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## Cautious Optimism for Canadian Credit Cards

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**Abstract**

The Canadian economy and Canadian consumers continue to receive intense scrutiny from lenders and policymakers alike. The resilience of the economy and continued rise of house prices in the face of the global recession has puzzled analysts for several years. Forecasts of a U.S.-style collapse in home values and mass charge-offs across consumer credit portfolios have failed to materialize. In this article, we focus on the consumer credit card sector in particular to better understand the trends and consumer behaviours driving outstanding balance growth and payment performance. While broader global macroeconomic risks threaten future performance, lenders and consumers are aware of rising debt burdens and have taken steps to mitigate the potential fallout of an economic shock. Nonetheless, Canadian household balance sheets are levered, limiting options to respond to shocks if they should materialize.

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# Cautious Optimism for Canadian Credit Cards

BY CRIS DERITIS, MUSTAFA AKCAY AND STEVE KERNYTSKY

The Canadian economy and Canadian consumers continue to receive intense scrutiny from lenders and policymakers alike. The resilience of the economy and continued rise of house prices in the face of the global recession has puzzled analysts for several years. Forecasts of a U.S.-style collapse in home values and mass charge-offs across consumer credit portfolios have failed to materialize. In this article, we focus on the consumer credit card sector in particular to better understand the trends and consumer behaviours driving outstanding balance growth and payment performance. While broader global macroeconomic risks threaten future performance, lenders and consumers are aware of rising debt burdens and have taken steps to mitigate the potential fallout of an economic shock. Nonetheless, Canadian household balance sheets are levered, limiting options to respond to shocks if they should materialize.

## Taking Stock

Publicly available data on credit card use and performance in Canada is limited. The Canadian Bankers Association provides limited statistics, including the delinquency rate for credit card balances that are 90 or more days past due as well as quarterly loss rates. These series provide interesting data on the overall health of credit card portfolios in Canada as well as overall trends in performance, which has demonstrated steady improvement since 2010 (see Chart 1). However, the data do not provide the geographic or credit score granularity that is necessary to understand underlying credit trends or dynamics. National data is also of limited value to credit card portfolio holders who may want to benchmark their own performance to that of their competitors within their own geographic footprint and credit profile.

Individual credit card issuers in Canada can certainly track their own portfolios, but this may not provide a representative picture, given differing levels of market share, concentration and focus. Through a recently

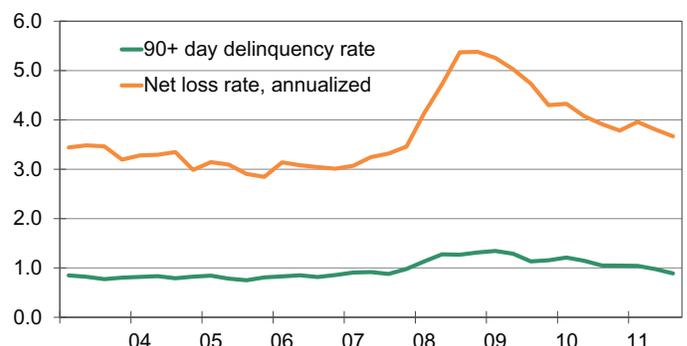
formed partnership between Equifax Canada and Moody's Analytics, industry-wide information broken out by geography and risk segments is now available to economic researchers, analysts and financial institutions. With this data, we are able to obtain valuable insights into the availability and use of credit along with performance trends such as delinquency and default rates across a variety of consumer credit products.

Equifax Canada collects credit report information on virtually all Canadian consumers and their individual credit accounts. Considering the company's long history and broad coverage, its historical database contains a wealth of information about Canadians' use of credit. Along with Moody's Analytics, Equifax Canada

Analytics has created a time-series database containing aggregated information on loan originations, outstanding balances, and performance segmented by product type, quarter of origination, geography (i.e. province and metropolitan area), and origination credit-score band.

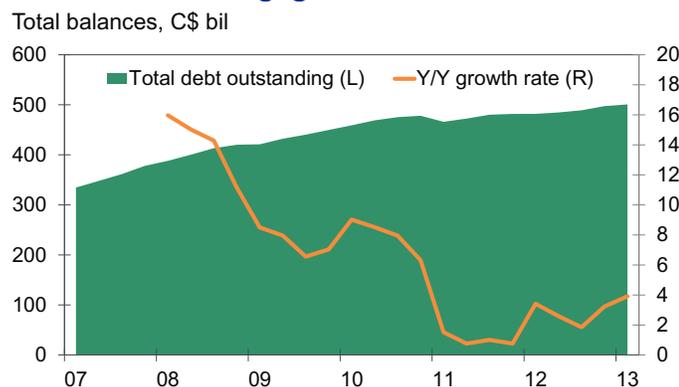
A casual examination of the data indicates that consumer credit balance growth has been robust post-2009. The year-over-year growth rate has slowed since 2011 (see

**Chart 1: Canadian Credit Card Trends Improve**  
Percent



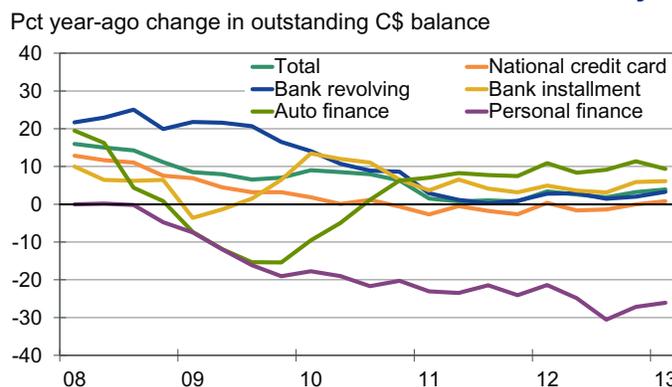
Sources: Canadian Bankers Association, Moody's Analytics

**Chart 2: Non-Mortgage Debt Grows but Slows**



Sources: Equifax Canada, Moody's Analytics

**Chart 3: Auto Loan Volume Growth Leads Way**



Sources: Equifax Canada, Moody's Analytics

Chart 2); however, some reversal in this decelerating trend is observable in recent quarters. Breaking out the data by lending product shows that much of the decline has been concentrated in bank installment and revolving credit lines, many of which are backed by home equity. Credit card balances were relatively flat over the 2010 to 2012 time period but grew at a 0.8% year-over-year rate in the first quarter of 2013. The one area that continues to experience robust growth is auto lending, with balances increasing by nearly 10% per year (see Chart 3). Much of that is the direct result of the dramatic reduction in auto purchases during the recession, when households delayed new-auto purchases, preferring to repair rather than replace their vehicles to the extent possible. As recession has turned to recovery, consumers have returned to dealer lots, seeking to unleash some of this pent-up demand.

Though outstanding balances on credit cards have been flat or falling over the past year, it is noteworthy that the amount of available credit outstanding grew 2.2% faster than in last year's first quarter. The total number of open accounts has grown even more swiftly, expanding at a 3% rate. Credit card issuers are clearly interested in expanding their portfolios and extending additional credit, but they are being more cautious and judicious. New credit is going to highly qualified borrowers who tend to have higher incomes, net worth and credit scores. These borrowers are also more likely to use their cards for transactional convenience rather than financing purchases, consistent with the small change observed in outstanding balances.

**Counting Cards**

Despite the relatively small growth in credit card balances in recent years, the sector is of significant interest because of banks' relatively large exposure to it. In addition, consumers' behavior with credit cards can serve as an early warning for other credit products. Unlike mortgage and auto loans, credit cards are unsecured. Theoretically, distressed borrowers whose incomes drop should forego payments on their credit cards first before risking

a foreclosure or vehicle repossession. As has been observed in the United States, a dramatic reduction in home equity can turn this relationship on its head as borrowers who are hopelessly under water on their loans may decide to stop throwing good money after bad on their home mortgages. Still, sudden changes in credit card activity can indicate overall financial stress.

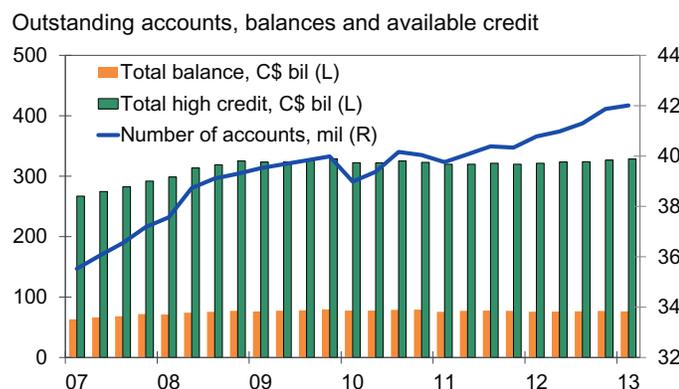
To better understand the credit card sector, Equifax Canada assembled a historical database with information on all credit card accounts that were active as of January 2006 or later. The database was segmented by quarter of origination (vintage) as well as by the account holder's credit score at origination. Specifically, credit card accounts were grouped into one of four categories by the primary borrower's credit score<sup>1</sup>:

- » Less than or equal to 620
- » 621-660
- » 661-700
- » Greater than 700

Duplicate joint accounts were removed from the database to avoid double-counting. In addition, each of the vintage-credit score segments was further subdivided by geography determined by the primary account holder's reported postal code. In order to respect the privacy of individual account holders and to reduce the size of the database to a more manageable level, the data

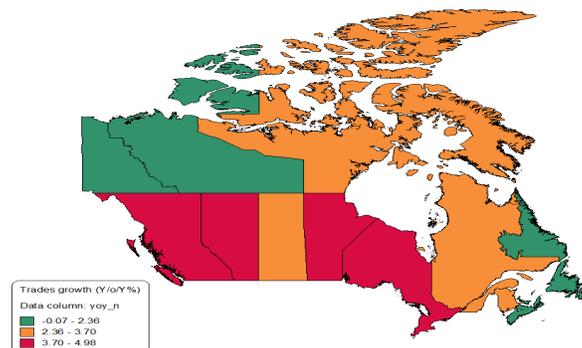
<sup>1</sup> Credit scores were computed using Equifax's proprietary Equifax Consumer Risk Predictor 3.0 score, which classifies borrower risk on a scale from 300 to 900 based on a variety of risk attributes, including payment history, credit utilization rates, etc.

**Chart 4: New Cardholders Don't Build Balances**



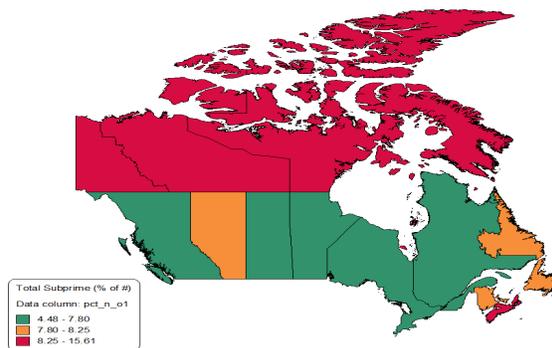
Sources: Equifax Canada, Moody's Analytics

**Chart 5: Credit Card Growth Varies by Province**



Sources: Equifax Canada, Moody's Analytics

**Chart 6: Subprime Lending Concentrated in North**



Sources: Equifax Canada, Moody's Analytics

are available to subscribers at both provincial and metropolitan levels.

With this level of detail, we are able to examine several important dynamics. In Chart 4, we can see that the number of open credit card accounts has risen over the past year even as balances have remained relatively constant. Significant regional variation is present, with the central and western provinces experiencing faster growth in card accounts than the eastern provinces (see chart 5).

The distribution of credit scores in Canada follows an interesting north-south pattern, with more low-credit-score borrowers in the North, precisely the opposite of what is observed in the United States. The Maritimes, Nova Scotia in particular, also exhibit a higher proportion of lower-credit-score, or subprime, credit card borrowers than in other parts of Canada (see Chart 6).

Delinquency rates on credit cards follow strong regional patterns as well. Local

economic strength or weakness determines the ability of consumers to find employment and earn the income that allows them to pay their bills. Just as booms in energy and commodity prices have fueled the expansion of the central corridor in the United States, Canada's energy- and timber-rich western provinces have experienced rapid growth. As a result, the fraction of borrowers who are 30 days or more past due on credit cards has been lower than in the rest of the country (see Chart 7). It is worth noting, however, that the range in delinquency rates at the provincial level is relatively tight, from 1.5% of outstanding balances in British Columbia to 2.6% in Nunavut.

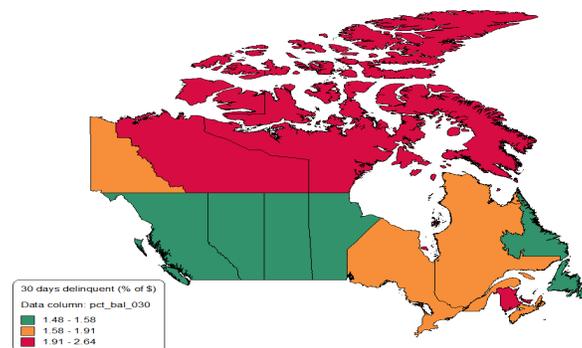
Naturally, higher default and bankruptcy rates are associated with higher delinquency rates. Areas dependent on manufacturing such as Ontario or Quebec have been particularly hard-hit (see Chart 8) as globalization has dented competitiveness and the global recession

has reduced demand for durables and other manufactured goods. Ongoing economic risks in some of Canada's major export markets, the United States and Europe specifically, make these provinces particularly vulnerable to higher bankruptcy and charge-off rates.

**Forecasting Futures**

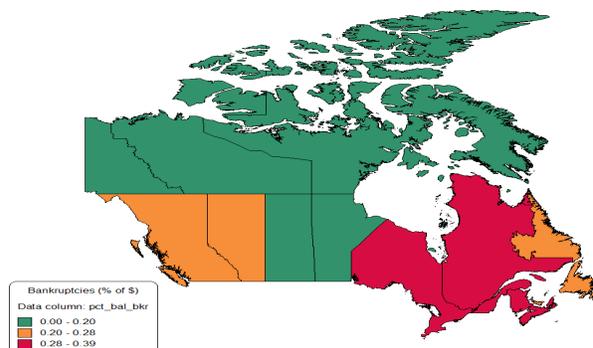
In addition to examining the data by geography, credit score and origination cohort, Moody's Analytics has developed econometric models relating economic factors to historical volume and performance metrics for credit cards. These vintage-based models leverage the regional heterogeneity and cyclical nature of the data to correlate economic performance with credit outcomes. Unlike other databases that either provide a single snapshot of current conditions or a national time-series of performance, the panel structure of the Equifax Canada data not only provides information on the business cycle exposure of loan performance

**Chart 7: 30-Day Delinquency Rates Lower in West**



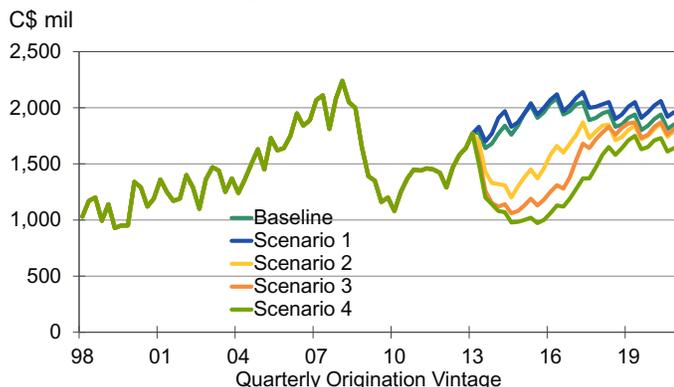
Sources: Equifax Canada, Moody's Analytics

**Chart 8: ...But More Bankruptcies in the East**



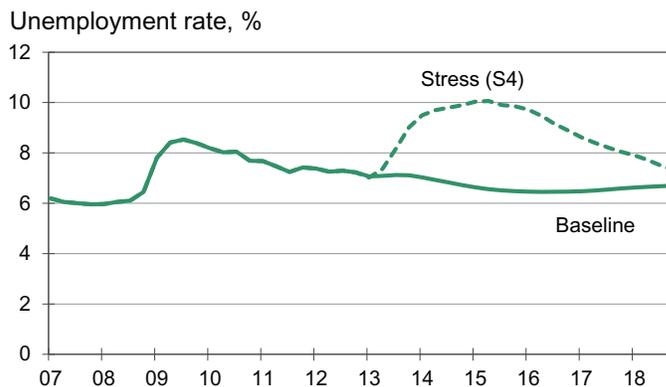
Sources: Equifax Canada, Moody's Analytics

**Chart 9: Card Originations Forecast to Grow**



Sources: Equifax Canada, Moody's Analytics

**Chart 10: Unemployment Forecast to Decline**



Sources: Equifax Canada, Moody's Analytics

but also allows for tracking performance by origination vintage.

Industry experts and analysts know well that consumer credit origination volumes and quality are not random: They follow a cyclical process as supply-and-demand factors ebb and flow throughout the business cycle. The simplest form of this relationship maintains that the best-quality loans are originated during the worst economic times and vice versa. By explicitly controlling for vintage quality and prevailing economic conditions at the time of origination in our models, we can better capture this intrinsic effect on loan performance. As a result, we are better able to accurately predict performance than if we were to rely on observed portfolio characteristics or current economic conditions alone.

**Credit Goes to Highly Qualified Borrowers**

Models for origination volume and initial high credit were developed first in order to es-

tablish the amount of new debt and potential exposure that will be added over the next five years. These models consider the historical relationship of debt and credit creation with labor market measures (employment and unemployment), interest rates, and wealth and income measures. House prices provide a good proxy for wealth, since the home remains the single largest asset on most Canadian households' balance sheets. We jointly estimate panel models to capture the interactions of all of these effects simultaneously with an econometric equation of the form:

$$\log(y_{iv}) = z_{iv} + u_{iv} \tag{1}$$

Where:

$i = 1, \dots, n$  refers to a given geographic region and credit-score band,

$v = 1, \dots, V$  indicates the quarter of the origination or vintage (for example, 2010Q1, 2010Q2, etc.);

$y_{iv}$  is the origination volume or loan count within a particular geography-credit-score band ( $i$ ) and vintage ( $v$ );

$z_{iv}$  are variables that define the economic conditions that prevailed at the time each vintage was originally formed interacted with a credit-score band to allow for economic relationships to vary between low- and high-credit borrowers; and

$u_{iv}$  is a residual capturing any unexplained variation in origination volume.

Chart 9 provides a summary of the quarterly forecast for credit card originations over the next five years. Under a baseline scenario wherein the Canadian economy continues to grow, the models suggest that balances will remain relatively flat through 2014 (abstracting from seasonal fluctuations). After that point, the Moody's Analytics baseline scenario forecasts a persistent decline in unemployment as economic activity increases (See Chart 10). This in turn would lead consumers to increase their credit card balances modestly to support additional spending. New credit card issuance is also expected to rise on the back of the forecast rise in retail sales growth shown in Chart 11. However, should this fairly optimistic scenario fail to be realized, we provide results under much darker economic scenarios, as can be observed in Scenarios 2 through 4<sup>2</sup> (see Chart 9). Under these scenarios, the Canadian economy would be subjected to a variety of external shocks, including a recession in the U.S. triggered by fiscal issues, an implosion of the euro zone, or a slowdown in China and other key Asian economies.

The origination models were estimated down to the provincial level and used eco-

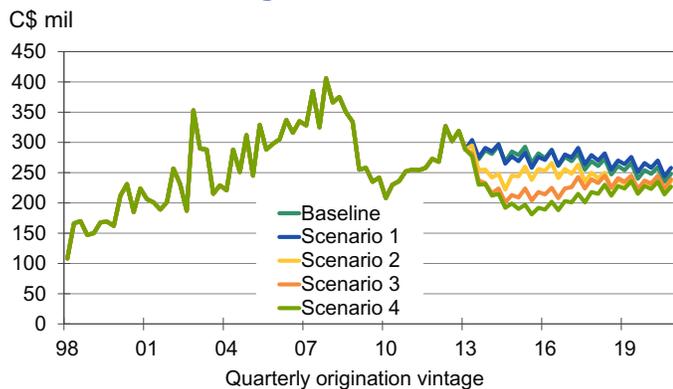
**Chart 11: Retail Sales to Expand; Risks Remain**



Sources: Equifax Canada, Moody's Analytics

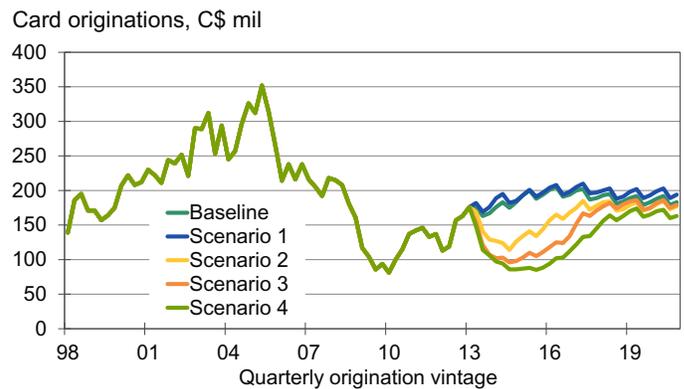
<sup>2</sup> Information regarding the structural macroeconomic and regional models that Moody's Analytics employs is available separately. The scenarios identified here correspond to a Monte Carlo simulation of this macroeconomic model. The Baseline scenario corresponds to the 50<sup>th</sup> percentile in the distribution of these simulations, while Scenarios 1, 2, 3 and 4 correspond to the 25<sup>th</sup>, 75<sup>th</sup>, 90<sup>th</sup> and 96<sup>th</sup> percentiles, respectively.

**Chart 12: Card Originations to Stabilize in Quebec**



Sources: Equifax Canada, Moody's Analytics

**Chart 13: Issuers Avoid Credit Scores <620**



Sources: Equifax Canada, Moody's Analytics

economic drivers that are specific to each province. Chart 12 for Quebec, for example, does not display the same strong rebound observed for the rest of the country, since the unemployment rate is expected to remain above the national average at close to 8% in 2013 and 2014. The models also account for changes in underwriting standards and policies. In Chart 13, the model predictions indicate modest growth in new credit card originations for borrowers with low credit scores, while growth will be faster for borrowers with higher credit score (see Chart 14).

**Outstanding Balances to Remain Constant**

Once quarterly origination volumes are established, the next step in the forecasting procedure considers the evolution of balances for each origination cohort over time. Typically, borrowers who receive a new credit card will run up balances quickly either by

transferring balances from other accounts or by simply shifting their ongoing usage from older cards to the new one. Separate models are estimated on historic data to capture the relationship in balance growth or decline from one quarter to the next:

$$d \log(y_{ivt}) = x_{it} \beta + z_{iv} \gamma + r_{ivt} \phi + f_i(t - v) + u_{ivt} \quad (2)$$

Where:

$i = 1, \dots, n$  refers to a given geographic region and credit score band,

$v = 1, \dots, V$  indicates the quarter of the origination or vintage (2010Q1, 2010Q2 etc.);

$y_{ivt}$  is the origination volume or loan count with in a particular geography and credit score band ( $i$ ), vintage ( $v$ ) and month ( $t$ );

$x_{it}$  is a set of variables that help define the macroeconomic conditions that the region-credit score ( $i$ ) faces at time ( $t$ );

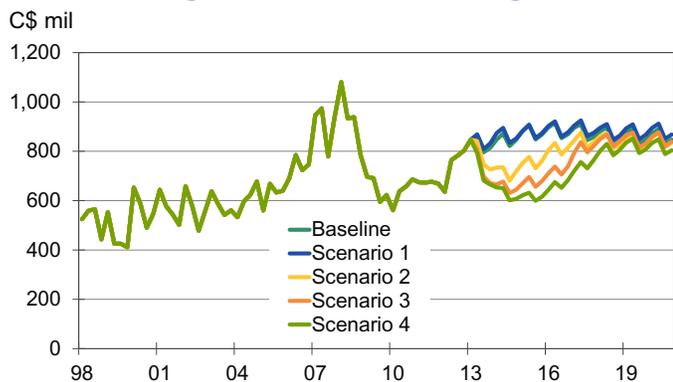
$z_{iv}$  are variables that define the economic conditions that prevailed at the time each vintage was originally

formed; and  $u_{ivt}$  is a residual, capturing any unexplained variation in origination volume.

ten prove to very useful. The function  $f_i(t - v)$  is a nonlinear baseline lifecycle that might also be a function of macroeconomic factors. The expression  $t - v$  contains the age of a vintage  $v$  at time  $t$ . We find that consumers' use of their credit cards fluctuates as a function of the age of the account, borrowers' credit quality, and prevailing economic conditions. As with the models used to forecast new loan originations, the economy enters the model in two distinct ways. First, the state of the economy at the time of origination is used to proxy for the intrinsic credit quality of borrowers that is not captured by the credit score or other observable factors. The supply-and-demand dynamics for consumer credit changes over time as consumers' needs change and as risk aversion at banks fluctuates with the business cycle. Second, changes in the economy have a direct impact on the ability of borrowers to pay their obligations. High unemployment and low income growth are detrimental to all consumers—even those with strong credit histories. The econometric models are designed to capture both of these effects.

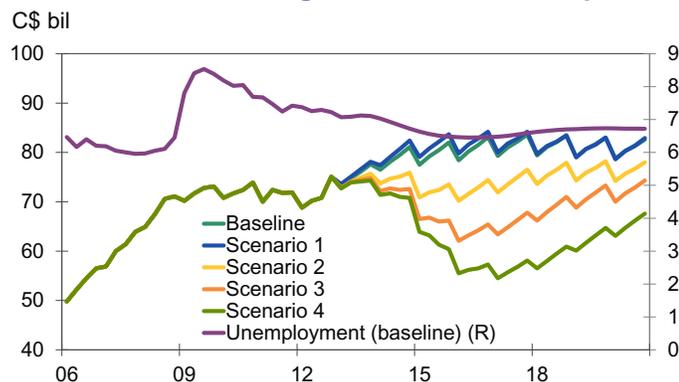
Chart 15 provides the results of this modelling and forecasting exercise. Credit card balances grew rapidly from 2006-2008, with year-over-year growth rates ranging from 10% to 12%. As unemployment rose in 2009, growth slowed to around 2% per year and has remained relatively constant despite the fact that employment has slowly recovered. The models are anticipating a stronger rate of growth of around 4% until the end of

**Chart 14: Originations Plateau for High Scorers**



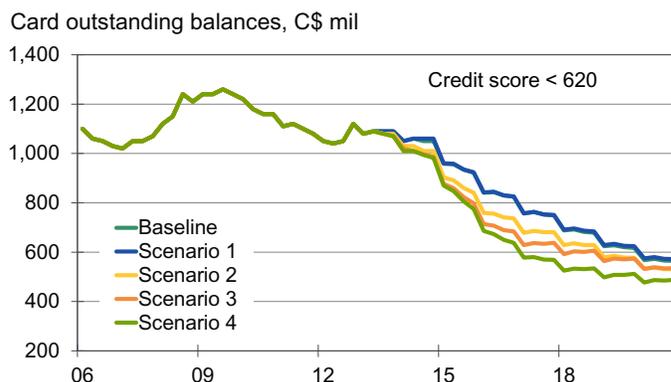
Sources: Equifax Canada, Moody's Analytics

**Chart 15: Outstanding Balances Set to Expand**



Sources: Equifax Canada, Moody's Analytics

**Chart 16: Credit Limited in Low-Growth Alberta**



Sources: Equifax Canada, Moody's Analytics

2015 under the Moody's Analytics baseline scenario. Should the economy falter or grow more slowly than our baseline view, balances will face negative pressure as lenders pull back, but demand for consumer credit will rise from those borrowers impacted by weaker economic conditions. This will keep balances from dropping dramatically, unless the Canadian economy falls into deep recession as represented by Scenarios 3 and 4.

As with origination volumes, fluctuations in balances vary considerably across provinces and credit-score bands. For example, modest growth in economic activity in Alberta will lead to moderate growth in credit card balances overall but a significant contraction for subprime borrowers (see Chart 16).

**Performance Unchanged as Households Adjust**

Finally, econometric models were developed to forecast delinquency, default, bank-

ruptcy and prepayment rates within each province, origination quarter, and credit-score band under consideration. Delinquency and default rates for credit cards are heavily dependent on the current state of the labor market and its impact on available disposable income. An underlying maturation curve is also observable, since all loans start out being non-delinquent and separate themselves into performing and nonperforming groups over time. The model structure shares some similarities with the balance forecasting model, although the dependent variables and parameter estimates vary:

$$\log(y_{ivt}) = x_{it}\beta + z_{iv}\gamma + r_{ivt}\phi + f_i(t - v) + u_{ivt} \quad (3)$$

Where:

$y_{ivt}$  is the performance metrics, for example delinquency rate, within a particular geography credit-score band ( $i$ ) and vintage ( $v$ ) at month ( $t$ ). The rest of the terms are the same as those described for the outstanding balance models.

even 5%, surpassing those of 2009. Unlike those in the United States, Canadian credit card portfolios did not experience a significant purging process during the Great Recession. As a result, many Canadian consumers remain vulnerable to future economic weakness, while U.S. households have either restructured and rebuilt their balance sheets or have defaulted and been removed from the population of active accounts.

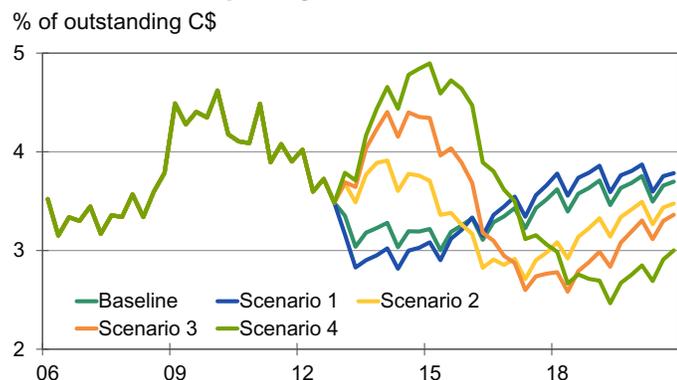
As with the forecasts for originations and balances, credit performance is highly dependent on local economic conditions. Although most of the country is expected to experience little to no change in delinquency rates, some provinces such as Ottawa and Nova Scotia are forecast to experience worse performance under the baseline scenario (see Chart 18).

**Stable Future Forecast, but Risks Remain**

Putting all of the forecasts together allows us to provide a complete outlook for the performance of the Canadian credit card market. In Chart 19, we see that the models call for a small rise in the annualized default rates for cards in the short run, as the impact of tighter underwriting standards implemented in 2012 will not be fully digested until later this year. Still, the rise in defaults should be modest and result in low rates similar to those experienced in 2007. The slow and steady decline in unemployment combined with the improved qualifications of borrowers receiving credit should place downward pressure on default rates in 2014-2015. Finally, the increase in originated bal-

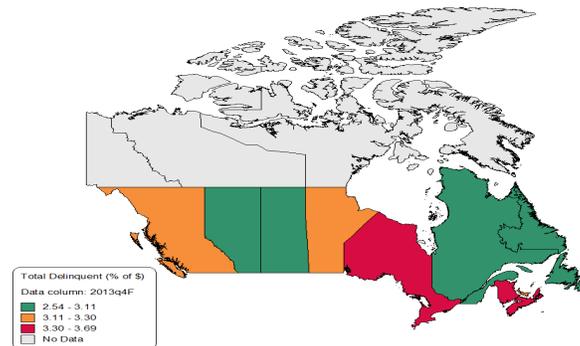
ances over the next three years (see Chart 17). Should the situation deteriorate, rates could rise to 4.5% or

**Chart 17: Delinquency Rates to Fall...or Rise?**



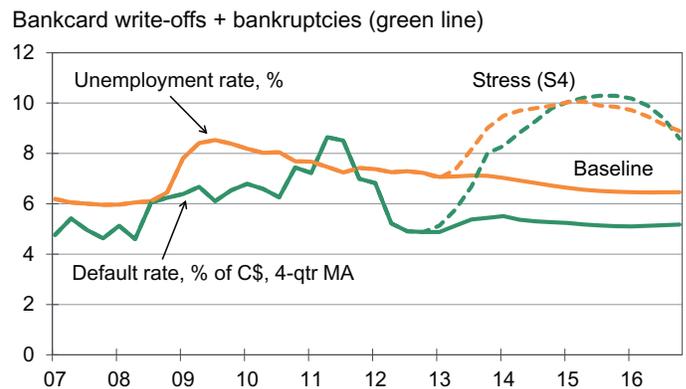
Sources: Equifax Canada, Moody's Analytics

**Chart 18: Delinquency-Rate Forecast for 2013Q4**



Sources: Equifax Canada, Moody's Analytics

**Chart 19: Default Rates Track Unemployment**



Sources: Equifax Canada, Moody's Analytics

ances discussed in the prior sections should have the effect of increasing the denominator of the default rate while contributing little in the way of new losses in 2015. This will cause the default rate to drift toward historical lows in 2016.

This forecast presumes that all of the global economic problems alluded to earlier will be resolved in a reasonably graceful way. If the United States is unable to settle its fiscal issues and devise a plan to reduce the government deficit gradually over the next decade, U.S. consumer and business demand for Canadian goods could drop sharply as the nation is pulled back into recession. Similarly, the

exit of one or more members of the euro zone could trigger a panic across the continent, limiting the demand for Canadian exports. Demand from China, Japan, and other Asian nations has also supported the Canadian economy and fuelled some of the increase in consumer debt, especially in the western provinces. A disruption in this demand could also trigger an increase in unemployment and force credit card losses to new highs, as shown by the stress scenario in Chart 19.

On the bright side, Canadian lenders and households have become increasingly aware of the dangers around rising leverage ratios and have been taking actions over the past

few years to curtail gradually some of the aggressive borrowing patterns of the end of the last decade. A sharp reduction in consumer demand poses its own risks to the economy, as it could feed upon itself and lead to sharp cutbacks by more businesses and consumers. A gradual adjustment to a new equilibrium is best, but the global race is on to see whether all of these adjustments can be made simultaneously. With active attention paid to these issues to restructure balance sheets and a bit of luck, Canadian consumers—and Canadian credit card issuers—will come through the latest cycle with modest losses and more sustainable finances.

# About the Authors

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Cristian de Ritis is a director at Moody's Analytics. He performs consumer credit modeling and analysis with the firm's Credit Analytics group and contributes to the analysis for CreditForecast.com. Before joining the Moody's Analytics West Chester PA operation, Cris worked for Fannie Mae and taught at Johns Hopkins University in Washington DC. He received a PhD and MA in economics from Johns Hopkins University and graduated summa cum laude from Michigan State University with a bachelor's degree in economics.

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Moody's Analytics added Economy.com to its portfolio in 2005. Its economics and consumer credit analytics arm is based in West Chester PA, a suburb of Philadelphia, with offices in London and Sydney. More information is available at [www.economy.com](http://www.economy.com).

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