Indebted Households and Potential Vulnerabilities for the Canadian Financial System: A Microdata Analysis

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- Over the past decade, an increasing proportion of households in Canada have become highly indebted relative to their income. The proportion of indebted households with ratios of debt to gross income exceeding 350 per cent has increased from 4 to 8 per cent since the pre-crisis period. These households now hold about one-fifth of total outstanding household debt.
- Consistent with the increase in house prices experienced over the past decade, the rising incidence of highly indebted households has been more prominent in British Columbia, Alberta and Ontario. The increase also tends to be more concentrated in younger and lower- to middle-income households.
- Model simulations that take into account the larger share of highly indebted households suggest that an increase in unemployment and interest rates could have a larger impact on the financial system now than it did in the pre-crisis period.
- The vulnerability of the financial system to household indebtedness ultimately depends on whether financial institutions can withstand losses emanating from the household sector. Stress tests of the Canadian banking system suggest that systemically important Canadian banks are resilient even though they experience declines in their capital positions in a very severe stress scenario.

Introduction

To effectively assess the extent to which elevated household indebtedness is a vulnerability for the Canadian economy and financial system, it is important to go beyond aggregate statistics such as the total household debt-to-income ratio.[1] Since debt and income are not uniformly distributed across households, aggregate measures of household indebtedness can mask important information about those households that hold more debt and their ability to repay that debt when faced with shocks to incomes and interest rates.

In this report, we use household-level data from the Canadian Financial Monitor (CFM) to identify the demographic and socio-economic characteristics of indebted households and their evolution over the past 10 years.[2] The household-level analysis enables us to obtain a more granular picture of household indebtedness in Canada, deepen our understanding of the resilience of indebted households to adverse shocks and enhance our assessment of the financial system vulnerability stemming from elevated household indebtedness.

Our work complements regular analysis presented in issues of the *Financial System Review*, as well as some recent research on household debt, such as Uppal and LaRochelle-Côté (2015a, 2015b), Alexander and Jacobson (2015), and Crawford and Faruqui (2011–12). Uppal and LaRochelle-Côté (2015a, 2015b) use

1 A vulnerability is a pre-existing condition that can amplify and propagate shocks throughout the financial system. See Christensen et al. (2015) for further discussion on the Bank of Canada's approach to vulnerability assessment.

2 The Canadian Financial Monitor is a survey conducted by Ipsos Reid that collects information on households' balance sheets, income, debt payments, and other financial and demographic characteristics. The survey data span from 1999 to 2014 and cover approximately 12,000 households each year. Responses are weighted to generate a representative sample of the Canadian population. One limitation of the survey is that information on income, mortgage and house values is recorded in ranges and is top-coded, i.e., values above certain upper bounds are censored. For the purpose of our analysis, we use midpoints as reported values whenever answers are provided in ranges. We also use multi-year averages over time to reduce sampling variability. Since a change to the administered questionnaire in 2005 affected the measurement of income, we conduct our analysis from 2005 on.

Statistics Canada's 1999 and 2012 Survey of Financial Security (SFS) to study changes in debt, assets and net worth among Canadian families across selected characteristics. They find significant increases in both assets and debt in the 1999–2012 period, although there were differences across family types.[3] They also find that wealth increased more quickly among the most affluent families, largely because of a rise in the value of their assets. Alexander and Jacobson (2015) use the SFS and focus on the distribution of mortgage debt across households, finding pockets of vulnerability by income, age and region. Crawford and Faruqui (2011–12) find that falling interest rates, rising house prices and financial innovation have likely underpinned the rise in outstanding mortgage and consumer debt since the late 1990s. Our contribution to this research is to identify characteristics of highly indebted households and assess their resilience to various shocks.

The Distribution of Debt Across Canadian Households: Salient Characteristics

We begin by looking at the incidence of household debt in Canada over the past 10 years. To facilitate pre- and post-financial-crisis comparisons, we report results over two time periods: 2005–07 and 2012–14.[4]

Roughly 70 per cent of Canadian households held some debt in the past decade (**Table 1**).[5] This proportion is lower than the 77 per cent peak reached in the United States before the 2007–09 global financial crisis. For the post-crisis period, the proportion is lower than in economies such as Australia, Norway and Sweden, which have similar macro policy frameworks and experienced similar conditions to those in Canada during and after the crisis.[6] Abstracting from cyclical factors, cross-country differences in the incidence of debt likely reflect differences in housing finance policies and household preferences regarding home ownership, as well as demographic and other institutional factors.

Table 1: Incidence of household debt in Canada

	2005–07	2012–14
Proportion of indebted households in Canada (per cent)	70.4	69.2
Incidence of debt by type (per cent)		
Households with mortgages only	6.9	8.6
Households with both mortgages and consumer debt	27.4	25.9
Households with consumer debt only	36.1	34.7
Share of household debt (per cent)		
Mortgages	71.2	77.4
Consumer debt	28.8	22.6

Source: Ipsos Reid

Looking at the composition of household debt over the past decade, we find that roughly 35 per cent of Canadian households held mortgages, while about 60 per cent had some type of consumer (non-mortgage) debt.[7] In terms of value, however, mortgages accounted for the vast majority of total household debt. An important observation is that the share of mortgages in total household debt has increased over time, rising from 71 per cent in the 2005–07 period to 77 per cent in the 2012–14 period, reflecting the increase in home ownership and house prices over the past decade.

Table 2 shows the incidence and share of household debt across different income quintiles, net worth quintiles, age and education categories, and regions.[8, 9]

We find that the incidence of debt tends to be higher in households with higher incomes, those with more education and those in the middle net worth categories. These households also hold a bigger share of total household debt. Consistent with the life-cycle theory of consumption, the incidence of debt also tends to

3 Debt grew faster, for example, among families with a major income earner aged 35 to 44 and among couples with children under 18, and its growth was mainly due to mortgage borrowing. The value of assets also grew with rising real estate values. For non-homeowners, singles and families with major income earners aged 15 to 34, increases in debt were not matched by a statistically significant rise in assets.

4 Analysis on a year-over-year basis yields similar results. The 2008–11 period generally follows the trend over the past decade.

5 While the percentage of indebted households in the CFM is broadly equivalent to numbers found in the SFS, there can be discrepancies between the two surveys because of different sampling and weighting methodologies. The SFS, for example, suggests an increase in the incidence of debt from 69.4 per cent in 2005 to 71.1 per cent in 2012.

6 In Australia, 71.7 per cent of households had debt in 2013–14 (Australian Bureau of Statistics). In Norway, 84 per cent of households had registered debt in 2012 (Households' Income and Wealth Statistics from Statistics Norway), while in Sweden, about three-quarters of households had mortgages over 2010–14 (Alfelt and Winstrand 2015). Canada has a higher proportion of indebted households than euro-area economies that were more directly affected by the crisis, such as Spain, Italy and Ireland, in which 50, 25 and 57 per cent of households, respectively, were in debt (2011 Eurosystem Household Finance and Consumption Survey and Ireland Central Statistics Office). In the United States, 74.5 per cent of households had debt in 2013 (Survey of Consumer Finances).

7 Consumer debt includes secured and unsecured lines of credit, credit card debt, leases, student loans and other consumer loans. See Crawford and Faruqui (2011–12) for further details.

8 We also looked at differences between the incidence of mortgage and consumer debt across the various categories. We found that the incidence of mortgage debt was relatively similar across provinces but was much more prominent across higher-income quintiles, younger households and those with university degrees. Households in lower-income and older age groups relied more extensively on consumer debt. In terms of share of total household debt, consistent with the results in **Table 1**, mortgages were the dominant type of household debt across all categories.

9 In the 2014 CFM data, the dollar ranges for the 1st to 5th income quintiles are less than 35k, 35k to 55k, 55k to 85k, 85k to 125k, and 125k and above. The dollar ranges for net worth quintiles are less than 6.2k, 6.2k to 80.8k, 80.8k to 254.5k, 254.5k to 566.6k, and 566.6k and above.

Table 2: Incidence of household debt, by demographic and socio-economic characteristics

Category	Incidence of household debt, by category (per cent)		Share of total household debt (per cent)	
	2005–07	2012–14	2005–07	2012–14
Income quintile				
1st – lowest	51.4	53.0	4.1	4.9
2nd	68.1	66.9	10.8	10.8
3rd	76.6	74.7	17.4	19.9
4th	81.9	78.5	29.8	28.3
5th	80.2	77.1	36.6	34.3
Net worth quintile				
1st – lowest	74.7	71.9	16.7	16.3
2nd	66.0	65.1	12.8	15.7
3rd	77.9	79.9	26.5	30.7
4th	73.6	70.7	25.0	22.3
5th	60.7	59.7	18.9	15.0
Age				
< 35	84.5	77.0	28.8	25.8
35–44	82.4	79.6	32.6	28.2
45–54	76.0	73.3	23.6	23.5
55–64	65.3	65.8	10.3	14.1
≥ 65	42.5	53.7	4.8	8.4
Education				
≤ High school	63.1	62.5	19.5	15.4
Some post-secondary education	75.4	72.1	44.5	41.4
≥ Bachelor's degree	71.1	70.4	35.8	43.0
Region				
British Columbia	69.0	66.7	16.3	15.2
Alberta	74.1	71.6	12.1	15.0
Saskatchewan-Manitoba	66.6	67.5	5.2	5.8
Ontario	71.8	70.2	43.2	40.0
Quebec	67.5	68.5	17.3	18.3
Atlantic provinces	73.9	69.8	6.0	5.6

Source: Ipsos Reid

decrease with age. As younger households expect their future income to increase, they build up debt early in adulthood to finance consumption and then save (and reduce their debt) during middle age to accumulate wealth to support spending during retirement years. Not surprisingly, then, more than half of total debt was held by households under 45 years of age, even though they made up about 40 per cent of all households in 2012–14.

There were a few notable changes over the past decade. First, the share of total debt held by Albertans increased the most, while the share held by households living in Ontario declined the most. This likely reflects a younger demographic profile in Alberta than in Ontario. It also reflects the actual and expected relative performance of the two economies over the two periods—a situation that could change with the recent downturn in the energy sector. Second, the proportion of indebted households and the share of debt held by those in the oldest age category (65 and above) have increased sharply. This is likely because baby boomers comprise a large fraction of the population and many of them are entering this age category. Relative to previous generations, baby boomers have higher home-ownership rates (Hou 2010), have longer life expectancies, are working longer and have benefited the most from rising house prices. These factors may have contributed to a capacity to hold more debt than previous cohorts. Third, the share of debt held by households with higher education (a bachelor's degree or above) has increased significantly. Finally, the share of debt held by the wealthiest households

has declined, while households in middle net worth categories have taken on a larger share of total household debt over time.

While these observations provide a useful picture of the exposure of Canadian households to debt, further analysis is required to determine whether indebted households are vulnerable to shocks affecting their ability to repay. In the next section, we examine the characteristics of households that are highly indebted and that may therefore be vulnerable to shocks.

Characteristics of Highly Indebted Households in Canada

We define households as *highly indebted* if their debt-to-income ratio, calculated as the total amount of debt divided by *gross* household income, exceeds a certain threshold.[10] We determine this threshold by using the Bank of Canada's Household Risk Assessment Model (HRAM) (Faruqui, Liu and Roberts 2012) to analyze which households, ranked in different debt-to-income categories, are more susceptible to arrears on their debt under a hypothetical stress scenario.[11] We find that the incidence of arrears increases significantly for households with debt-to-income ratios between 250 and 350 per cent, with even sharper increases for households with debt-to-income ratios above 350 per cent (see **Appendix**). Therefore, for the remainder of this report, we consider households with debt-to-income ratios of 350 per cent and above to be highly indebted households.[12]

Table 3 shows that the proportion of indebted households with a debt-to-income ratio above 350 per cent doubled from around 4 per cent during the 2005–07 pre-crisis period to around 8 per cent in 2012–14.[13] Importantly, their share of total household debt was around 21 per cent in 2012–14, up from 13 per cent in 2005–07. Mortgages account for the bulk of that debt, with their importance growing from 80 to 87 per cent over the two periods. Since real estate assets account for about 90 per cent of these indebted households' total assets, their net worth could be particularly affected by a house price correction.

Despite the greater incidence of highly indebted households in Canada, the debt-service and financial-assets-coverage ratios of these highly indebted households have improved over time.[14, 15] Indeed, the median household in this group faced lower debt-service costs and had more financial assets to service debt payments in the post-crisis period than it did before the crisis. More generally, fewer of the highly indebted households had very high debt-service ratios (40 per cent or higher) and more of them would be able to cover their debt payments over the next month in the case of emergencies.[16] While these results suggest that the highly indebted households are now in a better position to service their debt payments, this situation likely reflects the prolonged period of declining interest rates following the crisis. It could change materially in an environment of rising interest rates.

Given the non-negligible and increasing proportion of highly indebted households in Canada, we now dig deeper into their demographic and socio-economic characteristics to try to determine whether they are financially vulnerable. Although the increase in the proportion of highly indebted households has been fairly broad-based, some important differences can be seen across groups (**Table 4**).

For example, the percentage increase in the incidence of highly indebted households was largest for those between 35 and 54 years of age and among those with a high school education or less. Across income quintiles, the increase in the incidence of highly indebted households more than doubled for the middle-income quintiles, while the percentage increase was smaller for the lowest-income group and actually dropped for the highest-income quintile. A similar picture emerges across wealth quintiles. Overall, it appears that the increase in the proportion of highly indebted households after 2005 was more concentrated in younger, low- to middle-income and low- to middle-wealth groups. One

10 Since disposable income is not available in the CFM, we use the gross income measure.

11 We consider a household to be in arrears if it has been late on its debt-payment obligations for three months or more.

12 For convenience, we will refer to this debt-to-income category as "above 350 per cent" in the text of this report.

13 Focusing on households with mortgage debt, Alexander and Jacobson (2015) find that the proportion of highly indebted households roughly doubled between 2005 and 2012 (from 5.5 per cent to 10.8 per cent). Using Statistics Canada's SFS data, they define households as highly indebted if their ratio of mortgage debt to disposable income exceeds 500 per cent. Using CFM data, we find similar numbers when we define highly indebted households as those with a ratio of mortgage debt to gross income above 350 per cent (which is roughly equivalent to a ratio of mortgage debt to disposable income of 500 per cent assuming a tax rate of 30 per cent).

14 The debt-service ratio is defined as monthly debt payments divided by gross household income. It measures the ability of a household to service monthly debt payments, taking into account income, interest rates and principal payments. The financial-assets-coverage ratio is defined as total non-pension financial assets (i.e., all cash, GICs, bonds, stocks and mutual funds held outside of a group pension plan) divided by monthly debt payments. It captures the number of months a household would be able to draw on its financial assets to service debt payments in response to adverse shocks.

15 These patterns are also true for all indebted households. Their median debt-service ratio decreased from 13.5 to 12.9 per cent from 2005–07 to 2012–14. Their median financial-assets-coverage ratio increased from 20.1 months to 26.1 months, while the median proportion of real estate assets in total assets for indebted households increased from 55.7 to 65.4 per cent over the same period.

16 Consistent with banking industry standards, a household is considered to be more likely to have difficulty making loan payments when its debt-service ratio is 40 per cent or higher. Dey, Djoudad and Terajima (2008) find an increasing likelihood of mortgage delinquency with debt-service ratios above 35 per cent.

Table 3: Incidence of highly indebted households

Households with a debt-to-income ratio of 350 per cent and above	2005–07	2012–14
Share of all indebted households (per cent)	4.1	7.9
Proportion with debt-service ratio of 40 per cent or higher (per cent)	55.1	35.7
Proportion with financial-assets-coverage ratio of less than 1 month (per cent)	22.5	20.7
Share of household debt (per cent)	12.7	20.7
Proportion in mortgages (per cent)	79.8	86.6
Other metrics of financial health		
Median debt-service ratio (per cent)	43.1	34.2
Median financial-assets-coverage ratio (number of months)	5.5	6.5
Median proportion of real estate in total assets (per cent)	84.4	89.7

Source: Ipsos Reid

Table 4: Incidence of highly indebted households, by demographic and socio-economic characteristics

Category	Incidence of highly indebted households among indebted households, by category (per cent)		Share of total household debt (per cent)	
	2005–07	2012–14	2005–07	2012–14
Income quintile				
1st – lowest	9.2	14.2	1.9	3.1
2nd	5.6	12.6	2.8	4.9
3rd	4.2	9.4	2.9	6.1
4th	1.8	5.3	2.1	4.7
5th	1.6	1.4	2.9	1.9
Net worth quintile				
1st – lowest	5.0	8.3	3.3	4.4
2nd	4.2	9.0	1.7	4.4
3rd	4.7	12.0	2.8	7.1
4th	3.8	6.6	3.0	3.6
5th	2.5	2.4	1.8	1.2
Age				
< 35	5.0	9.7	4.0	5.6
35–44	4.7	9.7	3.8	5.6
45–54	3.5	7.7	2.6	4.6
55–64	3.4	6.5	1.5	2.9
≥ 65	2.9	5.5	0.8	1.9
Education				
≤ High school	3.7	8.1	2.5	3.7
Some post-secondary education	4.5	8.3	5.9	9.3
≥ Bachelor's degree	3.9	7.3	4.2	7.7
Region				
British Columbia	7.5	13.6	3.5	5.1
Alberta	4.1	10.9	1.3	3.7
Saskatchewan-Manitoba	2.3	4.9	0.4	0.7
Ontario	4.4	8.5	5.1	8.0
Quebec	2.7	5.0	1.8	2.6
Atlantic provinces	2.4	3.6	0.6	0.6

Source: Ipsos Reid

potential explanation for this result is the already-noted rising house prices, which have outpaced income growth and have led many households to take on larger mortgages to finance their house purchases. Given that real estate assets now account for a much larger fraction of the assets of indebted middle-income households, these households could be more affected than in the past in the event of a house price correction.[17] Regionally, Alberta registered the biggest jump in the share of highly indebted households, nearly tripling from about 4 to 11 per cent.

These dynamics translate into a pool of highly indebted households that are relatively younger than the pool of less-indebted households (i.e., those with a ratio of debt to gross income below 350 per cent); have lower income and wealth; are less likely to have a bachelor's degree; and are more likely to live in British Columbia, Alberta or Ontario (**Table 5**).

Table 5: Key differences between the pools of highly indebted and less-indebted households over 2012–14

Category	Highly indebted households DTI ≥ 350%	Less-indebted households 0 < DTI < 350%
Income (median)	$50,970	$79,000
Net worth (median)	$96,840	$152,500
Age (median)	44	48
Proportion with a bachelor's degree or above (per cent)	33.6	36.6
Proportion in British Columbia, Alberta and Ontario (per cent)	76.3	58.8

Note: DTI = debt-to-gross income ratio
Source: Ipsos Reid

The Exposure of Highly Indebted Households to the Risk of Job Loss

Now that we have identified the characteristics of highly indebted households, we investigate whether they face a greater risk of job loss than the average household. A sharp and persistent income decline due to job loss could cause highly indebted households to default on their debt, contributing to financial system stress.

The risk of job loss tends to be associated with a range of socio-economic and demographic factors such as age, education, region and employment sector. To reflect this tendency, HRAM makes use of work from Chan, Morissette and Frenette (2011) to compute a relative risk of layoff for a household with given socio-economic characteristics. By doing so, the model can capture some of the patterns seen in past recessions, whereby the likelihood of being laid off was higher among young workers, individuals with no university degree, and those employed in the primary, construction and manufacturing industries.[18, 19] The relative risk of layoff for a particular household can then be compared with the expected probability of layoff for a household whose socio-economic characteristics are the average among all households in the workforce. For example, a relative risk factor of 0.5 means that a household is expected to encounter only half the risk of layoff that an average household encounters. Conversely, a relative risk factor of 3.0, which might be more indicative of a younger employee with less work experience and education, or an employee in a sector with more job turnover, would mean that a household has three times the average risk of layoff. We use our results to construct the distribution of household debt by relative risk of layoff.

Table 6 and **Chart 1** compare the share of household debt held by households based on their relative risk of layoff and across different debt-to-income categories. A number of insights emerge. First, the majority of household debt (about 80 per cent) is held by households that have an average or lower-than-average risk of a layoff. Second, for less-indebted households, about 22 per cent of their debt is held by those that have a very low risk of layoff. The respective share for highly indebted households is lower, at 17 per cent. Third, there does not appear to be a significant difference between highly indebted and less-indebted households regarding above-average risk of losing their jobs—the most pertinent group from a financial stability perspective. For both sets of households, about 19 per cent of the debt is held by those with higher-than-average risk of job loss. Given that households with debt-to-gross income ratios above 350 per cent hold about

Table 6: Share of total debt, by risk of layoff

Relative risk of layoff		Share of total household debt (per cent)	
		DTI < 350%	DTI ≥ 350%
Very low	0–0.5	21.8	16.7
Medium-low	0.5–0.75	30.4	35.5
Average	0.75–1.25	29.0	29.9
Medium-high	1.25–1.75	10.7	8.9
Very high	≥1.75	8.1	9.1

Note: DTI = debt-to-gross income ratio
Sources: Ipsos Reid and Bank of Canada calculations

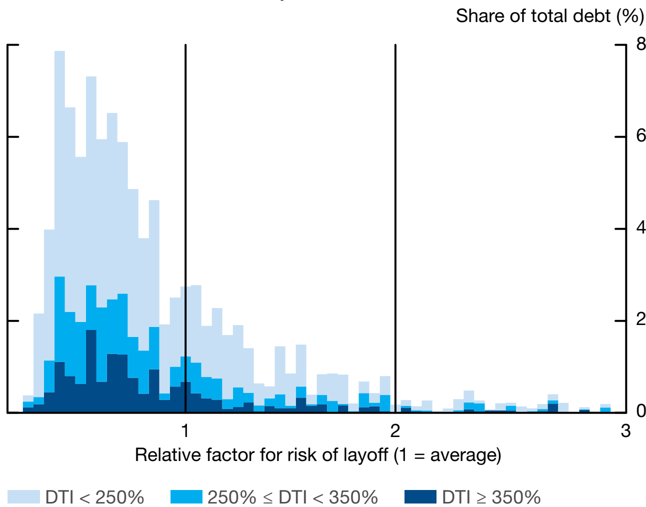
17 From 2005–07 to 2012–14, the median share of real estate assets in total assets increased from 36, 58, 65 and 63 per cent to 55, 69, 74 and 70 per cent for the second, third, fourth and fifth (highest) income quintiles, respectively.

18 Primary industries include agriculture, forestry, fishing, mining, and oil and gas.

19 Chan, Morissette and Frenette (2011) use Statistics Canada's Labour Force Survey (LFS). Because the socio-economic information in the LFS does not correspond exactly to data available in the CFM, certain variables such as job tenure, for example, must be replaced with an age-determined proxy.

Chart 1: Most debt is held by households with average or below-average risk of layoff

Distribution of debt relative to layoff risk

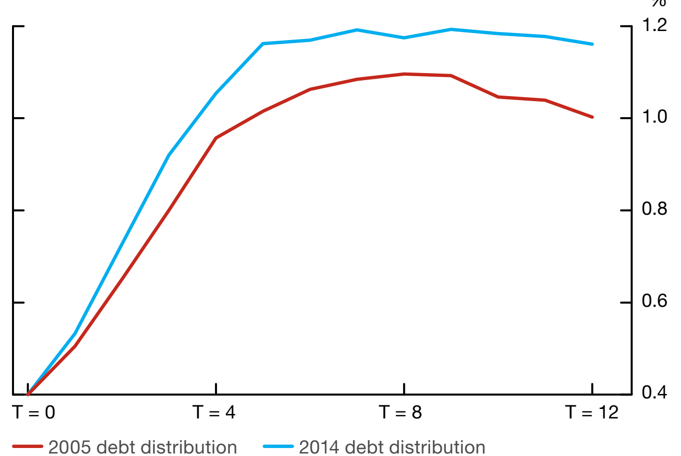


Sources: Ipsos Reid and Bank of Canada calculations

Last observation: 2014

Chart 2: A greater incidence of highly indebted households leads to a greater increase in arrears under a stress scenario

Household arrears rate



Source: Bank of Canada calculations

21 per cent of total household debt, this means that about 4 per cent of all household debt is held by highly indebted households that are also at a higher-than-average risk of losing their jobs.

Estimating the Impact of an Adverse Shock on Canadian Households

Shocks affecting the ability of households to repay their debt, such as unemployment or interest rate shocks, can reveal weaknesses in household finances that would otherwise not be apparent in a stable economic environment. In this section, we use HRAM to analyze the impact of a hypothetical stress scenario on the rate of household debt in arrears. We focus on the shock scenario's arrears rate since it is a more comprehensive measure of potential vulnerability in current household finances. Indeed, rather than reflecting only one dimension of household finances, such as debt payments relative to income, a household would likely end up in arrears through a confluence of factors, such as elevated indebtedness, sensitivity to income shocks and an inadequate financial asset buffer.

To gauge the effect of an adverse shock in light of the greater incidence of highly indebted households in Canada in recent years, we compare the impact of a stress scenario around two sets of initial conditions: household balance-sheet positions in 2005 (when about 4 per cent of indebted households had debt-to-income ratios greater than 350 per cent) and in 2014 (when about 8 per cent of indebted households had debt-to-income ratios greater than 350 per cent). Our scenario involves simultaneous increases in the unemployment rate and the household borrowing rate of 3 and 2 percentage points, respectively, that persist for three years.[20, 21] Chart 2 shows the impact on a starting-point arrears rate of 0.4 per cent.

We find that the greater incidence of highly indebted households in 2014 relative to 2005 results in a more pronounced increase in arrears following the same shock. With debt levels higher relative to income in 2014 than in 2005, households faced with shocks that lower income or increase debt payments exhaust their financial assets and fall into arrears more quickly.[22] After one year, the increase in arrears is roughly 16 per cent greater under the 2014 debt distribution (65 basis points compared with 56 basis points in 2005). After three years, the increase in arrears is roughly 27 per cent greater under the 2014 debt distribution (76 basis points compared with 60 basis points in 2005). Although the additional 16 basis points in arrears arising from the

20 The likelihood of a scenario of this severity is judged to be low.

21 Although an economic downturn would typically result in a more accommodative policy stance on interest rates, household borrowing rates are assumed to increase as a result of higher risk premiums in the downturn or higher longer-term interest rates due to external forces. For each set of initial conditions, the increase in arrears is calculated relative to the control scenario of stable macrofinancial conditions with no shock to either unemployment or borrowing rates. Note also that similar increases in unemployment to what we assume in our scenario have been witnessed in previous economic downturns: the recession of the early 1990s saw a rise of more than 3 percentage points for about three years, while the recent financial crisis saw an increase of up to about 2 percentage points for two years.

22 Our analysis does not take into account equity that indebted households may have in their homes. Because the stress scenario is performed *relative* to a "control" scenario of normal conditions, this channel will likely worsen the impact. A severe unemployment shock is likely to be accompanied by a decline in house prices and reduced access to credit; thus, households would have relatively *less* ability to access this equity either through additional borrowing or a house sale.

Box 1

Household Indebtedness: A Canada–United States Comparison

Further perspective can be gained on the quantitative importance of highly indebted households by comparing the Canadian situation with that of the United States before the 2007–09 financial crisis.

Table 1-A shows that fewer Canadian households over the 2012–14 period held any debt compared with their U.S. counterparts in 2007 (69 per cent in Canada versus 77 per cent in the United States). Among indebted households, Canada has a smaller proportion with a debt-to-income ratio of 350 per cent or above (7.9 per cent versus 12.8 per cent in the United States), and these households hold a smaller share of total household debt (20.7 per cent versus 34.6 per cent). Moreover, among highly indebted households, the proportion with a high debt-service ratio (40 per cent or above) or with financial assets worth less than one month of debt payments was smaller in Canada than in the United States.[1]

While it is beyond the scope of this report, a complete comparison of household indebtedness in Canada and the United States should also consider institutional differences between the two countries, such as mortgage interest deductibility, length of fixed-term mortgages, recourse versus non-recourse laws, and the extent and effectiveness of government involvement in the housing market (see, for example, Crawford, Meh and Zhou (2013) and Schembri (2014)). Overall, these statistics suggest that indebted households in Canada in 2012–14 were less vulnerable than their U.S. counterparts were during the lead-up to the crisis. Moreover, the relatively robust position of Canadian financial institutions, more stable sources of mortgage funding and higher mortgage underwriting standards in general all contribute to the resilience of the Canadian financial system.

1 The results are similar if we focus on households with a debt-to-income ratio above 250 per cent.

Table 1-A: Incidence of debt and highly indebted households in Canada and the United States

	Canada 2012–14	United States 2007
All indebted households Incidence (per cent)	69.2	77.0
Households with a debt-to-income ratio of 350 per cent and above		
Incidence among indebted households (per cent)	7.9	12.8
Proportion with debt-service ratio of 40 per cent or more (per cent)	35.7	70.7
Proportion with financial-assets-coverage ratio of less than 1 month (per cent)	20.7	26.0
Share of total household debt (per cent)	20.7	34.6

Sources: Ipsos Reid and the Federal Reserve 2007 Survey of Consumer Finances

shock may appear small, it is meaningful in the context of Canadian historical experience. For comparison, during the financial crisis, the rate of households in arrears in Canada went from 0.30 to 0.65 per cent, an increase of 35 basis points.[23]

While these simulations show how initial conditions regarding household balance sheets can magnify the impact of adverse shocks,[24] the vulnerability of the financial system to household indebtedness will ultimately also depend on whether financial institutions can withstand the losses stemming from the household sector. With Basel III regulatory reforms requiring banks to hold more and higher-quality capital and to satisfy liquidity standards (Chouinard and Paulin 2014), Canadian banks are now in a better position to navigate through periods of stress. Further, stress tests of Canadian financial institutions such as in Canada's 2013 Financial Sector Assessment Program (FSAP) (IMF 2014) typically suggest that even though Canadian domestic systemically important banks experience a decline in their capital position in very severe stress scenarios, they maintain a solid ability to generate capital internally.[25] Similarly, the FSAP stress test for large life insurers and the Canada Mortgage and Housing Corporation showed that although the capital position of these institutions would deteriorate, it would remain well above regulatory

23 Both the level of arrears in Canada and its increase during the crisis are small compared with those in the United States. The pre-crisis level of loans 90 days or more in arrears in the United States was roughly 2 per cent of the total loan balance. It peaked above 9 per cent during the crisis. See **Box 1** for additional observations from a Canada–United States comparison.

24 Cross-country research from the Organisation for Economic Co-operation and Development (2013) finds that high debt levels can create vulnerabilities that amplify and transmit macroeconomic and asset-price shocks. When household debt rises above trend, the likelihood of a sharp economic downturn increases. Baker (2014) and Mian and Sufi (2010, 2014) find that the elasticity of consumption to income is significantly higher among highly indebted households than in low-debt households and that the buildup in household debt in the lead-up to the crisis significantly worsened the decline in consumption. Brunnermeier and Sannikov (2014) also show that economies with high degrees of leverage face a greater risk of falling into downward spirals with defaults and excessive deleveraging.

25 The FSAP scenario involved the Canadian economy facing financial headwinds from a large negative foreign demand shock, falling commodity prices, rising uncertainty, and unfavourable effects on confidence and wealth that affect both businesses and households. This culminated in a severe and persistent recession of nine quarters with a peak increase in unemployment of 5.9 percentage points, a 33 per cent decline in house prices and significant deleveraging from indebted households to repair their balance sheets.

requirements. While this supports the view of the overall strength and resilience of the Canadian financial system, caution is nevertheless warranted since the effects of such adverse shocks could be larger if feedback loops between the financial system and the real economy were more significant or if non-linearities (e.g., selling assets in a downturn) were more pronounced than anticipated.

Conclusion

This report uses household-level data to gain insights into the characteristics of indebted households in Canada. We find that the share of highly indebted households in Canada has doubled since the pre-crisis period and that they now hold about one-fifth of total household debt (about 20 per cent of which is in the hands of households with an above-average risk of losing their jobs). Distributional analysis along several socio-economic dimensions indicates that highly indebted households have become more prevalent across lower- to middle-income groups, in younger households, and in British Columbia, Alberta and Ontario. Further, simulation results suggest that the more stretched balance-sheet positions of indebted Canadian households in recent years can magnify the impact of adverse shocks on the financial system.

That said, the vulnerability of the financial system also depends on whether financial institutions can withstand the losses stemming from the household sector. Financial institutions in Canada proved to be resilient during the crisis. With an effective regulatory and supervisory regime in place and further strengthening of the regulatory framework through Basel III measures, Canadian banks are in a strong position to withstand pressures stemming from the household sector. The Bank of Canada continues to monitor the state of household finances as well as other key elements that, together, determine the robustness of the Canadian financial system.

Appendix

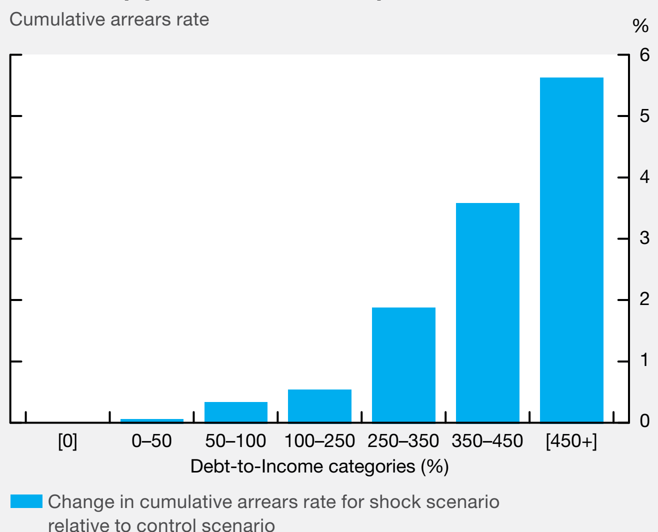
Identifying a Vulnerability Threshold for the Debt-to-Income Ratio

Simulation experiments corroborate the finding that a higher debt-to-income burden is associated with an increased likelihood of a household encountering financial distress, leading to arrears in debt payment obligations. A higher debt-to-income burden gives a household less opportunity to accumulate savings and provides a smaller margin in the event of losses to income or increases in interest rate payments.

Chart A-1 contrasts the increase in the rate of arrears across different debt-to-income categories under a hypothetical stress scenario with simultaneous increases in the unemployment and household borrowing rates of 3 and 2 percentage points, respectively. We find that under our stress scenario, the incidence of arrears increases non-linearly with the debt-to-income ratio. In particular, the increase in arrears becomes more significant for debt-to-income ratios beyond 250 per cent, with sharper increases for households with a debt-to-income ratio above 350 per cent.

Chart A-1: Household arrears become more significant in debt-to-income categories above 250 per cent but increase more sharply in those above 350 per cent

Cumulative arrears rate



Sources: Ipsos Reid and Bank of Canada calculations

Last observation: 2014

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