are notional and do not indicate actual costs borne by borrowers.
- With changes in mortgage insurance criteria that were introduced in April 2010, the qualifying interest rates used for variable and adjustable rate mortgages were increased (to the typical posted rate for five year mortgages). This had the impact of raising the qualifying GDS and TDS ratios, which meant more potential borrowers were disqualified. The consequence was even lower actual GDS and TDS ratios for variable and adjustable rate mortgages. For the second half of 2010, the average actual GDS ratio is estimated at 19.3% and the average actual TDS ratio was 28.2% - again, far below the respective benchmarks of 32% to 35% for GDS and 45% for TDS.

For fixed rate mortgages:

- The average (actual) GDS ratio was 22.5% and the average TDS 32.5%.
- The rules changes that took effect in April had little impact on these figures, since most of these mortgages have five year terms and could be qualified at the actual mortgage interest rates.

Findings are very similar for mortgages that were made for refinance.

Impacts of Future Rises for Interest Rates

The data base was used to simulate the impact of higher interest rates, at an assumed interest rate of 5.0%. This would represent a rise of about one percentage point for fixed rate mortgages (compared to the current typical rate of 4.0%, after lender discounts). It is a considerably larger rise for variable and adjustable rate mortgages – more than 2.5 points versus current typical rates of 2.3% to 2.5%.

For variable and adjustable rate mortgages:

- The average GDS would increase to 24.6% and the average TDS ratio would increase to 33.7%.
- The detailed data indicates that about 1% of these mortgages would have TDS ratios of 45% or more.
- Applying the results to the broader population, there might be about 800 to 950 buyers whose mortgages were funded during 2010, with variable/adjustable rate mortgages, whose TDS ratio would be 45% or higher.

For fixed rate mortgages:

- The average GDS would increase to 22.3% and the average TDS ratio would increase to 32.5%.
- Less than 1% of these mortgages would have TDS ratios of 45% or more.
- There might be 1,000 to 1,350 buyers for 2010, with fixed rate mortgages, whose TDS ratio would be 45% or higher.

The simulations suggest that in total: among high ratio buyers whose mortgages were funded during 2010, about 2,000 to 2,500 might have TDS ratios of 45% or more, if interest rates rise to the extent assumed. This is an extremely small number relative to the total number of households in Canada (about 13.4 to 13.5 million). The assumed magnitude of interest rate increases is quite large, particularly for variable rate mortgages. This author opines that mortgage interest rates are quite unlikely to rise by the extent assumed for the simulations, and thus risks are even lower than suggested by these simulations.

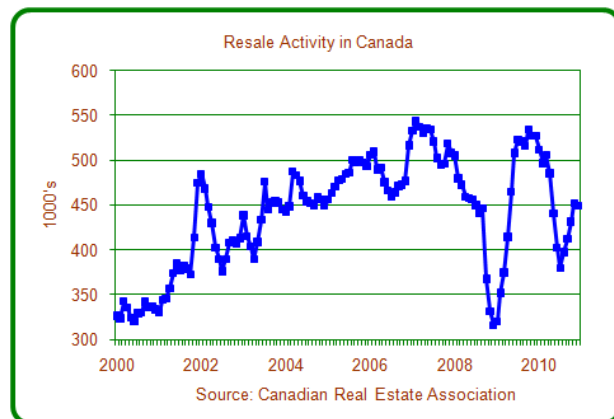
Conclusions

There is always risk in the mortgage market. In the Canadian experience, the major risk factor is loss of ability to pay (especially due to job loss).

A secondary risk factor is unaffordable increases in payments. This research report concludes that this is a negligible risk factor at present and in the near-to-medium term future. Recent discussions about the mortgage market have focused on this negligible factor. There have been some calls for mortgage lending criteria to be tightened further. This analysis concludes that Canadian lending criteria are already tight enough.

In fact, some might argue that with the changes implemented in April 2010, Canadian criteria are currently too tight.

Recent volatility for Canadian resale activity is not an accident. Before the April rule changes there was a wave of activity as some buyers wanted to be qualified under the prior rules. This borrowed demand from the future; subsequently, there was a period of payback. Recent data suggests that the payback period is over. We are probably now seeing a level of activity that is consistent with the state of the economy and the lending environment. A lingering consequence of the recession is that housing activity is weaker than prior to the recession, but in historic terms it can be considered moderate. However, given the changed lending rules, housing demand at present and for the near future is probably lower than it needs to be.



While it will be useful to discuss the appropriateness of current lending criteria, the discussion should not be focused solely on whether to tighten; the possibility of moderating the criteria should also be on the table.

Introduction

Mortgage debt has become quite prominent in discussions of the Canadian economy. Rapid growth of residential mortgage debt (which exceeded 10% per year during the second half of the last decade, and is currently running at about 7% per year) has led to fears that consumers may have difficulty meeting their obligations if and when interest rates rise dramatically from current low levels.



Given events in the United States over the past four years, it is certainly prudent to consider whether there are similar risks in Canada – have consumers and lenders been reckless?

Data on mortgages is very thin in Canada¹. The available data sheds virtually no light on the quality of mortgage credit in Canada, making it difficult to hold a thorough discussion of risks related to mortgage indebtedness.

The Canadian Association of Accredited Mortgage Professionals (“CAAMP”) has attempted to enhance the discussion by generating original data and commentary on the residential mortgage market. This includes twice-per-year consumer surveys² that profile characteristics of Canadian borrowers and their mortgages.

In addition, in January 2010, CAAMP published a special report (“Revisiting the Canadian Mortgage Market”), which used an extensive database to assess the risks for 40,000 actual mortgages that had been initiated during the first 11 months of 2009. The database represented about one-sixth of the growth of the mortgage market, and was concentrated in the “high ratio” segment that represents the greatest risks. The research included an assessment of the borrowers’ ability to afford substantial rises in mortgage interest rates. It concluded

Canadians are indeed assessing their abilities (and vulnerabilities). They are being prudent and the vast majority of Canadian mortgage borrowers are not taking on undue risks. They are prepared for the possibility of rising interest rates.

This report repeats the approach taken a year ago, using an even larger dataset. Once again it is concluded that “risks are small and contained” within the Canadian residential mortgage market. The year ago study focused entirely on mortgages for home purchases. This report adds data and analysis for mortgages for refinance.

¹ Available data on residential mortgages includes volumes of credit outstanding (published by the Bank of Canada and illustrated in the chart above), approvals of mortgages for new and existing housing (published by Canada Mortgage and Housing Corporation), mortgage arrears (published by the Canadian Bankers Association, and representing seven major lenders), and data on asking interest rates for mortgages, available at a multiplicity of websites.

² Published each fall as “Annual State of the Residential Mortgage Market in Canada” and each spring under various titles. The Survey Reports are available at www.caamp.org.

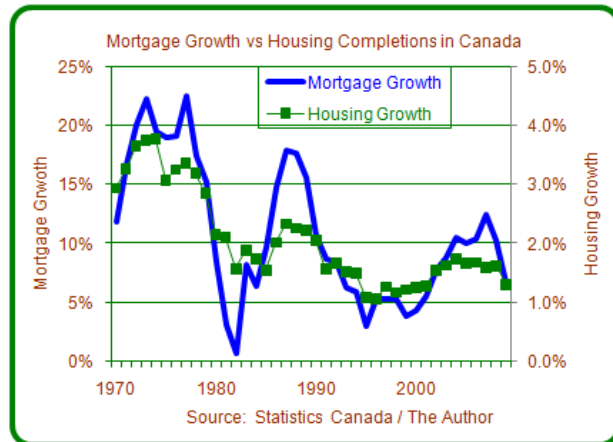
Rapid Growth of Mortgage Debt

The volume of outstanding residential mortgage credit in Canada surpassed \$1 trillion during August 2010 and as of October 2010 was \$1.018 trillion³. This was about 57% higher than just five years earlier, representing a growth rate of 9.4% per year. This growth rate was far in excess of growth of incomes and therefore mortgage debt has become a growing burden for Canadian households.

Subsequent to the recession, housing activity has slowed, bringing a corresponding deceleration for the mortgage market. As of October 2010, the annual growth rate was 7.0% (an expansion of \$66 billion). Growth of mortgage credit has slowed compared to prior years, but remains quite robust.

Growth of mortgage credit occurs through several processes. This section briefly discusses the processes and provides estimates of the growth due to each process⁴. Due to its technical nature, some readers might choose to skip to Page 8.

- Expansion of the housing inventory. Completions of new dwellings increase the number of properties that have mortgages. However, not all new housing (or existing) has mortgages. This author's analysis of data from the 2001 Census indicates that about 80% of newly completed ownership dwellings have mortgages (and the percentage is similar for recently-sold existing dwellings). The chart to the right contrasts the rate of mortgage growth (percentage change per year) with the rate of housing completions (as a percentage of the existing housing stock) and illustrates quite clearly that growth of the housing inventory has been a major factor for growth of mortgage credit. Construction of new homes was relatively strong prior to the recession. The calculations suggest that during 2005 to 2009, housing completions resulted in about \$38 to \$40 billion per year in new mortgages, more than one-half of total mortgage growth, which averaged \$72.5 billion per year during the same period.
- Sales of existing homes represent a larger amount of housing activity, but the impact on mortgage demand is less substantial than for new housing, for two reasons. Firstly, average mortgage amounts are about 30% lower than for new homes. Secondly, a sale of an existing property often involves the discharge of an existing mortgage, which reduces the net impact. The overall impact of resale activity on mortgage growth is uncertain, but appears to be about \$18 to \$20 billion per year.



³ This total, published by the Bank of Canada, includes mortgages for owner-occupied dwellings and for residential investment properties and vacant properties. CAAMP's Fall 2010 report "The Annual State of the Residential Mortgage Market" conducted a survey of consumers, and that data suggests that mortgages on owner-occupied properties amounted to about \$820 billion.

⁴ The estimates have been developed by combining various data sources and must be seen as "back-of-the-envelope" approximations rather than exact data.

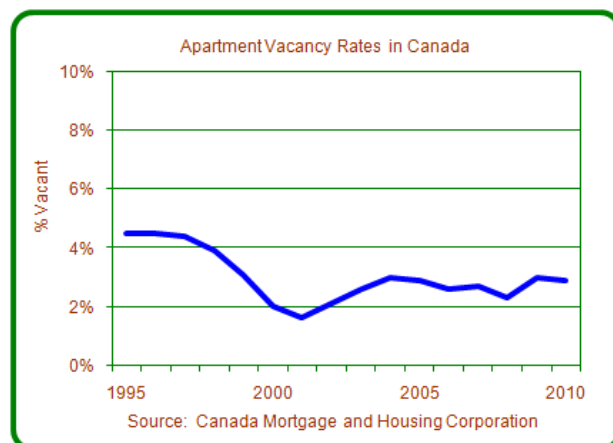
- Equity take-out has been estimated via CAAMP's consumer surveys. The most recent estimate is that \$46 billion of new mortgage debt resulted during 2010. Pre-recession estimates were of similar magnitude.
- On the other hand, there are reductions in mortgage indebtedness through two main processes.
- Principal repayment via monthly mortgage payments is about \$35 billion per year.
- Lump sum principal repayments are estimated at \$8 to \$10 billion per year.

In total, these additions and subtractions amount to about \$60 billion per year of mortgage credit for owner-occupied primary dwellings (as of 2009). This is less than the \$68.5 billion growth of total residential mortgage credit reported by the Bank of Canada. The difference is attributable to "other" residential mortgages, which are not owner-occupied primary residences, including investment and vacation properties.

Given the rapid growth in mortgage credit that is associated with new dwellings, we must be alert to the possibility that there was over-building in Canada – after all, in the US excessive buying of investment properties was a significant contributing factor in the housing market collapse.

The Canadian data, however, indicates that this has not been an issue here.

- Canada lacks data on vacancies in the home owner sector. However, data from the Canadian Real Estate Association suggests that growth in supplies of new listings has been more-or-less in line with growth of the housing inventory – the chart to the right shows listings as a share of the housing inventory. If there had been excessive investment, this indicator should have spiked during the past half decade, but it showed only a moderate rise that was not out-of-line historically.
- Vacancy data is available for rental apartments. If there was excessive building, the vacancy rate would have spiked during the second half of the past decade, but it did not.



The available data indicates that rapid growth of mortgage credit in Canada has been due to strong demand for housing that resulted from rapid job creation. There is no evidence that the growth has been "speculative". This, however, leaves unanswered a critical question of whether Canadians can

afford the mortgages they have taken on. The remainder of this report addresses that issue.

The Data

Data on the Canadian mortgage market is extremely limited. This research project has compiled an original “microfile” dataset that has been used to profile characteristics of recent loans and to simulate the impacts of future interest rates.

The data, provided by corporate members of CAAMP, includes about 59,000 mortgage loans, totaling just under \$16 billion, which were funded during 2010, for home purchases only (excluding renewals or refinances of existing mortgages). Over the same period, total mortgage activity for home purchases was in the range of \$60 billion. This dataset therefore represents about one-quarter of total activity. There is no guarantee that this dataset exactly represents the characteristics of all new mortgages, but it is highly likely that it provides a close approximation.

A second component for his year’s research has compiled data on high-ratio mortgages that were funded in 2010 for the purpose of refinance (rather than for purchases). That dataset includes about 26,500 mortgages, with a total principal value of \$6.6 billion.

The datasets were designed to include only insured mortgages. A vast majority of the mortgages is high-ratio and therefore the data represent the most risky mortgages: to the extent that the “true” risk profile of the Canadian mortgage market differs from the findings of this report, the level of risk is even lower than portrayed here.

About CAAMP

CAAMP is the national organization representing Canada’s mortgage industry. With over 12,000 mortgage professionals representing over 1,700 companies, its membership is drawn from every province and from all industry sectors. This diversified membership enables CAAMP to bring together key players with the aim of enhancing professionalism.

In 2004, CAAMP established the Accredited Mortgage Professional (“AMP”) designation to enhance educational and ethical standards for Canada’s mortgage professionals.

Established in 1994, CAAMP has taken a leadership role in Canada’s mortgage lending industry and has set the standard for best practices in the industry.

CAAMP’s other primary role is that of consumer advocate. On an ongoing basis CAAMP aims to educate and inform the public about the mortgage industry. Through its extensive membership database, CAAMP provides consumers with access to a cross-country network of the industry’s most respected and ethical professionals.

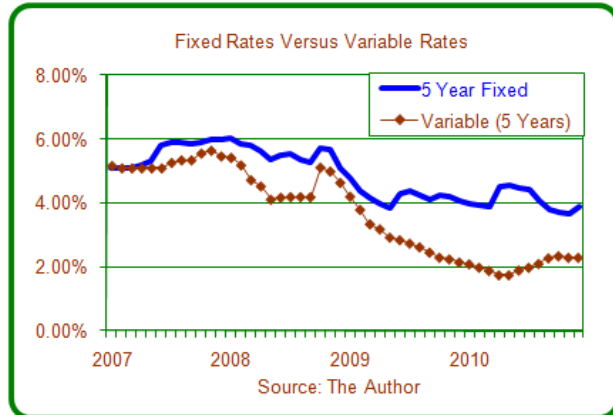
About the Author

Will Dunning is an economist (BA, MA), and has specialized in the analysis and forecasting of housing markets since 1982. In addition to acting as the Chief Economist for CAAMP he operates an economic analysis consulting firm, Will Dunning Inc.

Mortgages for Home Purchase

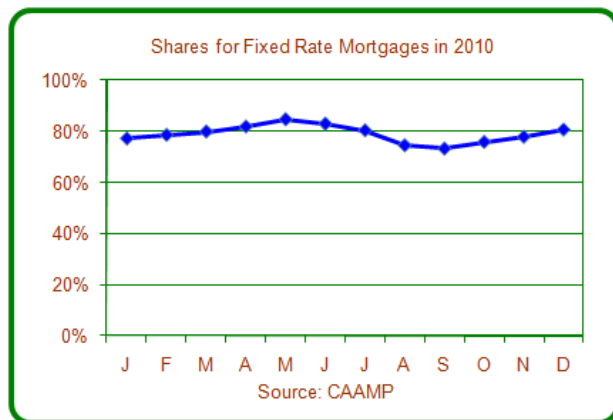
Caution by Lenders and Borrowers

A key concern has been the extent to which borrowers are choosing variable rate mortgages. The chart to the right shows advertised interest rates for variable rate mortgages and fixed rate mortgages (for lenders that are offering discounts in both cases). The spread between these rates has been quite large during the past two years, which might encourage more use of variable rate mortgages.



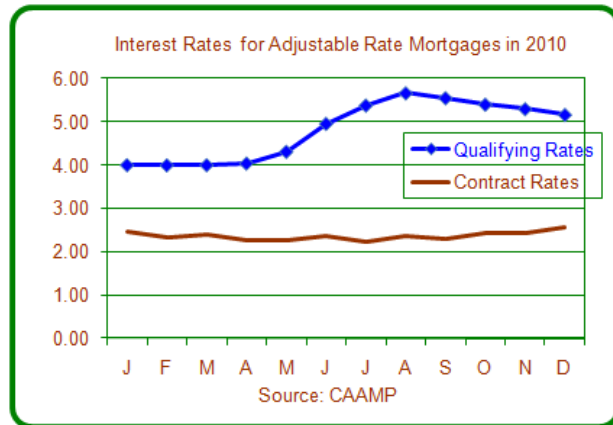
Borrowers with variable rate mortgages may be exposed to greater risks, due to the possibility of sudden rises of interest rates. However, CAAMP's consumers' surveys have found that the shares for fixed and variable rate mortgages have changed very little over the past half decade. This suggests that consumers' choices of fixed versus variable rates are influenced less by the differences in costs and more by their risk tolerances – a majority of consumers show a preference for predictable payments, regardless of the cost differential.

The dataset prepared for this research study also indicates that fixed rates are by far the majority choice for high-ratio borrowers (the borrowers who are exposed to the greatest risks related to interest rates). In this dataset, 79% of mortgages funded in 2010 had fixed rates; the remaining 21% have adjustable or variable rates. The year ago study found that in 2009, 86% of the mortgages had fixed rates. The 79% share for 2010 does indicate that there has been some shifting of shares, which is the consequence of the increased spread between interest rates for fixed and variable rate mortgages: in 2009 the spread averaged 1.3 percentage points; in 2010 it was considerably larger at 2.0 points.

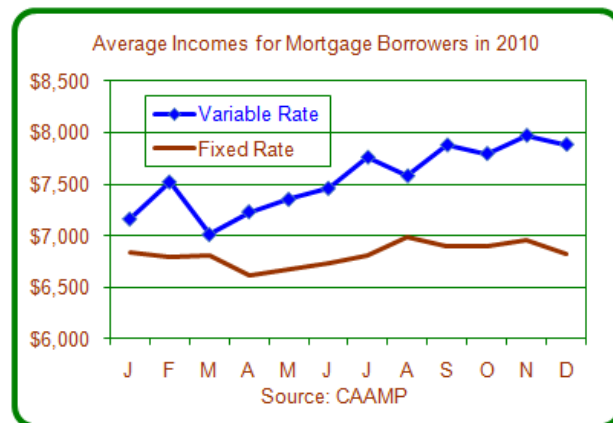


The chart above illustrates that shares for fixed and variable rate mortgages were roughly flat during 2010. During the year mortgage lending criteria become relatively more restrictive for variable rate mortgages - with the changes that took effect in April, variable rate mortgages went from being qualified at lenders' typical rates for three year mortgages to the higher posted rates for five year mortgages.

As is shown in the chart to the right, the average qualifying rate was about 4.0% in the early months of 2010, but increased to well over 5% following the change in rules. It might have been expected that there would be shifting away from variable rates during the second half of the year. To the contrary, in this dataset, the change in qualification rules did not significantly alter choices of fixed versus variable rates. The conclusion is that consumers' choices between fixed versus variable rates were based on actual mortgage costs, rather than the notional costs that were used in the qualification process.



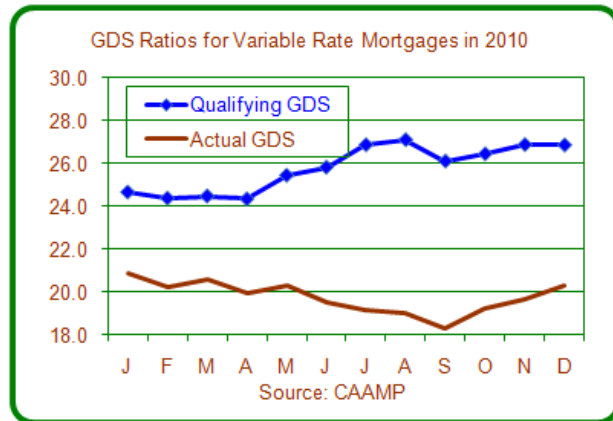
However, there is some evidence that fewer potential home buyers qualified for variable rate mortgages following the change in rules. The chart to the right shows average incomes for borrowers by types of mortgage. Following the rule changes, average incomes increased slightly for those choosing fixed rate mortgages (during the second half of the year the average income was 2% higher than during the first half). There was a larger increase (7%) for variable rate mortgages – this implies that fewer lower income buyers were able to qualify for variable rate mortgages. Admittedly, the changes in incomes have also been influenced by changes in affordability, resulting from rising housing values and increases in interest rates for variable rate mortgages – these rates rose by 0.65 to 0.75 percentage points (depending on the lender) during June to September. Thus, the rise in incomes for consumers taking variable rate mortgages was due to a combination of the rule changes and rising costs.



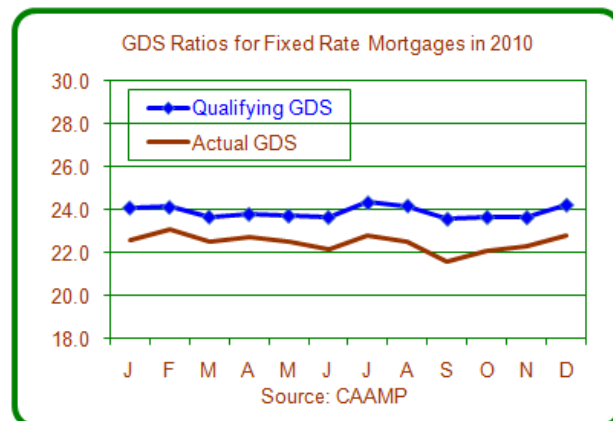
Data on gross debt service (“GDS”) ratios also illustrates the impacts of the changed rules, and confirms that caution is being exercised by buyers and lenders.

A pair of charts below shows gross debt service ratios as calculated by lenders based on the qualifying interest rates and the actual GDS ratios that result from the contracted interest rates.

The first chart shows the data for variable/adjustable rate mortgages. The change in rules resulted in a substantial rise in the qualifying GDS ratios: the average ratio in the second half of the year was 26.7%, well above the 24.9% ratio seen in the first half of the year. These calculated GDS ratios are notional: what really matters to the borrower is the actual GDS ratio, based on the contracted interest rates. The data shows that actual GDS ratios fell following the change in rules: the average actual GDS ratio for variable/adjustable rate mortgages was 19.3% in the second half of the year, versus 20.2% in the first half. The fall in actual GDS ratios combined with the rise in average incomes (discussed above) suggests that fewer buyers were able to qualify for variable rate mortgages following the rule changes.



For fixed rate mortgages, the average GDS ratio (actual) is about 22.5% and did not vary by much during the year. Actual GDS ratios for fixed rate mortgages are higher than for variable rate mortgages, because qualifying criteria are stricter for variable rate mortgages. It also seems that borrowers with variable rate mortgages are deliberately leaving themselves more room to absorb future increases in their interest rates.



The average GDS ratios for these mortgages are far below the typical maximum threshold of 32% to 35% – both before and after the rule changes. For variable rate mortgages, the average GDS is currently in the range of 20%; for fixed rate mortgages, the average GDS ratio is about 22.5%. The table below shows the distributions of GDS ratios.

- Based on the qualifying interest rates, there is a large minority of variable/adjustable rate mortgages with high GDS ratios (one-third of these variable rate mortgages have qualifying GDS ratios of 30% or higher). However, looking at actual GDS ratios (the second column of data) just 4% of these mortgages have GDS ratios of 30% or higher. More than one-half (52%) have actual GDS ratios below 20% and a further 29% have GDS ratios from 20% to 24.9%: 81% of variable/adjustable rate mortgages have actual GDS ratios below 25%. Moreover, these are the figures for the entire year. For the second half of the year (reflecting the changed rules), just 3% of variable rate mortgages have GDS ratios of 30% or more and 84% have GDS ratios below 25%.
- These GDS ratios indicate that these borrowers have substantial room to afford future rises in their mortgage interest rates. Simulations presented below confirm this suggestion.
- For fixed rate mortgages, the distributions are less dramatic: 16% of the mortgages have actual GDS ratios of 30% or more and 64% have GDS ratios below 25%.

Table 1
Distribution of GDS Ratios for Home Buyer Mortgages Funded During 2010
Variable Versus Fixed Rate Mortgages

Range	Variable/Adjustable Rates		Fixed Rates	
	Qualifying Interest Rate	Actual Contracted Interest Rate	Qualifying Interest Rate	Actual Contracted Interest Rate
< 20%	24%	52%	32%	39%
20-24.9%	20%	29%	24%	25%
25-29.9%	23%	15%	22%	20%
30-34.9%	19%	4%	14%	11%
35% or more	14%	< 1%	8%	5%
Total	100%	100%	100%	100%
Average GDS	25.9%	19.6%	23.9%	22.5%

Source: CAAMP

Analysis of total debt service (“TDS”) ratios shows very similar patterns:

- For variable/adjustable rate mortgages, actual GDS ratios are far below the calculated qualifying figures.
- Looking at the actual TDS rates for variable rate mortgages, the figures were markedly lower in the second half of the year (28.2% - well below the standard threshold of 45%) than in the first half of the year (29.9%). For the entire year the average was 28.9%.
- For fixed rate mortgages, there was little variation during the year (with an average of 32.5% for the entire year).
- Actual TDS ratios are considerably lower for variable/adjustable rate mortgages than for fixed rate mortgages.

The distribution of TDS ratios (shown in the next table) also shows that a vast majority of these borrowers have considerable capacity to absorb increases in their interest rates.

- For variable rate mortgages, only a small handful have actual TDS ratios of 45% or more and just 2.5% have TDS ratios of 40% or more. More than one-half (56%) have TDS ratios below 30%; 85% have ratios below 35%. Among these borrowers, there is considerable capacity to afford higher interest rates.
- For fixed rate mortgages, once again the data is less dramatic, but it also shows relatively few borrowers with high TDS ratios.

Table 2
Distribution of TDS Ratios for Home Buyer Mortgages Funded During 2010
Variable Versus Fixed Rate Mortgages

Range	Variable/Adjustable Rates		Fixed Rates	
	Qualifying Interest Rate	Actual Contracted Interest Rate	Qualifying Interest Rate	Actual Contracted Interest Rate
< 30%	20%	56%	27%	34%
30-34.9%	22%	30%	24%	25%
35-39.9%	35%	12%	30%	29%
40-44.9%	22%	2%	19%	13%
45% or more	1%	0.1%	1%	0.2%
Total	100%	100%	100%	100%
Average TDS	35.2%	28.9%	33.9%	32.5%

Source: CAAMP

Looking Forward

The risk, which has been well-emphasized by commentary over the past two or three years, is that future rises in mortgage rates will result in increasing mortgage payments, and could push borrowers into financial difficulty.

For those with fixed rate mortgages, the increases in payments would occur at the scheduled renewal dates.

For those with adjustable or variable rate mortgages, the impacts on payments would be sudden⁵. As is discussed below (and has been strongly hinted above), increased payments would be manageable for most of these borrowers, since their ability to pay has been tested at interest rates higher than their actual interest rates.

This section of the report uses the CAAMP database to simulate the impacts of rising interest rates. The assumptions used in the simulations are described in the box to the right.

Higher mortgage interest rates – as and when they occur – will result in increased mortgage payments for most borrowers. However, for many borrowers, increases in incomes (even with the cautious assumption that incomes will increase by 2.5% per year) will more than offset

Assumptions for the Simulations

Assumptions for mortgage interest rates are based on current typical rates, with increases based on the most recent forecasts published by the major banks.

These forecasts lead to assumptions for mortgage rates as of the end of 2012. The assumptions are applied as follows: for adjustable and variable rate mortgages, it is assumed that the change in interest rate takes effect in two years; for fixed rate mortgages the increases are applied at the scheduled ends of the terms.

- For fixed rate mortgages: the bank forecasts for bond yields suggest that rates may increase by about one point by the end of 2012. Added to current typical rates (after lender discounts) of about 4.00% for five year mortgages, the assumed rate is 5.00%.
- For adjustable/variable rate mortgages: forecasts for the Bank of Canada Overnight Target Rate vary widely, with expectations for the end of 2012 ranging from 2.25% to 3.5% (versus the current rate of 1.00%). Applying the maximum expected increase (2.5 points) to current typical rates of 2.25% to 2.5% indicates a rate of 5.0% by the end of 2012.

Incomes rise by 2.5% per year. This is a conservative assumption, as most of these recent borrowers are early in their careers and can expect raises due to promotions, in addition to cost of living adjustments. Other costs for housing and debt service that are included in the calculation of GDS and TDS increase by 2.5% per year.

It is assumed that no prepayments are made. Therefore, reductions in mortgage principals are calculated based on scheduled amortization. To the extent that borrowers make prepayments, outstanding principals will be lower than assumed and therefore the impacts of changing interest rates will be less than estimated. CAAMP's consumer research has found that a substantial share of mortgage holders make voluntary additional efforts, including making lump sum payment or increasing their regular payments beyond required amounts. In the Fall 2010 survey 35% of mortgage borrowers had made such additional voluntary efforts during the past 12 months.

At the time that the interest rates are reset, revised payments are calculated taking into account changes in income, reductions in mortgage principals, and shortening of the remaining amortization periods (which results from the passage of time).

⁵ To be more precise, the increases would be sudden for most of the holders of adjustable and variable rate mortgages. A small share of these mortgages have payment levels that are fixed: as the interest rate changes there are impacts on the rate at which the principal is amortized and the payments aren't adjusted until the scheduled renewal date. In the simulations, for all types of variable and adjustable rate mortgages, the payment adjustments are applied two years after the start of the mortgage.

the increased mortgage payments.

- The average GDS ratio (currently 21.7% based on actual, contracted interest rates) would rise to 22.7%; the average TDS ratio would rise from the current 31.5% to 32.7%.
- For the borrowers with fixed rate mortgages (the majority of borrowers), the average GDS ratio would be roughly unchanged (from the current 22.5% to 22.3%). Similarly, the average TDS ratio would be unchanged, at an average of 32.5%.
- For borrowers with variable/adjustable rate mortgages, the average GDS would rise significantly, from the current 19.6% to 24.6%. The average TDS would rise from 28.9% to 33.7%.

Of course, averages do not tell the full story. The next table further elaborates the results by showing the distributions of GDS and TDS ratios, after the assumed rises in rates. Overall, as is illustrated in this table, combining both groups of mortgages, GDS and TDS ratios would remain far below typical underwriting thresholds (32% to 35% for GDS and 45% for TDS). Highlights from the detailed simulations are:

- For borrowers with fixed rate mortgages, about 10% would have relatively high GDS (30% to 34.9%) and 11% would have TDS ratios from 40% to 44.9%. 5% would have high GDS ratios of 35% or more.
- Very few of these borrowers (less than 1%) would have TDS ratios of 45% or more.
- For borrowers with adjustable and variable rate mortgages, the share with relatively high GDS ratios (30% to 34.9%) would be substantial, at 17% and a further 8% would have GDS ratios of 35% or more. TDS ratios, which are more important in assessing debt burdens, portray a less severe outcome: 13% would have relatively high ratios (40% to 44.9%), but just 1% would have high TDS ratios (45% or more).
- These findings represent small numbers of households.
- With several steps, we can convert these findings into estimates of the numbers of households affected.
- Looking first at those with variable/adjustable rate mortgages:
 - There are about 13.4 to 13.5 million households in Canada.
 - Each year about 2.5% to 3% of households are first-time home buyers (about 350,000 to 400,000).
 - Of these, an estimated 21% took adjustable or variable rate mortgages in 2010 (70,000 to 85,000).
 - The simulations suggest that 14% of these borrowers would have TDS ratios of 40% or more following the potential rises of interest rates.
 - Combining the factors, these findings represent about 10,000 to 12,000 households, or only 0.075% to 0.090% of Canadian households. While these events would be very stressful for the people involved, for the nation as a whole this represents a very small risk
 - Narrowing the criteria, to TDS ratios of 45% or more, the estimated share of variable rate mortgages affected is estimated at 1.1%. Combining the factors, these would represent about 800 to 950 households, representing a microscopic challenge at a national level.
- For those with fixed rate mortgages:
 - The 79% of first-time buyers who took fixed rate mortgages represent about 250,000 to 300,000 households.
 - The simulations suggest that 12% of these borrowers would have TDS ratios of 40% or more following the potential rises of interest rates.

- Combining the factors, these findings represent about 30,000 to 38,000 households, or about 0.25% of Canadian households.
- Taking as a threshold the standard benchmark of TDS ratios of 45% or more, the estimated share of fixed rate mortgages affected is estimated at just 0.4%. Combining the factors, these would represent about 1,000 to 1,350 households, again representing a microscopic challenge at a national level.

Combining the estimates for the two types of mortgages, for all first-time buyers in Canada during 2010, about 2,000 to 2,500 are at risk of having high TDS ratios (45% or more) following the assumed rise of interest rates. This is a very small number – less than 0.02% of all Canadian households.

Table 3			
Distribution of Future GDS and TDS Ratios			
Based on Assumed Future Interest Rates			
Mortgages for Home Purchase			
Distributions	Adjustable/ Variable Rates	Fixed Rate Mortgages	Combined
GDS Ratios			
< 20%	27%	40%	37%
20-24.9%	23%	26%	25%
25-29.9%	25%	20%	21%
30-34.9%	17%	10%	12%
35% or more	8%	5%	5%
Total	100%	100%	100%
Average GDS	24.6%	22.3%	22.7%
TDS Ratios			
< 30%	25%	33%	31%
30-34.9%	27%	27%	27%
35-39.9%	34%	29%	30%
40-44.9%	13%	11%	12%
45% or more	1%	< 1%	< 1%
Total	100%	100%	100%
Average TDS	33.7%	32.5%	32.7%
Source: CAAMP			

Overall, this data confirms that recent mortgage lending, in an environment of very low interest rates, results in some risk of financial difficulties if and when interest rates increase in future. However, the degree of risk does appear to be extremely small.

Mortgages for Refinance

Some Impacts from Changed Rules

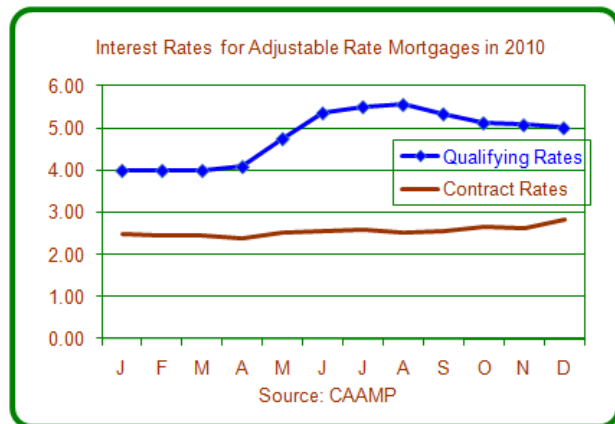
The dataset for this section includes more than 26,000 mortgages that were funded for refinance during 2010. All are insured loans. The total loan amount is \$6.6 billion.

Characteristics of these mortgages are broadly similar to the mortgages for home purchase (which were analyzed in the prior major section):

- 79% are fixed rate mortgages.
- Among the fixed rate mortgages, two-thirds have terms of five years or longer.
- Combining these factors, 53% have fixed rates and terms of five years or longer.

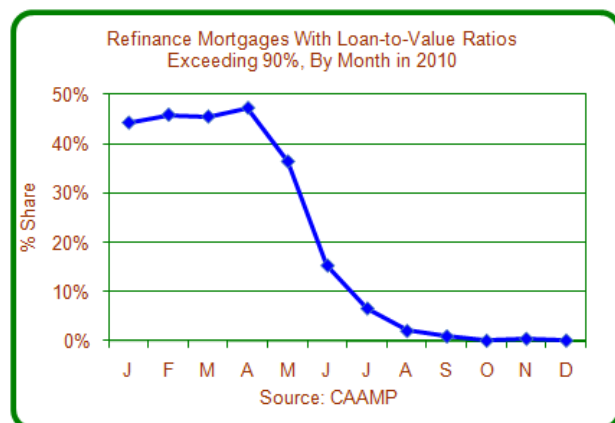
With changes in mortgage insurance rules that took effect in April 2010, there was a large rise in the qualifying interest rates used for variable/adjustable rate mortgages.

As was seen for purchase loans, there were changes in GDS ratios following change in the qualification rules: for adjustable rate mortgages, the calculated qualifying GDS ratios averaged 22.8% in the first half of the year but increased to 24.5% for the second half. The actual GDS ratios (calculated on the contracted interest rates) however, did not change materially during the year, averaging 18.8% in the first half of the year and 18.7% in the second half. For the full year, TDS ratios averaged 33.9% based on the qualifying interest rates and 29.0% based on actual contracted interest rates.



For fixed rate mortgages, qualifying GDS ratios averaged 22.6% during the year; actual GDS ratios averaged 21.2%. TDS ratios averaged 33.0% based on the qualifying interest rates and 31.5% based on actual contracted interest rates.

A significant factor is the reduction in the maximum loan-to-value ratio, to 90%. The share for mortgages at 90% or more of property value fell to nil, but there was a sharp rise in the share with loan-to-value ratios from 85% to 90%, from 37% in the first half of the year to 68% in the second half. The share with ratios lower than 85% rose from 24% in the first half to 30% in the second half. Thus, the changes in the rules had some impact on loan-to-value ratios.



The average loan amount was the same in the first half of the year as in the second half. Since incomes rose, the loans taken in the second half of the year represent a slightly smaller share of the borrowers' potential capacities: the ratio of loan amount to income averaged 2.85 in the first half of the year, but fell to 2.81 in the second half, a drop of 1.3%.

Looking Forward⁶

The data presented above on actual GDS and TDS ratios for these refinance mortgages suggests that the borrowers have left themselves a great deal of room for future rises in interest rates. The simulations of impacts of rising rates confirm that suggestion. The table below shows that:

- For variable/adjustable rate mortgages, about 12% would have TDS ratios of 40% or higher, although just 1% of the borrowers would have TDS ratios of 45% or more.
- For fixed rate mortgages, about 9% would have TDS ratios of 40% or higher; less than one half of a percent would have TDS ratios of 45% or more.

These estimates suggest strongly that there are very low interest rate related risks associated with refinance mortgages.

Table 4			
Distribution of Future GDS and TDS Ratios			
Based on Assumed Future Interest Rates			
For Refinance Mortgages			
Distributions	<i>Adjustable/ Variable Rates</i>	<i>Fixed Rate Mortgages</i>	<i>Combined</i>
GDS Ratios			
< 20%	37%	47%	45%
20-24.9%	23%	24%	24%
25-29.9%	21%	17%	18%
30-34.9%	13%	8%	9%
35% or more	6%	3%	4%
Total	100%	100%	100%
Average GDS	22.7%	20.8%	22.7%
TDS Ratios			
< 30%	32%	41%	39%
30-34.9%	27%	26%	26%
35-39.9%	29%	24%	25%
40-44.9%	11%	8%	9%
45% or more	1%	< 1%	< 1%
Total	100%	100%	100%
Average TDS	32.6%	31.0%	32.7%
Source: CAAMP			

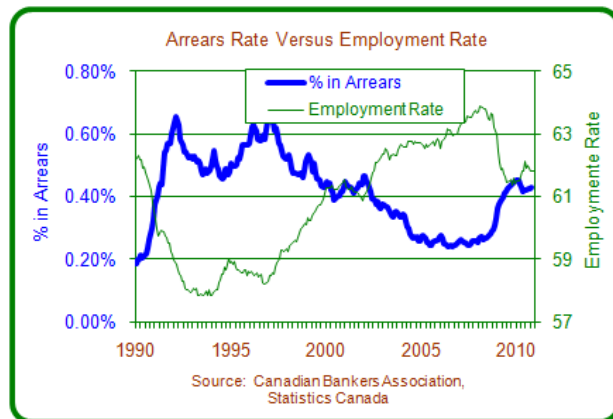
⁶ In this section, no estimates are developed of the absolute numbers of households falling into various categories, due to the lack of data on the total numbers of mortgages refinanced.

Some Mortgage Borrowers are Challenged

Data from the Canadian Bankers Association – which covers 7 major banks – shows that there was a rise in mortgage arrears during the recession. Prior to the recession the arrears rate was less than 0.30%. During the winter of 2008/09, however, the arrears rate increased rapidly. Since the end of the recession, the arrears rate has fallen slightly. The most recent data (as of October 2010) shows an arrears rate of 0.43%. While the increased rate is indicative of increased financial difficulties, it is lower than was seen during most of the 1990s (when the average arrears rate was 0.50%).

In the Canadian context, most mortgage defaults are due to reduced ability to pay, including especially job loss, but also income reductions due to reduced hours or reduced hourly pay rates. Marital breakdown is also a cause of financial difficulty (this might usually fit into the category of reduced ability to pay).

The chart shows the importance of the employment situation. It contrasts the arrears rates with the Canadian “employment rate” (the percentage of adults who are employed). The data shows very clearly that changes (up or down) in the employment rate are followed by changes in the arrears rate (in the opposite direction). The job losses that occurred during the recession are the primary cause of the rise in mortgage arrears: a sharp drop in the employment rate was followed several months later by increased arrears.



The employment rate has recovered only some of the losses incurred during the recession (shown on Page 1). This partial recovery of the employment environment has allowed for only a partial recovery of mortgage arrears. The future path for arrears will be highly influenced by economic trends, particularly the rate of job creation.

A separate cause of mortgage default is “over-extension” – debt levels were reasonable at the time of getting the mortgage (as evidenced by GDS/TDS ratios), but credit was added after the fact, such as lines of credit, credit cards, and buy-now-pay-later retail offerings. There is no reason to believe that over-extension is becoming more prevalent, especially given the caution shown by the vast majority of mortgage borrowers. Moreover, it is said that lenders have generally become more cautious about extending credit, especially to individuals with lower credit ratings.

A third cause is unaffordable increases in mortgage payments. This caused considerably difficulty in the United States, as low introductory rates were replaced by market interest rates and payments rose substantially. In Canada, this has been virtually non-existent as an issue.

But, this third category of risk is the source of recent concerns about future threats. This study concludes that very few Canadians face unaffordable increases in mortgage costs.