Lawrence Schembri: Connecting the dots – elevated household debt and the risk to financial stability

Remarks by Mr Lawrence Schembri, Deputy Governor of the Bank of Canada, to the Guelph Chamber of Commerce, Guelph, Ontario, 24 February 2016.

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The charts and tables can be found at the [Bank of Canada](#)'s website.

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Introduction

Thank you for the invitation to speak here today. Let me start by congratulating my host, the Guelph Chamber of Commerce, for the impressive work it has done over the years to strengthen the local business community and economy. Economic vitality needs to be nurtured, which is what members of your organization have been doing since 1827, when Guelph was little more than a gleam in the eye of its founder, John Galt. Although Galt never succeeded in establishing the bank that he knew was necessary for growth, early residents created a building society to help them save and borrow for their farms and businesses. That society supported the economic development of Guelph.

My topic today is the financial system in Canada that emerged from those modest beginnings in Guelph and other communities across the country, and the role the Bank of Canada plays in helping to maintain its overall stability.

Like the transportation system, the financial system is essential infrastructure.[1] It provides core functions necessary to facilitate economic activity and is constantly evolving, incorporating new technology and other innovations to become more efficient. It is as vital to the economy as our system of roads and highways.

Although the Bank of Canada, unlike some other central banks such as the U.S. Federal Reserve or the Bank of England, is not responsible for directly overseeing banks and insurance companies, we help to promote financial stability and efficiency in a number of different ways. In these efforts, we take a system-wide perspective that encompasses all financial institutions and markets at the federal and provincial levels, especially those that are "systemic" or, in other words, critical to the functioning of the entire system. This system-wide perspective allows us to "connect the dots" not only across the financial system but, equally importantly, between the financial system and the real economy, including households and non-financial firms. By seeing how all the components work together, we can identify potential problems before they become serious and help maintain the flow of financial traffic[2]

An important vehicle in our efforts to promote financial stability is the *Financial System Review*, which we publish twice a year. The *Review* summarizes the Bank's analysis of the main vulnerabilities and risks to the stability of the Canadian financial system. Its purpose is to inform

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1 The core functions of the financial system include credit allocation, maturity transformation, risk transfer, price discovery, the provision of liquidity, and the facilitation of payments.

2 In addition to identifying systemic vulnerabilities and risks, the Bank oversees key financial market infrastructures, provides liquidity to the financial system and, if necessary, acts as lender of last resort to qualified financial institutions.

both the private and public sectors of our assessments so that they can take appropriate steps to mitigate these vulnerabilities and reduce their exposures to them.[3]

In 2014, we incorporated into the *Review* a new framework for identifying and gauging vulnerabilities and assessing risks. In my talk today, I will cover three main points.

First, I'll begin with an overview of this framework.

Second, I'll illustrate the application of this framework by stepping you through our latest assessment of a key vulnerability, elevated household debt, drawing on recent Bank research into the increasing prominence of highly indebted households.

And third, I'll briefly discuss the Bank's contribution to reducing vulnerabilities.

Assessing risks to financial stability

The better we understand the sources and the transmission of financial system stress, the better we will be able to prevent, or at least limit, the impact of financial crises. To that end, our new framework informs and directs our risk-assessment process.[4] At the heart of the framework is the explicit identification of vulnerabilities and risks. Such transparency encourages everyone involved in the financial system to consider how to mitigate the vulnerabilities and react if the risks were to materialize.

Our framework sets out three steps (Figure 1):

1. identifying financial system vulnerabilities;
2. developing risk scenarios; and
3. assessing each risk scenario by determining the probability of it occurring, as well as its impact should it occur.

The first step is identifying vulnerabilities, which are conditions that could amplify and propagate shocks throughout the financial system. Examples of potential vulnerabilities include high levels of indebtedness or leverage, liquidity and maturity mismatches, and the mispricing of assets. In contrast, risks are events or outcomes that could threaten the ability of the financial system to perform its core functions. Risks materialize when trigger events – which are adverse shocks such as the recent dramatic drop in oil prices – interact with vulnerabilities. To illustrate the difference between a vulnerability and a risk, imagine a bridge with fractures in its concrete supports. That's the vulnerability. The risk is that the bridge could collapse if a trigger event, such as an earthquake, shook its foundations.

Focusing explicitly on vulnerabilities in the Canadian financial system allows us to highlight where the fragilities lie and how they are evolving. We identify a range of vulnerabilities and consider them in relation to a wide variety of financial institutions, markets, end-users and payment systems (Table 1).[5]

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[3] We share our assessments of systemic vulnerabilities and risks with our federal regulatory partners on the Senior Advisory Committee (SAC). The SAC is chaired by the Deputy Minister of Finance and includes the Bank of Canada, the Office of the Superintendent of Financial Institutions, the Canada Deposit Insurance Corporation and the Financial Consumer Agency of Canada. Our work contributes to the committee's discussions of systemic vulnerabilities and potential remedial policy actions.

[4] See "Enhanced Risk-Assessment Framework," Bank of Canada *Financial System Review* (June 2014): 1–2; and I. Christensen, G. Kumar, C. Meh and L. Zorn, "Assessing Vulnerabilities in the Canadian Financial System," Bank of Canada *Financial System Review* (June 2015): 37–46.

[5] The sectors we examine include the following: (i) financial institutions (including large and small banks), credit unions, trust companies, life insurance companies, and pension funds; (ii) financial and property markets and non-bank financial intermediation; (iii) the end-users of financial system services such as households, governments and non-financial corporations; and (iv) payment clearing and settlement systems and financial

The second step is developing a risk scenario for each of the most serious vulnerabilities, including a list of possible triggers. A risk scenario describes how a trigger event will interact with a vulnerability to affect the financial system.

Third, we assess the probability of each risk occurring and the impact if it did. The rating of risks summarizes our judgment on their importance to the financial system and their likely effect on the real economy.

That, in brief, is our framework. Now, let's look at high household debt, a key vulnerability we analyzed in the December issue of the FSR.[6]

Key vulnerability: household indebtedness

Canada was spared some of the most serious negative consequences of the global financial crisis because of our strong financial regulatory and supervisory framework and the effectiveness of our policy response. This response included a reduction in the policy interest rate by the Bank of Canada to support aggregate demand and help achieve our inflation target.[7]

As a result of these policies, the Canadian economy recovered relatively quickly, supported by solid growth in household spending that was funded by household income growth and borrowing.[8]

The buildup of household debt, however, has increased the vulnerability of the economy and the financial system to adverse shocks to incomes and interest rates.[9] With high indebtedness or elevated leverage – an important indicator of vulnerability in the financial system – the household sector is less resilient. During times of stress, people with higher debt will typically cut back on their spending disproportionately more than those with less or no debt. This means that high household indebtedness can amplify the impact of a shock. In more extreme cases, adverse shocks could lead to an increase in household defaults, which would mean losses for banks, other lenders and mortgage insurers. In the worst case, if the losses were extensive and spillovers were large, the increase in stress could potentially deplete the capital buffers built into the financial system to absorb losses, impairing its functioning, with large negative effects on economic activity.

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market infrastructures, which are the systems that facilitate the clearing, settlement and recording of payments, securities and derivatives or other financial transactions among participating entities.

Vulnerabilities in these different sectors are measured along various dimensions, such as the degree of leverage, complexity, and liquidity and maturity transformation, as well as the behaviour of asset prices. While these elements are part of the normal functioning of the financial system, they may make the system vulnerable if they become excessive. In addition, we review the external exposures of the sectors and their degree of interconnectedness across the Canadian financial system. For example, the interbank market is an important source of funding, but it could rapidly transmit funding problems through the system in the event of a financial shock.

6 G. Cateau, T. Roberts and J. Zhou, "Indebted Households and Potential Vulnerabilities for the Canadian Financial System: A Microdata Analysis," Bank of Canada *Financial System Review* (December 2015): 49–58.

7 The Bank of Canada's action was part of a global effort at broad policy coordination among G20 countries that included fiscal stimulus, financial reform and interest rate cuts. See www.imf.org/external/np/sec/pr/2009/pdf/g20_040209.pdf

8 The borrowing has led to increasing levels of household debt, against a backdrop of rising house prices. For a discussion of monetary policy and its impact on household debt, see S.S. Poloz, "Integrating Financial Stability into Monetary Policy" (speech to the National Association of Business Economics, Washington, D.C., 12 October 2015).

9 Global long-term real interest rates have been on a steady decline for almost 20 years, in part because of lower risk premiums. See L. Schembri, "The Long-Term Evolution of House Prices: An International Perspective" (speech to the Canadian Association of Business Economics, Kingston, Ontario, 25 August 2015).

To understand the magnitude of this potential threat to the financial system we need to understand both the sustainability of household debt and the impact on the financial system of increased defaults, should they occur. That raises three key questions:

1. Which households are holding the debt?
2. How likely are the highly indebted to lose their jobs?
3. How able are highly indebted households to service their debt?

Which households are holding the debt?

Data from Ipsos Reid's *Canadian Financial Monitor* from 2002 to 2014 show that household debt in Canada has not only increased significantly but has also become more concentrated over time in households with higher levels of indebtedness.

For example, the level of debt held by Canadian households with a debt-to-gross-income ratio of less than 250 per cent has increased only modestly in inflation-adjusted terms over the past 12 years. In contrast, the debt of households with a debt-to-gross-income ratio equal to or greater than 250 per cent increased by almost 75 per cent over the same period.

Within this group is a subgroup of highly indebted households, defined as those with a debt-to-gross-income ratio that is equal to or more than 350 per cent (Chart 1).[10] Most of the people in this subgroup are young – under the age of 45. The size of this subgroup doubled from around 4 per cent during the 2005–07 pre-crisis period to around 8 per cent of indebted households in 2012–14.That amounts to about 720,000 households holding close to $400 billion in debt, about one-fifth of the overall household debt.

A deeper dive into the characteristics of these highly indebted households reveals that, compared with less-indebted borrowers, highly indebted borrowers tend to be younger, have lower incomes and wealth and are less likely to have pursued post-secondary studies or training. Highly indebted borrowers are also disproportionately more likely to live in British Columbia, Alberta or Ontario, provinces where house prices are the highest (Chart 2).[11, 12]

How likely are the highly indebted to lose their jobs?

Members of highly indebted households are more likely to lose their jobs because they tend to be younger and are less likely to have a post-secondary degree or training.

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10 Households are defined as "highly indebted"if their debt-to-income ratio, calculated as the total amount of debt divided by grosshousehold income, exceeds a certain threshold.This threshold was determined by using the Bank of Canada's Household Risk Assessment Model (HRAM) to analyze which households, in different debt-to-income categories, are more susceptible to arrears on their debt under a hypothetical stress scenario.See Cateau, Roberts and Zhou (2015).

11 Although 63 per cent of Canadians live in British Columbia, Alberta or Ontario, these three provinces account for 81 per cent of the debt held by highly indebted households.

12 Focusing on mortgage debt only, 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 data from Statistics Canada's Survey of Financial Security, they define households as highly indebted if their ratio of mortgage debt to disposable income exceeds 500 per cent. Using CFM data, Bank researchers find similar numbers when focusing only on mortgage debt and assuming an average personal income tax rate of 30 per cent. See C. Alexander and P. Jacobson, "Mortgaged to the Hilt: Risks from the Distribution of Household Mortgage Debt," C.D. Howe Institute Commentary No. 441 (December 2015).

How able are highly indebted households to service their debt?

An analysis by the Bank suggests that highly indebted households would be less able to make their payments after a shock.[13] Although the median share of gross income needed to service the debt of highly indebted households has fallen notably over the past decade from 43 per cent of gross income to 34 per cent, largely as a result of much lower interest rates, the liquid financial buffers held by this group remain relatively modest, roughly equivalent to only 6.5 months of current debt servicing.[14]

Still, debt loads and arrears in Canada today are not nearly as high as they were for U.S. households at the start of the financial crisis. For example, relative to Canadian households in 2012–14, more U.S. households in 2007 carried debt, more of those households were highly indebted and twice as many of those highly indebted households had debt service ratios of 40 per cent or more (Table 2).

Risk scenario: highly indebted households

Assessing the risk associated with the vulnerability arising from more highly indebted households starts with the development and analysis of a plausible risk scenario. A number of triggers could set off the risk, but the most likely is a severe recession that causes a sharp, widespread rise in unemployment, which reduces the ability of households to service their debt.

To gauge the effect of such a shock on the stability of the financial system we simulated a large and persistent increase in the unemployment rate of 5 percentage points.[15] While the probability of such a scenario is low, it is similar to the magnitude of the adverse shock used by the International Monetary Fund in its 2014 assessment of the stability of the Canadian financial sector.[16]

Our simulations suggest that in response to this shock household arrears rates could rise significantly, from 0.4 per cent in 2014 to reach as high as 1.8 per cent after three years. About 20 per cent of this estimated rise would be attributable to the increase in debt and its greater concentration among highly indebted households since 2007.[17]

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13 The incidence of arrears increases significantly for households with debt-to-income ratios between 250 and 350 per cent, with even higher increases for households with debt-to-income ratios equal to or above 350 per cent. See Cateau, Roberts and Zhou (2015).

14 Liquid financial buffers are defined as non-pension financial assets and include GICs, bonds, stocks and mutual funds held outside a group pension plan. The financial buffers held by less-indebted households are equivalent to about 26 months of debt payments. See Cateau, Roberts and Zhou (2015).

15 The simulation was conducted using our Household Risk Assessment Model (HRAM). For further details on HRAM, see U.Faruqui, X. Liu and T. Roberts, "An Improved Framework for Assessing the Risks Arising from Elevated Household Debt," Bank of Canada, *Financial System Review*, (June 2012): 51-57.

16 See International Monetary Fund "Canada: Financial Sector Stability Assessment," IMF Country Report No.14/29, February 2014

17 Historically, this increase in household arrears is significant. Arrears are defined as the percentage of consumer loans by dollar value held at chartered banks that are currently 90 days or more behind in payments. For example, during the global financial crisis the rate of households in arrears in Canada only rose from 0.30 per cent in the first quarter of 2008 to 0.65 per cent in the first quarter of 2010. Given the regulatory regime in place at the time, this doubling in the arrears represented less than 5 per cent of Tier One Capital held by Canada's chartered banks. Clearly, a larger increase in arrears would have a much greater impact on the banks' capital.

What would be the impact on the financial system and economy?

What would be the possible implications for the financial system if the vulnerability arising from highly indebted households were triggered?

The rise in household arrears could force some vulnerable homeowners to sell their homes or eventually default on their mortgages and other consumer debt.[18] If defaults rose quickly or if many households were forced to sell their homes, house prices could drop sharply across Canada, particularly in Vancouver and Toronto, which have recently experienced exceptionally strong price growth.

A broad-based decline in house prices would, in turn, have large direct effects on Canadian lenders and mortgage insurers. Results from stress tests show, however, that there are sufficient buffers in the financial system to withstand such a scenario.[19] For example, the six largest Canadian banks, which hold roughly 70 per cent of outstanding mortgages, have increased the quantity and quality of their capital in recent years and are well diversified across regions and sectors. In addition, most of the mortgages they hold are supported by government-backed mortgage insurance programs or by high homeowner equity.

Nonetheless, if such a decline in house prices occurred, the impact on the broader Canadian economy and the financial system would be large.

What is the probability of this risk occurring?

Despite the drop in the price of oil and some non-energy commodities, the probability of this risk being triggered remains low. The decline in Canada's terms of trade has set off a complex and lengthy chain of adjustments within the economy, as capital and labour re-allocate between resource and non-resource sectors. The negative impact of this shock has been felt most acutely in the oil-producing regions, where employment insurance claims have been rising. The non-resource sector, however, is expected to gain further traction, supported by a strengthening global economy – most notably in the United States – the stimulative effects of a lower Canadian dollar, and accommodative monetary and financial conditions. Indeed, the Bank's interest rate reductions in 2015 helped to reduce the probability of this risk materializing. Although the Canadian economy appears to have stalled in the fourth quarter of last year, we expect growth to pick up to 1 per cent in the first quarter and then to move above 2 per cent for the remainder of 2016.

What is the assessed rating for this risk?

Although there is a low probability of this risk being realized, the Bank's Governing Council assessed it as "elevated" because of the large potential impact it would have on the economy (Table 3).

Mitigating the Vulnerability: The Role of the Bank of Canada

While the expected uptick in economic activity will help stabilize household debt as output, incomes and interest rates rise, economic growth alone may not be sufficient to mitigate this vulnerability. Other policies should be adopted to complement the impact of economic growth. To promote the stability of the financial system, a range of policy responses can – and have been – deployed.[20] These include the following:

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[18] Another trigger could be a rise in global interest rates, unlikely in the current environment of weak global demand.

[19] International Monetary Fund "Canada: Financial Sector Stability Assessment," IMF Country Report No.14/29, February 2014.

[20] See S. S. Poloz (12 October 2015).

- ***Encouraging prudence on the part of borrowers and lenders.*** Through the FSR and other public communications, the Bank has informed households and lending institutions of its analysis and thereby raised their awareness of high household debt in an effort to encourage them to exercise appropriate caution.[21] In particular, borrowers and lenders should take into account the impact of higher borrowing rates in the future on the cost of servicing mortgages and other loans.
- ***Enhancing market discipline through increased transparency.*** By making its analysis and assessments public, the Bank aims to also increase awareness of this vulnerability among the agencies responsible for assessing consumer creditworthiness, on one side, and bank analysts and investors, on the other side.
- ***Strengthening regulation and supervision of the financial sector.*** As I noted earlier, financial institutions and markets in Canada were relatively well regulated and supervised before the global financial crisis. Since then, the regulatory and supervisory framework has been further strengthened. The Bank, along with other public authorities, has helped develop more rigorous global standards and promote their implementation in Canada.[22] An important example is the implementation of the Basel III regulatory reforms, which require banks to hold more and higher-quality capital and meet new liquidity and leverage requirements. Consequently, Canadian banks are now in a better position to cope with unexpected downturns in economic activity.

  The Bank also works with other public authorities at the federal and provincial levels to stress-test the ability of financial institutions to withstand various macroeconomic shocks. These tests incorporate existing vulnerabilities. The goal is to encourage the institutions themselves, as well as the supervisory bodies, to take remedial measures to increase resilience, as necessary.[23]
- ***Adopting macroprudential measures.*** In the immediate aftermath of the crisis, household debt and house prices resumed growing faster than disposable income in response to the lower interest rates and the recovering Canadian economy. The federal government and a number of agencies worked together to mitigate this growing systemic vulnerability. The Bank's analysis of these vulnerabilities helped to inform these decisions.

  For example, the federal government tightened rules for government-supported mortgage insurance four times over five years, starting in 2008. In December 2015,

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[21] This effort by the Bank is complemented by the communications of other public authorities, for example, the Financial Consumer Agency of Canada and the Department of Finance.

[22] The Governor of the Bank of Canada is a member of the Board of Directors of the Canada Deposit Insurance Corporation and the Financial Institutions Supervisory Committee and chairs the Heads of Agencies committee. These groups provide oversight of the implementation of, and adherence to, the new global standards for banks (for example, Basel III standards and standards for effective resolution regimes) and financial markets (for example, standards for over-the-counter derivatives), as well as non-bank financial intermediation (shadow banking, for example, standards for repos and securities lending). See L. Schembri, "Born of Necessity and Built to Succeed: Why Canada and the World Need the Financial Stability Board" (speech to the CFA Society, Ottawa, 24 September 2013). Similarly, the Bank works with provincial securities regulators to ensure the adoption of the Principles for Financial Market Infrastructures, developed by the Committee on Payments and Market Infrastructures/International Organization of Securities Commissions.

[23] Stress tests of Canadian financial institutions by the International Monetary Fund (IMF) suggest that even though our largest banks would suffer a decline in their capital positions in very severe stress scenarios, they would still be able to generate capital internally and continue their critical functions. Similarly, the IMF stress test for large life insurers and the Canada Mortgage and Housing Corporation found similar results. For more information, see International Monetary Fund "Canada: Financial Sector Stability Assessment," IMF Country Report No.14/29, February 2014.

the federal government made a fifth change, increasing the minimum down payment for houses valued at from $500,000 to $1 million.

For its part, the Office of the Superintendent of Financial Institutions (OSFI) released new guidance on mortgage underwriting and mortgage insurance that implemented enhanced global standards.[24] In December, OSFI announced that it would issue for public consultation proposed rules for how much capital the banks and mortgage insurers must hold against vulnerable insured mortgages.

These measures help to limit access to borrowing to the most creditworthy households, for example, those with higher credit scores, and thus complement the accommodative monetary policy of the Bank of Canada by better targeting the stimulus to those households with the capacity to borrow.[25]

- ***Keeping the focus of monetary policy on the right objective.*** Since the crisis, the Bank has kept its policy interest rate relatively low, by historical standards, to support economic growth and thereby achieve its primary goal of returning inflation to the 2 per cent target within a reasonable time frame. Because we conduct monetary policy within a risk-management framework, we recognize that elevated household debt could represent a risk to financial stability. Although we have the flexibility to choose a different path for interest rates to restrain the accumulation of household debt and mitigate vulnerabilities in the financial system, we have focused on attaining the 2 per cent inflation target. We believe that there are other measures, including public policies and private remedial actions, better suited to targeting and reducing these vulnerabilities than monetary policy, which affects the entire economy and is thus a very blunt instrument to address financial stability.[26]

To summarize my main points, then, the financial vulnerability associated with elevated household debt has increased over the past decade. It has done so, in part, because the debt has become more concentrated in highly leveraged households, especially those whose ability to service their debt may be more vulnerable to an economic downturn. Our assessment, therefore, of this vulnerability depends not only on the magnitude of the debt but also on its distribution.

However, the Canadian financial system is very resilient and could withstand the triggering of this vulnerability. And public authorities in Canada have taken appropriate measures to mitigate it. Moreover, this vulnerability should stabilize as the economy and household incomes strengthen and interest rates normalize.

The Bank is, nonetheless, concerned about high household debt and will continue to monitor it closely.

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[24] OSFI's B-20 Guideline on Residential Mortgage Underwriting Practices and Procedures is available at http://www.osfi-bsif.gc.ca/eng/fi-if/rg-ro/gdn-ort/gl-ld/pages/b20.aspx.Its B-21 Guideline on Residential Mortgage Insurance Underwriting Practices and Procedures is at www.osfi-bsif.gc.ca/eng/fi-if/rg-ro/gdn-ort/gl-ld/pages/b21_let.aspx.

[25] For more details on the complementary nature of monetary and macroprudential housing policy during the post-crisis period, see L. Schembri, "The Long-Term Evolution of House Prices: An International Perspective" (speech to the Canadian Association of Business Economics, Kingston, Ontario, 25 August 2015). For more details on the impact of the macroprudential policies, see A. Crawford, C. Meh and J. Zhou, "The Residential Mortgage Market in Canada: A Primer," Bank of Canada, *Financial System Review* (December 2013): 53–63; and L. Schembri, "Housing Finance in Canada: Looking Back to Move Forward," *National Institute Economic Review*, 230, no. 1 (November 2014): R45–R57. Available at www.niesr.ac.uk/media/press-release-future-housing-finance-11970#.VsNMm-bG-HM.

[26] T. Lane, "Monetary Policy and Financial Stability – Looking for the Right Tools" (speech to the HEC Montréal, Montréal, Quebec, 8 February 2016).

Conclusion

Let me conclude.

The Bank of Canada's mandate is to promote the economic and financial welfare of Canada. Those who established the Bank of Canada in the wake of the Great Depression clearly understood that the two goals of financial *and*economic stability must go hand-in-hand. One is a necessary condition for the other.

But the experience of history tells us that economic stability, supported by the appropriate monetary policy to achieve low and stable inflation, is not sufficient for financial stability. That was an important lesson taught by the global financial crises of the late 1920s and 2000s. Other policies are needed to help to safeguard financial stability, namely, effective regulation and supervision of the financial system, and close monitoring and timely remediation of emerging financial vulnerabilities.

The Bank of Canada makes important contributions to these other means of achieving financial stability.

First, we use our system-wide perspective and our new framework to identify and assess vulnerabilities and risks and, thereby, "connect the dots" within the financial system and with the real economy.

Second, we work collaboratively with our partner agencies, sharing our research and analysis with them and the public at large to collectively mitigate emerging vulnerabilities.

The Bank's close collaboration with other agencies has helped Canada achieve a remarkable period of financial stability over the past quarter century. This collective effort to monitor and mitigate financial vulnerabilities, such as elevated household indebtedness, is essential to maintaining a stable and efficient financial system and promoting economic growth in Canada.

Thank you.