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Residential Mortgage Securitization in Canada

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Residential Mortgage Securitization

Introduction

As an asset class, residential mortgages represent the single largest group of assets securitized in Canada. As of December 31, 1999, approximately $22 billion had been securitized, representing 33% of the total ABS market. Residential mortgages also represent one of the safest classes of assets available from a credit quality perspective. Even prior to credit enhancement and utilization of spread, net loss levels for most bank mortgage portfolios have historically remained below 25 basis points per year as measured as a percentage of outstanding amounts. For conventional residential mortgages, an embedded level of enhancement exists because of loan to value restrictions (minimum 25% equity requirement, more in rural areas depending on the lender) and this accounts for the low level of losses on these portfolios. While generally being one of the safest classes of assets, some categories of residential mortgages can have significantly higher risk levels. Understanding these risks and the appropriateness of enhancement levels and structural considerations are necessary for any investor in asset-backed securities. Here, we evaluate various characteristics of residential mortgages along with discussions on historical price data in a number of major housing markets. This study describes our analytical approach, along with adjustments, data requirements, and sample required credit enhancement calculations.

Mortgage Products

Introduction

Residential mortgage products can vary substantially in terms of their characteristics and risks. While a significant portion of residential mortgage product follows fairly uniform guidelines suggested by Canada Mortgage and Housing Corporation (“CMHC”) and underwriting standards followed by the Schedule I banks are quite consistent, there is an increasing universe of non-conforming mortgages. Even mortgages originated under standard guidelines are subject to significant performance variability depending on the terms of the mortgage, the nature of the property, and the borrower. Understanding the issues between the various mortgage variables and the influence they have upon the performance of mortgage pools are a prerequisite for any residential mortgage securitization.

NHA Insured

NHA insured residential mortgages are mortgages that conform (so called conforming mortgages) with the guidelines of the CMHC and are insured by CMHC under the National Housing Act (“NHA”). The NHA was enacted to promote affordable housing for Canadians. Without mortgage insurance, residents in rural communities or residents without substantial downpayments would be much less likely to obtain a mortgage. CMHC is an agency of the Government of Canada, and has a credit rating equivalent to the Government of Canada (rated AAA for Canadian dollar obligations, AA (high) for foreign currency obligations, and R-1(high) for short-term obligations all with Stable trends as of July 2000). Borrowers who require a mortgage in excess of 75% of the value of their home are required to purchase mortgage insurance that reimburses principal and interest to the lender to the extent that the borrower defaults, and proceeds from enforcement are insufficient to repay amounts owed. In return for the insurance, CMHC charges a premium to the homeowner, which is typically amortized along with the mortgage balance.

The securitization of NHA-insured mortgages can take two forms. Pools of mortgages may be accumulated and Mortgage-Backed Securities (“MBS”) may be issued under the NHA MBS program. Timely repayment of principal and interest in respect of the MBS are guaranteed under this program. The second form of NHA-insured mortgages are guaranteed in respect of full repayment of principal and interest on the individual mortgages (as opposed to the security held by the investor). In the latter case, the insurance provided by CMHC is not an absolute timeliness of payment guarantee but is a guarantee of ultimate recovery of principal (and to a lesser extent interest) subject to satisfaction of certain conditions. Insurance does NOT cover any payments made for purchased mortgages in excess of the face amount, and there may be delays between the time of the default and ultimate repayment. The repayment is also essentially a prepayment in full, but does not attract penalties for early payout. In all cases, the mortgage servicer may be required to demonstrate due diligence with respect to documentation and underwriting. The servicer may also be required to initiate legal proceedings, take possession, and solicit defaulted properties. Claims may be turned away if the mortgage servicer does not perform as required by CMHC.

Other Insured

Where the underlying mortgages are insured by a party other than CMHC, the rating on the debt without any other forms of enhancement would be constrained by the rating of the guaranteeing party (assuming the guarantor has a higher rating than the portfolio). Matters related to interest rate and servicer risk remain relevant, as is the case with CMHC-insured mortgages. Insurance provided by parties other than CMHC is a minor part of the Canadian marketplace, though there is potential that this will grow as various U.S. players eye the Canadian market.
Conventional Mortgages (Conforming)

Conventional or conforming mortgages are residential first mortgages on single-family dwellings of four units or less and with a loan to sale price or appraised value of 75% or less at the time of origination. This represents the largest single class of residential mortgages and is the type of mortgage generally underwritten by the major financial institutions in Canada (restrictions under banking and trust companies legislation restrict high LTV mortgages unless insurance is obtained on the excess portion).

The evaluation of large conforming mortgage pools is relatively straightforward. In fact, a general template is now used by DBRS, after evaluating a significant number of such transactions. The general template will be discussed later in this study.

Non-conforming Mortgages

In very simple terms, a non-conforming mortgage is any residential mortgage that does not conform with CMHC underwriting guidelines. This may include high LTV mortgages (over 75%), higher than normal debt service ratios (TDSR and GDSR – see definitions in Appendix B), second or third mortgages, lack of documentation, etc. Because each pool of non-conforming documentation is unique, the individual characteristics must be evaluated in far greater depth than would be the case for conforming mortgages. With the broad range of possible mortgage types, the non-conforming definition is not particularly useful. As such, more appropriate and accurate descriptions are generally used such as sub-prime, second mortgages, high ratio mortgages, etc.

Sub-prime

Sub-prime mortgages are probably the most interesting class of mortgage products securitized in the Canadian marketplace. The profitability and pitfalls of this market are readily apparent if one has tracked the U.S. sub-prime marketplace. Obviously as the portfolio moves from an “A” quality to a “D” quality, the probability of default increases (and at an increasing rate). This is because the ability (or willingness) to pay is decreased. Careful analysis of the underlying mortgagees is important because different variables have a significant impact upon the required level of enhancement. For example, a “C” mortgage will have far different enhancement levels if the diminished creditworthiness of the mortgagees also results in high LTVs or is reflected in high TDSR/GDSR ratios. A poor credit history coupled with prudent lending guidelines as reflected in lower LTVs and conservative TDSR/GDSR ratios will produce a portfolio with a significantly different loss performance than would a portfolio that has higher LTVs and lenient TDSR/GDSR guidelines. Not only is the mortgagee more likely to be able to deal with temporary cash flow setbacks in the first situation, but is much more motivated to ensure that a default does not occur (because of a higher equity component). Therefore, careful analysis of the pools is extremely important in evaluating sub-prime mortgage pools.

While the difficulties the U.S. marketplace has experienced provide a useful lesson in the potential problems that must be considered, it is also important to understand that the U.S. mortgage market is fundamentally different from Canada. As such the risks of the sub-prime market in Canada are considerably lower than in the U.S. First and probably most importantly, the U.S. market is much more aggressive in underwriting at the lower end of the credit scale than is the case in Canada. Even with the emergence of U.S. players in Canada, underwriting typically only goes down to the “C” level. The more conservative nature of Canadians also suggests that there are far fewer “D” type credits available. Generally good borrower credit quality translates into low credit investigation costs for Canadian banks, and better portfolio performance.

High ratio mortgages and 125s (mortgages up to 125% LTV) are more common in the U.S. because tax incentives associated with mortgage deductibility shift borrowing from more conventional sources to housing related borrowing. No such incentive exists in Canada. Another complication for sub-prime mortgage pools that exists in the U.S. that does not exist in Canada is the long-term prepayable nature of mortgages in the U.S. Mortgages in the U.S. have terms of up to 30 years and are fully prepayable without penalty. In Canada the maximum term is 10 years, but 5 years is more typical. Also, Canadian institutions generally impose penalties of up to three payments for early prepayment. Predicting cash flows where credit quality is suspect and where prepayments are highly variable is extremely difficult for U.S. lenders. As such, the sub-prime portfolios in Canada differ markedly from U.S. performance.

<table>
<thead>
<tr>
<th>Credit History</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortgage (last 12 months)</td>
<td>0x30</td>
<td>2x30</td>
<td>4x30</td>
<td>6x30</td>
</tr>
<tr>
<td>Instalment Debts (last 24 months)</td>
<td>0x60</td>
<td>0x60</td>
<td>1x60</td>
<td>1x90</td>
</tr>
<tr>
<td>Revolving Debts (last 24 months)</td>
<td>0x30</td>
<td>1x60</td>
<td>1x90</td>
<td>varies</td>
</tr>
<tr>
<td>Bankruptcy</td>
<td>None in 5 years</td>
<td>None in 5 years</td>
<td>None in 2-3 years</td>
<td>Within 1 year</td>
</tr>
</tbody>
</table>

Legend: 2x60 for example means no more than two 60 day delinquencies
Second Mortgages

Second mortgages are not fundamentally different than first mortgages except that the claim against the property in question is subordinate to another mortgage (the first mortgage). Evaluation of second mortgage pools is also not materially different than first mortgages of similar underwriting quality except for stress testing purposes. The impact of a property value decline for repossessions is far more significant in percentage terms than is the case for the first mortgage holder. For example, if a $100,000 property was financed with a $75,000 first mortgage and a property experiences a 40% decline in value (ignoring sale and carrying costs), the loss to the first mortgage holder is $15,000 or 20% of the mortgage value. If we have the same property (and decline) but financed with a $50,000 first mortgage and a $25,000 second mortgage, the loss to the mortgage holders would be $0 and $15,000 for the first and second mortgage holders respectively. The loss represents a 60% loss to the second mortgage holder. The worst case is one where the second mortgage is a small percentage of the first mortgage. Continuing with the above example, if the property was financed with a $60,000 first mortgage and a $15,000 second mortgage, the second mortgage would experience a loss of 100%. Due to the variability of losses that the junior lienholder position may experience, LTV or combined LTV (CLTV) does not provide sufficient detail to determine required protection. The ratio of the combined mortgage represented by the first mortgage relative to the second is required on a discrete basis. Where information is unavailable, DBRS will make conservative assumptions.

Due to the increased sensitivity of the second mortgage to recovery proceeds, and the impact of additional costs and the involvement of additional parties, property value declines in respect of such mortgages are assumed by DBRS to fall by an additional 25% for the AAA stress case (for example, from 40% to 50%), and the time required to facilitate recoveries is increased by six months. Clearly, second mortgages are more sensitive to property value declines and credit enhancement levels would reflect this inherently higher volatility and subordinated access to recovery proceeds.

Fixed/Floating

Most mortgages are fixed rate instruments, but adjustable rate mortgages or six month fixed rate mortgages constitute a significant portion of the market. Six month fixed rate mortgages are effectively “floating” rate instruments because rates are reset every six months. New risks are introduced when mortgages are floating rate because the volatility of interest rates has the potential to cause defaults. This is particularly worrisome in two situations:

• When interest rates rise to historically high levels they are typically associated with slowdowns in the economy (higher unemployment) and declines in property values. The combination of higher mortgage payments, lower employment levels and declining property values are all negatives for a mortgage securitization. Fixed rate mortgages are less susceptible to the first factor (though on renewals this is an issue but only for that portion of the portfolio renewing when rates are high).
• When variable or short-term rates are used to help qualify a property purchaser, this may result in default when the borrower seeks financing in a higher interest rate environment. Because short rates are typically lower than long rates, some purchasers qualify under the TDSR/GDSR ratios only when they choose short-term or variable rates. These purchasers, however, are especially vulnerable if interest rates rise. Should their ratios rise above acceptable levels as a result of interest rate increases, defaults could result.

Floating rate risks should be swapped by an acceptable swap counterparty rated AA(low). If the Trust has to accept floating rate risk, stressed scenarios will increase short term benchmark rates to 20% at the rate of 2% per month. Structures with basis risk in the swaps may require additional enhancement to deal with these risks.

Term

Mortgages with shorter amortizations are less prone to foreclosure than mortgages with longer amortizations. An individual with a $150,000 mortgage on a $200,000 property at a fixed rate of 8% and a 15-year amortization would have to pay $1,433 each month. An individual with a 25-year amortization and otherwise similar terms would have to pay $1,158 each month. The ability to make higher payments would be consistent with a higher income borrower. In addition, in times of financial difficulty, the borrower under the 15-year mortgage might be able to extend the amortization to a 25-year mortgage, which would permit the borrower to withstand a decrease in after-tax income of $3,300 per year. A faster amortization also provides for a more rapid reduction in LTV. After two years, the 15-year mortgage has an LTV of 69%, while the 25-year mortgage would have an LTV of 73%. These differences become more pronounced as time passes—after five years, the 15-year amortization would have repaid sufficiently such that the underlying property could withstand DBRS’s typical AAA stress test case of a 40% decline in property value without a loss on the mortgage. Meanwhile, the 25-year amortization would result in a loss of over $16,000 or 12% of the remaining mortgage value.

Refinancing Risk

Mortgages with a term less than the amortization term of the mortgage are subject to some refinancing risk. In the Canadian marketplace, such mortgages are common. Refinancing is a risk because the lender is not legally obligated to refinance the balloon payment when the
mortgage matures. The borrower may be unable to refinance and a foreclosure could result. This inability could be due to borrower-specific factors such as credit and income, or could be due to external factors such as a large increase in interest rates. The lower the LTV at the time refinancing is required, the lower the risk, as exposure to the lender is reduced. Six-month mortgages are subject to almost continuous refinancing risk, but are generally sought by more experienced borrowers. Due to the refinancing risk involved, DBRS is likely to increase the default multiple required for a given rating level for pools of short-term mortgages.

Large Mortgages
Mortgages over $275,000 are typically considered large mortgages by DBRS. Using a minimum 75% LTV, the property value or sale price must be $367,000 at a minimum for the mortgage to exceed this size. DBRS imposes limits on the dollar amount of large mortgages in a securitized pool, as well as an absolute maximum mortgage size because more expensive properties are more likely to experience larger drops in value than more modest properties, and because the time required to recover on proceeds of disposition increases with the value of the property. Typically, no more than 7.5% of the pool (as measured by dollars) may consist of mortgages over $275,000, although this percentage is subject to adjustment based on geographic distribution. No mortgages over $500,000 are permitted except in unusual circumstances that would typically entail additional credit enhancement.

Types of Properties
The property type that offers the least risk is the single-family detached property in an urban area. This is also the most common type of residential mortgage property. High and steady demand for these properties provides assurance that values would be less adversely affected by economic downturns than would be the case for other property types. Single-family attached properties and low-rise condominiums (typically five stories or less) are slightly riskier, while high-rise condominiums are viewed as the riskiest residential mortgage property type. Where condominium concentration is material, DBRS increases its decline in property value assumption by 25% in respect of the portion of the portfolio that consists of high-rise condominiums for AAA cases. Typically, condominiums are capped at a maximum of 15% of any portfolio. Properties located in or adjacent to cities with diversified economies are less likely to have their properties decline as a result of the failure of a single industry or company.

Geographic Concentrations
Enhancement levels and assumptions are based on properties that are situated across Canada with minimal geographic concentrations. The following table outlines the maximum dollar-weighted percentage permissible in each province or region:

<table>
<thead>
<tr>
<th>Province</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ontario</td>
<td>75%</td>
</tr>
<tr>
<td>British Columbia</td>
<td>33%</td>
</tr>
<tr>
<td>Quebec</td>
<td>33%</td>
</tr>
<tr>
<td>Alberta, Winnipeg, Saskatchewan</td>
<td>20%</td>
</tr>
<tr>
<td>NB, NS, Newfoundland, PEI</td>
<td>20%</td>
</tr>
</tbody>
</table>

If the concentration of mortgages in any of these regions exceeds the percentages outlined, the stress test will be adjusted to increase the default rate in respect of the overconcentrated province or region by up to 25%.

Occupancy Status
Most conforming mortgages are owner-occupied primary housing units. Second homes or vacation homes are less desirable as borrowers are less likely to default on their primary dwelling. Homes that house more than one family are usually dependent on rental income and are also less desirable.

Other Innovations
The Canadian mortgage market has undergone a number of changes over the last twenty years with mortgage terms shortening, variable rate mortgages, six month mortgages, sub-prime mortgages, new prepayment privileges, high LTV mortgages (up to 95%), etc. Innovations will continue to be introduced both by traditional Canadian-based players, non-bank institutions and foreign bank and non-bank institutions that have entered or are anticipated to enter the Canadian marketplace. As these innovations are introduced, securitizations of these products will have to adapt.

The Residential Property Market
Differences between individual markets in Canada can be quite significant. The following are short summaries of some of the declines that have occurred in the largest markets in Canada.

Vancouver
The Greater Vancouver market experienced a rapid run-up in property values in the early eighties and quickly turned with a recession. Cyclical downturns in the natural resource sector also exasperated the situation, which resulted in a decline in average house prices of 28%.
The Vancouver market represents some concern to DBRS, as the lower mainland area of BC is a less diversified economic region than central Canada. It is also more reliant on potentially volatile investment from the Far East. This market has experienced three periods of impressive price increases followed by corrections of varying magnitude over the past 20 years.

Calgary
Calgary has been one of the most potentially volatile marketplaces in Canada over the last 30 years. While the graph might suggest no higher volatility than (for example) Toronto, averages can conceal some of the underlying dynamics of the marketplace.

Calgary suffers from a heavy reliance on one industry—oil and gas production and related services. A boom in the residential marketplace occurred when oil prices increased rapidly as a result of the oil shocks precipitated by OPEC in the 1970s. Projections of oil prices in the $60 - $80 per barrel range were quite common. With the subsequent overproduction and loss of cohesion of OPEC it no longer could sustain the oil price regimen. Oil prices collapsed and consequently the Calgary economy suffered a severe correction. Housing prices dropped quite significantly if they were saleable at all. We estimate that at the depth of such a downturn, housing prices may have dropped closer to the 40% range (rather than the 25% range suggested by the graph). Such a drop is consistent with the drop in housing prices in Texas during the same period.

Winnipeg
The performance of the Winnipeg market is fairly consistent with other major communities in the prairies (excluding Alberta). Most of these communities did not experience any significant property price appreciation (being fairly consistent with inflation) or spurts in prices over the last 30 years. Because there has been no significant upward pressure on prices, there is less pressure on the downside when economic conditions weaken. Part of this is a reflection of the stable agricultural base that supports the prairie communities, and the well diversified economy. Few areas of Canada have had housing markets with prices that have been as stable as those in Winnipeg.

Toronto
The Toronto market has been characterized by rapidly increasing property prices particularly in the mid to later part of the 1980s. A significant boom in economic activity, and particularly property markets, saw a dramatic surge in property ownership and speculation. The influx of immigration and the effects of population demographics taking place at the same time also led to rising prices. During the recessionary period of the early 1990s, Toronto was particularly hard hit. Because of overbuilding, Toronto’s residential market was depressed with property values, on average, declining around 28%. Larger and custom-built homes had even more severe property declines than this.
Associated with this declining market was an increase in typical resale periods that in many cases exceeded 12 months (if sales were even at all possible).

**Montreal**

Montreal did not experience the excesses that Toronto had during the late 1980s primarily as a result of the ongoing sovereignty debate. Due to the resultant lack of confidence in the Quebec market there was slow new investment and job creation. The inflationary pressures in the housing market did not exist. As a result, there was no correction associated with the recessionary period of the early 1990s. Ongoing separatism debate will probably have a modest impact on the marketplace but outright independence (or an affirmative vote in any referendum) could have a significant impact. Prices are currently experiencing a period of slow upward growth, and any decreases over the past 30 years have been slight.

**Halifax**

Halifax is typical of many smaller communities in Canada where housing prices are reflective of underlying fundamentals of population growth and are little affected by speculative or transitory demand. The Maritimes have typically experienced slow (as in lower than the national average) GDP growth and have not had circumstances which have artificially boosted housing demand (such as a narrow industry reliance or overseas demand). Halifax should continue to remain quite stable in terms of pricing.

**Overall View**

There are two inescapable conclusions that can be drawn from the previous analysis of certain specific cities in Canada. Firstly, geographic diversification can provide significant benefits in terms of downside protection. Typically the largest losses in property prices occur when rapid price increases are followed by a recessionary period. The shocks affecting one market do not necessarily affect the others to the same degree (or at all). For example, Toronto and Montreal were not adversely affected in the early 1980s but Calgary and Vancouver were. Similarly, in the early 1990s, Toronto was adversely affected but Vancouver’s price correction was relatively modest. Secondly, property price decreases in the 20 – 30% range are quite possible though certainly not expected. In the last 30 years, three of the four largest markets in Canada have experienced one drop in that range (Vancouver: -28%, Calgary: -25% and Toronto: -28%).

**Analytical Approach**

**Property Prices**

While residential property prices have varied from city to city in terms of their absolute levels and timing of rises and falls, they have been remarkably similar in terms of the maximum property value decline. Generally this maximum has been about 30% (for example, Vancouver’s 1981 – 1982 drop, Calgary’s 1981 – 1985 drop, and Toronto’s 1990 – 1996 drop). There have been exceptions to this with some cities experiencing remarkable stability such as Winnipeg, Montreal and Halifax.

While the residential mortgage market is one of the best markets where underlying collateral values can be obtained, it must be understood that there are a number of limitations...
in the data that must be considered in evaluating appropriate benchmarks.

Some of the limitations include:

- Prices are for sold units. If properties had to be sold at a most inopportune time, the actual decline in property value may be higher than suggested by the data. Given the general inability of securitization vehicles to hold properties for extended periods of time, it may be possible that declines could exceed general market averages should timing be particularly unfavourable (the opposite is also true, however). Price declines might not reflect true losses as liquidity may have dried up for certain markets and/or property types.

- Prices are averages. Because prices are averages the composition of sales may affect the data. A slowdown in higher priced properties may result in an overall average declining more significantly than the median property price and conversely may overestimate property prices when higher value properties are in higher demand. For more typical properties in the $100,000 to $300,000 range, volatility of prices may be significantly different than the overall averages. Median prices are probably more realistic measures of property price changes but this information is only available more recently and not for historical periods. Averages also mask underlying changes within property types. Larger properties, small properties, condominiums, and single-family dwellings all have differing price sensitivities and underlying volatility that is masked by the averages. Furthermore, different demographic and market conditions may affect the proportions of these property types and thus bias the average property data either upwards or downwards.

- Prices are generally for sales through established channels. When properties are sold through channels not picked up by the agency that monitors sales, data is lost. Private sales, auctions, non-listing brokers etc. are only some of the channels through which sales of properties may occur and which may not be picked up by average price data. This is a potential concern because these atypical channels tend to be used more frequently when property sales are slow or when the market is particularly robust (i.e. both highs and lows are affected).

- Prices reflect an entire year of sales. Seasonality of prices (generally higher in spring and lower in winter) and any price movement throughout the year due to non-seasonal factors are obscured.

- For smaller cities prices are less statistically significant due to the smaller numbers of sales, especially during down markets when prices not only decline but the numbers of sales also decline. Care must be used for smaller urban areas.

Mortgage Delinquency and Default

For conventional residential mortgages, the most important aspect of mortgage delinquency is that it is an indication of potential future default and subsequent enforcement. Because we are dealing with assets which were originally backed by 25% or more equity, loss levels for portfolios can continue at very low levels if market conditions (i.e. real estate prices) remain stable or even turn slightly negative. Differentiating portfolios based on loss levels is extremely difficult and potentially flawed. A better indication of potential loss levels is the frequency of default (a payment or any portion of a payment 90 or more days past due), as this is indicative of the underlying quality of the obligors. Should market conditions deteriorate, it is the underlying quality of the obligors that will ultimately determine how much of the portfolio will be exposed to declining collateral values. Frequency of default data in conjunction with frequency of foreclosure data provide a good base from which DBRS can make assumptions regarding stressed scenarios.

Mortgage Enforcement Timeframes

One of the key drivers of enhancement levels for residential mortgage securitization is the carrying cost associated with delinquency and mortgage enforcement. The length of time it takes to enforce and collect on the mortgage depends on the choice of remedy (suing on the mortgage covenant, foreclosure, power of sale, and judicial sale), legislation governing mortgages in the provinces (which differ in terms of substantive provisions and timing) and time to dispose of the property. This period can range from several months to several years. Extended periods for collection are usually either the result of an inability to sell the property (and/or collect the debt from the mortgagor) or litigation on the property. For residential properties, litigation is usually not a factor.

In terms of enforcement, sellers generally choose the most expeditious and flexible remedy. In Ontario and some other provinces, the remedy often chosen is a power of sale. In Ontario, the power of sale requires that the debt must be outstanding for at least 15 days, and 35 days’ notice must be given to the mortgagor and other persons entitled to notification. After this time period has elapsed, the seller can sell the property. If there is any deficiency on the sale of the property, the seller can sue the mortgagor for this amount. In provinces with less creditor-friendly legislation, borrowers may have up to 12 months to repay the mortgage before the lender is permitted to dispose of the property.

Unfortunately, there is very little statistical data available on actual mortgage enforcement time periods, and what is available is probably not statistically relevant. Typical timeframes during normal economic periods range from days to several months but during economic downturns, resa
periods can extend up to a full year with some smaller communities experiencing even longer resale periods.

Disposal Costs
Disposal costs are costs incurred to sell repossessed properties (excluding carrying costs). Primarily these are brokerage and legal fees. Typical brokerage fees run from 3% to 6% of the sales price, though with bulk or volume sales such rates could be 2 to 3%. Legal fees are usually quite minor in the scheme of things, typically less than 1%.

Prepayment Impact
Most residential mortgages are prepayable at least to some extent. Most providers of mortgages allow some level of prepayment. Generally, 10% – 20% of the original principal may be repaid in any one year (usually on the anniversary date) without prepayment penalty. In addition, some institutions allow extra payments by doubling up payments or 10 – 15% increases in the amount of the regularly scheduled payments. Further, if a property is sold, most institutions do not impose a prepayment penalty, particularly if a new mortgage is placed with the same institution. Notwithstanding no penalty imposition, the Purchase Agreement may require that a “make whole” payment be made to the SPV.

Where prepayment penalties are imposed (usually the lesser of three months or the present value of the interest differential), some securitizations do not pass the penalties through to the securitization vehicle. Even where such payments are passed through to the SPV, they are typically not sufficient to compensate the SPV for lost yield. Sometimes, the portfolio is open to prepayment at any time should the underlying customers be willing to pay the penalties imposed (or waived if the institution should feel amenable). DBRS will assess the risk introduced by the prepayment provisions of a particular transaction to maintain adequate levels of protection.

Because a mortgage is usually a family’s largest financial commitment, interest rate sensitivity is much higher for this product than for other financial obligations. Automobile loans, credit cards, and personal lines of credit do not typically display a high degree of interest sensitivity. When interest rates drop, there can be a huge financial incentive for an obligor to prepay the mortgage and refinance with the same or another institution. Unlike the U.S., where mortgages are completely prepayable without penalty, the Canadian market is not as sensitive to interest rates (prepayment penalties and the shorter mortgage terms are the primary differences). Because of this interest sensitivity, general prepayment options and core prepayments (associated with sales of properties, death of the obligor etc.), the cash flow stream associated with a pool can vary materially from the contractual cash flows. This is particularly important for investors in pass-through securities where duration is dependent upon the timing of cash flow receipts. In addition, prepayments can affect spread and its durability (see next section) which may decrease the effective level of credit enhancement available for the program. Studies have shown that the “core” prepayment rate on mortgages in Canada is usually in the 6% – 8% range, usually related to the normal turnover of housing by families (trading up or down, deaths, etc.).

As prepayments shorten the average life of securitization transactions, they reduce the period of time over which stressed assumptions can affect the portfolio. Aside from its effect on spread, a high assumed prepayment rate generally allows a structure to withstand stressed scenarios that are harsher than zero prepayment rate scenarios, since prepayments reduce the principal balance in respect of which defaults are applied. DBRS will not necessarily assume that mortgages that prepay will not be subject to default. For example, if one assumes that 40% of the mortgages will prepay, it cannot be assumed that only 60% of the defaults will be assumed by the portion of the portfolio that does not prepay. DBRS will permit the following prepayment rate assumptions:

<table>
<thead>
<tr>
<th>Annual Assumed Prepayment Rates</th>
<th>Lower of</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAA</td>
<td>Historical minus 6%</td>
</tr>
<tr>
<td>AA</td>
<td>Historical minus 5%</td>
</tr>
<tr>
<td>A, BBB, BB, B</td>
<td>Historical minus 4%</td>
</tr>
</tbody>
</table>

Spread and its Durability
Part of the enhancement for a securitization is the spread that is potentially available to investors should losses rise. A minimum level of spread allows the SPV to withstand some losses without drawing on the other forms of enhancement protecting investors. Spread is also necessary to pay for any replacement servicer should it be required. However, with prepayment of higher interest rate mortgages there is the potential for a drop in the average spread of the portfolio and thus the level of protection for investors.

An analysis of the variability of rates on mortgages will give a good idea of the potential exposure to prepayments. If a portfolio has a wide range of interest rates, the prepayment of the highest rate mortgages will have a more significant impact on average spread than if the range of rates is much more narrow. This dispersion of rates is taken into account when prepayment penalties may not compensate for the loss of spread, and where dispersion is beyond normal parameters. For portfolios where the difference between the lowest- and highest-rate mortgage in the portfolio is less than 200 basis points, DBRS will assume that at least 10% of the highest rate mortgages in the portfolio on a dollar-weighted basis will prepay almost immediately. For portfolios where this band is equal to or exceeds 200 bps, DBRS will assume that 25-40% of the highest rate mortgages in the portfolio will prepay. The actual profile used to adjust spread will depend on the density of the mortgage rate
dispersion. The difference between this adjusted dollar-weighted spread and the all-in cost of funds on a dollar-weighted basis will be considered the spread for stress-testing purposes. The table below provides an example of how spread is determined when analyzing a portfolio with wide interest rate dispersion. Note that the spread in the hypothetical portfolio was reduced from 1.81% to 0.93% after adjusting for prepayments, negative carry, and expenses. DBRS will adjust all spread figures using this method to arrive at an adjusted spread, which will be used for stress-testing and eligibility purposes in arriving at credit enhancement requirements.

### Sample Computation of Spread

<table>
<thead>
<tr>
<th>Mortgage Rate</th>
<th>Midpoint of Range</th>
<th>Unadjusted dollar-weighted spread</th>
<th>Adjusted dollar-weighted yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>From To</td>
<td>00s</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>9.5% 10.0%</td>
<td>9.75%</td>
<td>8,000</td>
<td>8%</td>
</tr>
<tr>
<td>9.0% 9.5%</td>
<td>9.25%</td>
<td>7,000</td>
<td>7%</td>
</tr>
<tr>
<td>8.5% 9.0%</td>
<td>8.75%</td>
<td>6,000</td>
<td>6%</td>
</tr>
<tr>
<td>8.0% 8.5%</td>
<td>8.25%</td>
<td>19,000</td>
<td>19%</td>
</tr>
<tr>
<td>7.5% 8.0%</td>
<td>7.75%</td>
<td>18,000</td>
<td>18%</td>
</tr>
<tr>
<td>7.0% 7.5%</td>
<td>7.25%</td>
<td>28,000</td>
<td>28%</td>
</tr>
<tr>
<td>6.5% 7.0%</td>
<td>6.75%</td>
<td>6,000</td>
<td>6%</td>
</tr>
<tr>
<td>6.0% 6.5%</td>
<td>6.25%</td>
<td>5,000</td>
<td>5%</td>
</tr>
<tr>
<td>5.5% 6.0%</td>
<td>5.75%</td>
<td>3,000</td>
<td>3%</td>
</tr>
<tr>
<td>5.0% 5.5%</td>
<td>5.25%</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>

**Unadjusted dollar-weighted yield:** 7.84%

**Adjusted dollar-weighted yield:** 7.19%

* In this example, we assume that the mortgages comprising 40% of the pool with the highest mortgage rates will prepay in computing the interest rate assumed in respect of the portfolio. As a result, all mortgages in the boxed area are assumed to prepay. If the range of mortgage yields were tighter, our prepayment assumptions would be much less severe.

Assume that the Trust issues $100 million of R-1(high) CP and a $3 million subnote, the proceeds of which are held in cash.

Assume swapped cost of funds of 6% for the CP and 7% for the subnote.

**Interest Costs:**

- $100 million * 6% = $6 million
- $3 million * 7% = $210,000
- Total: 6,210,000
- Expenses 50,000
- Weighted average COF: 6.03%
- Dollar-weighted COF incl. exp.: 6.26%

* The dollar-weighted COF is lower than the weighted average COF because $103 million of notes are being issued against $100 of assets.

**Unadjusted spread:** 1.81%

**Adjusted spread:** 0.93%

In some cases, spread is provided synthetically through an amortizing swap. For example, the SPV could enter into an agreement to pay the yield on a portfolio of mortgages less a spread and receive the SPV cost of funds. Where the swap counterparty is rated AA(low) or better, DBRS will give full credit for the spread, although the rating of the transaction may be compromised if the rating of the swap counterparty is later reduced.

### Mortgage Quality

The underlying credit quality of the mortgagee will determine the potential default characteristics of the portfolio that is quite independent of the actual characteristics of the mortgages (within fairly broad ranges). For example, a highly successful professional with good earning power and a solid financial situation is less likely to default on a mortgage even if the mortgage value exceeds the property value because of the repercussions on his/her credit standing and the ability to recover such loss on default from other personal assets. In this case, the personal covenant to repay dominates asset coverage on the mortgage.

An analysis of the credit evaluation process of the mortgagee by underwriters is required during initial due diligence sessions. To the extent that mortgages are based less on credit quality and more on collateral quality, there is a potential for higher levels of default and foreclosure, exposing the portfolio to swings in property value, than would be the case where both credit quality and collateral quality are emphasized. The time and expenses involved in realizing on the underlying value of a property would also tend to increase required enhancement levels for such portfolios.

### Collections

A due diligence review of collection process and philosophy provides insight to the effectiveness of the servicing and the approach that might be taken in dealing with defaults. Also, an assessment of the ability of the underwriter to deal with significant increases in delinquencies and defaults needs to be made. Are systems, personnel and management available to deal with significant increases in work load? If there are inherent limitations, this could represent a significant concern when/if portfolio performance should deteriorate. Are there clearly defined processes governing the initiation of internal or branch action, legal action and appraisals? Can the servicer provide information as to the nature and success of its actual enforcement experiences? The ability of an originator’s systems to produce reasonably detailed historical data with respect to default rate, foreclosure frequency, and recoveries is viewed positively as an indication that the servicer is capable of tracking problem mortgages efficiently.

### Structure

The vast majority of mortgages securitized in the Canadian market are a straightforward sale of mortgages to the SPV. Originators will randomly select from a group of eligible mortgages and DBRS will analyze pool cut characteristics for suitability. Mortgages that are later found to be ineligible on
closing must be repurchased by the Seller at book value. Sellers have the option but not the obligation of repurchasing or substituting defaulted mortgages with performing mortgages at book value. This mechanism is used on a regular basis by many sellers, which tends to understate the default performance published in connection with many securitization pools. This increases the credit quality of the program while maintaining spread levels. However, it provides less information to the marketplace with respect to the performance of the seller’s portfolio, and dampens the effectiveness of triggers (although problem mortgages are being excised early without consuming credit enhancement).

A few rated transactions are not structured as a sale of certain specific mortgages to the SPV but rather as a sale of an undivided co-ownership interest in a pool of assets. In these transactions, whose structures are similar to those of credit card-backed ABS, term notes can efficiently be issued against shorter-term mortgages. Using the more traditional approach of a sale of mortgages, the term of the notes cannot exceed the longest tenor of mortgage. Enhancement requirements for both these structures, all things equal, are very similar. However, as is the case with credit card issues, investors of notes issued against the co-ownership structure are subject to amortization risk if the seller fails to maintain the size of its portfolio of eligible mortgages relative to the size of the issue. This is addressed by required pool balance tests and requirements for the seller to add similar assets that do not reduce the creditworthiness of the portfolio (for example, CMHC-insured mortgages that have similar terms).

Title

As in other types of securitizations, DBRS requires that the sale of mortgages from the seller to the SPV be done on a true sale, bankruptcy remote basis.

Assuming that the sale of mortgages from the seller to the SPV is on a true sale basis, the SPV will be entitled to rights that the seller had over the securitized mortgages. It is thus important to ensure that, prior to the sale, the seller had priority over the securitized mortgages. This is accomplished through the securitization agreement, including the eligibility criteria required for the securitized mortgages. One important eligibility criterion is that the seller possess first mortgages on the underlying properties. The seller, as first mortgagee, has priority to proceeds from the disposition of the property and subsequent mortgagees cannot enforce their mortgages against the underlying obligor without paying off, or preserving, the interests of the first mortgagee. To ensure the position of the seller, however, it is also important to confirm that the property does not have any encumbrances or liens which may take priority over the first mortgage. In particular, liens for taxes, unpaid condominium fees or construction liens should not be registered against title to the property. In addition, it is also important to ensure that the seller is a first loss mortgagee for purposes of insurance. The insurance should be equal to the replacement value of the structures on the property. This ensures that if the building(s) on the property is (are) damaged or destroyed, the seller has priority to the insurance proceeds. This is important since, in this situation, the obligor may find it difficult to keep payments on the mortgage current. Other conditions are also required with respect to the underlying mortgages. In detailing these conditions, the objective is to ensure that the seller (and the SPV after the sale) has the highest possible priority over the property and that no other parties can have claims that would prejudice or affect the seller’s (and thereafter, the SPV’s) interest in the property.

Although the mortgages are assigned from the seller to the SPV, the assignment is not typically initially registered against title to the underlying properties due to administrative and cost requirements. Instead, the seller holds the title to the properties in trust for the SPV and services the mortgages (until replaced). Provision is made for the assignment to be registered at a later point in time. To allow for a future registration of the assignment, the SPV will generally receive either completed mortgage assignments, coupled with the power of attorney that allows for the registration of the mortgage assignments under certain conditions. Typically, DBRS requires that sellers that are downgraded to below the “A” level prepare registrable transfers within 90-180 days of the downgrade, depending on the size of the portfolio. Should the seller’s long-term unsecured credit rating fall below BBB, or upon the occurrence of a servicer termination event, the seller would be required to register the mortgage assignments, or the Custodian would have a power of attorney to register these assignments. Registrations on title will be the only indication of the SPV’s interest since the SPV does not have to register a security interest in the securitized mortgages under the PPSA (the PPSA will not apply to mortgages where the interest in the real property, in addition to the cash flows, has been assigned). This procedure of not registering the mortgages in the name of the SPV unless necessary (the seller has full registration) greatly saves on transaction costs.

Environmental Risk

Although environmental risk can apply to all property types, it is generally much less of a risk in residential mortgage securitizations. Unlike commercial or industrial properties, residential properties generally do not have a history of prior uses that involve chemicals or other materials which may require environmental remediation. As a condition of eligibility to be included in a residential mortgage securitization, the underlying properties must be free and clear of liens, encumbrances or orders for environmental matters. Indemnities for environmental risk and an environmental audit may be required where the properties have on-site septic tanks or sewage facilities. These requirements will, for example, generally apply to mobile
home parks and cottage properties or other rural properties serviced by on-site septic tanks or sewage facilities.

**Stress Scenarios**

**Residential Mortgage Benchmarks**

For pools of residential mortgages that have sufficient geographical diversification, good servicing and historical performance within industry norms, DBRS has developed fairly standard parameters for use in our computer stress models. These parameters are appropriate for pools of “A” borrowers and are generally not applicable for sub-prime borrowers (B, C and D credits). The parameters determine the appropriate enhancement levels, as they are the drivers of potential losses in any residential mortgage portfolio. Simplistically, the level of defaults represents both a period of carrying costs exceeding revenues and a potential enforcement candidate. If such default represents an enforcement (in all scenarios we assume a 100% enforcement rate upon a mortgage default), then losses on disposal are determined by the decline in property value, if any, and the length of period such property must be held before ultimate sale (carry costs).

<table>
<thead>
<tr>
<th>Stress Parameters</th>
<th>Property Decline</th>
<th>Recovery Period</th>
<th>Default Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min.</td>
<td>Max.</td>
<td>Min.</td>
</tr>
<tr>
<td>Investment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAA</td>
<td>40%</td>
<td>50%</td>
<td>17</td>
</tr>
<tr>
<td>AA</td>
<td>35%</td>
<td>40%</td>
<td>15</td>
</tr>
<tr>
<td>Grade A</td>
<td>30%</td>
<td>35%</td>
<td>13</td>
</tr>
<tr>
<td>Grade BBB</td>
<td>20%</td>
<td>25%</td>
<td>10</td>
</tr>
<tr>
<td>Non-Investment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BB</td>
<td>10%</td>
<td>15%</td>
<td>7</td>
</tr>
<tr>
<td>Grade B</td>
<td>5%</td>
<td>10%</td>
<td>2</td>
</tr>
</tbody>
</table>

The property decline parameters include costs of disposal (primarily broker fees and legal costs). Given that disposal costs generally amount to between 3% and 6%, it is clear that a “B” rating assumes no significant property declines. However, it must be remembered that there may be some protection provided by the original underwriting guidelines (for example, 75% LTV provides for a 25% cushion to protect against price declines in the event of enforcement), and loan amortization, in addition to any excess spread in the transaction. As a practical matter, it would only be a combination of higher LTV mortgages and low levels of credit enhancement that would necessitate a “B” rating because low LTV mortgages would, by their nature, have inherent protection that (with excess spread) warrant a higher rating than “B”.

The stress-testing benchmarks noted in the table above apply to conventional residential mortgages for owner-occupied single family dwellings (includes buildings with up to a maximum of four units). It does not apply to high-rise condominium projects due to their higher price volatility and a less stable owner environment. Generally, in applying the parameters to high rise condominium projects, the recovery period and default parameters are applied as is, but the property decline values are grossed up by approximately 25%. For example, a AAA single family dwelling may be stressed with a 40% property decline while a high-rise condominium unit might be subjected to a 50% property value decline. The parameters are set to ensure that the rating of the security is consistent with the stress scenario. Therefore, a “AAA” security would have to withstand a situation where property values declined by 40% (50% if backed by condominium mortgages, in both cases inclusive of recovery costs such as brokerage fees and legal expenses), recovery periods on foreclosed properties took approximately 18 months and default rates were at least three times historical annual highs. Stress multiples are typically considerably higher than this depending on the number of years of history available and the quality of this data. At a minimum, originators must provide default history through the last economic cycle for DBRS to consider this type of default multiple. Originators that cannot provide this data will be subject to higher assumed default multiples.

For other than conforming residential mortgage pools, no specific levels of credit enhancement are generally applied because the underwriting characteristics are very important in determining the expected and worse case future performance levels. However, for conforming mortgage pools, enhancement levels are quite consistent because underwriting standards and historical performance levels are quite consistent from seller to seller. As a result, fairly uniform structures/parameters have been utilized for these transactions. Generally, enhancement is provided in one of two ways: either by cash collateral account (“CCA”) or overcollateralization/subordination.

**Size and Form of Credit Enhancement in Relation to the Term of the Securitized Mortgages**

Assuming comparable asset quality, the form and sizing of credit enhancement will vary in accordance with the term of the transaction. In a stressed scenario, a seasoned pool of six-month mortgages would be subject to high default rates for a maximum of six months, declines in property value for approximately two years (six months plus 18 months’ recovery), and considerable refinancing risk as the mortgages mature. In addition, structures that securitize short-term mortgages would typically be revolving in nature, resulting in a lag between mortgage deterioration and amortization of the pool. A seasoned pool of five-year mortgages would typically have less refinancing risk, and would begin to amortize immediately, but would have at least five years of potential exposure to high default rates and declines in property value. Note that the ramp-up for stress scenarios involving shorter-term mortgages would be far more severe than that which would apply in respect of longer-term mortgages. For both cases, stress testing has resulted in similar overall credit enhancement requirements. However, defaults are applied in respect of the entire portfolio each month, resulting in cash flow requirements that must be met with either spread, cash reserves,
overcollateralization, or preferential access to the cash flow waterfall (subordination). Of these forms of enhancement, the availability of spread is an important consideration. DBRS will generally require that mortgage portfolios provide adjusted spread of at least 0.55%. Overcollateralization and subordination are similar when comparing different forms of credit enhancement, since they both allow holders of the senior notes to access cash flows relating to assets that comprise more than the face amount of senior notes. Cash reserves are necessary to maintain minimum amounts of liquidity, but the inclusion of cash reserves introduce negative carry as cash held in these accounts must be invested in high-quality investments often yielding several hundred basis points less than the mortgage rate that would have applied if these amounts had been invested in additional mortgages. Still, 0.50% of cash is an absolute minimum. As conventional residential mortgages are booked at a maximum 75% LTV, losses only occur if sale proceeds are less than 75% of the original purchase price. For losses to occur, a mortgage must become delinquent, then default, be repossessed and the underlying property experience a significant decline in value. This explains why most mortgage portfolios have losses well under 0.25% per annum. In a AAA stress scenario, the risk of default on the asset-backed notes comes from a combination of its carrying cost and losses on the foreclosed property. For example, for a portfolio with a phenomenally high 5% enforcement rate and a 20% loss rate on every mortgage (i.e. a 40% decline in property value in respect of a 75% LTV mortgage), the portfolio would lose 1% of its principal value. However, the defaulted mortgages would not be generating interest, but would still require funding. Assuming a trust cost of funds of 7% and a one-year average life, the trust would lose 5% x 7% x 1.5 years = 0.525% from negative carry in respect of the defaulted mortgages. A CCA is more effective in covering the negative carry portion of the pool losses than are additional mortgages that do not provide as much liquidity.

The total amount of protection (in terms of a percentage of the overall pool) provided to investors is the same for both structures. Typically, where liquidity is desired (for example, to carry a number of defaulted mortgages while foreclosure proceedings are taking place), substantial cash reserves are necessary to prevent cash flow shortfalls. Where a large proportion of mortgages are maturing each month (for example, a pool of six-month mortgages), the conversion of enhancement to cash (in respect of the balloon payment) provides liquidity to the Trust. This is in contrast to a pool of unseasoned mortgages with long terms and amortizations, where the conversion of enhancement to cash may take place slowly over several years. For example, for season six month mortgages with 3% overcollateralization, 0.5% of the initial pool balance becomes available each month as the enhancement liquidates. In contrast, a pool of five-year mortgages with 3% overcollateralization would convert 0.05% of the initial pool balance to cash each month. Overcollateralization is quite similar to cash when dealing with short-term mortgages.

### Comparison between overcollateralization for six-month and two-year mortgages

<table>
<thead>
<tr>
<th>Six-month Mortgages</th>
<th>Two-year Mortgages</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Credit enhancement</strong> of 3% overcollateralization</td>
<td><strong>Credit enhancement</strong> of 3% overcollateralization</td>
</tr>
<tr>
<td><strong>Month</strong></td>
<td><strong>Start Principal</strong></td>
</tr>
<tr>
<td>1</td>
<td>103,000,000</td>
</tr>
<tr>
<td>2</td>
<td>97,008,333</td>
</tr>
<tr>
<td>3</td>
<td>94,166,667</td>
</tr>
<tr>
<td>4</td>
<td>90,125,000</td>
</tr>
<tr>
<td>5</td>
<td>85,333,333</td>
</tr>
<tr>
<td>6</td>
<td>81,541,667</td>
</tr>
<tr>
<td>7</td>
<td>77,250,000</td>
</tr>
<tr>
<td>8</td>
<td>74,958,333</td>
</tr>
<tr>
<td>9</td>
<td>72,666,667</td>
</tr>
<tr>
<td>10</td>
<td>70,375,000</td>
</tr>
<tr>
<td>11</td>
<td>68,083,333</td>
</tr>
<tr>
<td>12</td>
<td>65,791,667</td>
</tr>
<tr>
<td>13</td>
<td>63,500,000</td>
</tr>
<tr>
<td>14</td>
<td>61,208,333</td>
</tr>
<tr>
<td>15</td>
<td>59,916,667</td>
</tr>
<tr>
<td>16</td>
<td>58,625,000</td>
</tr>
<tr>
<td>17</td>
<td>54,322,500</td>
</tr>
<tr>
<td>18</td>
<td>50,041,667</td>
</tr>
<tr>
<td>19</td>
<td>45,750,000</td>
</tr>
<tr>
<td>20</td>
<td>41,458,333</td>
</tr>
<tr>
<td>21</td>
<td>37,166,667</td>
</tr>
<tr>
<td>22</td>
<td>32,875,000</td>
</tr>
<tr>
<td>23</td>
<td>28,583,333</td>
</tr>
<tr>
<td>24</td>
<td>24,291,667</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>103,000,000</td>
</tr>
</tbody>
</table>

As cash flow requirements can be substantial as defaults and carrying costs ramp up, DBRS requires that pools of mortgages with longer average lives be enhanced by more cash relative to pools of mortgages with shorter average lives. The general structures for enhancement amounts relative to the life of mortgages in a pool are as follows (for a AAA rating):

<table>
<thead>
<tr>
<th>Longest remaining term in pool</th>
<th>Credit Subordination</th>
</tr>
</thead>
<tbody>
<tr>
<td>One year or less</td>
<td>0.60%</td>
</tr>
<tr>
<td>More than one year to three years</td>
<td>2.50%</td>
</tr>
<tr>
<td>More than three years to five years</td>
<td>3.55%</td>
</tr>
</tbody>
</table>

While total enhancement is the same for all three cases, at 3.5% (plus spread), the composition of this enhancement varies in accordance with the liquidity requirements of each pool of mortgages. Enhancement levels shown are “base
For the purposes of stress testing, DBRS assumes that all defaults always occur in respect of the highest LTV mortgages in the portfolio. Most randomly-selected pools analyzed by DBRS typically consist (on a dollar-weighted basis) of more mortgages in the 70-75% LTV bucket than other LTV buckets, simply because an equal number of mortgages across a range of LTVs will naturally be skewed towards higher LTVs as these mortgages will typically be larger. For many mortgage pools, the dollar-weighted percentage of the pool represented by mortgages in the 70-75% LTV buckets is less than the cumulative default rate assumed for a typical stress test. For such a pool, this effectively means that the stress test would be applied entirely in respect of 75% LTV mortgages. This approach is conservative but also reflects reality—a borrower with 50% equity in his or her home is far less likely to default than a 75% LTV borrower. If, however, there are relatively few mortgages above a 60% LTV, some credit may be given for the reduced risk of losses on disposal. In any case, as discussed previously, much of the enhancement requirement is based on carrying cost.

Delinquencies are usually stressed as well by taking a three times multiple of the historically worst level of delinquency. This usually serves to reduce yield on the portfolio and stress the level of cash flow available to the SPV.

Where portfolios to be securitized contain several pools that have distinct characteristics, DBRS requires that originators provide pool-by-pool stratifications. For example, a portfolio may include: five-year, 25-year amortization, single-family mortgages; three-year, 15-year amortization high-rise condominiums; and a small percentage of non-“A” borrowers with various terms and amortizations. In each case, DBRS would require the following stratifications:

- LTV (5% buckets)
- Remaining term (3-month buckets)
- Remaining amortization (3-month buckets)
- Property type
- Remaining principal balance ($25,000 buckets)
- Geographic distribution (by province)
- Mortgage Rate (0.50% increments) or spread to benchmark

DBRS also requires historical data in respect of the following items for a minimum of five years, but in any event for a period of time sufficient to evaluate portfolio performance through the most recent full economic cycle:

1. Total principal outstanding;
2. 30-day delinquencies (the principal balance of mortgages that became delinquent in the period divided by the total principal balance and annualizing where appropriate);
3. Default (or 90-day delinquency) rate, (the principal balance of mortgages that became defaulted in the period divided by the total principal balance and annualizing where appropriate); and
4. Foreclosure rate.

Data provided must be specific to the assets to be securitized, or a pool containing only mortgages that are directly comparable to such assets. Where stratifications or historical data relate to dissimilar mortgages, conservative assumptions need to be made, which may adversely affect credit enhancement requirements, or prevent reliable analysis altogether.

**Triggers**

DBRS usually requires the following termination triggers to be included in the governing documentation:

1. Failure to pay;
2. Failure to perform covenants;
3. Untrue representation or warranty;
4. Certain events of bankruptcy or insolvency with respect to the Seller;
5. Failure to maintain a rating of at least BBB(low) on the part of the seller; and
6. Default rate exceeding specified threshold

The occurrence of any of these triggers would cause all spread to be trapped in the SPV, and would typically permit the SPV to replace the servicer following noteholder direction. DBRS typically requires that the definition of Defaulted Mortgage include all mortgages that are considered to be defaulted in accordance with the Seller’s credit and collection policy plus the principal balance of any mortgage in respect of which any payment or any portion of any payment is overdue by more than 90 days. This is a conservative definition that ensures that serious defaults are not realized all at once, and preserves the protection provided by the triggers. Unless there are mitigating factors, DBRS generally requires that following a default or deemed default, the Seller shall provision an amount equal to the losses that would be incurred if the value of the underlying property were to fall by some amount from its original value. DBRS prefers to use structures where Sellers must provision based on an assumed 40% decline in property value. Structures that realize a loss on realization of enforcement proceeds are less able to maintain timeliness of payment (usually due to the release of cash to the seller while mortgages are becoming defaulted) and may require higher credit enhancement levels.
Stress testing has indicated that a default trigger by itself (resulting in a lock-up event where all excess cash is trapped by the structure) may not provide sufficiently early warning with respect to future problems. As a result, DBRS will require that future transactions include a trigger that will trap excess cash once the cash component of the credit enhancement falls below a certain level.

An example of some stress testing is shown in Appendix A.

Eligibility Criteria

To ensure that assumptions about the mortgage pool used in setting enhancement levels are appropriate, eligibility criteria are incorporated into the purchase agreements to exclude mortgages that are not appropriate and/or inconsistent with the underlying assumptions associated with the pool. Equally important is that the eligibility criteria ensure a well-diversified pool of underlying collateral.

For conventional (conforming) mortgage pools, the usual eligibility criteria are as follows:

- the mortgages must be underwritten to CMHC guidelines;
- the LTV of the mortgage at origination must not exceed 75%;
- the mortgage provides for payments that take place no less frequently than monthly;
- the mortgage is a first mortgage on a residential property;
- the mortgage has been validly assigned;
- there are no adverse claims;
- the borrower is not the subject of bankruptcy proceedings;
- the mortgage is not subject to any dispute, counterclaim, or defense;
- the mortgage is payable in Canadian dollars by a Canadian resident;
- no mortgages may exceed $500,000 (performance characteristics of “Jumbo” mortgages are sufficiently different to justify their exclusion);
- the maximum term of the mortgage is not to exceed 5 years;
- the percentage of the portfolio consisting of mortgages on condominiums will be restricted to a certain percentage (or possibly excluded altogether); and
- the mortgages are not delinquent or defaulted.

In addition, DBRS will require that the portfolio complies with the following requirements:

- A minimum adjusted spread in respect of the mortgage pool, usually no less than 0.55%;
- Geographic diversification;
- for mortgages between $275,000 and $500,000, the total portion of the portfolio may not exceed 7.5%;
- Minimum documentation standards.

For other mortgage pools, the eligibility criteria may be loosened and other restrictions implemented. For example, for sub-prime residential mortgages restrictions on LTV may be relaxed but other restrictions such as limits on the underlying quality of the mortgagors may be imposed, and required spread would usually be much higher. In sum, the eligibility criteria are tailored to the transaction in question to ensure asset character/quality does not “drift” from initial assumptions used in setting the enhancement levels.

Qualitative Criteria

Notwithstanding all the quantitative analysis, qualitative criteria are an important element especially when comparing Sellers and their respective underwriting criteria. This is true particularly for newer organizations or organizations that have experienced systems disruptions that do not have data that extends back to the last recessionary period, where qualitative criteria may be an overriding factor in setting enhancement levels. When dealing with mortgage portfolios, loss numbers can be so small that numerical differentiation between underwriters for limited periods of time is virtually impossible. Discussions with underwriters about their process, philosophy and systems during due diligence sessions may be the only practical way of determining if performance is likely to track other players in the marketplace or whether it will be better or worse. In cases where performance is expected to be worse, unless we are comfortable with the likely magnitude of that performance, we will not proceed with rating the transaction. Where historical data is not sufficiently detailed, DBRS will apply a higher default multiple and tighter default ratio triggers to the portfolio for stress testing purposes.

An analysis of only the mortgage underwriting segment of a seller may be short-sighted. The aggressiveness or prudence of management may be demonstrated in other business units. If mortgage underwriting is relatively new without a significant track history, the performance of the seller is (for example) its long-running leasing business unit might provide a tangible insight as to how businesses tend to be managed. To the extent that DBRS already rates the seller, discussions with the analysts covering the seller will also provide insight as to approach, prudence etc.

Credit Enhancement Types & Levels

Standards for Convention Mortgages

As previously indicated, the following table represents the most common template for securitizing conventional residential mortgages. These parameters represent base case enhancement requirements and may be higher where the pool is less than ideal (such as with the existence of geographic concentration, condominiums forming a significant part of the portfolio, qualitative factors that suggest aggressive underwriting, etc.).
Overcollateralization is more acceptable when spread is an important consideration, net yield is expected to remain positive, and receivables turn over relatively quickly, such as in the case for short-term mortgages.

Subordinated Notes

The issuance of subordinated notes is effectively no different from overcollateralization or seeding of a CCA except the legal form has been changed. A subordinated note holder is either providing additional overcollateralization or the proceeds are deposited into a CCA account (or a combination thereof). The minor difference between true overcollateralization, a direct CCA deposit and subordinated notes is that the subordinated notes carry a cost (interest) that must be covered during the term of the transaction until such time as a trigger event is breached. This may have a small impact on the size of credit enhancement available versus an equivalent sized overcollateralization or a CCA.

Letter of Credit

An irrevocable letter of credit (possibly in the form of a repurchase commitment) may be provided by a third party, highly rated financial institution (rated AA(low) or better). This provides a high level of confidence that funds will be available if required. Unlike overcollateralization or a CCA, no income is earned. There is the risk that the financial institution may be downgraded and, failing a replacement of this institution, may result in the program being downgraded. This has happened in the U.S., and as a result is not used as often as before. Canada has not typically used this form of credit enhancement for residential mortgage securitization and has not suffered any downgrades where it has been used.

Legal Issues—Opinions and Officer’s Certificates

DBRS will request a true sale and bankruptcy remoteness opinion. This opinion should state that the mortgages sold to the trust will not constitute part of the seller’s estate upon a bankruptcy of the seller. This involves an analysis of whether the transaction represents a true sale and whether the trust is perfected vis-à-vis a trustee in bankruptcy of the seller and other creditors of the seller. With respect to the solvency of the seller at the time of the sale, DBRS relies on the credit rating of the seller, officers’ certificates from the seller and various legal searches (generally including a bankruptcy search, an execution search, a Bank Act search and PPSA searches). Other searches may also be performed depending on the situation.

Another issue which arises is whether a PPSA registration and a registration opinion is necessary. Practically speaking, a PPSA registration is generally not necessary since the seller is not only assigning the payment stream under the mortgages, but is also assigning real property rights to the seller.

<table>
<thead>
<tr>
<th>Longest remaining term in pool</th>
<th>Credit Enhancement</th>
<th>Annual Spread</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cash Subordination</td>
<td>Total</td>
</tr>
<tr>
<td>One year or less</td>
<td>0.60% 2.90%</td>
<td>3.50% 0.55%</td>
</tr>
<tr>
<td>More than one year to three years</td>
<td>2.25% 1.25%</td>
<td>3.50% 0.55%</td>
</tr>
<tr>
<td>More than three years to five years</td>
<td>3.50% 0%</td>
<td>3.50% 0.55%</td>
</tr>
</tbody>
</table>

No comparable guidelines (other than approach) can be provided for non-conforming mortgages because their characteristics can vary so significantly.
SPV. Although not necessary, the practice has been to complete PPSA registrations. At the same time, however, registration opinions concerning these matters will generally not be required.

The above analysis concerning registration does not apply in the case of Quebec. The Quebec Civil Code provides that where a security interest is taken over property, publication of a hypothec describing the security interest is required in order for the SPV to perfect its interest in the mortgages. This, however, will not be necessary where the mortgages are a universality. Unfortunately, there is a range of opinion concerning whether a given assignment is or is not a universality. DBRS takes a conservative view and discounts a universality opinion unless, on the facts, the assignment meets the strictest interpretation of what is a universality. If the mortgage assignment is not a universality, or if DBRS does not fully rely on a universality opinion, two general solutions have been adopted. First, DBRS may require that, if the seller’s rating falls to BBB or below, the seller or servicer shall provide notice of the mortgage assignment to each obligor in Quebec. This perfects the SPV’s position. Second, the transaction can be structured so that the seller assigns the mortgages to a special purpose corporation (“SPC”) (generally, the SPC will have a name that is related to the seller for marketing purposes). The assigned mortgages are the only assets of the SPC. To perfect its interest, this SPC notifies obligors of the assignment. In addition, this SPC enters into an assignment agreement with the SPV. Since the assigned mortgages represent all of the SPC’s assets, one can obtain a strong universality opinion.

**Conclusion**

For conforming residential mortgages, securitization is relatively straightforward with established benchmarks in terms of portfolio performance and transaction structures readily available. Underlying data about the housing market in general is quite good especially when compared to other classes of assets. However, in order to best analyze the portfolio in question, detailed data on the portfolio itself as well as the originator’s policies, procedures, and historical delinquency, default, foreclosure, and loss performance is required.

Based on the cash flow characteristics of mortgage pools of varying average life, DBRS has revised its credit enhancement requirements with respect to both the amount and form of credit enhancement required. Typical mortgage pools will require total credit enhancement of at least 3.5% plus adjusted excess spread of at least 0.55% per year. Enhancement for pools of short-term mortgages may be almost entirely in the form of overcollateralization, while enhancement for pools of longer-term mortgages must be entirely or almost entirely in cash.
Appendix A – Stress Testing Parameters

Below are tables showing typical stress testing parameters and results associated with a fictitious conventional residential mortgage portfolio that has been securitized. The parameters used were as follows:

Base Characteristics (applicable to all scenarios)
Portfolio Type: Diversified single-family uninsured residential
Portfolio Spread: 0.55% (adjusted)
Amortization Schedule: 25-year amortization, five-year term with 0-24 months' seasoning
Prepayment Rate: zero

Stress Test
Delinquencies: 3 times historical maximum (5 times expected steady-state)
Defaults: 5 times historical average (at a minimum, more than 3 times historical maximum)
Application of test: Delinquencies and defaults increase over a period of 12 months starting in month 2

Property Value Decline: 40%
Assumed LTVs: All defaults take place in respect of 75% LTV mortgages
Enforcement Period: 18 months
Servicing Fees: 0.25% per year starting in the first month

Credit Enhancement
Cash: 3.5% CCA, annual adjusted spread of 0.55%
Appendix B – Definitions

CCA
Cash Collateral Account. Part of the proceeds of the issuance of notes is held back in the form of cash. Such cash is invested in highly rated securities (typically rated R-1(middle) or higher) until or if required as credit enhancement.

GDSR
Gross Debt Service Ratio (GDSR) calculation is a lending principle that your monthly housing costs should not exceed a certain percentage of your gross monthly family income. The monthly housing costs consist of principal and interest for the mortgage(s), property taxes, heating and (typically) 50% of condominium fees. CMHC guidelines suggest that GDSR should not exceed 32% of gross income.

LTV
Loan to Value ratio is calculated as the ratio of the outstanding amount of the mortgage divided by the lower of the original purchase price and any subsequent appraisal.

Overcollateralization
Assets sold in excess of funding raised. The difference is represented by a deferred purchase price payable to the seller who is subordinate to all rated notes issued.

SPV
Special Purpose Vehicle. An entity created for the express purpose of acquiring asset interests (however legally accomplished) and issuing asset-backed paper. Such entity is generally designed to be bankruptcy remote, but that may not necessarily be so in all circumstances.

TDSR
Total Debt Service Ratio (TDSR) calculation is similar to GDSR except that your monthly housing cost and payments on all of your other outstanding debts (including loans, credit cards and lease payments) should not exceed a certain percentage of your gross monthly income. CMHC guidelines suggest that TDSR should not exceed 40% of gross income.