BANK OF CANADA
BANQUE DU CANADA

ANNUAL REPORT 2018

DYNAMIC.
ENGAGED.
TRUSTED.

The *Annual Report* is available on the Bank of Canada's website at bankofcanada.ca.

For further information, contact:

Public Information Office
Communications Department
Bank of Canada
234 Wellington Street
Ottawa, Ontario K1A 0G9
Telephone: 1-800-303-1282 (toll-free in North America)
Email: info@bankofcanada.ca
Website: bankofcanada.ca

ISSN 1914-5691 (Print)
ISSN 1487-0452 (Online)

BANK OF CANADA
BANQUE DU CANADA

ANNUAL REPORT 2018

DYNAMIC.
ENGAGED.
TRUSTED.

Contents

Governor's Foreword 1

2018 at a Glance 4

Management Discussion and Analysis 7
- Mandate and Planning Framework 9
- Monetary Policy 15
- Financial System 21
- Funds Management 27
- Currency 33
- Managing the Bank 37
- Communications and Outreach 43
- Global Engagement 49
- Governance of the Bank 55
- Risk Management 63
- 2018 Financial Results 69

Financial Statements 81

Senior Deputy Governor Carolyn A. Wilkins and Governor Stephen S. Poloz on their way to the Monetary Policy Report *press conference following the October rate announcement*

GOVERNOR'S FOREWORD

Building on our accomplishments

2018 began with the Bank of Canada being named "Central Bank of the Year" by UK-based *Central Banking*, which closely follows developments in the world's central banks. This was a very proud moment for us—the sense of accomplishment, widely shared, was palpable.

The Canadian economy, too, seemed to be at the top of its game. Inflation was very close to the 2 per cent target, the economy was operating near its potential, and unemployment was at a 40-year low.

Yet there remained much to be done. The Bank needed to bear down to meet the commitments in the final year of its three-year plan and to develop a new medium-term plan for 2019–21. Interest rates were expected to move up toward a normal range consistent with how the rest of the economy was performing. In short, the organization sought to build on the accomplishments of 2017, and this important work needed to happen in a chaotic global context.

In the Canadian economy, companies were telling us that they were operating at capacity, facing a shortage of qualified workers to fuel their growth and hesitating to invest because of trade uncertainty. It is a testament to the resilience of the economy that it continued to grow in these conditions. We estimate that it grew by about 2 per cent in 2018, with 1.3 per cent growth in job creation, although the fourth quarter saw an abrupt slowing as a result of a new collapse in global oil prices.

Concerns about the future of the North American Free Trade Agreement (NAFTA) reached a peak during the summer and caused investment spending to weaken

considerably. The Bank maintained a middle course throughout, pointing to both upside and downside risks to the economy. In the end, a new agreement was signed—the Canada-United States-Mexico Agreement (CUSMA)—and a strong sense of relief spread through corporate Canada. Of course, ratification challenges remain, and the ongoing US-led trade conflict—aimed mostly at China, but also involving tariffs against many other countries—continues to raise substantive doubts about the outlook for the global economy. Once again, the Bank continued to emphasize that the risks are two-sided, as there would be substantial new economic lift if the trade war were resolved.

Through the ebb and flow of economic and geopolitical events, the Bank raised interest rates three times during 2018—in January, July and October—bringing the policy rate to 1.75 per cent. The drop in global oil prices late in the year felt like an echo of late 2014, although the situation is clearly less dire this time because the oil price drop has been smaller and the economy is stronger overall. Governing Council continues to judge that the policy interest rate will need to rise over time into a neutral range to achieve the inflation target. The appropriate pace of rate increases will depend on how the outlook evolves, with a particular focus on developments in oil markets, the Canadian housing market and global trade policy.

> *"Overall, we ended 2018 with most of the Canadian economy on a solid footing... And we start 2019 with more confidence that financial system vulnerabilities have stopped building and, in some respects, are improving."*

Overall, we ended 2018 with most of the Canadian economy on a solid footing. We expect investment spending and exports to pick up on the back of CUSMA, the Comprehensive Economic and Trade Agreement (CETA) and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), as well as the federal government's new accelerated depreciation tax rules. We also expect a return to more balanced growth that is less reliant on housing. And we start 2019 with more confidence that financial system vulnerabilities have stopped building and, in some respects, are improving.

A Christmas card I received from a fellow central bank governor noted that we had "stickhandled some tricky situations" at the Bank of Canada in 2018, which felt like high praise to a Canadian. If we did, it was because our staff nimbly adapted to some very unusual developments. Monetary policy must manage the risks facing the Canadian economy in a forward-looking manner, given that changes in policy take time to affect the economy. The hockey metaphor is very apt because the puck must be passed to where the receiving player will be when it arrives. This means that policy depends very heavily on economic forecasts and models designed to weigh alternative risks and policy scenarios. The Bank's forecast record was very strong in 2018, especially given the volatility we faced. We also conducted timely, innovative research into the effects of escalating trade actions on the world economy.

A key challenge that central bankers everywhere face is formalizing the process of considering financial stability risks when conducting monetary policy. We made some significant improvements in 2018 on this front, from three different directions. First, we upgraded our core forecasting model to incorporate household debt accumulation and the link with higher house prices. Second, we deployed growth-at-risk modelling to capture the evolution of financial vulnerabilities and their potential consequences for economic growth should those risks be realized in a negative scenario. And third, we began to use anonymized microdata on mortgages—at the individual loan level—to help us understand the consequences of higher interest rates on household cash flows.

Another challenge shared with other central banks is the digitalization revolution. We have reorganized ourselves to invest more in understanding how digitalization is affecting our economy, particularly in investment and productivity growth. We stepped up our work examining the potential features of a central bank digital currency, their implications and the circumstances under which we could recommend issuing one. This work will help us make timely and informed decisions, should those circumstances arise. And we reached new milestones in Project Jasper, establishing the Bank as a leader in research on financial technologies. In fact, we were recognized for this by *Central Banking* with a Pioneer Award at the FinTech & RegTech Global Awards.

An important global forum for sharing work on such issues is the G7, and Canada held the G7 Presidency in 2018. We made important contributions to that process, partnering with the Department of Finance Canada to co-host a series of events that helped lay the intellectual groundwork for policy discussions by central bank governors, finance ministers and, ultimately, the leaders at the G7 Summit in Charlevoix, Quebec.

There were many more highlights in 2018, many of which are far less visible to Canadians. We led the creation of a working group with financial market participants to enhance our benchmark interest rates. We worked closely with Payments Canada, which operates Canada's core large-value and retail payment systems, to modernize those systems. We announced a partnership with the Creative Destruction Lab and launched the Partnerships in Innovation and Technology Program to encourage the deployment of new digital tools and technologies at the Bank. And we made significant enhancements to the resilience of our systems and operations in our existing facilities and established a new, fully capable backup operations centre in Calgary.

Much more visible to the public was the introduction of a new $10 bank note. This was the culmination of nearly five years of effort that required not only a dedicated and innovative team at the Bank but also the support of the Minister of Finance and the federal government. The note is the first regularly circulating bank note to feature an iconic Canadian woman. It is also Canada's first vertical note, which permits the image of the featured individual to be some 50 per cent larger. After an unprecedented campaign to involve Canadians in the choice, civil rights pioneer and businesswoman Viola Desmond, from Halifax, was selected. Keeping with the theme of human rights, we chose to feature Winnipeg's Canadian Museum for Human Rights on the obverse side.

A second high-visibility area that changed significantly in 2018 was on the Bank's communications front. We have always strived to be clear and open with Canadians. But in 2018 we undertook a major survey of stakeholders and conducted a formal analysis of our main communications channels for readability. We discovered that we were not reaching all those who truly want to understand us and that our readability scores fluctuate quite widely. So we began to monitor our publications for readability and actively worked to make them easier to absorb. We introduced a new digital magazine, *The Economy, Plain and Simple*, to explain key economic concepts in a friendly and engaging way. We also launched the Financial System Hub to provide timely analysis of developments in the financial system. And we began the practice of offering a speech by a member of Governing Council the day after the four policy decisions each year that are not accompanied by the *Monetary Policy Report*.

To sum up, the organization advanced quite a lot in 2018. This is the product of a high-performing, dedicated staff who, once again, met the challenges we faced with ingenuity, hard work and enthusiasm. To support them better, we took important steps to promote diversity and inclusion: we identified executive champions, ran a successful self-identification campaign, supported the creation of employee resource groups and co-hosted a diversity and inclusion conference with the Office of the Superintendent of Financial Institutions. We were proud to be named one of Canada's Top 100 Employers for the ninth consecutive year.

Governor Stephen Poloz takes part in the November launch event for the new $10 bank note featuring Viola Desmond. The launch was held at the Canadian Museum for Human Rights in Winnipeg. Photo: Douglas Little Photography

We also received tremendous support from our Board of Directors, despite significant turnover. Eight new independent directors joined the Board: Debora Bielecki, Stephanie Bowman, Robert Campbell, Paul Haggis, Raymond Ivany, Monique Mercier, Mariette Mulaire and Anne Whelan. They replaced the eight directors who left: Norman Betts, Alan Borger, Phyllis Clark, Colin Dodds, Derek Key, Wes Scott, Jean Simon and Martin Sullivan.

Let me take this opportunity to express my appreciation to our departing board members, and the four who have remained, for their outstanding service. Thanks also to our new board members for their enthusiasm and advice. All of us at the Bank of Canada are eagerly anticipating the challenges and opportunities that 2019 will bring.

Stephen S. Poloz
Governor

2018 AT A GLANCE

2%
Canada's real GDP growth as estimated at December 31, 2018

2%
Inflation-control target

2.3%
CPI inflation

1.75%
Policy interest rate at year-end

$105.8B
Gross value of marketable bonds issued in 2018

$73.3B
Market value of liquid reserves held in the Exchange Fund Account in US dollars as at December 31, 2018

2.5B
Number of bank notes in circulation

$90.2B
Total value of bank notes in circulation

$1.1B
Net income for the Bank in 2018

$1.2B
Amount remitted by the Bank to the Receiver General of Canada

73.3 US cents
Exchange rate for 1 Canadian dollar as at December 31, 2018

62
Bank research papers published in academic journals

30

Years’ worth of economic projections published on the Bank’s website

460,500

Page views of the website for the new bank note featuring Viola Desmond

61,396

Number of Museum visitors, 95% of whom would recommend it

1,750

Approximate number of Bank employees

2019–21

Time period for the Bank’s new medium-term plan

50%

Reduction in energy consumption at head office following renovations

$272,905

Total staff donations to the Bank of Canada workplace charitable campaign

4

Notable awards in 2018: Central Bank of the Year, Canada’s Top 100 Employers, National Capital Region’s Top 25 Employers, Pioneer Award (in recognition of the Bank’s work on Project Jasper)

MANAGEMENT DISCUSSION AND ANALYSIS

The historic Graham Towers board room, named after the Bank's first Governor

MANDATE AND PLANNING FRAMEWORK

Mandate

The Bank of Canada is the nation's central bank. Its mandate, as defined in the *Bank of Canada Act*, is "to promote the economic and financial welfare of Canada."

The Bank's vision is to be a leading central bank—dynamic, engaged and trusted—committed to a better Canada.

Its four core areas of responsibility are as follows:

MONETARY POLICY
The objective of monetary policy is to preserve the value of money by keeping inflation low, stable and predictable.

FINANCIAL SYSTEM
The Bank promotes safe, sound and efficient financial systems, within Canada and internationally. It conducts analysis to identify and mitigate systemic risks, oversees major clearing and settlement systems and conducts transactions in financial markets in support of these objectives.

CURRENCY
The Bank designs, issues and distributes Canada's bank notes; oversees the note distribution system; and ensures a consistent supply of quality bank notes that are readily accepted and secure against counterfeiting.

FUNDS MANAGEMENT
The Bank provides funds management services for the Government of Canada, itself and other clients. For the government, the Bank provides treasury management services and acts as fiscal agent for public debt and foreign exchange reserves.

Planning framework

The Bank has a robust planning framework in place to implement and operationalize its vision and mandate. Every three years, it establishes a medium-term plan (MTP) to set out its strategic direction, goals and indicators of success. The MTP helps the Bank respond to the realities of its policy and operating context, anchors annual planning and budgeting activities and serves as the foundation for departmental and employee performance agreements.

The year 2018 was the last of the Bank's 2016–18 MTP, *Central Banking for a New Era.* Built on a foundation of three themes that brought to life its vision, this MTP enabled the Bank to continue its tradition of excellence while enhancing its readiness for the future.

In May, the Bank launched its 2019–21 MTP, *Leading in the New Era*, which carries over the same themes and goals and builds on some of the major initiatives already underway.

Reporting

The *Annual Report* is the Bank's public accountability document, presenting its financial and non-financial performance during the year. The Bank also publishes quarterly financial reports.

The Bank maintains a website featuring research papers, speeches, public reports, data and audiovisual materials on various topics to promote public understanding of its ongoing work.

More information

- *Central Banking for a New Era: The Bank of Canada's 2016–18 Medium-Term Plan*
- *Leading in the New Era: The Bank of Canada's 2019–21 Medium-Term Plan*

The 2016–18 and 2019–21 medium-term plans

The 2016–18 and 2019–21 MTPs are built on a foundation of three themes that, together, bring to life the vision of being a leading central bank that is dynamic, engaged and trusted.

REINVENT

RENEW

REINFORCE

Theme 1: Reinventing Central Banking

Strategic goals	1.1 Advance the frontiers of monetary policy frameworks and research to build economic resilience 1.2 Incorporate financial stability considerations into the Bank's policy advice and operations 1.3 Ensure sound and effective payment systems, methods and technologies 1.4 Consider the implications of alternative futures
Progress in 2018	▪ Employed new technologies, tools and techniques to support the ongoing monitoring and forecasting of the Canadian economy ▪ Conducted trade research and analysis with a focus on the effects of global and North American trade policies, as well as on the ongoing competitiveness challenges and capacity constraints facing Canadian exports ▪ Co-led the Finance Track for Canada's G7 presidency, in partnership with the Department of Finance Canada; co-hosted a series of events that laid the groundwork for policy discussions throughout the year ▪ Continued to broaden and deepen the Bank's framework for analyzing and assessing financial system vulnerabilities and risks, with a focus on integrating financial stability considerations into the conduct of monetary policy* ▪ Launched a new financial system survey that will enhance the Bank's ability to identify new and emerging financial system risks and vulnerabilities ▪ Unveiled and issued the new, vertical $10 bank note featuring Viola Desmond ▪ Expanded the Bank's understanding of the impact of digitalization and financial technology (fintech) on the functioning of the economy, conducted research to inform policy development and advice on a central bank digital currency, and reached important milestones in Project Jasper ▪ Contributed to ongoing work to modernize Canada's payment systems

Key areas of focus in 2019	▪ Continue to conduct research and analysis, with a focus on re-examining the Bank's monetary policy framework ▪ Continue to incorporate financial stability considerations into monetary policy* ▪ Further explore the impact of new technologies, including the implications of increased digitalization on the economy and how technology is transforming financial services ▪ Continue to provide direction to, and participate in, the Payments Canada project to design and implement a modernized core payments system in Canada ▪ Work toward developing and implementing a new financial market infrastructure resolution regime in Canada to fulfill the Bank's new role as resolution authority for financial market infrastructure (which is expected to come into force in 2019)

* For more information, please see Financial System on page 21.

Theme 2: Renewing Ways of Doing Business

Strategic goals	2.1 Be connected and transparent 2.2 Be nimble and resilient
Progress in 2018	▪ Launched a campaign to better understand and engage with the public, improve transparency and promote greater awareness of the Bank and its work ▪ Launched two new digital spaces—*The Economy, Plain and Simple* and the Financial System Hub—and began delivering economic progress report speeches after each of the four interest rate announcements not accompanied by the *Monetary Policy Report* ▪ Created a variety of temporary and travelling exhibitions to complement the Bank of Canada Museum's permanent exhibition and continued to consult with Canadian educators to produce new school programs ▪ Made significant enhancements to the resilience of the Bank's systems and operations and to its cyber security capabilities; in particular, completed the design and fit-up of an alternative operations site in Calgary to ensure the continuity of critical banking and market operations ▪ Updated the Bank's sabbatical program and introduced a new Top Research Award for economic and financial system researchers
Key areas of focus in 2019	▪ Continue to expand the Bank's framework for stakeholder relations, promoting tools and guidelines to map, assess and coordinate activities ▪ Continue to operationalize the Bank's Calgary operations site ▪ Continue work with major Canadian financial institutions to enhance the resilience of the financial system and support the continuity of Canada's wholesale payments ecosystem ▪ Continue work on the multi-year project to modernize the Bank's cash processing centres

Theme 3: Reinforcing a Culture of Innovation

Strategic goals	3.1 Nurture a culture where innovative ideas and creative solutions are expected 3.2 Enhance business innovation and knowledge sharing
Progress in 2018	▪ Engaged leaders and employees in making the Bank a more diverse and inclusive work environment ▪ Introduced a series of courses to support the development of competencies that ensure leaders and employees are successful at the Bank ▪ Continued to evolve some components of information technology infrastructure and solutions to cloud-based platforms ▪ Held 495 sessions in IdeaSpace, the Bank's innovation lab, to promote cross-functional thinking and collaboration ▪ Converted the Bank's *Financial System Review* and *Banking and Financial Statistics* into digital publications ▪ Engaged new types of resources, implemented new analytic tools and enhanced internal governance and strategies to better exploit new types of data ▪ Launched the Partnerships in Innovation and Technology Program (PIVOT) to fast-track innovation in the Bank's economic analysis and research and day-to-day operations, and partnered with the Creative Destruction Lab to deepen the Bank's knowledge of leading technologies
Key areas of focus in 2019	▪ Develop and begin implementation of a broad corporate diversity and inclusion strategy ▪ Continue to enhance employee and leadership development programming ▪ Provide employees with access to new and enhanced tools and programming to support wellness ▪ Continue to develop and implement an enterprise data strategy to ensure the Bank can rapidly exploit the most relevant data and analysis ▪ Continue to champion a digital-first approach to communications, including simple and easy-to-use intranet services and digital tools and associated platforms

Senior Deputy Governor Carolyn Wilkins and Governor Stephen Poloz respond to questions at the Monetary Policy Report *press conference in October.*

MONETARY POLICY

Monetary policy in 2018

The Canadian economy continued to expand at a solid pace through most of 2018, supported by growth in both foreign and domestic demand and favourable financial conditions. Economic growth in Canada was relatively broad-based across sectors and regions and, at 2.0 per cent,[1] was near the estimated growth rate of potential output. However, global trade policy uncertainty remained elevated through 2018, and a significant pullback in global oil prices began to weigh on growth in the second half of the year.

Consumer price index (CPI) inflation averaged 2.3 per cent in 2018, ending the year at 2 per cent in the fourth quarter. The inflation rate fluctuated during the year because of transitory factors, notably related to gasoline prices and airfares. Meanwhile, all three of the Bank's measures of core inflation stayed around 2 per cent, consistent with the view that the economy was operating close to full capacity.

In this context, the Bank continued to reduce the amount of monetary stimulus. Three policy rate increases, of one-quarter of a percentage point each, were made in January, July and October. Even with the increases, the year-end policy interest rate of 1.75 per cent remained below the Bank's estimated range of the neutral policy rate.

1 As estimated at December 31, 2018

Medium-term inflation expectations have continued to be well anchored at the 2 per cent target

Objectives and indicators	Reference level (per cent)	2014 (per cent)	2015 (per cent)	2016 (per cent)	2017 (per cent)	2018 (per cent)
Achievement of Bank target for CPI inflation						
CPI inflation*	2.0	2.0	1.1	1.4	1.6	2.3
Average cumulative CPI inflation since 2001†		1.9				
Expectations of inflation remaining anchored to our target						
Inflation expectations at a 10-year horizon‡	2.0	2.0	2.0	2.0	2.0	2.0

* CPI inflation is defined as the growth rate in the average price level for 2018 compared with the average price level for 2017.

† Average cumulative CPI inflation since 2001 is defined as the compound annual growth rate between the average price level for 2018 and the average price level for 2001.

‡ Consensus Economics—10-year projections

The Bank of Canada's role

The primary objective of Canada's monetary policy is to enhance the well-being of Canadians by contributing to sustained economic growth, increased levels of employment and an improved standard of living.

Experience has shown that the best way monetary policy can achieve this goal is by giving Canadian households and businesses confidence in the value of their money—in other words, by keeping inflation low, stable and predictable.

This allows Canadians to make informed spending and investment decisions, encourages longer-term investment in Canada's economy and contributes to sustained job creation and productivity growth.

At the heart of Canada's monetary policy framework is the 2 per cent inflation target, which is the midpoint of a 1 to 3 per cent inflation-control range. The target is set jointly by the Bank and the Government of Canada and is renewed every five years. The inflation target is symmetric: the Bank is equally concerned about inflation rising above or falling below the target.

In its conduct of monetary policy, the Bank's Governing Council takes a risk management approach within a flexible inflation-targeting framework. Since monetary policy affects the economy with a lag, decisions must be forward-looking and rely on analysis and forecasts by Bank staff, as well as on other insights from external sources. Given that Canada is an open economy and maintains a flexible exchange rate, global forces are an important consideration in the conduct of monetary policy.

Economic context

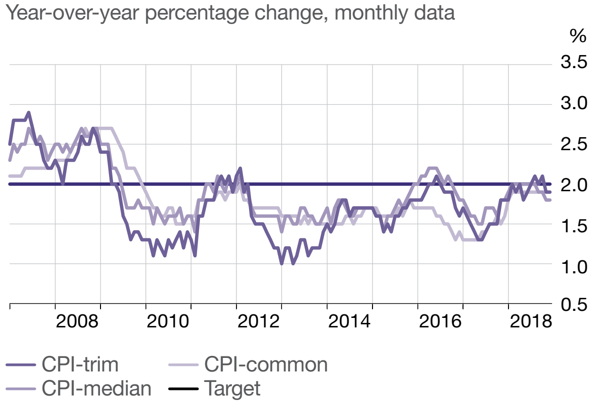
Global economic activity grew at a solid pace in 2018, notwithstanding a modest softening in the second half of the year. The US economy was especially robust. Against this global backdrop, the composition of demand in Canada shifted toward exports and business investment and away from consumption and housing. Firms continued to expand capacity in response to strong domestic and foreign demand.

Business investment expanded at a robust pace and would have been even stronger were trade tensions and uncertainty over future trade policy not clouding the economic outlook. The signing of the new Canada-United States-Mexico Agreement was a positive development for North America, though at year-end it still had not been ratified. Meanwhile, signs that trade conflict between the United States and China and geo-political tensions were negatively impacting economic activity began to emerge by the end of the year. Amid uncertainty about global growth prospects and supply issues, prices of commodities—notably oil—weakened in the second half of the year. Meanwhile, transportation capacity constraints contributed to larger discounts on western Canadian oil prices relative to global bench-marks for much of the year. Together, these develop-ments weakened investment spending in Canada's oil sector.

Population growth, supported by strong immigration, and solid employment growth underpinned household spending. Against this backdrop, households continued to adjust their spending in response to policy changes in the regional housing markets, tighter mortgage rules and rising interest rates. These factors contributed to significant softening of the housing market in 2018 and

Core inflation measures remain close to 2 per cent

Year-over-year percentage change, monthly data



Sources: Statistics Canada and Bank of Canada
Last observation: December 2018

to slowing of growth in household credit. Both housing resales and new single-detached housing starts fell in 2018, and house price increases slowed. Similarly, consumption growth eased as income growth and con-sumer confidence softened toward the end of the year.

The demand for labour was robust in 2018, with employment growing by 1.3 per cent and job vacancies further increasing to reach a historical high in the third quarter. The unemployment rate was at a 40-year low at 5.6 per cent in December. In this context, wage gains were generally solid in 2018 but eased in the second half of the year because of weaker conditions in oil-producing provinces.

Achievements

The Bank's decision to raise interest rates three times was supported by thorough and timely staff analysis of the major developments affecting the Canadian economy. In addition, Bank staff examined the impact of housing policy changes and higher interest rates in an environment of elevated household debt. Given the elevated uncertainty regarding global trade policy, additional modelling and analysis were conducted to assess the channels through which trade measures would impact the global and Canadian economies.

To further enhance its ability to assess the amount of slack in the economy, the Bank conducted important work to improve its measurement of trends in real GDP, unemployment and other macroeconomic variables. Using survey information, analysis of CPI and wage growth pressures, and assessments of labour market developments (including comparisons with US develop-ments), the Bank concluded that the Canadian economy was operating just below capacity at the end of 2018.

The Bank also made progress toward identifying priorities for the 2021 renewal of the inflation-control target agreement with the Government of Canada. These priorities include evaluating alternative monetary policy frameworks, particularly their implications for the frequency and severity of episodes where interest rates are at their effective lower bound.

Research on inflation targeting and its alternatives was also the theme of the Bank's 2018 Annual Economic Conference—which brought together academics, policy-makers, private sector economists and rep-resentatives from policy think tanks. Participants explored issues such as optimal monetary policy near the effective lower bound, the role of inflation expecta-tions and the merits of inflation targeting relative to alternatives.

Research on inflation targeting and its alternatives was the theme of the Bank's Annual Economic Conference in November, which brought together academics, policy-makers, private sector economists and representatives from policy think tanks.

In support of its analysis and research, a new version of the Bank's main monetary policy model, the Terms-of-Trade Economic Model (ToTEM), is now fully live and used to inform policies. The new version better captures the dynamics of household credit and housing markets.

Finally, the Bank continued to expand its understanding of digitalization and its impact on the economy and monetary policy. In partnership with the Organisation for Economic Co-operation and Development; Innovation, Science and Economic Development Canada; and the Business Development Bank of Canada, the Bank hosted the Global Forum on Productivity, which focused this year on disruptive technologies. Meanwhile, staff produced research about the digital economy, conducted survey work and explored the applicability of digital tools such as text analytics.

Looking forward

- The Bank will continue to analyze various factors affecting the Canadian economy. In particular, it will closely monitor the robustness of the global expansion, including changes in trade policies. It will also follow developments in the Canadian energy sector, such as the implications of lower global oil prices and the effects of transportation constraints on western Canadian oil prices, production and investment.
- The Bank will further refine its analysis of the dynamics of inflation and wage growth and their relationship with output and labour market slack. An important part of this research will be to take advantage of new sources of data and explore methodologies that allow the Bank to more accurately estimate potential output growth, labour market slack and the role of consumer inflation expectations.

Deputy Governor Lawrence Schembri (far left) chairs a panel on the policy and economic implications of new technologies at the 3rd Annual Conference of the Global Forum on Productivity, hosted by the Bank in June. Continuing from left: Dirk Pilat (Deputy Director, Organisation for Economic Co-operation and Development),Darren Hannah (Vice President of the Canadian Bankers Association and Vice Chair of the Economy Policy Committee of Business at the Organisation for Economic Co-operation and Development), Avvey Peters (Chief Strategy Officer, Communitech, and Adviser to the Supercluster Next Generation Manufacturing Canada)

- As part of its research toward the 2021 renewal of the inflation-control target agreement, the Bank will continue to examine the efficacy of alternative monetary policies, such as price level, average inflation and nominal income targeting, and the advantages and disadvantages of dual mandates. Moreover, Bank staff will assess the robustness of monetary policy rules in the presence of the effective lower bound across a variety of models that embody competing views of the economy.
- Bank staff will continue to build richer and more realistic models to inform monetary policy. This includes working toward incorporating banks and other sources of credit into macroeconomic models, and developing tools to assess the costs and benefits of using monetary policy, financial system or macroprudential tools to support financial stability at a given conjuncture.
- The Bank will explore the implications of digitalization for the broader Canadian outlook in terms of output and inflation measurement, as well as for investment, productivity and potential output.
- The Bank will continue to explore potential uses of new and emerging technologies, such as big data analytics, that could improve the efficacy of its work.

More information

- The quarterly *Monetary Policy Report* presents the Bank's base-case projection for inflation and growth in the Canadian economy, and its assessment of risks.
- The *Business Outlook Survey* gathers the perspectives of businesses on topics of interest to the Bank of Canada (such as demand and capacity pressures), as well as their forward-looking views on economic activity.
- Poloz, S. S. 2018. "Year-End Economic Progress Report: Financial Vulnerabilities in Focus." Remarks to CFA Toronto, Toronto, Ontario, December 6.
- Wilkins, C. A. 2018. "Choosing the Best Monetary Policy Framework for Canada." Remarks to the McGill University Max Bell School of Public Policy, Montréal, Quebec, November 20.

Sorel Etrog's sculpture Flight *(cast bronze, 2 m x 3 m, 1967), located adjacent to the Bank's centre building on Wellington Street. The work was commissioned by the Canada Pavilion for Expo 67.*

FINANCIAL SYSTEM

Financial system in 2018

The Canadian financial system remained resilient in 2018. Its capacity to withstand adverse shocks was further enhanced by new mortgage finance policies and the continued implementation of other regulatory reforms.

The Bank's 2018 issue of the *Financial System Review* (FSR), published in June, highlighted the main vulnerabilities and risks facing the financial system, including elevated household debt, imbalances in housing markets, and the possibility of a major cyber attack targeting a financial institution or market infrastructure. These were the same key vulnerabilities identified in 2017, and although they remained elevated, the Bank did note some lessening of those related to household indebtedness and housing market imbalances.

Tighter mortgage finance conditions, higher mortgage interest rates and provincial and municipal housing market policies continued to weigh on credit markets and housing activity in the second half of 2018. By year-end, household credit growth showed signs of stabilization at a slower pace, and the quality of new mortgage loans showed notable improvement. Similarly, activity in the housing market was relatively stable but at a weak level, as homebuyers, sellers and builders continued to adapt to the new policies.

As a result, the Bank judged that household vulnerabilities were beginning to edge lower—although the level of household indebtedness is expected to remain elevated for some time. On balance, the Bank determined that the overall level of risk to the financial system had remained broadly unchanged since late 2017.

Achievements

The Bank made significant advances in the integration of financial stability considerations into monetary policy. Notably, it formalized the Bank's risk management approach to monetary policy in a framework that

The Bank of Canada's role

An effective and resilient financial system is crucial to the long-run stability and growth of the Canadian economy, allowing consumers and firms to purchase goods and services with confidence and to make informed decisions about financial transactions and investments.

Canada's financial system relies primarily on financial institutions, financial markets, and clearing and settlement systems to enable a full range of financial activity—saving, borrowing, investing, and buying and selling financial assets.

The Bank

- has specific oversight responsibilities for major clearing and settlement systems, the financial market infrastructures (FMIs) that are designated as systemically important for Canada;
- facilitates the smooth operation of Canadian payment systems and acts as settlement agent, or "banker," for members of Payments Canada that are direct participants in the Large Value Transfer System, Canada's main payment system; and
- provides liquidity to Canadian financial institutions on a routine basis and, if required, on an extraordinary basis to a range of Canadian financial institutions and designated FMIs.

The Bank works with the Government of Canada, provincial agencies, market participants and other central banks and international organizations to ensure that systemically important and prominent FMIs operate in ways that control risk and promote efficiency and stability in Canada's financial system.

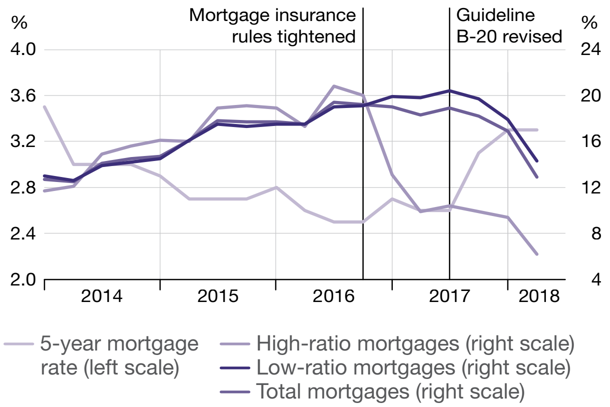
More generally, the Bank assesses vulnerabilities and risks to the stability of the Canadian financial system. It communicates this assessment to the public in the annual *Financial System Review,* as well as through public speeches and other channels.

The Bank engages in deliberations on financial regulatory policies both in Canada and internationally. In particular, the Bank is a member of the Senior Advisory Committee that provides advice to the Minister of Finance on policies related to financial stability.

The Bank also participates in international work promoting financial stability, including under the auspices of the Financial Stability Board, the Basel Committee on Banking Supervision, the Committee on Payments and Market Infrastructures, and the Bank for International Settlements.

The quality of lending has improved, with fewer mortgages going to highly indebted borrowers

Share of new mortgages with a loan-to-income ratio over 450 per cent, 5-year mortgage rate



Note: Data include mortgages for residential purchases and refinances originated by federally regulated financial institutions. The 5-year mortgage rate is the median contractual interest rate for a fixed-rate mortgage issued by a federally regulated lender.

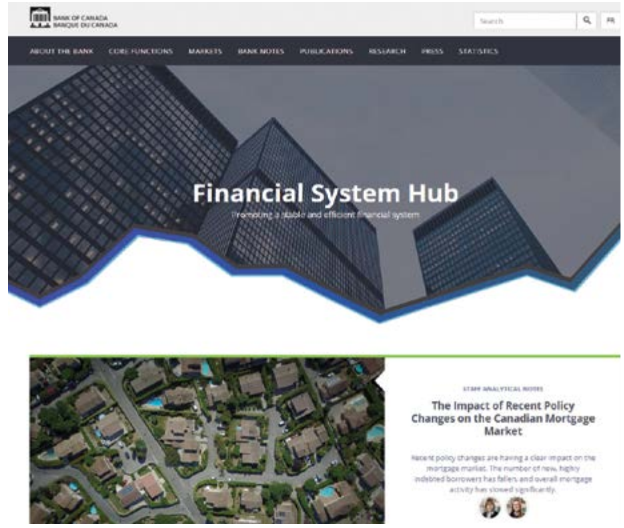
Sources: Department of Finance Canada, regulatory filings of Canadian banks and Bank of Canada calculations

Last observation: 2018Q2

quantifies the trade-off between macroeconomic stability and financial stability.[1] Important to this work was the concept developed at the International Monetary Fund of "growth-at-risk," which models the distribution of possible gross domestic product growth outcomes.[2] This framework was discussed in an article co-authored by Governor Stephen Poloz.[3]

Financial stability considerations were further integrated into the Bank's modelling work. Staff continued to develop and use "nexus" models, which enable researchers to assess the impact and effectiveness of macroprudential policies—such as regulations related to housing finance and bank capital—and their interaction with monetary and fiscal policies.

The Bank also implemented innovative and comprehensive quantitative frameworks for assessing systemic financial risk. It launched a new suite of tools (the Framework for Risk Identification and Assessment, or FRIDA) for the quantification of financial stability risk scenarios.[4] Staff continued to leverage microdata and loan-level data to monitor, assess and analyze the evolution of household vulnerabilities.



In November, the Bank launched the Financial System Hub, a dedicated space on the Bank's website for timely analysis and research on financial stability issues.

In partnership with Canada's six largest banks, the Bank contributed to a strategy for mitigating the potential impact of a cyber event affecting our wholesale payments system.

Communicating with Canadians

This year, the Bank significantly modernized the way it communicates and engages with Canadians about financial system stability.

In autumn, two new online spaces were launched: the Financial System (FS) Hub and the Financial System Research Centre.

- The FS Hub presents timely and broadly accessible analysis of financial system topics. The digital format gives the Bank flexibility to discuss new financial system developments as they arise and to present this work in a more accessible and engaging format. For example, a new financial system survey launched this year collected insights from market participants and will enable the Bank to improve its ability to identify new and emerging financial system risks and vulnerabilities over the long term. A summary of responses from the autumn survey is available on the FS Hub.

1 T. Duprey and A. Ueberfeldt, "How to Manage Macroeconomic and Financial Stability Risks: A New Framework," Bank of Canada Staff Analytical Note No. 2018-11 (May 2018).

2 International Monetary Fund, "Chapter One: Is Growth at Risk?" Global Financial Stability Report: October 2017.

3 C. A. Meh and S. S. Poloz, "Investing in Monetary Policy Sovereignty: Ideas from the Periphery," in *Monetary Policy Spillovers in a Financially Integrated World*, 66–75. Proceedings of the Danmarks Nationalbank–Bank for International Settlements joint conference to mark the 200th anniversary of Danmarks Nationalbank, September 7–8, 2018, Copenhagen.

4 For an overview of the Bank's risk assessment tools, see J. Fique, "The MacroFinancial Risk Assessment Framework (MFRAF), Version 2.0," Bank of Canada Technical Report No. 111 (September 2017).

- The Financial System Research Centre showcases the Bank's financial system research and analysis, helping to increase the visibility and impact of Bank research and promoting the building of partnerships with external researchers.

The Bank's flagship publication on financial stability, the FSR, is now published once per year, rather than twice. This new publishing schedule recognizes both the new role being played by the FS Hub and that the main vulnerabilities facing the financial system tend to evolve slowly. In addition, this year's FSR was issued for the first time as a fully digital document featuring interactive content.

In 2018, the Bank started the practice of having a Governing Council member give a speech on financial system issues in the second half of the calendar year, updating and complementing the FSR. The Bank will also continue to discuss financial system issues that have a bearing on the outlook for economic growth and inflation in its quarterly *Monetary Policy Report*.

Modernizing Canada's payment systems

The Bank continued to support the progress of Payments Canada's project to modernize Canada's payment systems. Payments Canada is the organization responsible for operating Canada's national payment infrastructure, which in turn underpins the Canadian financial system and economy.

As part of this effort, significant progress was made in 2018 toward establishing a new high-value payment system known as Lynx, including the selection of a vendor. Important progress was also made on the design of the Real-Time Rail (RTR), a new payments infrastructure that will enable fast, convenient payments and funds transfers for smaller payments. Furthermore, progress was made on enhancements to the Automated Clearing Settlement System.

Experimenting with financial technologies

The Bank completed Phase III and Phase IVa of Project Jasper in 2018; Phase IVb is in progress. Jasper is an ongoing collaborative research initiative aimed at understanding the mechanics, limits and possibilities of distributed ledger technology (DLT).

- Jasper Phase III produced a proof-of-concept equity securities settlement system using DLT. The system simultaneously settled the cash leg (using central bank money) and the securities leg of transactions for full delivery versus payment. This work was conducted in partnership with Payments Canada and the TMX Group—a Canadian financial services company and exchange operator.

The Bank's Fintech Working Group poses with their Pioneer Award, which they earned for their broad-based approach on financial technology (fintech) and their work on Project Jasper.

- Jasper Phase IVa[5] examined the pain points in cross-border payments and explored a number of models that could potentially help address these challenges. This research was conducted in partnership with the Monetary Authority of Singapore, the Bank of England and four commercial banks.
- Jasper Phase IVb is producing a proof-of-concept cross-border payment system using DLT. This phase of the project, being developed in partnership with the Monetary Authority of Singapore, is focused on technical questions related to the interoperability of different platforms.

The Bank's groundbreaking work on Jasper was recognized with a Pioneer Award at the first annual Central Banking FinTech & RegTech Global Awards 2018.

Financial system policy, industry engagement and regulation

The Bank works with government partners, regulatory authorities and financial institutions to develop and implement policies and standards that contribute to Canada's financial stability and provide a sound foundation for its economic growth.

This past year marked an important milestone in Canada's efforts to establish a credible resolution regime for its largest banks. The legislative framework for a bail-in regime, which the Bank played a significant role in shaping, was introduced in 2016 and came into force in September 2018. It ensures that both investors in bank-issued debt and equity holders share the financial burden of resolving systemically important banks.

The Bank continued work in 2018 to implement its revised policies for Emergency Lending Assistance (ELA) and made important changes to its collateral policies for liquidity operations. Specifically, it revised the haircut methodology for non-mortgage loan portfolios—introducing a more granular and risk-sensitive approach. Other changes removed a mechanistic reliance on credit rating agencies and reduced the Bank's exposure to wrong-way risk, as per the Principles for Financial Market Infrastructures.

Additionally, the Bank signed two information-sharing memoranda of understanding—the first with Autorité des marchés financiers, and the second with provincial authorities that supervise the credit union system in Manitoba. These agreements would facilitate the timely provision of ELA if it is needed and enhance crisis management efforts both at the Bank and at the provincial level.

5 Bank of Canada, Bank of England and Monetary Authority of Singapore, *Cross-Border Interbank Payments and Settlements—Emerging Opportunities for Digital Transformation* (November 2018).

Deputy Governor Lynn Patterson speaks in June to the Investment Industry Association of Canada and the Institute of International Finance about reference rate reform.

As part of broader contingency planning and crisis management efforts, the Bank worked with the Department of Finance Canada, the Office of the Superintendent of Financial Institutions and the Canadian Deposit Insurance Corporation to enhance federal regulatory authorities' preparedness to respond to stress in the banking sector.

Working closely with industry partners, the Bank helped establish the Canadian Alternative Reference Rate Working Group (CARR), which is sponsored by the Canadian Fixed-Income Forum. This group will review and enhance the existing Canadian risk-free rate (the Canadian Overnight Repo Rate Average). It will also assess the need for and potentially develop a Canadian-dollar term risk-free rate benchmark that is robust, reliable and resilient to any market stress—in addition to being consistent with the International Organization of Securities Commissions' Principles for Financial Benchmarks.

The Bank also continued to work closely with the Government of Canada and the Canadian Securities Administrators to implement a transparency regime for

Governor Stephen Poloz presents the Bank's year-end economic progress report before the CFA Society Toronto in December. Photo: Adam Szpruta Photography

Government of Canada debt markets, as well as with other Canadian federal and provincial agencies toward the implementation of post-crisis reforms to over-the-counter derivatives markets.

Finally, financial market infrastructure (FMI) resolution legislation, naming the Bank as resolution authority, received Royal Assent on June 21, 2018. Once the legislation comes into force (expected in 2019), the Bank will be responsible for ensuring the orderly resolution of failing FMIs to minimize impacts on the economy.

Looking forward

- The Bank will continue work on the framework for incorporating financial stability considerations into monetary policy.
- The Bank will broaden and deepen its frameworks to better analyze and assess financial system vulnerabilities and risks—including leveraging microdata for research and analysis, publishing quantitative assessments of financial system resilience, and exploiting new data visualization tools for monitoring vulnerability.
- The Bank will continue its work with Canada's six largest banks to enhance the resilience of the country's wholesale payments system.
- The Bank will continue to provide direction to, and participate in, the design and implementation of modernized core payment systems in Canada.
- CARR will continue its work toward a Canadian-dollar term risk-free rate benchmark.
- The Bank's powers as resolution authority for FMIs are expected to come into force in 2019, and the Bank will continue working toward developing and implementing a new FMI resolution regime in Canada.
- The Bank will continue working with the International Monetary Fund as it conducts its Financial Sector Assessment Program, a comprehensive, in-depth analysis of the Canadian financial sector.
- The Bank will continue to expand and strengthen the data, research and analytical tools used to map the interconnections in the financial system, focusing on core funding markets and shadow banking (e.g., asset manager) sectors.

More information

- Bank of Canada, "Bank of Canada launches digital hub for promoting a stable and efficient financial system," press release, November 14, 2018.
- Financial System Hub
- Financial System Research Centre
- Project Jasper – Phase III
- Project Jasper – Phase IVa
- Project Jasper Pioneer Award
- Canadian Alternative Reference Rate Working Group

FUNDS MANAGEMENT

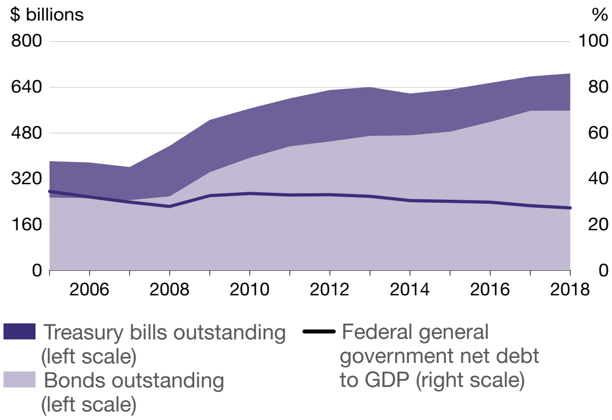
Funds management in 2018

Changes to the Government of Canada's borrowing requirements relative to what had been forecast required that the Bank adapt its funding advice in 2018.

Other important considerations in 2018 were the higher global interest rates and increased financial market volatility, associated in part with steps toward monetary policy normalization in the United States and other advanced economies. The increased market volatility created a more challenging environment for making sound portfolio management decisions for Canada's foreign reserves.

Meanwhile, the Bank continued the process to discontinue the government's retail debt program, as announced in the 2017 federal budget. It also further strengthened its focus on business and operational resilience in its funds management systems, given the heightened risk of cyber threats.

Domestic marketable debt outstanding



Sources: Department of Finance Canada, Statistics Canada and Bank of Canada

Achievements

Consistent with the objectives of the government's debt management strategy for 2018–19, debt activities focused on refinancing government debt coming to maturity, raising stable and low-cost funding for government programs and services, and maintaining a liquid and well-functioning market for Government of Canada securities.

The government's gross borrowing needs are largely driven by the refinancing of maturing debt. They are also driven, to a lesser extent, by the expected financial requirements (or sources) and changes in cash balances. While the government's cash balances were expected to remain unchanged through 2018–19,

The Bank of Canada's role

The Bank acts as fiscal agent and banker for the Government of Canada. It administers and provides advice on the federal government's debt and foreign reserves and, in co-operation with the Department of Finance Canada, develops policies and programs for managing Canada's borrowing and investment activities.

This includes managing the government's cash balances, conducting auctions for domestic debt, managing the funding and investment of assets and liabilities in the Exchange Fund Account (which contains Canada's liquid foreign exchange reserves), and administering the government's retail debt program.

The Bank also provides efficient and resilient banking, settlement and custodial services to itself, the federal government, official international financial organizations, foreign central banks, designated financial market infrastructures, financial institutions that are members of those systems and some federal Crown corporations.

The Bank monitors, manages and reports on financial risks related to activities undertaken as fiscal agent of the government, as well as those associated with the Bank's own balance sheet, and acts in a managerial and oversight role for the custodial activities relating to collateral management of domestic and foreign operations.

Bank staff conduct research and develop analytical tools to enhance policy advice on funds management and payment system issues.

The Bank acts as the custodian of unclaimed balances—Canadian-dollar deposits or negotiable instruments held by federally regulated banks or trust companies for which there has been no activity for a period of 10 years or longer.

The Bank also acts as administrator of the Bank of Canada Pension Plan, including managing the assets held in the Pension Trust Fund and the Supplementary Trust Fund.

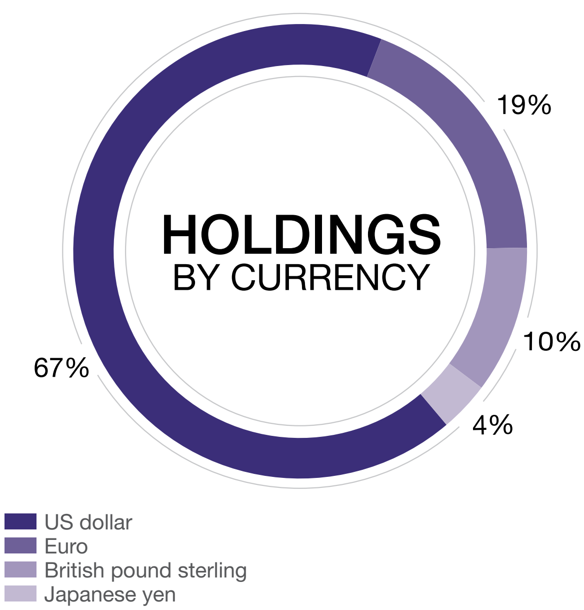
refinancing needs for debt expected to mature were projected at December 31 to be $227 billion, in addition to the expected financial requirement of approximately $35 billion for the next fiscal year.

For the government's 2018–19 fiscal year:

- Gross bond issuance was expected to be $115 billion, representing a decrease of about $22 billion from 2017–18 levels.
- The stock of treasury bills was expected to be $138.1 billion at year-end, an increase of $27.4 billion compared with the previous year.
- The stock of total market debt was expected to reach $755 billion, a year-over-year increase of $50.7 billion.
- The market value of liquid reserves held in the Exchange Fund Account (EFA) was about US$73.3 billion as at December 31, 2018. About 67 per cent of the reserves were invested in US dollars, with the balance held in euros, pounds sterling and Japanese yen.

Liquid foreign exchange reserves held in the Exchange Fund Account

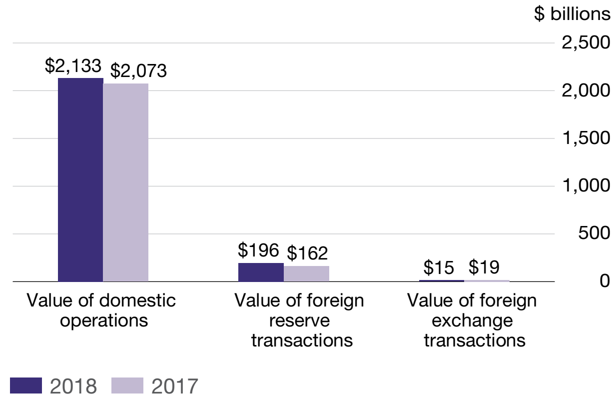
As at December 31, 2018



Bond issuance program

In line with the government's debt management strategy, bond issuance satisfied the minimum requirements to support market well-functioning at all maturities, while concentrating additional issuance in cost-risk-effective short- and medium-term bonds (two-, three- and five-year maturities).

Value of market operations



Bill issuance program

The treasury bill issuance program acted as a shock absorber, adjusting downward to reflect funding requirements that were lower than forecasted. At one point in 2018, the treasury bill stock fell to $107.5 billion.

Retail debt program

On behalf of the Department of Finance Canada, the Bank services and maintains the government's retail debt, primarily in the form of Canada Savings Bonds (CSBs) and Canada Premium Bonds (CPBs). In this role, it provides accounting, communications, operations and systems support.

In 2017, the government announced it would no longer issue new retail debt. To support the government's decision, the Bank began a multi-year process to wind down the program and encourage the timely redemption of matured bonds.

All outstanding CSBs and CPBs ($2.02 billion in December 2018) will mature by December 1, 2021. Following that date, the Bank will continue to manage the matured but unredeemed stock of retail debt products. The government will continue to honour all outstanding debt until redemption.

Funds management policy

The government strives to promote transparency and regularity in the management of its debt. In co-operation with the Department of Finance Canada, the Bank develops policies and programs for managing Canada's borrowing and investment activities.

Together, the two undertook a joint assessment of government securities distributors (GSDs), institutional investors and other interested parties on the functioning of the government's debt distribution framework, in light of the evolving regulatory and market landscape.

The project team responsible for leading the modernization of the Bank's auction system continued its important work in 2018.

Nearly all respondents described the Canadian primary and secondary markets for Government of Canada securities as competitive, functioning well and offering good liquidity. On balance, market participants commented that the debt distribution framework continues to appropriately balance the interests of the government as an issuer of securities with those of GSDs and end investors.

The Bank also worked closely with the Department of Finance Canada to update its framework for the management of Canada's official international reserves. The allocation of assets and liabilities within the EFA is now being reviewed with an increased focus on market developments, which will allow for timely, well-informed adjustment, when necessary.

In its role as administrator of the Bank of Canada Pension Plan, the Bank undertook its triennial study of the Pension Plan's assets and liabilities. In response to the study's recommendations, it began to explore ways to match the Plan's assets more closely with the liabilities to its members and to enhance the diversification of assets within the portfolio to improve the risk and return profile of the Plan.

Operations

The Bank is in the process of upgrading internal systems related to its domestic market operations (both as fiscal agent for the government and on its own behalf), including the modernization of its auction system—in support of its financial system, monetary policy and funds management responsibilities.

The Bank also continued work related to the automation of its domestic market operations and the renewal of collateral management capabilities.

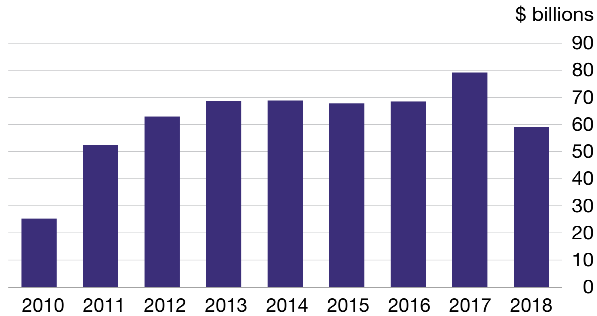
The new Banking Operations Financial Crimes Risk Management Policy developed in 2018 will better enable the Bank to protect its operational systems, processes, controls and services from fraud, money laundering, terrorist financing and sanctions violations.

The Bank also implemented a new unclaimed balances system, consisting of a claim management system, a claimant portal and a financial institution portal. The improved system enables more efficient claims management and provides easier access for the Canadian public to search for unclaimed balances and initiate the claims process.

The results of a comprehensive review indicated that the Bank is fully compliant with all mandatory controls from the SWIFT (Society for Worldwide Interbank Financial Telecommunications) Customer Security Programme introduced in 2017 to reinforce the security of the global banking system. The Bank is also on track to comply with all non-mandatory SWIFT controls by the end of 2019.

Foreign client holdings of securities at the Bank of Canada

End-of-year value, amount in custody



Looking forward

- The Bank will continue to enhance its framework for managing Canada's official international reserves. This includes ongoing model development, enhanced execution strategies and instruments, and preparation for market transition to new reference rates (see page 25 for more information about reference rate reform).
- The Bank will continue to wind down the government's retail debt program. As part of this effort, the Bank will realign its mandate toward servicing and redeeming bonds and will ensure bond owners are made aware of their matured bond series and the importance of timely redemption.
- The Bank will negotiate a new contract for the back-office operations of the CSB program.
- The Bank will continue to enhance its Banking Operations Financial Crimes Risk Management Policy by implementing and enhancing tools, including those supporting sanctions compliance and fraud detection.

More information

- The Government of Canada Debt Management Strategy
- 2018–19 Debt Management Strategy Consultations, Summary of Comments
- Summary of Comments—Government of Canada Debt Distribution Review Consultations
- Garriott, C., S. Lefebvre, G. Nolin, F. Rivadeneyra and A. Walton. 2018. "Alternative Futures for Government of Canada Debt Management." Bank of Canada Staff Discussion Paper No. 2018-15.
- Canada Savings Bonds website

Governor Stephen Poloz and Wanda Robson—sister of Viola Desmond, portrait subject for the new $10 bank note—participate in the November launch event. The launch was held at the Canadian Museum for Human Rights in Winnipeg. Photo: Douglas Little Photography

CURRENCY

Currency in 2018

The Bank continues to provide Canadians with secure bank notes while monitoring digital forms of payment and what the future of cash could look like.

At year-end, approximately 2.5 billion Canadian bank notes were in circulation. Polymer notes represented about 88 per cent of these, and older, paper notes were rarely used in transactions.

Polymer notes continued to perform well, lasting at least 3.5 times longer than paper. The increased durability of polymer, together with its recyclability, results in more economical and environmentally friendly bank notes.

Canada's polymer bank notes have cutting-edge security features that make them easy to check and difficult to counterfeit. This is reflected in Canada's low counterfeiting rate. At the end of 2018, the counterfeiting rate was 15 parts per million (ppm),[1] well below the Bank's target of 30 ppm. The Bank continues to conduct research on new security features and bank note technologies to remain ahead of counterfeiters.

The Bank also continued its counterfeit deterrence activities with retailers and law enforcement partners, including the Royal Canadian Mounted Police (RCMP) and Public Safety Canada, as part of the National Counterfeit Enforcement Strategy; Canada Border Services Agency; and FINTRAC (Financial Transactions and Reports Analysis Centre of Canada).

1 As at November 30, 2018

Achievements

The Bank issued a new polymer $10 bank note featuring Viola Desmond, a social justice icon and the first Canadian woman to be pictured on a regularly circulating bank note (see page 36 for more information).

The Bank continued to make progress with its research on central bank digital currency. A number of departments collaborated to advance this investigation into the technical options and the economic merits and risks of this potential new form of central bank money. This research also involved co-operation with various external partners, including academics and other central banks.

The Bank conducted research on how people perceive and authenticate bank notes, and employed machine learning techniques to determine how cash users evaluate bank note quality. Additionally, staff continued industrial-scale testing of existing options for security features in future bank notes and worked with the National Research Council Canada and other partners on the next generation of bank note security features.

The Currency Information Management Strategy initiative concluded in 2018 and is now being incorporated into core operations. The project enabled the Bank to collect and analyze data from many sources to enhance the quality of bank notes in circulation,

The Bank of Canada's role

The Bank is responsible for providing Canadians with bank notes they can use with confidence. It oversees the complete life cycle of a bank note, including design, development, production, distribution, removal and destruction. The goal is to ensure that bank notes in circulation continue to meet the needs of Canadians by being secure against counterfeiting, meeting a high standard of quality and being available in sufficient supply.

The Bank undertakes a broad spectrum of research to inform the strategic direction for its currency function. Research topics include bank note security and design, the quality and performance of notes in circulation, the use of cash, the future of bank notes and digital currencies. The Bank also studies the oversight, regulation and issuance of retail electronic payment methods.

The Bank engages in regular consultations with stakeholders in the law enforcement, retail and banking sectors, as well as with the public at large. These groups provide valuable information on topics such as how cash is being used, the visual content of future bank notes and the use of alternative methods of payment.

To deter counterfeiting, the Bank collaborates with law enforcement agencies and the judiciary. The Bank also conducts educational activities to increase the routine verification of bank notes by retailers and the public.

The Bank participates in international working groups and collaborates with research institutes and other central banks to pool knowledge, share opinions and resources, exchange best practices and contribute research in fields related to currency.

identify trends in the use of cash and understand the movement of bank notes through the distribution system.

The *2017 Methods-of-Payments Survey Report*, published in 2018, examined how Canadians use cash at the point of sale compared with other forms of payment. The study revealed that consumers still rate cash as an easy-to-use, low-cost, secure and widely accepted method of payment. That said, cash was being used less often to make transactions in 2017 than in the past. The Bank also published papers on the issues arising from a cashless society and on awareness and use of Bitcoin and other cryptoassets in Canada.

The Bank continued to engage in rigorous bank note supply chain management and quality assurance practices, as well as ongoing collaboration with financial institution partners, to ensure that Canadians have ready access to cash. It also collaborated with several of Canada's major financial institutions to analyze the country's bank note distribution system to ensure it continues to be effective and cost-efficient.

Advancements in the modernization of the Bank's cash processing centres were made to ensure they remain cutting-edge and continue to provide efficient operations and services.

Regional offices in Vancouver, Calgary, Toronto, Montréal and Halifax give the Bank a strong presence across Canada. They provided support for the unveiling and issuance of the new $10 bank note. They also worked with law enforcement partners, financial institutions and the retail community to educate Canadians about bank note authentication and counterfeit deterrence.

Finally, the Government of Canada put in place the authority to remove legal tender status from bank notes. The Bank supported this initiative because it ensures that notes in circulation remain current, are easy to use and are difficult to counterfeit.

Quebec Regional Director for Currency Phuong Anh Ho Huu (second from left) with her law enforcement partners at the Forum on Counterfeiting and Fraud in September. From left: Pierre Thivierge, Royal Canadian Mounted Police; José Blanchet, Sûreté du Québec; and Dominique Côté, Service de police de la Ville de Montréal

Looking forward

- The Bank's approach to issuing bank notes changed with the release of the vertical $10 note and will follow a new model going forward. Rather than issuing all five denominations within a short time frame, as was done for past series, a new note will be released every few years. This approach will allow the Bank to integrate the latest security features whenever a new note is issued.
- The Bank will continue its research on digital currencies, bank note quality and security features, and the use of cash; it will also continue with its industrial testing of new bank note technologies and work on future bank note security features.
- The Bank will roll out an engagement strategy for external currency stakeholders.

More information

- Learn more about the new vertical $10 bank note
- Watch videos to learn more about the design, security features and stories behind Canada's bank notes
- View the webcast of the announcement of the issuance of the new $10 note
- Engert, W., B. Fung and S. Hendry. 2018. "Is a Cashless Society Problematic?" Bank of Canada Staff Discussion Paper No. 2018-12.
- Henry, C., K. Huynh and G. Nicholls. 2018. "Bitcoin Awareness and Usage in Canada: An Update." Bank of Canada Staff Analytical Note No. 2018-23.
- Henry, C., K. Huynh and A. Welte. 2018. "2017 Methods-of-Payment Survey Report." Bank of Canada Staff Discussion Paper No. 2018-17.

#vertical10

Portrait subject Viola Desmond was one of hundreds of remarkable Canadian women nominated through the nation-wide "Is she Bank NOTE-able?" public consultation campaign.

On November 19, 2018, the Bank of Canada issued a new $10 polymer bank note. It is the first vertical bank note issued by the Bank, and the first regularly circulating note to feature a Canadian woman as the portrait subject: social justice icon Viola Desmond. The launch was held at the Canadian Museum for Human Rights (CMHR) in Winnipeg, which is depicted on the back of the note. Regional events also took place in Halifax, Montréal, Toronto, Edmonton and Vancouver.

This represented the culmination of a historic process that began on International Women's Day 2016 when Prime Minister Justin Trudeau announced that the next Canadian bank note would feature an iconic woman as the portrait subject. On the same day, the Bank announced the launch of the "Is she Bank NOTE-able?" public consultation campaign.

During this campaign, Canadians were invited to nominate Canadian women for consideration. The initiative resulted in more than 26,000 nominations and 461 eligible nominees. Viola Desmond was ultimately chosen to be the portrait subject, and her selection was revealed just before the end of 2016.

The design of the new note was unveiled at an event in Halifax on International Women's Day 2018, exactly two years after the announcement of the Bank NOTE-able woman campaign.

The new $10 bank note, with its depictions of Ms. Desmond and the CMHR, acknowledges the past and continuing efforts to achieve rights and social justice for all Canadians. It has enhanced security features that are easy to check and difficult to counterfeit, ensuring that Canadians can use it with confidence.

The Bank NOTE-able woman campaign, and the resulting $10 note, captured the attention of Canadians and the world, garnering significant attention in both traditional and social media.

The Bank is very proud of this note.

MANAGING THE BANK

Managing the Bank in 2018

Four years ago, the Bank launched a new vision: *To be a leading central bank—dynamic, engaged and trusted—committed to a better Canada*. The statement encouraged employees to think differently about the Bank and its work and committed the organization to making a meaningful shift in the way it conducts business.

The thrust of that vision was embedded in the Bank's ambitious 2016–18 medium-term plan (MTP), which drew to a close this year. Over the course of this MTP, employees were encouraged to experiment with new ways of working together and to adopt an innovative approach to their work.

Employees fully embraced this mindset within the context of the institution's long-standing commitment to excellence. As a result, the Bank has undergone a significant amount of change during this MTP.

These changes are supported by a modern, connected workplace, where technologies and shared spaces encourage dialogue, creativity and experimentation. In 2018, the Bank marked the first full year with all head office employees back in its renovated Wellington Street building.

Composition of Bank staff, by role

Approximate, for 2018

* Total number includes approximately 1,500 employees in core operations and 250 employees working on projects (temporary).

About managing the Bank of Canada

A strong management and operating framework provides the foundation for the Bank's core functions and activities.

Efficient, cost-effective and innovative operations contribute to the achievement of the Bank's business objectives. At the same time, a strong leadership culture and effective communications promote employee engagement and productivity.

In addition to the economists and financial system specialists who work in the Bank's core functions, leaders and staff in corporate administration departments focus on the management of

- people—attracting, retaining and developing highly qualified employees;
- corporate processes—executive decision making and governance, compliance, risk management, audit, legal systems, corporate policy and communications;
- assets—maintaining buildings, securing people and physical assets, and procuring services;
- finances—budgeting, accounting and control; and
- information—technology, data and security.

Our principles of corporate administration are to be

- a value-added business partner, with relationships and knowledge that business lines need to solve problems;
- operationally excellent, with efficient and integrated processes and systems, superior analytics, and shared planning and budgeting;
- easy to do business with, delivering efficient and responsive services and advice; and
- effective corporate stewards, able to provide the advice, guidance and support needed for wise decision making and stewardship of the Bank's finances, information and employees.

For the ninth consecutive year, the Bank was named one of Canada's Top 100 Employers and one of the top 25 employers in the National Capital Region.

Bank employees raised $272,905 for the United Way and Health Partners through the Bank's annual workplace charitable campaign.

Achievements

Human resources

Every year, considerable effort goes into providing employees with distinctive development opportunities, competitive total compensation and a superior work environment.

In 2018, there was a significant focus on promoting diversity and inclusion at the Bank. Both leaders and employees were engaged in supporting this commitment. Among its achievements in this area, the Bank

- adopted a more inclusive approach for employee self-identification and conducted a campaign to gain a better understanding of current employment equity representation at the Bank
- engaged senior leaders to serve as the Bank's diversity and inclusion champions
- introduced new training for recruiters and hiring managers
- named the first three recipients of the new Master's Scholarship Award for Women in Economics and Finance: Haeyeon Lee (pursuing a Master of Financial Economics at the University of Toronto), Monica Mow (pursuing a Master of Arts in Economics at the University of Victoria) and Fanny McKellips (pursuing a Master of Arts in Economics at Queen's University)
- supported the employee-driven creation of several resource groups, including a group for women and one for the LGBTQ2S community

In March, Bank employees and external guests from Canada's federal financial safety net agencies[1] and the Canada Mortgage and Housing Corporation came together for "Celebrating Diversity and the Power of Inclusion." This was a frank and productive discussion about how diversity and inclusion affect the workplace.

Bank employees and external guests engage in conversation at the "Celebrating Diversity and the Power of Inclusion" conference, held at the Bank in March.

Another important initiative for the Bank was adopting a comprehensive and coordinated approach to professional and career development. This initiative built on the performance and development framework launched in 2017.

The Bank continued to invest in attracting and retaining economists and financial system specialists. Following consultations with its researchers and leaders, and a thorough external benchmarking exercise, the Bank updated its sabbatical program to enhance the practicality, accessibility and attractiveness of this type of leave for researchers.

A new Top Research Award was introduced to recognize achievements in economic and financial system research at the Bank. It is awarded to the individual or group who made the most significant contribution to the Bank's research agenda. Wataru Miyamoto won the inaugural award for his paper, "Government Spending Multipliers Under the Zero Lower Bound: Evidence from Japan."

The final wave of the Bank's comprehensive three-year program to modernize its human resources programs, processes and tools was a success, with the introduction of a new recruiting tool in July.

All of this work was supported by the Bank's employee communications function, which used a variety of digital channels and products to keep staff informed of important changes and engaged in their work.

1 These include the Bank of Canada, the Department of Finance Canada, the Office of the Superintendent of Financial Institutions, the Financial Consumer Agency of Canada and the Canada Deposit Insurance Corporation.

From left: Jing Yang (Deputy Managing Director, Canadian Economic Analysis), Julie Champagne (Managing Director, Corporate Services) and Ben Sorensen (Senior Director, Information Technology Services) speak at the launch event for PotentiELLE, an employee-led network created to empower women and support their development at the Bank.

Operating infrastructure

The Bank's operating infrastructure is adapted and improved each year to keep up with the rapid pace of change in technology and constantly evolving business needs.

Since the completion of the Bank's head office renovations, the Wellington Street facility has outperformed pre-design forecasts for energy consumption savings. Ottawa Hydro presented the Bank with an energy savings award in recognition of the renovated building's energy efficiency.

Staff continued to leverage the Bank's innovation lab, IdeaSpace, to tackle challenges collectively and creatively—with a focus on continuous improvement. The lab was introduced as part of head office retrofits to be a dedicated space for cross-functional thinking and collaboration.

IdeaSpace was the setting for 495 sessions in 2018, including three instalments of the ReCon speaker series, which brings in external experts from fields outside economics or finance for interactive sessions with employees.

Resilience

In 2018, the Bank's resilience efforts remained focused on ensuring that the key systems and processes that support Canada's market and banking operations can continue to operate without interruption in the event of unforeseen circumstances.

As part of these efforts, the Bank established a new data centre—one of three that are dispersed across the country to ensure the security and integrity of Bank data. It also completed the design and fit-up of its alternative banking and market operations site in Calgary, and conducted regular disaster recovery exercises throughout the year.

The Bank continued to make progress on its cloud adoption strategy, which is focused on converting specific components of information technology infrastructure and solutions to cloud-based platforms. The strategy contributes to the Bank's resilience by ensuring some information technology systems are kept up-to-date by vendors, as appropriate, to meet the Bank's needs.

Cyber security

The Bank continued to monitor, assess and respond to cyber threats in 2018 and to adjust to the rapidly evolving cyber threat landscape.

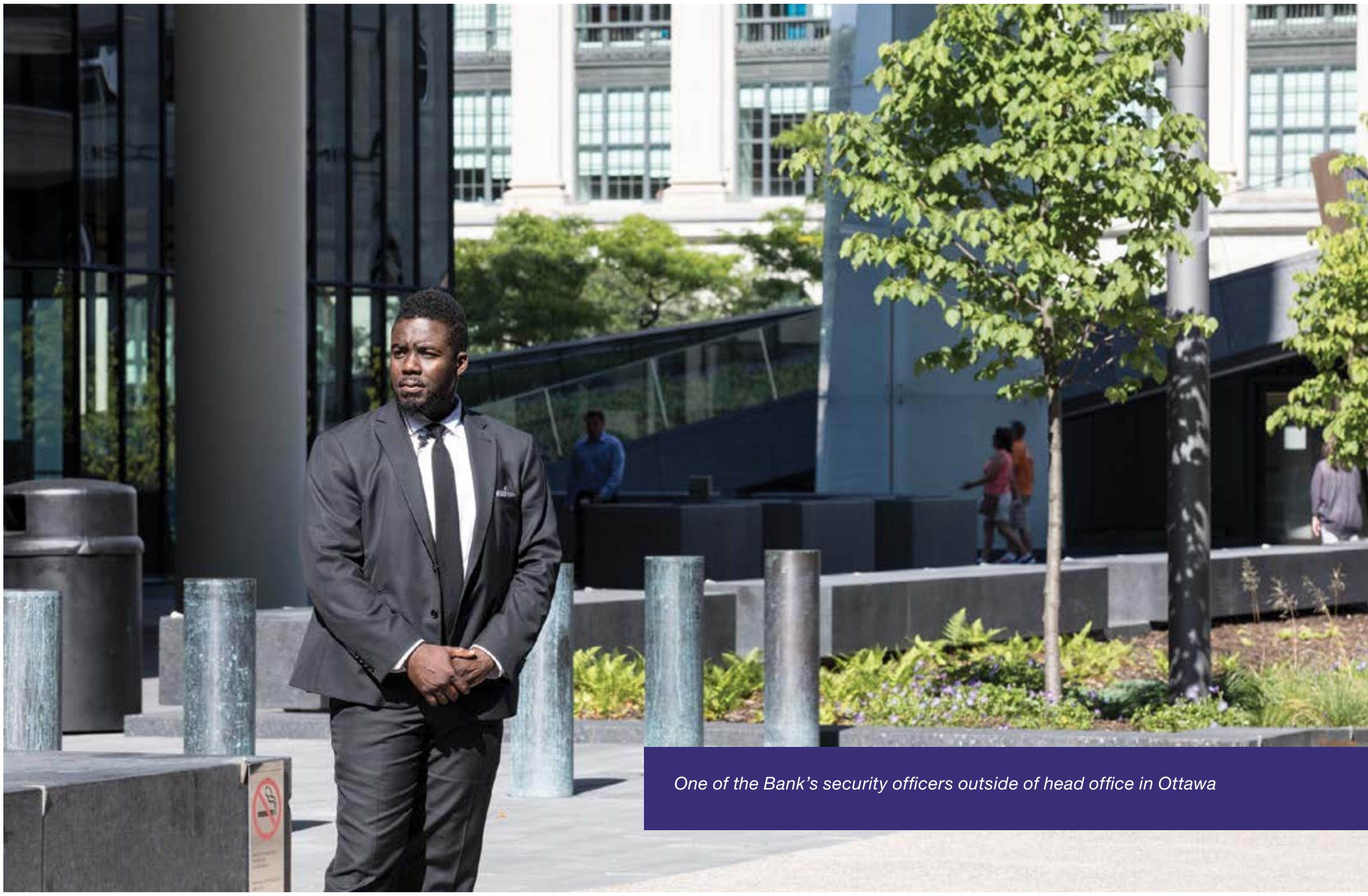
Work on the Bank's cyber security strategy continued, with a focus on enhancing cyber resilience internally while promoting system-wide resilience through partnerships with the financial industry and government organizations. The new strategy is based on research, benchmarking and formal assessments of cyber security risks. This strategy will provide the framework for the Bank's cyber security goals for the 2019–21 MTP.

The Bank also successfully implemented the requirements identified in the SWIFT (Society for Worldwide Interbank Financial Telecommunications) Customer Security Programme (see page 31 for more information).

Data and records management

The Bank made significant advances in its management of data and official records in 2018. This work supports the continuous improvement of the Bank's research and statistical analysis, while respecting the sensitivity and security requirements of Bank-held data.

Some departments began to explore potential applications of advanced analytics, such as machine learning and text mining, as an aid to economic analysis and other Bank activities.



One of the Bank's security officers outside of head office in Ottawa

Looking forward

- A comprehensive diversity and inclusion strategy for the Bank will be developed in 2019, while wellness will continue to be promoted through the introduction of enhanced programming.
- Employee and leadership development programming will be enhanced.
- The Bank will continue to foster innovation through partnerships and experimentation.
- As part of its resilience efforts, the transition of business systems to the new architecture will continue, helping manage operational risks in years ahead.
- The Bank will continue to operationalize its alternative operations centre.
- Work to enhance the Bank's cyber security will continue. The Bank will also remain focused on attracting, retaining and developing talent in the field of cyber security.
- The Bank's enterprise data strategy will be further advanced, and work will continue on the renewal of the Bank's analytical environment.

COMMUNICATIONS AND OUTREACH

Communications and outreach in 2018

The Bank of Canada is committed to open and transparent communication with Canadians about its policies, actions and analysis.

Households, businesses and investors can have more confidence in the value of their money and the safety of their financial system when they understand the Bank's role better.

Achievements

The current context is one of a shifting media landscape, increased digitalization of communications and growing public expectations for transparency from public institutions. In this context, the Bank continues to pursue new and innovative ways to engage with various stakeholder groups, including the media, financial market participants and the public at large.

The goal is to communicate with Canadians clearly and effectively, while providing a comprehensive account of the Bank's activities. To achieve this, the Bank launched several new initiatives this year, including

- public opinion research to deepen the Bank's understanding of its audiences and their communications needs
- efforts to make speeches and key publications more readable for non-specialists
- broader and easier access to the Bank's data, models and research
- increased use of social media and digital platforms to connect with and inform broader audiences
- development of website products and Bank of Canada Museum programming to engage with the public and help them understand the Bank's work

The Bank's annual communications activities

Extensive outreach and stakeholder engagement activities ensure that the views of Canadian individuals, businesses and organizations are understood and considered by the Bank as it conducts its policy actions.

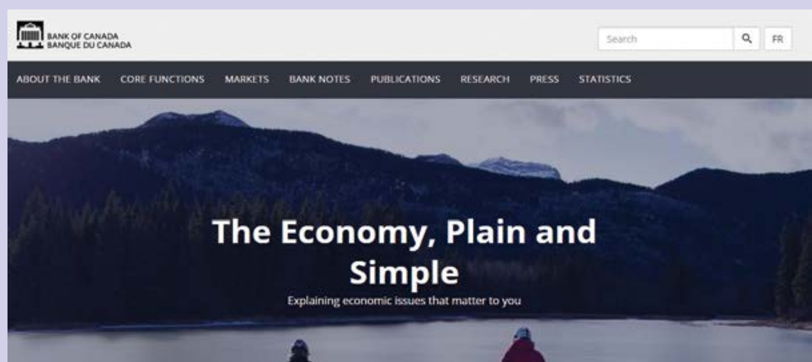
Eight times a year, the Bank announces its decision on the key policy interest rate, complemented quarterly by the release of the *Monetary Policy Report* (MPR).

The Bank publishes the *Financial System Review* (FSR) once a year to help Canadians understand risks to the stability of Canada's financial system. The FSR is now complemented by a digital Financial System Hub that offers timely access to Bank analysis and research on financial stability issues.

The Bank also publishes *The Economy, Plain and Simple*, a digital publication launched in 2018 that aims to help Canadians better understand the economy through short articles that explain key economic concepts and issues in a way that is easy to understand.

In addition to these regular publications and related tools, members of Governing Council communicate important Bank messages through public speeches to Canadians and international audiences, which are often webcast.

The release of major publications, such as the MPR and the FSR, is followed by a news conference and media interviews with the Governor and the Senior Deputy Governor (SDG). Members of the media attend lock-ups



The Bank's new digital magazine, The Economy, Plain and Simple, *presents key economic concepts and current economic issues in a friendly and engaging way.*

at the Bank's head office to obtain copies of speeches and publications under embargo.

The Governor and the SDG appear semi-annually before the House of Commons Standing Committee on Finance and the Standing Senate Committee on Banking, Trade and Commerce, as they did in the spring and autumn of 2018.

Members of Governing Council also host regular consultations and round table meetings with a wide range of private and public sector leaders throughout the year.

Social media:
145,080 Twitter followers,
28,750 LinkedIn followers,
4,272 YouTube subscribers,

Speeches:
20 public speeches
by Governing Council

Bank of Canada
Museum:
61,396 visitors

Stakeholder relations:
1,400 visitors at Doors
Open Ottawa event

Media relations: 14 press conferences,
83 media interviews; 37 press releases,
339 responses to media queries

Website:
37 million unique page views,
7.8 million unique users

Public information:
12,277 phone calls,
4,048 emails from the public

Public opinion research

The Bank launched a public opinion research program in 2018 to better understand its audiences and their communications needs.

As part of these efforts, a survey was conducted. Results showed strong correlations between awareness, understanding and trust in the Bank. The results also showed a strong interest from the public to learn more about the Bank and the economy.

The findings indicated that most Canadians have some knowledge of the Bank's role, function and mandate. At 70 per cent, trust in the Bank compares favourably with trust in other key Canadian institutions. A total of 17 per cent of Canadians (approximately 6 million people) indicated that they were interested in the economy but felt they did not understand it well enough.

The public also showed a strong preference for plain, simple, visual and digital communications, delivered through their preferred communications channels. The Bank is using this feedback to tailor its communications strategies and products to better meet the communications and information preferences of its audiences.

The Bank also published an assessment of the readability of its speeches and main publications. While the Bank ranks well among its international peers, results showed that further work is needed to ensure its speeches and publications are easy to understand.

Plain and simple communications

With the results of its public opinion research in mind, the Bank increased its efforts in 2018 to communicate in clear and easy-to-understand ways and to provide more educational information on economic issues.

A major initiative was *The Economy, Plain and Simple*, a new, digital magazine that uses short, simple articles and visual content to make key economic concepts accessible and engaging.

The Governor delivered a public speech dedicated to issues related to transparency and public trust, and in it described some of the new communications initiatives the Bank undertook this year.

Transparency around policy

The Bank uses its quarterly *Monetary Policy Report* (MPR) to provide a rationale for its interest rate decisions, including details on the most important risks to its projections and how they are expected to evolve. In 2018, the Bank took several steps to further enhance transparency related to its policy decision making.

Members of Governing Council began delivering public speeches to provide an economic progress report after each of the four interest rate announcements not accompanied by an MPR. Similar to MPR opening statements, these speeches shed light on key aspects of the economy's evolution and on the considerations that figured most prominently in Governing Council's policy deliberations.

To complement the Bank's *Financial System Review*, a digital Financial System Hub was launched to offer more timely access to the Bank's analysis and research on financial stability issues (see page 23 for more information). The Bank also launched a new online database offering access to the past 30 years of staff economic projections of the Canadian economy.

Once every five years, the Bank renews its monetary policy framework. In 2018, as part of this process, the Bank provided public access to parts of its annual economic conference for the first time. Select sessions were webcast so that interested members of the public could watch them (see page 17 for more information).

Governor Stephen Poloz speaks in June to the Greater Victoria Chamber of Commerce on central bank communications.

Digital strategy

The Bank provided an enhanced digital experience for online visitors in 2018.

Website readability was improved, and new functionality helped to make content more quickly and easily searchable. Social media posts were made more engaging and visually appealing, with enhanced illustrations, videos and interactive multimedia features.

Going digital

In 2018, the Bank

- converted the *Financial System Review* into a fully digital publication;
- launched a Facebook presence for the Bank of Canada Museum;
- developed a new application programming interface that allows users to retrieve financial data and information from the Bank's website;
- transformed the *Banking and Financial Statistics* publication into a set of interactive, downloadable digital dashboards;
- made Bank data and models more accessible to the public, enabling researchers to more easily extract, use and share data; and
- published 15 staff analytical notes in fully digital format.

Stakeholder relations and outreach

Stakeholder relations

The Bank engages with stakeholders across a wide range of sectors and regions, including businesses, academia, parliamentarians, industry associations and labour groups. These relationships inform the Bank's policy decisions by helping the Bank better understand the evolution of the economy. They also offer insights into future challenges and opportunities, such as digitalization.

Engaging with diverse stakeholders also reinforces the Bank's accountability to Canadians. In this respect, ongoing and deepened engagement is an essential component of the Bank's communications strategy; it complements public, media and social media activities and events.

In 2018, Bank leaders participated in

- 90 public and private speaking engagements;
- 62 media activities;
- 27 consultations, round tables and dinners; and
- 11 regional outreach activities, including three in smaller urban centres.

These efforts were supported by the Bank's regional offices in Vancouver, Calgary, Toronto, Montréal, Halifax and New York. Changes to the Bank's outreach this year included planning more activities around a theme or speech and structuring round tables on discussion topics.

Regional representatives maintained close ties with industry, government, schools and universities; conducted interviews for the *Business Outlook Survey* and *Senior Loan Officer Survey*; researched issues affecting specific regions; and contributed to the Bank's understanding of financial markets. They also delivered education sessions to retailers, consumers and financial institutions on recognizing genuine bank notes and collaborated with law enforcement in counterfeit prevention activities.

Additionally, the Bank began developing a longer-term strategy to enrich and embed stakeholder relations in its programs and initiatives. The Bank will expand its engagement efforts to promote deeper relationships and more opportunities for dialogue with a broader cross-section of the public.

Academic outreach

High-quality research underpins all the Bank's work and played an important role in informing policy analysis in 2018.

As part of its commitment to making its research more accessible to the public, the Bank highlights its current research through a monthly newsletter and website link. A total of 61 staff working papers, 18 staff discussion papers, 41 staff analytical notes and 3 technical reports were published this year. Additionally, 62 papers by Bank staff were published or accepted in academic peer-reviewed journals.

The Bank engages with academic and other research partners on topics of importance. Five academics were part of the Bank's Visiting Scholar program in 2018 and are involved in several joint projects:

- Victor Aguirregabiria, University of Toronto
- Dean Corbae, Wisconsin School of Business
- Rodney Garratt, University of California, Santa Barbara
- Charles M. Kahn, University of Illinois
- Stephen D. Williamson, Western University

The Bank's Fellowship Program fosters excellence in research at Canadian universities and promotes research partnerships with external experts in areas important to the Bank's mandate. Through this program, two types of research awards are available for academics working at Canadian universities.

The Fellowship Award recognizes excellence among well-established researchers in Canada. The 2018 Fellowship Award recipients were the late Peter Christoffersen of the University of Toronto and Stephen D. Williamson of Western University.

The Governor's Award was presented to Markus Poschke of McGill University. This award is given to exceptional assistant and associate professors doing exemplary work in fields related to central banking.

In early 2018, the Governor hosted the final round of the third Governor's Challenge. This is an annual university competition designed to promote understanding of the role of monetary policy in Canada's economy. Wilfrid Laurier University was the 2018 winner.

During a regional outreach visit to Beauce, Quebec, in October, Deputy Governor Timothy Lane meets with Charles Dutil, President of trailer manufacturer Manac, at the plant in Saint-Georges.

Governor Stephen Poloz presents the Bank's 2018 Fellowship Award to Stephen D. Williamson of Western University, in November.

Visitors to the Bank of Canada Museum have the opportunity to learn more about the Bank's role in the economy and to better understand their place in it.

In addition to these programs, the Bank collaborates with the academic community through

- co-op and summer student placements with participating universities;
- scholarships and work placements for women in economics and finance, students with disabilities and Indigenous students;
- university recruitment programs to seek out recent graduates for positions at the Bank;
- student paper awards for doctoral students in economics and finance;
- regular workshops, conferences and sessions;
- doctoral internships; and
- regional outreach visits to colleges and universities by members of the Bank's Governing Council.

Innovation partnerships

In 2018, the Bank of Canada partnered with the Creative Destruction Lab to deepen its knowledge of leading technologies. The partnership will enable the Bank to stay abreast of developments in artificial intelligence, machine learning, cryptoasset technologies and quantum computing.

The Bank also launched the Partnerships in Innovation and Technology Program (PIVOT). PIVOT enables the Bank to work with innovators in the private sector and academia to experiment with digital tools and technologies as a means of fast-tracking innovation in the Bank's economic analysis and research and its day-to-day operations.

Bank of Canada Museum

The Museum, which reopened to the public in mid-2017, had a very successful first full calendar year in operation. It welcomed 61,396 visitors in 2018.

The Museum's mission is to help Canadians understand the work of the Bank and promote awareness of key economic concepts. The results of a visitor survey suggest that the Museum is achieving its objectives.

To complement its permanent exhibit, the Museum launched a variety of successful temporary and travelling exhibits in 2018. These included *Decoding E-Money*, which explores the history, evolution and impact of digital currencies; *A Noteworthy Woman*, which helps tell the story of Viola Desmond and the new $10 bank note launched in 2018; and *Before the Erebus: The Making of Sir John Franklin*, developed in partnership with the Canadian Museum of History.

The Museum continued to work with Canadian educators. It launched *Money & Monetary Policy in Canada*, an online educational resource produced in partnership with the Canadian Foundation for Economic Education. It also launched *Surprise, It's Money!*, a hands-on school program. In addition, the Museum developed two new school programs in consultation with elementary and secondary teachers.

More information

- Deslongchamps, A. 2018. "Readability and the Bank of Canada." Bank of Canada Staff Analytical Note No. 2018-20.
- Poloz, S. S. 2018. "Let Me Be Clear: From Transparency to Trust and Understanding." Remarks to the Greater Victoria Chamber of Commerce, Victoria, British Columbia, June 27.
- Partnerships in Innovation and Technology Program (PIVOT)
- Money & Monetary Policy in Canada
- Bank of Canada, "Bank of Canada publishes staff economic projections for the first time," press release, November 1, 2018.

GLOBAL ENGAGEMENT

Global engagement in 2018

The Governor, Senior Deputy Governor, Deputy Governors and other Bank leaders engage in dialogue on global economic and financial developments through such bodies as the G7, the G20, the Financial Stability Board (FSB), the Bank for International Settlements (BIS), the Organisation for Economic Co-operation and Development (OECD) and the International Monetary Fund (IMF).

In 2018, multilateralism faced heightened challenges: trade tensions, uncertainty over future trade policy and mounting concerns about the stability of the rules-based global order cast a cloud over much of the year. The Bank was nonetheless able to work constructively, making important contributions in several spheres.

Under the Argentine presidency, G20 member countries discussed risks to the global outlook and agreed to work toward resolving trade issues and reforming the World Trade Organization. They also recognized the need for co-operation among members for resilient and inclusive economies. Under the Canadian presidency, member countries of the Group of Seven leading industrialized nations (G7) focused on three themes: inclusive growth and adaptation to the modern economy, global governance, and promoting fair rules of the game.

Throughout the year, Bank representatives continued to take a proactive approach to building and reinforcing relationships with their partners from around the world.

Supporting Canada's G7 leadership

In 2018, Canada assumed the G7 presidency. The Bank made important contributions by co-leading a series of events in partnership with the Department of Finance Canada. The first was the G7 Symposium on Innovation and Inclusive Growth in Montebello, Quebec, on February 8. The Symposium brought together senior officials, academics and private sector participants with the goal to better understand the links between innovation and inclusive growth in the age of digitalization. This session helped lay the intellectual groundwork for related policy discussions that occurred throughout the remainder of the year.

The Bank of Canada's international role

The Bank's work on the international stage helps it achieve its mandate each year.

Sharing information and insights with global counterparts helps the Bank understand the global economy, which is essential to both formulating monetary policy and identifying risks to the financial system. Such engagement also prepares the Bank to address complex and often interrelated global economic, financial and regulatory challenges, as well as a range of common issues pertaining to financial system policies and central bank operations.

The Governor, Senior Deputy Governor, Deputy Governors and other Bank leaders engage in dialogue on global economic and financial developments through bodies such as

- the G7 and the G20,
- the International Monetary Fund,
- the Bank for International Settlements (BIS),
- the Financial Stability Board (FSB),
- the International Organization of Securities Commissions, and
- the Organisation for Economic Co-operation and Development.

The Governor serves on the BIS Board of Directors, which determines the strategic and policy direction of the BIS and supervises BIS management. He chairs the Board's Audit Committee, examining matters related to internal control systems and financial reporting.

The Bank supports FSB activities to develop and promote effective regulatory, supervisory and other financial sector policies in the interests of financial stability around the world.

The Senior Deputy Governor is a member of the FSB Plenary and the FSB Standing Committee on Assessment of Vulnerabilities, which monitors and assesses vulnerabilities in the global financial system.

Bank officials also participate in a variety of international working groups and committees, either to develop specific recommendations or to exchange ideas and collaborate with economists and researchers from other countries.

Senior Deputy Governor Carolyn A. Wilkins, who spoke at the event, noted that although the digital economy holds promise for higher overall living standards in the future, it could leave some behind today. She urged policy-makers to explore opportunities for mitigating downsides.[1]

The second key event for the Bank was the G7 Finance Ministers and Central Bank Governors' Meeting in Whistler, British Columbia, from May 31 to June 2. Bank staff worked with colleagues from the Department of Finance Canada to plan the exchange and frame discussions. Attendees reaffirmed the importance of rules-based international trade and inclusive growth, reviewed major risks to the economic outlook, discussed the risks and potential benefits of cryptoassets and considered how best to address cyber risks in the financial sector.

While in Whistler, central bank governors met on the sidelines to discuss other relevant issues, including monetary policy-making in an environment of uncertainty, and diversity and inclusion in central banking. As well, Governor Stephen Poloz and the Minister of Finance co-hosted a public symposium on some of the key underlying public policy considerations, including economic resilience and diversity and inclusion. This event was webcast to facilitate public engagement.

The Whistler discussions took place amid rising trade tensions. Nonetheless, ministers and governors benefited from constructive discussions and expressed their desire to restore collaborative partnerships to promote economic growth.

Through its presidency, Canada helped raise awareness of the importance of empowering women to participate fully in the economy and reducing the gender pay gap. The mandate for the G7 Cyber Expert Group was renewed, and, regarding the digital economy, Canada supported a review of international taxation and flagged the value of coordinating the international work effort on cryptoassets.

In addition, Bank representatives identified several areas for ongoing collaboration across G7 central banks.

Cyber security

Cyber security is as much an issue for the global economy as it is for Canada's. For this reason, the Bank continued to work with industry, international bodies and federal and provincial authorities to improve cyber security policies and practices at all levels.

Chief Operating Officer Filipe Dinis speaks at the Payments Canada Summit in May, outlining actions the Bank is undertaking with its partners in Canada and internationally on cyber security defence and recovery plans.

The Bank is a member of the G7 Cyber Expert Group, which supports G7 finance ministers and central bank governors in their efforts to promote the cyber resilience of the global financial system. Through this group, the Bank contributed to two international protocols in 2018: the *G7 Fundamental Elements for Third Party Cyber Risk Management in the Financial Sector* and the *G7 Fundamental Elements for Threat-led Penetration Testing*, both of which lay out guidelines for successful cyber security policy and practice.

The Bank also contributed to the work of several international organizations that promote global cyber security. Among them is CPMI-IOSCO—a joint committee that brings together the central banks that are part of the Committee on Payments and Market Infrastructures and the securities regulators that make up the International Organization of Securities Commissions. Through this group, the Bank contributed to the development of harmonized approaches to dealing with risks to financial market infrastructures, including cyber risks.

As a member of the SWIFT Global Oversight College, the Bank helps to oversee the resilience of SWIFT's messaging services, which are crucial to the smooth operation of domestic and global financial systems. The Bank is also a member of the Basel Committee on Banking Supervision (BCBS), which reported on the range of bank, regulatory and supervisory cyber resilience practices across jurisdictions.[2]

1 In addition to contributing to the international dialogue on these issues, the speech also generated discussion domestically and led to a parliamentary appearance by the Bank to discuss competition and data issues within Canada.

2 Basel Committee on Banking Supervision, "Cyber-Resilience: Range of Practices," Bank for International Settlements (December 2018).

Governor Stephen Poloz with the 2018 Central Bank of the Year award, presented to the Bank of Canada by UK-based Central Banking *in January*

Given the rapid evolution of cyber threats, information sharing is also a vital aspect of the Bank's overall cyber security posture. As part of this commitment, the Bank continued to exchange cyber security strategies and lessons learned through the Working Party on Security Issues, which includes the BIS and 16 other central banks.

Additionally, the Bank explored issues related to the resilience of high value payment systems through its membership in the High Value Payment System Operator Resilience Interest Group (HORIG). HORIG, which is made up of representatives from central banks and other like institutions, is currently working to develop guidelines for industry-wide cyber exercises.

This work complements Canada's domestic efforts to promote a safe and secure global financial system.

Building stronger financial systems

As part of the BCBS, the Bank contributed to the Basel III framework that was finalized in December 2017. When fully implemented, the framework will address the shortcomings of the pre-crisis regulatory framework and provide a regulatory foundation for a resilient banking system that supports the real economy.

With the policy development aspect of financial sector reforms mostly complete, the Bank helped promote the timely and consistent implementation of agreed-upon standards and evaluate the effectiveness of reforms. This included work with the BCBS and the FSB to determine whether the reforms are achieving their intended outcomes and to identify any material unintended consequences.

Beyond Basel III, the Bank continued to work with the FSB to finalize G20 post-crisis reforms more broadly. Among other topics, this work focused on determining appropriate resolution funding for central counterparties.[3]

The Bank also participated in ongoing efforts to monitor and assess emerging risks to global financial stability. It continued working with the FSB to assess vulnerabilities in the financial system. As Chair of the FSB's Financial Innovation Network, the Bank led the development of a monitoring framework for the financial stability implications of cryptoassets[4] and conducted a proactive assessment of the primary risks of cryptoasset markets and potential implications for financial stability.[5] The Bank also completed work on the impact on market structure from new entrants in the financial services space, which will be published in early 2019.

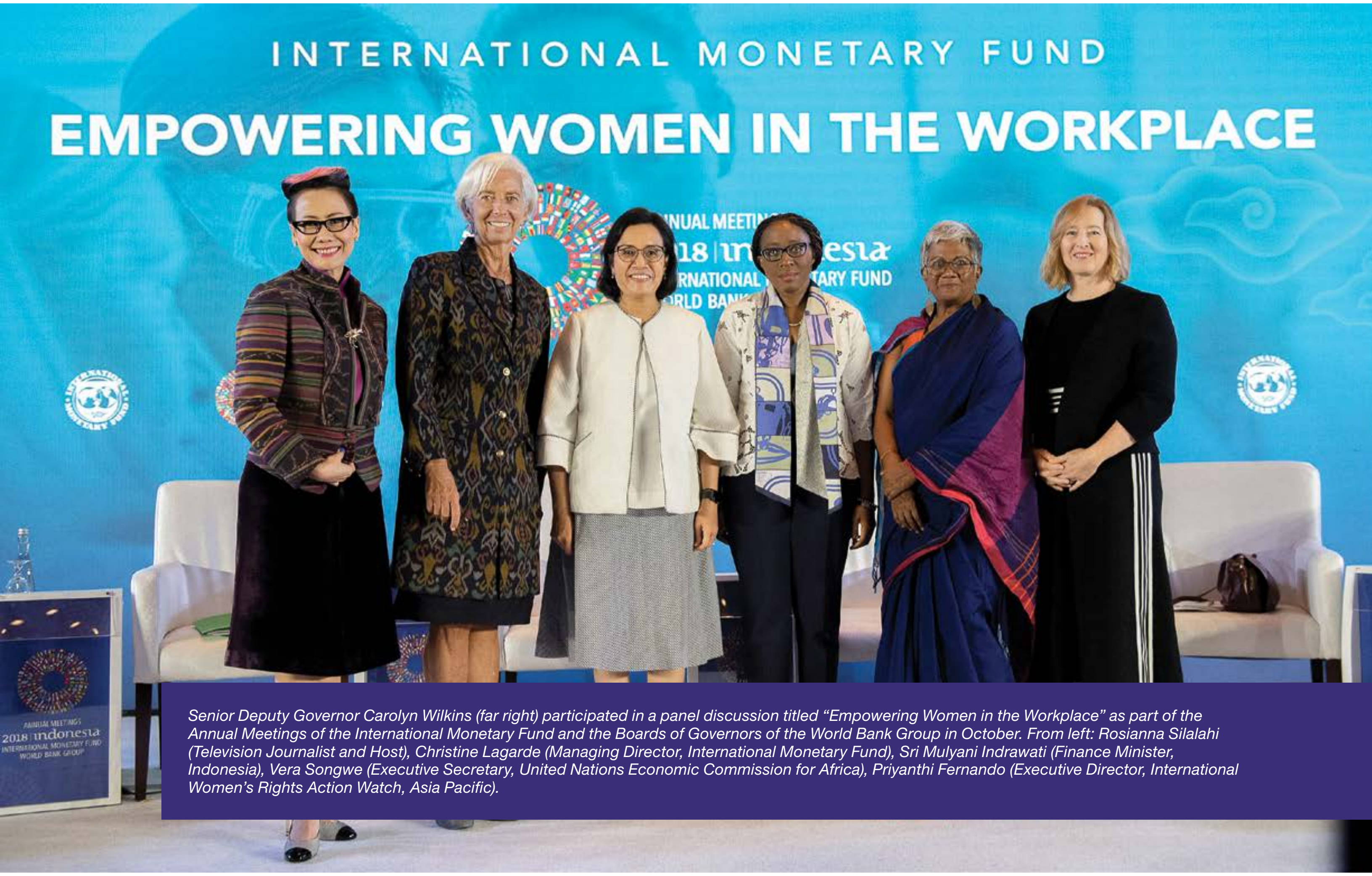
Working with other central banks that are members of the BIS Committee on the Global Financial System, the Bank participated in a working group that evaluated the financial stability implications of prolonged low interest rates on banks, insurance companies and pension funds.

Finally, the Bank continued to make important contributions to the peer review process through which the Principles for Financial Market Infrastructures are monitored and implemented. These are international risk management standards for financial market infrastructures, put in place to ensure that the infrastructure supporting global financial markets can withstand financial shocks.

3 Financial Stability Board, "Financial Resources to Support CCP Resolution and the Treatment of CCP Equity in Resolution," (November 15, 2018).

4 Financial Stability Board, "Crypto-Assets: Report to the G20 on the Work of the FSB and Standard-Setting Bodies," (July 16, 2018).

5 Financial Stability Board, "Crypto-Asset Markets: Potential Channels for Future Financial Stability Implications," (October 10, 2018).



Senior Deputy Governor Carolyn Wilkins (far right) participated in a panel discussion titled "Empowering Women in the Workplace" as part of the Annual Meetings of the International Monetary Fund and the Boards of Governors of the World Bank Group in October. From left: Rosianna Silalahi (Television Journalist and Host), Christine Lagarde (Managing Director, International Monetary Fund), Sri Mulyani Indrawati (Finance Minister, Indonesia), Vera Songwe (Executive Secretary, United Nations Economic Commission for Africa), Priyanthi Fernando (Executive Director, International Women's Rights Action Watch, Asia Pacific).

Fintech

Central banks around the world are paying close attention to innovation in digital financial services, such as digital currencies and distributed ledger applications—also known as financial technologies or fintech. These developments could have implications for financial stability, monetary policy and the issuance of currency.

Phases III and IVa of Project Jasper were completed in 2018; Phase IVb, addressing cross-border payments, is in progress (see page 24 for more information). The Bank's groundbreaking work on Jasper was recognized with a Pioneer Award at the first annual Central Banking FinTech & RegTech Global Awards 2018.

Central Bank Distributed Ledger Technology Working Group meetings are another avenue for ongoing fintech work. The Bank was a founding member of this group of some 15 central banks, which shares information on fintech projects—especially those based on distributed ledger technology.

Finally, given the Bank's expertise, experience and thought leadership on fintech issues, other central banks sought out its guidance and assistance throughout the year.

Central bank collaboration

The Bank works closely with other central banks, the BIS and other international organizations to promote innovation and excellence in central banking policy and operations in Canada and abroad.

As a member of the Four Nations Group, the Bank collaborates with the Federal Reserve, the Bank of England, Banco de México and the Reserve Bank of Australia on currency-related issues. It is also a founding member of the Central Bank Counterfeit Deterrence Group, a group of 35 central banks and issuing authorities that examines emerging international threats to the security of bank notes arising from digital counterfeiting.

In addition, the Bank hosted several large central bank meetings in 2018, including

- the Consultative Group of the Americas Directors of Operations meeting, which brought together heads of market operations;
- a workshop on digitalization with representatives from G7 central banks and the IMF;
- the first G7 Central Bank HR Heads Working Group Meeting on diversity and inclusion to share and strengthen current practices;
- the first Central Bank Heads of Security Annual General Meeting held in Canada to reinforce the trust and partnership between central banks;
- the first "Sommet des banques centrales sur la cybersécurité," which brought together cyber security experts from eight French-speaking central banks; and
- the Central Bank Internal Auditors' Working Group on Managing Third Party Risk.

As a leading central bank, the Bank readily shares its experience and expertise with others in the community, providing technical assistance to central banks and other international agencies. In 2018, the Bank accommodated 66 requests for technical assistance.

More information

- Department of Finance Canada. 2018. *G7 Fundamental Elements for Third Party Cyber Risk Management in the Financial Sector*.
- Department of Finance Canada. 2018. *G7 Fundamental Elements for Threat-led Penetration Testing*.
- Dinis, F. 2018. "Strengthening Our Cyber Defences." Remarks at the Payments Canada Summit, Toronto, Ontario, May 9.
- Organisation for Economic Co-operation and Development. 2018. *Roadmap to Infrastructure as an Asset Class*.
- Wilkins, C. A. 2018. "At the Crossroads: Innovation and Inclusive Growth." Remarks at the G7 Symposium on Innovation and Inclusive Growth, Montebello, Quebec, February 8.

GOVERNANCE OF THE BANK

Governance in 2018

The *Bank of Canada Act* provides the legal authority and framework for governance of the Bank of Canada.

Governor

The Governor of the Bank of Canada is both the Chief Executive Officer of the Bank and Chair of its Board of Directors.

Pursuant to the *Bank of Canada Act*, the Governor has specific authority and responsibility for the business of the Bank, including the formulation and implementation of monetary policy, the provision of fiscal-agent services to the Government of Canada, the issuance of bank notes and the provision of liquidity to the financial system. The Governor oversees Canada's major payment clearing and settlement systems, as stipulated in the *Payment Clearing and Settlement Act*.

In his role as Chair, the Governor leads the Board in its oversight responsibilities for financial and administrative matters at the Bank.

Board of Directors

The Board of Directors of the Bank of Canada is composed of the Governor, the Senior Deputy Governor and 12 independent directors. All independent directors are appointed for three-year renewable terms by the Governor-in-Council (the Cabinet). The Deputy Minister of Finance is an ex-officio, non-voting member of the Board.

The Board is responsible for financial and accounting matters and human resources. Monetary policy is neither formulated nor implemented by the Board. Members also keep the Bank informed of prevailing economic conditions in their respective regions and sectors.

The Bank maintains leading standards of corporate governance and management. To that end, the Board and senior management stay informed of best practices used by similar public institutions, other central banks and private sector organizations.

Changes in membership

The Bank welcomed eight new members to its Board of Directors in 2018.

Appointments	
June 2018	Debora Bielecki Stephanie Bowman Robert Campbell Mariette Mulaire Anne Whelan
September 2018	Paul G. Haggis Raymond E. Ivany Monique Mercier

Departures	
March 2018	Alan Andrew Borger
May 2018	Phyllis Clark
June 2018	Norman M. Betts Derek D. Key Wes Scott Jean Simon Martin Sullivan
September 2018	Colin Dodds

Committee structure and meetings

The Board of Directors has five standing committees, each of which has terms of reference and an annual work plan to guide its activities (see page 58 for committee descriptions and 2018 changes in leadership roles).

The *Bank of Canada Act* provides for an Executive Committee to act in place of the Board (see page 57 for membership). In 2018, this committee met twice: in July to receive an economic briefing from the Senior Deputy Governor and in November to receive the Bank's annual Senior Officer and Succession Planning report.

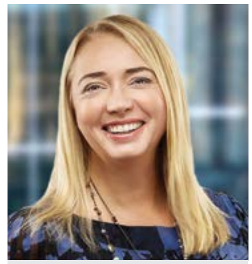
In addition, a selection committee was formed in June 2018 to lead the process for the recruitment of a deputy governor to replace Sylvain Leduc (see page 60 for additional information).

The Board and its committees meet regularly in Ottawa throughout the year and hold one meeting outside of the National Capital Region as part of the Bank's regional outreach program. In 2018, the Board met six times, and the external meeting was held in Montréal, Quebec.

The Board of Directors

Stephen S. Poloz[2*]
Governor

Carolyn A. Wilkins[2, 7*]
Senior Deputy Governor



Debora Bielecki[4, 5]
Toronto, Ontario

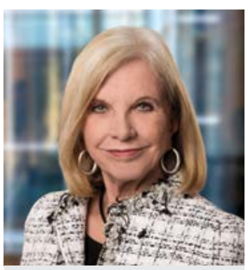
Stephanie Bowman[3, 5]
Toronto, Ontario

Robert Campbell[3, 6, 8*]
Sackville, New Brunswick

Peter P. Dhillon[2, 3*, 4]
Richmond, British Columbia

Paul G. Haggis[4, 7]
Canmore, Alberta

Raymond E. Ivany[5, 7]
Wolfville, Nova Scotia



Monique Jérôme-Forget[2, 5, 6*]
Montréal, Quebec

Claire M. C. Kennedy[1, 2, 4*]
Toronto, Ontario

Monique Mercier[4, 6]
Vancouver, British Columbia

Mariette Mulaire[3, 6]
Winnipeg, Manitoba

Paul Rochon[2]
Deputy Minister of Finance, Member ex officio

Greg Stewart[2, 5*, 6, 7]
Regina, Saskatchewan

Anne Whelan[3, 7]
St. John's, Newfoundland and Labrador

1. Lead Director
2. Member of Executive Committee
3. Member of Corporate Governance Committee
4. Member of Audit and Finance Committee
5. Member of Capital Projects Committee
6. Member of Human Resources and Compensation Committee
7. Member of Pension Committee
8. Fellowship Nominating Committee

* Indicates committee chair

Standing committees and leadership role changes

Committee	Chair	Mandate	Number of meetings in 2018*
Audit and Finance	Claire M. C. Kennedy	To provide Board oversight on the financial affairs of the Bank, including its medium-term plan, annual budget and expenditures, and on internal and external audit activities	6
Human Resources and Compensation	Monique Jérôme-Forget	To provide Board oversight on human resources policies and practices, compensation policies, succession planning, and the performance of senior executives To recommend compensation for the Governor and the Senior Deputy Governor, within ranges set by the Governor-in-Council (the Cabinet) and subject to its approval	3
Corporate Governance	Peter P. Dhillon	To provide Board oversight on corporate governance policies and practices, including Board effectiveness, Board member education, terms of reference of the Board and its committees, and the composition of Board committees	4
Capital Projects	Greg Stewart	To provide Board oversight for significant Bank projects	6
Pension†	Carolyn A. Wilkins	To provide advice to the Board on the Bank's responsibilities as sponsor and administrator of the Bank of Canada Pension Plan, including Plan investment policies, Plan administration, communications and stakeholder relations	4

* Attendance figures for the Board and committee meetings are published on the Bank of Canada website.

† The Pension Committee is composed of four independent directors, the Senior Deputy Governor and three other senior officers of the Bank.

There were several changes to leadership roles in 2018.

- Lead Director: Claire M. C. Kennedy succeeded Derek D. Key in June 2018.
- Chair, Audit and Finance Committee: Claire M. C. Kennedy succeeded Phyllis Clark in September 2018.
- Chair, Corporate Governance Committee: Peter P. Dhillon succeeded Claire M. C. Kennedy in September 2018.
- Chair, Capital Projects Committee: Greg Stewart succeeded Derek D. Key in September 2018.
- Chair, Fellowship Nominating Committee: Robert Campbell succeeded Colin Dodds in September 2018.

Board independence

Given that the Governor is both the Chief Executive Officer of the Bank and Chair of its Board of Directors, the independent (non-management) directors elect a lead director for a two-year renewable term to act as a key point of contact with the Governor. Derek D. Key acted as lead director until June 2018; he was succeeded that same month by Claire M. C. Kennedy.

The Board and its committees regularly hold sessions without management or non-independent directors present. Each committee of the Board, except the Pension Committee, consists solely of independent directors.

The Audit and Finance Committee provides Board oversight of the Bank's internal auditors and manages the relationship with the Bank's external auditors, who are appointed by the Governor-in-Council (the Cabinet). This committee meets privately on a regular basis with the external auditors, the Chief Internal Auditor, and the Chief Financial Officer and Chief Accountant.

The Board and its committees have the right to retain independent advisors at the Bank's expense.

Conduct, effectiveness and education

The Board regularly assesses its effectiveness by soliciting directors' views on various aspects of its operations, governance and activities. New directors participate in a comprehensive orientation program. The Board has implemented an ongoing director education program and regularly examines its education requirements.

The *Bank of Canada Act* specifies eligibility requirements for members of the Board, including rules to prevent conflict of interest. The Board requires its independent directors to follow the *Code of Business Conduct and Ethics for Directors.*

Executive Council, from left: Senior Deputy Governor Carolyn Wilkins, Governor Stephen Poloz, Deputy Governor Lawrence Schembri, Chief Operating Officer Filipe Dinis, Deputy Governor Timothy Lane, Deputy Governor Lynn Patterson.

Director compensation

Independent directors are paid within the ranges established under the *Remuneration Guidelines for Part-Time Governor-in-Council Appointees in Crown Corporations*, administered by the Privy Council Office.

- Annual retainer: $8,000
- Executive Committee, additional retainer: $3,000
- Committee Chair, additional retainer (excluding Corporate Governance Committee Chair): $1,000
- Corporate Governance Committee Chair, additional retainer: $2,000
- Per diem for meeting attendance: $625

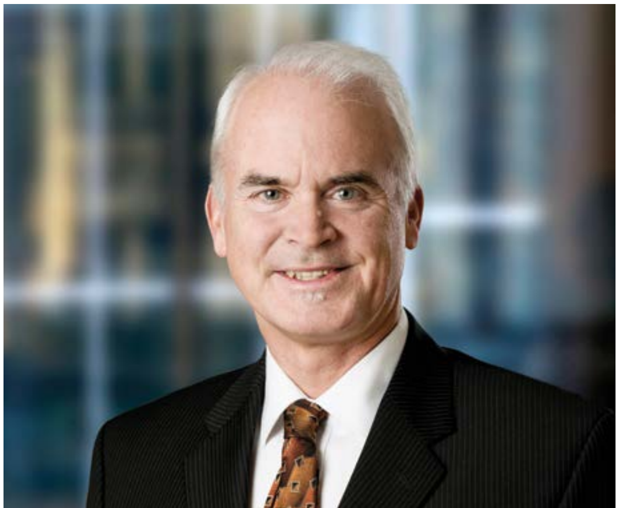
In accordance with its policy on travel, meals and accommodation expenses, the Bank reimburses independent members of the Board for expenses claimed while attending meetings of the Board, its committees or other Board-related activities.

The Governor, Senior Deputy Governor and Deputy Minister of Finance receive no compensation for their duties as members of the Board.

Bank of Canada management

Governor and Senior Deputy Governor

The Governor and Senior Deputy Governor are appointed for terms of seven years by the independent members of the Board of Directors, with the approval of the Governor-in-Council (the Cabinet). The length of the term allows the Governor and Senior Deputy Governor to adopt a longer-term perspective, which is essential to the Bank's effectiveness in conducting monetary policy and performing its other core functions.



Appointed in 2018, Deputy Governor Paul Beaudry joined the Bank in February 2019.

The salaries of the Governor and Senior Deputy Governor are determined by the Board within ranges established by the Government of Canada's Advisory Committee on Senior Level Retention and Compensation. They are subject to approval by the Governor-in-Council.

The remaining components of their total compensation are related to their membership in the Bank of Canada Pension Plan and health and dental benefits. The *Bank of Canada Act* stipulates that the salaries of the Governor and Senior Deputy Governor shall not include any performance-based element.

Governing Council

The Governing Council is made up of the Governor, the Senior Deputy Governor and four Deputy Governors.

In November, the Board of Directors appointed Paul Beaudry as Deputy Governor, effective February 18, 2019. He replaces Sylvain Leduc, who left the Bank in July 2018.

The Governing Council is responsible for setting the Bank's strategic direction and overseeing the Bank's core functions. Two committees are in place to provide advice:

1. Monetary Policy Review Committee

The Monetary Policy Review Committee (MPRC) meets regularly to share information and to provide advice to the Governing Council on monetary policy. It plays an important role in the assessment of economic conditions.

The MPRC consists of the Governing Council, the General Counsel and Corporate Secretary, advisors, managing directors of the economics departments and the Communications Department, senior financial market representatives in the Bank's Toronto and Montréal offices and the Bank's senior representative in New York. The MPRC is chaired by the Governor or, in the absence of the Governor, by the Senior Deputy Governor.

2. Financial System Review Committee

The Financial System Review Committee (FSRC) is the main forum for the presentation and discussion of issues related to the financial system. It has broad membership that includes all members of the MPRC and the managing director of the Currency Department. The FSRC is chaired by the Governor or, in the absence of the Governor, by the Senior Deputy Governor.

Bank of Canada management structure

The Chief Operating Officer oversees strategic and operational planning, administration and operations.

The Executive Council is the primary forum for management discussion and decisions on the Bank's strategic direction. It is composed of members of the Governing Council and the Chief Operating Officer.

The Bank also has seven advisors and a Chief Risk Officer who provide advice and expertise to the Governing Council and the Executive Council.

The Leadership Forum focuses on strategic Bank issues and on nurturing a leadership culture. The forum consists of members of the Executive Council, together with the Bank's advisors and managing directors.

The Senior Management Council supports the work of the Executive Council by overseeing operational issues, corporate programs, strategic initiatives, financial reporting, annual planning and related risks. It is composed of the Senior Deputy Governor (Chair), the Chief Operating Officer and certain managing directors.

See page 61 for a full list of senior management.

Compliance and ethics

The Bank requires that all employees observe the highest standards of professional ethics. To this end, the Bank's comprehensive *Code of Business Conduct and Ethics* is in place to address the personal and professional conduct of Bank employees.

The Code serves as a guide for all employees on the professional ethics expected by the Bank, including behaviour related to conflict of interest, work environment, confidentiality, conduct of personal financial transactions and handling of information. Senior employees and those with access to certain confidential information are subject to enhanced trading restrictions.

The *Code of Business Conduct and Ethics* is reviewed annually by the Board.

Framework for the disclosure of wrongdoing

The Bank has a policy and processes to support the disclosure of wrongdoing, including the provision of information to employees on how to report wrongdoing. The processes also provide for management's role in disclosures, investigations and reporting.

Sylvain Leduc, who served as Deputy Governor until his departure in July 2018, speaks before the Association des économistes québécois and the CFA Quebec in May.

Senior Management (as at December 31, 2018)

Governing Council

Governor
Stephen S. Poloz*

Senior Deputy Governor
Carolyn A. Wilkins*

Deputy Governors
Timothy Lane,* Lynn Patterson,*
Lawrence Schembri,* Paul Beaudry*†

Chief Operating Officer
Filipe Dinis*

Chief of Staff to the Governor and Senior Deputy Governor
Jill Vardy

General Counsel and Corporate Secretary, and Managing Director, Executive and Legal Services
Jeremy S. T. Farr

Advisors
Paul Chilcott, Don Coletti, Sheryl King, Sharon Kozicki, Ron Morrow, Stephen Murchison and Jill Vardy

Chief Risk Officer
Carol Ann Northcott

Audit
Michael O'Bryan, Managing Director and Chief Internal Auditor

Canadian Economic Analysis
Eric Santor, Managing Director

Communications
Jeremy Harrison, Managing Director

Corporate Services
Julie Champagne, Managing Director

Currency
Maureen Carroll, Managing Director

Economic and Financial Research
Jim MacGee,‡ Managing Director

Financial and Enterprise Risk§
Carol Ann Northcott, Managing Director

Financial Markets
Toni Gravelle, Managing Director

Financial Services
Carmen Vierula, Chief Financial Officer, Chief Accountant and Managing Director

Financial Stability
Grahame Johnson, Managing Director

Funds Management and Banking
Carol Brigham, Managing Director

Human Resources
Alexis Corbett, Managing Director and Chief Human Resources Officer

Information Technology Services
Sylvain Chalut, Managing Director and Chief Information Officer

International Economic Analysis
Rhys Mendes, Managing Director

* Member of Executive Council
† Appointed in November 2018 and effective February 18, 2019
‡ Appointed in July 2018 and effective January 2, 2019
§ Effective January 2, 2019 (see page 65 for more information)

RISK MANAGEMENT

Risk management in 2018

The Bank of Canada is exposed to a range of risks from internal and external sources that could influence its ability to achieve its mandate and strategic goals.

The Bank maintains a strong risk management culture and implements its enterprise risk management (ERM) policy using a framework that promotes consistent management of strategic, operational and financial risks.

ERM processes are integrated into the Bank's governance and decision making, allowing enterprise-wide and emerging risks to be identified and appropriately managed, in keeping with the Bank's risk appetite statement.

The Bank of Canada's risk appetite

The Bank, like any organization, cannot achieve its objectives without taking some degree of risk. While risk taking in an uncalculated fashion can lead to negative consequences, unwarranted risk aversion can also create risks—stifling innovation and leading to inefficiency in operations.

The Bank's Executive Council approves a risk appetite statement (RAS) each year to articulate their philosophy of risk management, as well as the type and amount of risk, at a broad level, that the Bank is willing to accept. The RAS is principles-based and provides high-level guidance to staff on what constitutes acceptable risk taking.

Risk appetite statement

The Bank of Canada's mandate is to promote the economic and financial welfare of Canadians. We pursue our mandate by keeping inflation low, stable and predictable, fostering a safe and efficient financial system, serving as fiscal agent to the Government of Canada, and providing Canadians with bank notes they can use with confidence. Our vision is to be a leading central bank—dynamic, engaged and trusted—committed to a better Canada.

As a central bank, we face a specialized and complex environment in which we manage a range of risks arising from external forces, as well as from our own activities. The operational and financial risks that confront us across all our activities are managed through sound internal controls. At the same time, the policy domain is highly strategic and dynamic in nature, since, at the core, the central bank makes decisions that anticipate the future in the context of uncertainty and, sometimes, public debate. We use judgment to weigh and manage all risks in light of their potential impact on the Bank's credibility, reputation and capacity to achieve its long-term objectives.

Bank employees manage these various risks in accordance with their delegated authority and within a comprehensive system of controls and deliberation processes designed to be commensurate with risk. We regularly monitor known risks and scan the horizon to identify emerging risks in both policy and operational areas.

Accordingly, our risk management activities are guided by the following:

- We seek to minimize and manage the impact of risks that could undermine the Bank's ability to fulfill its mandate.
- We actively seek to prevent the occurrence of material risk events that affect our ability to carry out and support our core functions.
- We have governance arrangements that help us scrutinize and evaluate the potential consequences of our major policy and operational decisions, and we review and learn from our own and others' experiences.
- Through our systems and practices, we seek to anticipate and assess new risks to our core functions, and respond to risks effectively should they materialize.
- We take informed risks to foster innovation, to advance our research and policy development, and to improve our operations and business practices.
- We encourage leading-edge research and innovative lines of inquiry, including constructive public discourse and debate, to advance our policy thinking and frameworks.
- We pursue process and technological innovation to respond to and mitigate emerging risks and to increase effectiveness, efficiency and resilience.
- We consider alternative futures and approaches to meeting our mandate within the context of a changing environment.

Achievements in 2018

In 2018, established ERM processes were further refined, and work continued to enhance their analytic rigour. Risk information was integrated into decision making, strategic planning and internal controls, and staff began embedding risk appetite considerations into their articulation of risks to business practices.

In collaboration with Bank departments, the ERM team played an important role in developing several policy enhancements in 2018. This work resulted in a more consistent, robust and well-understood approach to managing risks and considering them in important Bank decisions.

An innovation and risk management symposium was held in two parts over the course of the year—with a focus on untangling both concepts and showing how they can reinforce each other.

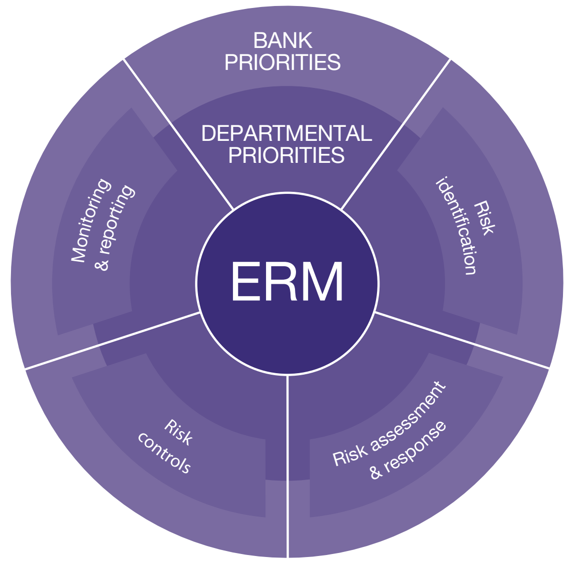
Toward the end of the year, the Bank announced that it would establish a new Financial and Enterprise Risk Department to enable the Bank to further develop its risk management culture and respond to the rapidly evolving environment. The new department consolidates the Bank's Enterprise Risk Management Office and Financial Risk Office (see page 67 for more information), effective January 2, 2019.

Risk governance

The objective of ERM is to embed risk considerations into governance and enable risk-informed decision making in the Bank's day-to-day operations to meet the vision, mandate and strategic goals laid out in its medium-term plan (see page 11 for more information).

The Governor, as Chief Executive Officer, has ultimate responsibility for risk management at the Bank, under the oversight of the Board of Directors. This responsibility is delegated to the Senior Deputy Governor and other members of the Executive Council, who oversee the ERM program and the implementation of sound management processes to safeguard the Bank. They also review and approve any changes to the ERM policy, framework and risk appetite statement in consultation with the Board of Directors, the Senior Management Council and the Risk Oversight Committee (ROC)—a subcommittee of the Senior Management Council.

Risk profiling process



The Chief Risk Officer (CRO) is the executive owner of the ERM program and chairs the ROC. The CRO, also a member of Senior Management Council, participates in enterprise-wide discussions on the Bank's risks; facilitates the development of the Bank's risk profile; monitors risk-related activities and issues; and prepares regular reports for the ROC, the Senior Management Council, the Executive Council and the Board of Directors.

As of January 2019, the CRO also serves as the managing director of the new Financial and Enterprise Risk Department and assumes responsibility for the Bank's Financial Risk Office.

Lines of defence

The Bank follows a three-lines-of-defence approach to support effective risk management, and each line has important roles, responsibilities and accountabilities.

First line of defence: Business lines within departments that perform risk management as part of their daily operations

Roles and responsibilities:

- Identify and assess the risks to the business
- Manage risk in their day-to-day activities
- Implement, self-monitor and report on controls

Second line of defence: The CRO, the enterprise risk management division and other operational units within the Bank that have risk mitigation among their core functions

Roles and responsibilities:

- Oversee the alignment of the Bank's activities with its risk appetite
- Approve and set risk frameworks, standards and methodologies
- Advise and challenge on risk matters

Third line of defence: Internal Audit, an independent, objective assurance and advisory service

Roles and responsibilities:

- Independently assess risk management, control and governance processes
- Advise on the design and implementation of these processes, while maintaining independence

Principal risks

Bank risks are classified into three categories: strategic, operational and financial. This risk-classification scheme is the foundation for enterprise-wide communications about risk and the integration of risk information into decision-making processes. In assessing its risks, the Bank considers the potential impact on its reputation.

Strategic risks arise from external conditions, such as widespread shifts in public opinion or changes in economic or legal parameters, that threaten to disrupt the assumptions core to the Bank's mandate or strategic goals.

Strategic risks are managed by continuously scanning the environment, maintaining extensive networks and conducting research to identify and develop policy and operating measures to mitigate risk. The Bank's stakeholder engagement and communications functions play an important role in the management of strategic risk.

Operational risks stem from inadequate or failed internal processes, people and systems—or from external events.

The Bank operates in a complex security and threat landscape and is thus exposed to operational risks that could impact its cyber security, business continuity or physical and personnel security. As threats continue to evolve and emerge globally, comprehensive programs are in place to manage and mitigate these risks, and substantial strategic initiatives are being implemented to further strengthen the Bank's resilience. Some of these initiatives involve collaboration with other central banks and the federal security and intelligence community.

The Bank pays particular attention to operational risks that could affect the systems and tools that support the Bank's core mandate.

The Bank also faces internal and external operational risks related to human resources. A highly competitive labour market has an impact on the Bank's ability to attract and retain experts in specialized and emerging fields, such as the economic and financial sector, cyber security and data science.

The Bank regularly reviews and updates its human resources approaches to meet these challenges, and its workforce is continuously monitored and evaluated to ensure staffing and skills support the achievement of strategic objectives. To this end, programs have been modernized to improve retention, develop leaders, enhance diversity and inclusion and provide opportunities for employees to evolve their skills.

The rapidly changing global economic and financial environment increases the risk that the Bank may not have access to, or be able to exploit, the data that inform the models used for economic and financial policy decisions. This risk is managed through a program of research and analysis and through collaboration and information sharing with other central banks and partner agencies. In 2018, work began on the development of an enterprise data strategy.

Consistent with similar organizations, the Bank also manages operational risk related to its work with third parties for the successful delivery of its activities and, ultimately, its mandate. In 2018, a Third Party Risk Management Policy was developed to ensure an enterprise-wide approach to maintaining sound practices to address risks throughout the relationship life cycle.

Finally, fundamental to prioritizing and managing interdependencies among all these strategic initiatives and the Bank's core activities are

- clear governance structures;
- effective internal policies, processes and standards; and
- careful resource management.

Financial risks relate to the potential for financial losses arising from credit, market and liquidity risks.

The Bank's financial risks are low because its asset portfolio consists primarily of Government of Canada securities. In exceptional circumstances, however, such as a financial crisis, the Bank may take on a higher level of risk.

Senior management has established a system of internal controls for its financial assets and liabilities, including a framework for financial risk management. The Bank's Financial Risk Office monitors and regularly reports on these risks.

Financial risks are discussed in detail in the notes to the Bank's financial statements.[1] Financial risks associated with the Bank's role as fiscal agent are not reflected in its financial statements. These risks are subject to oversight under the Funds Management Governance Framework of the Government of Canada and the Bank of Canada, and are borne by the government.

1 Additional information on financial risk management starts on page 107.


4

2018 FINANCIAL RESULTS

Overview

The Bank of Canada is the nation's central bank. The Bank's mandate under the *Bank of Canada Act* is to promote the economic and financial welfare of Canada. Its activities and operations are undertaken in support of this mandate and not with the objective of generating revenue or profit. The Bank is committed to keeping Canadians informed about its policies, activities and operations.

The Bank is a Crown corporation wholly owned by the Minister of Finance on behalf of the Government of Canada. The Bank works closely with the Department of Finance Canada and other federal and provincial financial regulators to promote a strong economy and oversee Canada's financial systems.

The Bank's financial structure supports its arm's-length relationship with the government in the conduct of monetary policy. The Bank has an independent revenue stream to fund its activities and operations. Net income remaining after any allocation to reserves is remitted to the Receiver General for Canada in accordance with the requirements of the *Bank of Canada Act*. The Bank does not have a budget appropriation from the government.

Managing the balance sheet

Financial position

(in millions of Canadian dollars)

As at December 31	2018	2017	2016
Assets			
Cash and foreign deposits	17.0	14.6	19.3
Loans and receivables	10,676.1	9,483.0	8,282.2
Investments	104,527.8	100,861.0	97,032.7
Capital assets	644.3	609.1	606.9
Other assets	189.7	132.6	164.9
Total assets	**116,054.9**	**111,100.3**	**106,106.0**
Liabilities and equity			
Bank notes in circulation	90,193.1	85,855.9	80,478.6
Deposits	24,806.2	24,228.8	22,831.5
Securities sold under repurchase agreements	-	-	1,500.0
Other liabilities	530.3	520.0	808.9
Equity	525.3	495.6	487.0
Total liabilities and equity	**116,054.9**	**111,100.3**	**106,106.0**

The Bank's holdings of financial assets are generally driven by its role as the exclusive issuer of Canadian bank notes. The issuance of bank notes creates a liability for the Bank, the largest on its balance sheet. Government of Canada deposits, including those supporting the government's prudential liquidity plan, represent the second-largest liability for the Bank. To offset these liabilities, the Bank invests the proceeds from the issuance of notes and deposits primarily into Government of Canada securities, which are acquired on a non-competitive basis.

The Bank also undertakes financial market transactions with eligible financial institutions in support of monetary policy objectives and the efficient functioning of Canadian financial markets. The Bank's transactions are typically securities purchased under resale agreements (SPRAs) or securities sold under repurchase agreements (SSRAs), where the Bank injects or withdraws liquidity by acquiring or selling financial assets.

The Bank's investments broadly mirror the structure of the federal government's nominal domestic debt outstanding. This makes the Bank's balance sheet a neutral factor in the government's debt management and fiscal-planning activities and limits the impact of the Bank's purchases on market prices.

Assets

Summary of assets

(in millions of Canadian dollars)

As at December 31	2018	2017	Variance $	Variance %
Cash and foreign deposits	**17.0**	**14.6**	**2.4**	**16**
Loans and receivables	**10,676.1**	**9,483.0**	**1,193.1**	**13**
Investments				
Government of Canada treasury bills*	24,217.8	18,370.4	5,847.4	32
Canada Mortgage Bonds	251.3	-	251.3	100
Government of Canada bonds	79,625.4	82,087.0	(2,461.6)	(3)
Other investments	433.3	403.6	29.7	7
	104,527.8	**100,861.0**	**3,666.8**	**4**
Capital assets†	**644.3**	**609.1**	**35.2**	**6**
Other assets	**189.7**	**132.6**	**57.1**	**43**
Total assets	**116,054.9**	**111,100.3**	**4,954.6**	**4**

* Following the adoption of IFRS 9 on January 1, 2018, Government of Canada treasury bills are now measured at amortized cost rather than at fair value through other comprehensive income. The opening adjustment on January 1, 2018, represented an increase in the carrying value of Government of Canada treasury bills of $9.7 million. See Note 2 to the financial statements for further information.

† Includes *Property and equipment* and *Intangible assets*

The Bank's total assets have increased by 4 per cent over the year to $116,054.9 million as at December 31, 2018. This increase predominantly reflects the increased demand for bank notes and the impact of fluctuations in deposits on the Bank's holdings of financial assets, as described in the discussion "Managing the balance sheet."

Loans and receivables is composed primarily of SPRAs totalling $10,673.0 million as at December 31, 2018 ($9,478.5 million as at December 31, 2017). SPRAs are high-quality assets temporarily acquired through the repo market, in line with the Bank's framework for financial market operations. These operations were conducted primarily to manage the Bank's balance sheet, promote the orderly functioning of Canadian financial markets and offset seasonal fluctuations in the demand for bank notes.[1]

The Bank's investments increased by 4 per cent to $104,527.8 million as at December 31, 2018. This increase was a result of the following movements within the Bank's holdings:

- Government of Canada treasury bills increased by 32 per cent to $24,217.8 million as at December 31, 2018. Purchases of Government of Canada treasury bills are based on the Bank's balance sheet needs.
- In November 2018, the Bank announced that it was expanding the assets it would acquire to include Canada Mortgage Bonds, which provides the Bank with more flexibility in the range of high-quality assets it can acquire to offset the continued growth in bank notes in circulation. The Bank held $251.3 million in Canada Mortgage Bonds as at December 31, 2018 ($nil as at December 31, 2017).
- Government of Canada bonds decreased by 3 per cent to $79,625.4 million as at December 31, 2018. This decrease primarily reflects the impact of the gradual reduction in the Bank's minimum purchase amount of nominal bonds at auctions from 20 per cent to 13 per cent initiated in 2015.[2]
- The value of the Bank's investment in shares of the Bank for International Settlements (BIS) increased by 7 per cent to $433.3 million as at December 31, 2018, driven primarily by favourable movements in the foreign exchange rate.

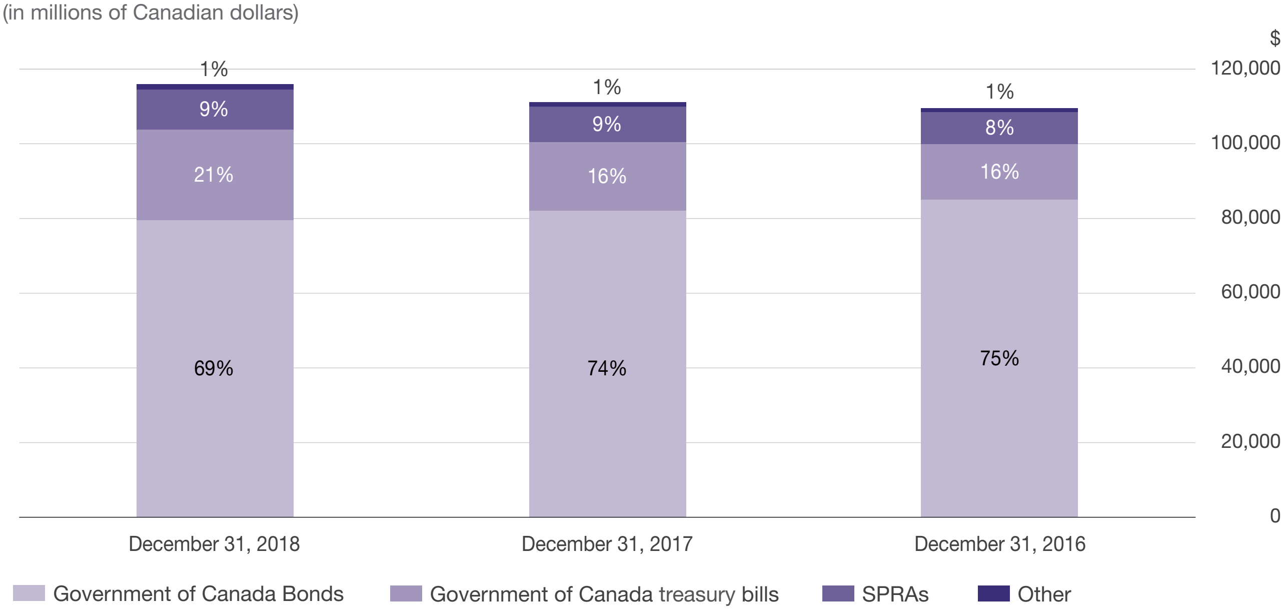
Capital assets has increased by 6 per cent to $644.3 million as at December 31, 2018, predominantly reflecting the Bank's medium-term plan (MTP) resiliency initiatives, including cyber security and business recovery enhancements.

1 Demand for bank notes typically reaches its lowest level at the end of the first quarter and peaks in the second and fourth quarters around holiday periods.

2 The Bank of Canada made the following changes to the Bank's minimum purchase amount of nominal bonds at auctions: October 1, 2015, reduced to 15 per cent from 20 per cent; February 3, 2017, further reduced to 14 per cent; and December 21, 2017, further reduced to 13 per cent.

Other assets includes the net defined-benefit asset related to the Bank of Canada Pension Plan (the Bank's registered pension plan), which amounted to $149.5 million as at December 31, 2018 ($109.0 million as at December 31, 2017). The increase over the prior year is primarily due to a 50-basis-point increase in the discount rate used to measure the related defined-benefit obligation,[3] which was partially offset by negative asset returns following the market downturn in the fourth quarter of 2018.

Asset profile
(in millions of Canadian dollars)



Liabilities

Summary of liabilities
(in millions of Canadian dollars)

As at December 31	2018	2017	Variance $	Variance %
Bank notes in circulation	**90,193.1**	**85,855.9**	**4,337.2**	**5**
Deposits				
Government of Canada	21,725.6	21,454.2	271.4	1
Members of Payments Canada	250.5	500.3	(249.8)	(50)
Other deposits	2,830.1	2,274.3	555.8	24
	24,806.2	**24,228.8**	**577.4**	**2**
Other liabilities	**530.3**	**520.0**	**10.3**	**2**
Total liabilities	**115,529.6**	**110,604.7**	**4,924.9**	**4**

The Bank's total liabilities have increased by 4 per cent to $115,529.6 million since December 31, 2017, generally driven by increases in bank notes in circulation and deposits.

Bank notes in circulation represents approximately 78 per cent (78 per cent as at December 31, 2017) of the Bank's total liabilities. The value of bank notes in circulation increased by 5 per cent to $90,193.1 million as at December 31, 2018, driven by the continued growth in demand for bank notes.

3 The defined-benefit obligation component of the net defined-benefit asset is measured using the discount rate in effect as at the period-end. The discount rate as at December 31, 2018, was 4.0 per cent (3.5 per cent as at December 31, 2017). See Note 14 to the financial statements for more information.

Deposits represents the second-largest liability on the balance sheet. Deposits increased by 2 per cent to $24,806.2 million as at December 31, 2018, as a result of the following changes:

- Government of Canada deposits consist of $20,000.0 million held for the government's prudential liquidity-management plan ($20,000.0 million as at December 31, 2017) and $1,725.6 million held for the government's operational balance ($1,454.2 million as at December 31, 2017). The operational balance fluctuates based on the cash requirements of the Government of Canada.
- Deposits by members of Payments Canada were $250.5 million as at December 31, 2018. These deposits are held for members of Payments Canada and represent the target for the minimum daily level of settlement balances to support the smooth operation of the Canadian payments system. The decrease from year-end 2017 was the direct result of the Bank's decision to reduce the target for the minimum daily level of settlement balances from $500 million to $250 million, which became effective on March 22, 2018.[4]
- *Other deposits* increased by 24 per cent to $2,830.1 million as at December 31, 2018. It consists of deposits from central banks and other financial institutions, as well as unclaimed balances remitted to the Bank in accordance with governing legislation, over which the Bank does not exercise control.

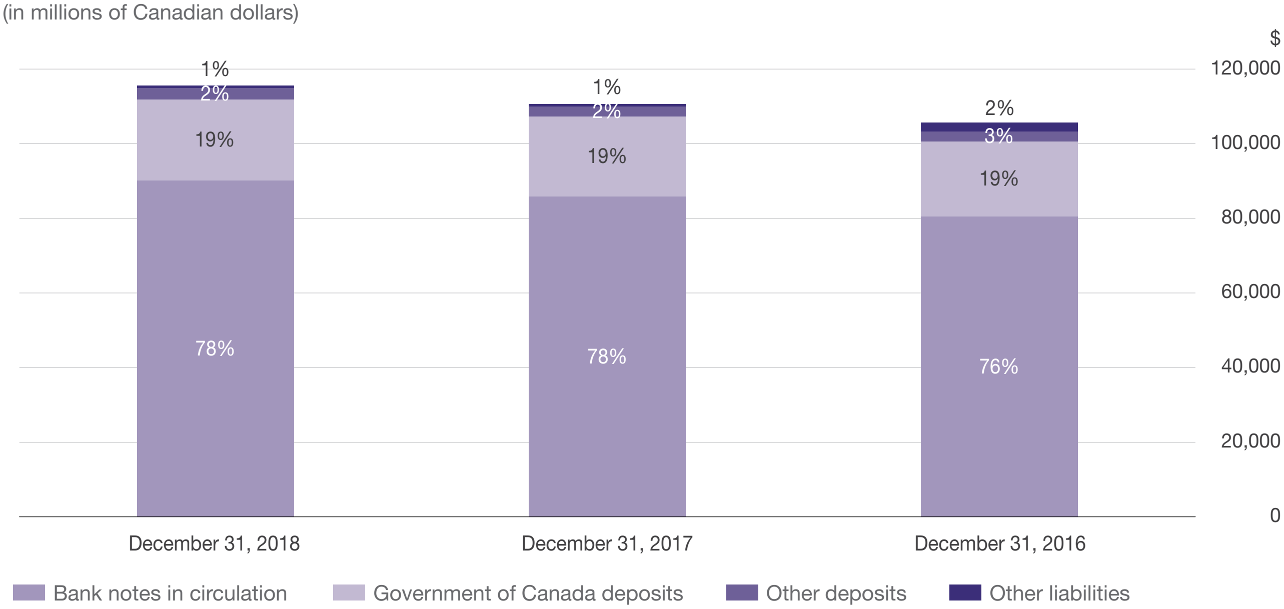
While there were no SSRAs outstanding as at December 31, 2018 ($nil as at December 31, 2017), these instruments were used over the course of the year to support the Bank's monetary policy function and withdraw intraday liquidity from the market, thereby reinforcing the Bank's target for the overnight rate.

Other liabilities consists mainly of the surplus payable to the Receiver General for Canada and the net defined-benefit liabilities of the Bank's employee benefit plans. These liabilities increased by 2 per cent to $530.3 million as at December 31, 2018, primarily as a result of the following changes:

- The surplus payable to the Receiver General for Canada was $225.9 million as at December 31, 2018 ($204.2 million as at December 31, 2017, and $213.9 million as at January 1, 2018, following the transition to IFRS 9 as described in Note 2 to the financial statements). Changes in the surplus payable to the Receiver General for Canada are driven by the net income of the Bank, less any allocations to reserves, and by the timing of cash payments to the Receiver General for Canada. During 2018, the Bank transferred cash payments of $1,204.2 million ($1,193.7 million in 2017).

Liability profile

(in millions of Canadian dollars)



4 This decision was designed to reinforce the Bank's target for the overnight rate by encouraging market participants to trade overnight balances with each other at levels closer to the target rate.

- Liabilities related to the Bank's defined-benefit plans include those related to the Bank of Canada Supplementary Pension Arrangement and unfunded post-employment defined-benefit plans. These liabilities decreased by $15.6 million (or 6 per cent) to $227.1 million as at December 31, 2018 ($242.7 million as at December 31, 2017), primarily reflecting increases in the discount rates[5] used to measure the defined-benefit obligations.

Managing equity

Summary of equity

(in millions of Canadian dollars)

As at December 31	2018	2017	Variance $	Variance %
Share capital	5.0	5.0	-	-
Statutory reserve	25.0	25.0	-	-
Special reserve	100.0	100.0	-	-
Investment revaluation reserve*	395.3	365.6	29.7	8
Retained earnings	-	-	-	-
Total equity	**525.3**	**495.6**	**29.7**	**6**

* The investment revaluation reserve was previously known as the available-for-sale reserve under IAS 39, as discussed in Note 2 to the financial statements.

The Bank's primary equity includes $5.0 million of authorized share capital and a $25.0 million statutory reserve. The Bank also holds a special reserve of $100.0 million to offset potential unrealized valuation losses due to changes in the fair value of the Bank's investment portfolio.

The Bank can operate safely with a low capital base because its balance sheet is not exposed to significant risks, as described in Note 7 to the financial statements. Of note, unlike some other countries, Canada's foreign reserves are not held by the central bank.[6]

The Bank's asset portfolio has a low credit risk since it consists primarily of bonds and treasury bills issued by the Government of Canada, and Canada Mortgage Bonds, which are fully guaranteed by the Government of Canada. Government of Canada bonds, Canada Mortgage Bonds and Government of Canada treasury bills are acquired with the intention to be held until maturity and are not subject to fair value accounting since they are measured at amortized cost. Other financial assets, such as advances and repurchase agreements, are transacted on a fully collateralized basis (see Note 7 to the financial statements for further information on the quality of collateral held).

The largest reserve held by the Bank is the investment revaluation reserve, which represents the unrealized fair value gains in the Bank's investment in the BIS. Fair value changes in the Bank's investment in the BIS are reported in *Other comprehensive income*, and the net unrealized fair value gains are accumulated in the investment revaluation reserve within *Equity*. As at December 31, 2018, this reserve totalled $395.3 million—an increase of 8 per cent from December 31, 2017.

5 The net defined-benefit liability is measured using the discount rates in effect for each defined benefit plan as at the period-end. The rates as at December 31, 2018, ranged from 3.5 to 4.0 per cent (3.1 to 3.5 per cent as at December 31, 2017). See Note 14 to the financial statements for more information.

6 The Government of Canada's Exchange Fund Account is the main repository of Canada's official international reserves, and is reflected in the Public Accounts.

Results of operations

Results of operations
(in millions of Canadian dollars)

For the year ended December 31	2018	2017	2016
Total income	1,658.4	1,479.5	1,531.3
Total expenses	(533.6)	(503.8)	(466.4)
Net income	**1,124.8**	**975.7**	**1,064.9**
Other comprehensive income (loss)	121.1	(38.0)	(7.3)
Comprehensive income	**1,245.9**	**937.7**	**1,057.6**

Income

Total income
(in millions of Canadian dollars)

			Variance	
For the year ended December 31	2018	2017	$	%
Interest revenue				
Investments	1,886.9	1,603.4	283.5	18
Securities purchased under resale agreements	122.6	52.4	70.2	134
Other	0.6	0.3	0.3	100
	2,010.1	**1,656.1**	**354.0**	**21**
Interest expense	**(364.4)**	**(187.8)**	**176.6**	**94**
Net interest revenue	**1,645.7**	**1,468.3**	**177.4**	**12**
Dividend revenue	**4.2**	**5.1**	**(0.9)**	**(18)**
Other revenue	**8.5**	**6.1**	**2.4**	**39**
Total income	**1,658.4**	**1,479.5**	**178.9**	**12**

Total income for 2018 was $1,658.4 million, an increase of 12 per cent over the previous year. Total income of the Bank is primarily driven by current market conditions and their impact on the interest-bearing assets and liabilities held on the Bank's balance sheet. Market rates increased in 2018 compared with 2017. This increases the yield profile of the Bank's investment portfolio as older instruments with lower yields reach maturity and are replaced by newer instruments with higher yields, and also increases interest paid by the Bank on deposits.

The magnitude of the impact of changing market rates is dependent on the average time to maturity of the instrument group; those with longer durations are slower to react. This is reflected in the fact that both the deposits held at the Bank and SPRAs react much more quickly to changes in market rates than the Bank's investment portfolio, which is composed primarily of Government of Canada bonds.

Interest revenue generated from the assets backing the bank notes in circulation (net of bank note production and distribution costs) is referred to as "seigniorage." It provides a stable source of funding for the Bank's operations, ensuring the Bank's operational independence and supporting the execution of its responsibilities.

The Bank's primary source of interest revenue is interest earned on its investments in Government of Canada securities. In 2018, the Bank recorded $1,886.9 million in interest revenue—an increase of 18 per cent over the previous year. The increase was primarily the result of higher yields on newly acquired bonds and treasury bills.

In 2018, interest earned on SPRAs was $122.6 million, representing an increase of 134 per cent over the previous year, which was driven primarily by higher overall yields, supplemented by higher average holdings throughout the year.

Income is reported net of the interest paid on deposits held by the Bank on behalf of the Government of Canada, members of Payments Canada and some other financial institutions, which amounted to $364.4 million in 2018—an increase of 94 per cent over the previous year.

The Bank's revenue from its remaining sources was $13.3 million for the year ended December 31, 2018 ($11.5 million for the year ended December 31, 2017) and included dividends earned on the Bank's investment in the BIS, and safekeeping and custodial fees.

Expenses

Total expenses

(in millions of Canadian dollars)

For the year ended December 31	2018	2017	Variance $	Variance %
Staff costs	276.1	253.6	22.5	9
Bank note research, production and processing	53.4	53.1	0.3	1
Premises costs	29.6	21.5	8.1	38
Technology and telecommunications	53.9	47.6	6.3	13
Depreciation and amortization	47.1	51.9	(4.8)	(9)
Other operating expenses	73.5	76.1	(2.6)	(3)
Total expenses	**533.6**	**503.8**	**29.8**	**6**

Overall, operating expenses were in line with expectations for 2018. The 6 per cent increase over the previous year primarily reflected increases in both staffing costs and expenditures on MTP resiliency initiatives, including cyber security and business recovery enhancements.

Staff costs increased by 9 per cent to $276.1 million in 2018 as a result of the following changes:

- $15.6 million (or 18 per cent) increase in benefit costs, from $85.4 million to $101.0 million associated with the Bank's defined-benefit plans. The increase in benefit costs is mainly the result of the discount rates used for their calculation.[7]
- $6.9 million (or 4 per cent) increase in salary costs, from $168.2 million to $175.1 million resulting from regular salary increases, vacant positions filled and increases in temporary staff to support ongoing strategic initiatives.

Costs associated with bank note production were 1 per cent higher than the previous year at $53.4 million, due to higher raw material costs related to the new $10 note featuring Viola Desmond and higher research costs supporting future bank note design and development, which were partially offset by lower shipping costs.

Premises costs were 38 per cent higher in 2018 at $29.6 million. Premises costs in the first quarter of 2017 were affected favourably by an $8.1 million reduction in the Bank's provisions related to the temporary space used during the Head Office Renewal Program with the Bank's move back to the renewed head office. After normalization, premises costs for 2017 and 2018 are comparable at $29.6 million. Although comparable, 2018 saw higher building maintenance costs related to the renewed head office, which were partially offset by lower rental and repair costs following the Bank's move in the first quarter of 2017.

7 Benefit costs are based on the discount rate as at December 31 of the preceding year (e.g., the rate at December 31, 2017, was used to calculate the benefit expenses for 2018). Discount rates and related benefit costs share an inverse relationship; as rates decrease, benefit expenses increase (and vice versa). The discount rates used for the calculation of the pension benefit plans and other benefit plan expenses decreased by an average of 40 basis points between the measurement dates as follows:

	2018 (rate as at December 31, 2017)	2017 (rate as at December 31, 2016)
Pension benefit plans	3.5%	3.9%
Other benefit plans	3.1% to 3.5%	3.2% to 4.0%

The increase in discount rate for December 31, 2018, as discussed in the "Assets" and "Liabilities" sections, will be reflected in the calculation of the 2019 expense and will result in decreased benefit costs for that period, all else being equal.

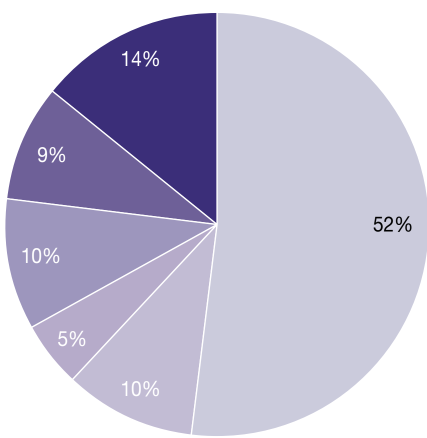
Technology and telecommunications expenses were 13 per cent higher for 2018 at $53.9 million. This increase was driven by the Bank's continued focus on strengthening its business continuity posture through investment in cyber security and business resiliency initiatives.

Depreciation and amortization of $47.1 million in 2018 represented a decrease of 9 per cent over the previous year. The decrease was largely the result of several assets becoming fully amortized in 2017, including assets related to the temporary space used during the Head Office Renewal Program. This decrease was partially offset by the impact of new assets being amortized in 2018.

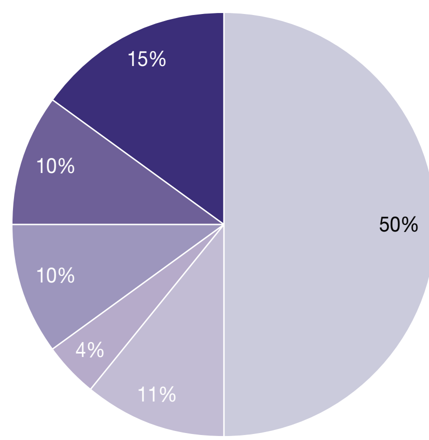
Other operating expenses represented 14 per cent of the Bank's total operating expenses for 2018 (15 per cent for 2017) and is mostly composed of purchased services in support of the Bank's operations.

Composition of expenses

For the year ended December 31, 2018



For the year ended December 31, 2017



Staff costs
Bank note research, production, processing
Premises costs
Technology and telecommunications
Depreciation and amortization
Other operating expenses

Other comprehensive income

Other comprehensive income

(in millions of Canadian dollars)

For the year ended December 31	2018	2017	Variance $	Variance %
Items that will not be reclassified to net income				
Remeasurements of the net defined-benefit liability/asset	91.4	(37.1)	128.5	346
Change in fair value of BIS shares*	29.7	n.a.	29.7	n.a.
	121.1	**(37.1)**	**158.2**	**426**
Items that may be reclassified subsequently to net income				
Change in fair value of available-for-sale assets†	n.a.	(0.9)	0.9	n.a.
Other comprehensive income (loss)	**121.1**	**(38.0)**	**159.1**	**419**

* The change in fair value of the BIS shares can no longer be reclassified to net income under IFRS 9, as described in Note 2 to the financial statements.

† The available-for-sale asset category was eliminated under IFRS 9. This resulted in changes to the classification of assets and the treatment of unrealized fair value gains and losses, as described in Note 2 to the financial statements.

Other comprehensive income for the year was $121.1 million. It consisted of remeasurement gains of $91.4 million on the Bank's net defined-benefit plan asset and liabilities and an unrealized gain of $29.7 million in the fair value of the Bank's investment in the BIS.

Remeasurements pertaining to the Bank's defined-benefit plans are primarily affected by changes in the discount rate used to determine the related defined-benefit obligations, by the return on plan assets, where funded, and by changes in the plans' financial assumptions. The remeasurement gains recorded in 2018 were mostly the result of increases in the discount rates[8] used to value the Bank's defined-benefit plans. These remeasurement gains were partially offset by negative asset returns on the Bank's pension plans following the market downturn in the fourth quarter of 2018.

Surplus for the Receiver General for Canada

The Bank's operations are not constrained by its cash flows or by its holdings of liquid assets, since income is predictable and exceeds expenses. The net income of the Bank, less any allocation to reserves, is considered ascertained surplus (surplus), which was $1,216.2 million in 2018 ($929.1 million in 2017). In accordance with the requirements of section 27 of the *Bank of Canada Act*, the Bank remits its surplus to the Receiver General for Canada and does not hold retained earnings.

The Bank's remittance agreement with the Minister of Finance was designed to enable the Bank to manage its equity requirements with consideration given to the volatility arising from fair value changes and remeasurements, which are recorded in other comprehensive income. This agreement allows the Bank to withhold from its remittance to the Receiver General for Canada any increase in cumulative net unrealized losses on financial assets that are classified and measured at fair value through other comprehensive income, unrealized remeasurement losses on the post-employment defined-benefit plans, and other unrealized or non-cash losses arising from changes in accounting standards or legislation. Any decrease in previously withheld cumulative net unrealized non-cash losses is added to the remittance.

Further information on the Bank's remittance agreement with the Minister of Finance is provided in Note 17 to the financial statements.

Looking back at the 2016–18 medium-term plan

The Bank's 2016–18 MTP
(in millions of Canadian dollars)

	Budget		Actuals	
	$	%	$	%
MTP expenditures	1,216	62	1,191	66
Bank note production	173	9	150	8
Non-current deferred employee benefits	60	3	56	3
Strategic investment programs	519	26	417	23
Total expenditures*	**1,968**	**100**	**1,814**	**100**

* Includes operational and capital expenditures. The Bank incurred $310 million in capital expenditures from 2016 to 2018.

The Bank's medium-term plan (MTP) for the three-year period ending December 31, 2018, was focused on reinventing central banking, renewing ways of doing business and reinforcing a culture of innovation.

The financial planning assumptions were based on a commitment of 2 per cent growth in MTP expenditures[9] between 2015 and 2018, representing zero real growth, consistent with the Bank's 2 per cent inflation target. This commitment was met, and the nature of actual expenditures was in line with expectations.

8 The net defined-benefit asset and liabilities are measured using the discount rate in effect as at the period-end. The rate applicable to the net defined-benefit asset as at December 31, 2018, was 4.0 per cent (3.5 per cent as at December 31, 2017). The rates applicable to the net defined-benefit liabilities as at December 31, 2018, ranged from 3.5 to 4.0 per cent (3.1 to 3.5 per cent as at December 31, 2017).

9 MTP expenditures include core operations, the initiative portfolio (a collection of initiatives of more than $0.5 million in value that meet the strategic priorities of the Bank and mitigate risks) and the general reserve (for unforeseen events).

This MTP was marked by the issuance of a commemorative $10 bank note for the 150th anniversary of Confederation in 2017 and the issuance of a new $10 note featuring Viola Desmond, an icon of the human rights and freedom movement in Canada.

With regard to strategic investments, the last three years saw the completion of many initiatives, including the renewal of the Bank's head office, which was completed on time and on budget and was recognized by Hydro Ottawa's *Save on Energy* retrofit program.

The Bank also made significant progress on other large multi-year initiatives to evolve the resilience of the financial system and the Bank—investments that will continue beyond 2018.

From 2016 to 2018, the Bank incurred $310 million in capital expenditures, which predominantly reflects the completion of the Bank's head office renewal, as well as ongoing investments in cyber security and business resiliency initiatives.

Looking ahead to 2019

The Bank's 2019 plan

(in millions of Canadian dollars)

	2019 budget	
	$	%
Core expenditures	372	59
Bank note production	54	9
New mandates	3	0
Sustaining resilience operations	38	6
Deferred employee benefits (net of allocations)	13	2
Strategic investment programs	155	24
Total expenditures*	**635**	**100**

* Includes operational and capital expenditures, and excludes depreciation. The Bank anticipates capital expenditures of $68 million in 2019.

The Bank's forecasts for its operations do not include projections of net income and financial position. Such projections would require assumptions about interest rates, which could be interpreted as a signal of future monetary policy.

The year 2019 is the first of the Bank's 2019–21 MTP, *Leading in the New Era*. The Bank's financial management framework was revised for the 2019–21 MTP to reflect new funding requirements and exclude depreciation costs, balancing the need for investment in people and tools with the Bank's commitment to ensuring the effective use of resources. Financial planning assumptions maintained a commitment to 2 per cent growth on *Core expenditures* between 2019 and 2021, or zero real growth, consistent with the Bank's 2 per cent inflation target. The Bank's other financial requirements are identified separately and excluded from the MTP's commitment to core operations growth.

New mandates captures the work to develop and implement legislative amendments from the Parliament of Canada.

Sustaining resilience operations captures the incremental operating costs resulting from the implementation of resilience investments, and an annual evergreening provision for information technology to sustain the Bank's resilience posture. These costs will be moved to the *Core expenditures* category once they have stabilized after the 2019–21 MTP.

Strategic investment programs includes work from multiple MTP resilience programs, which will continue to improve the Bank's resilience posture by both reducing its exposure to cyber risks and other potential major business disruptions to its networks, facilities or employees, and supporting its timely recovery. The year 2019 will also see the continuation of the program supporting the Payments Modernization Program, a multi-year initiative led by Payments Canada to replace the current Large Value Transfer System (LVTS) and the Automated Clearing Settlement System (ACSS). In addition, the Agency Operation Centre (AOC) Modernization Program will improve cash handling systems and reduce the risk of equipment failure due to aging infrastructure.

In 2019, the Bank expects to incur $68 million in capital expenditures, which predominantly reflects the Bank's continued investment in cyber security and business resiliency initiatives.

Further information on the 2019–21 MTP can be found in the "Mandate and Planning Framework" section of the Annual Report.

Accounting and control matters

The Bank conforms to the financial reporting requirements of the *Bank of Canada Act* as prescribed in the Bank's bylaws, which require that the Bank's financial statements be prepared in accordance with Generally Accepted Accounting Principles as set out in the *CPA Canada Handbook* published by the Chartered Professional Accountants of Canada (CPA Canada). Consistent with CPA Canada guidance, the Bank is a government business enterprise as defined by the Canadian Public Sector Accounting Standards (PSAS) and, as such, adheres to the standards applicable to publicly accountable enterprises. In compliance with this requirement, the Bank has developed accounting policies in accordance with IFRS.

The *Bank of Canada Act* requires the Bank to submit audited financial statements for the fiscal year ending December 31 to the Minister of Finance, accompanied by the Bank's *Annual Report*, by the end of February. The Minister presents the *Annual Report* to Parliament, and a copy of the financial statements is published in the *Canada Gazette*.

Funding of deferred employee benefit plans

The Bank sponsors a funded defined-benefit pension plan (the Bank of Canada Pension Plan), which is a registered pension plan, and a partially funded Supplementary Pension Arrangement[10] (the Bank of Canada Supplementary Pension Arrangement) to provide retirement income benefits to eligible employees. The pension plans are funded in accordance with applicable federal pension legislation and actuarial standards of practice in Canada to ensure proper funding of employee benefit obligations. The Bank also sponsors unfunded benefit plans, including post-retirement and post-employment benefits.

The Bank of Canada Pension Plan

The Bank has been conducting annual actuarial valuations of its pension plan for funding purposes since 2008. The latest completed valuation, as at January 1, 2018, reflects the plan's strong performance in 2017. On a going-concern basis (which assesses the plan over the long term on the assumption that it will operate indefinitely), the plan had a funding ratio of 140 per cent (135 per cent as at January 1, 2017). On a solvency basis (which assesses the plan on the assumption that it would be terminated on the date of the valuation), the funding status of the plan had a solvency ratio of 111 per cent (104 per cent as at January 1, 2017).

Given the plan's January 1, 2018, funding and solvency ratios, regulations under the *Income Tax Act* prohibited the Bank from making further contributions after June 2018. Bank contributions to the plan will resume depending on the results of actuarial valuations in subsequent years, with the next one scheduled for January 1, 2019. The Bank anticipates that, if the results of 2018 are in line with actuarial assumptions, its contributions will not resume in 2019.

Internal control over financial reporting

The Bank maintains an internal control framework to evaluate the design and effectiveness of internal controls over financial reporting, including disclosure controls and procedures to provide reasonable assurance regarding the reliability of financial reporting and the preparation of the financial statements in accordance with IFRS.

However, given their inherent limitations, internal controls over financial reporting can only provide reasonable assurance and may not prevent or detect misstatements. Disclosure controls and procedures are designed to provide reasonable assurance that all relevant information is gathered and reported to senior management on a timely basis so that the Bank can make appropriate decisions about public disclosure.

The Bank has a certification process to evaluate the design and effectiveness of its internal controls over financial reporting, including disclosure controls and procedures. This process is based on the Internal Control—Integrated Framework created and issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) and on the Control Objectives for Information and Related Technology (COBIT) framework.

10 The Supplementary Pension Arrangement was established to pay pension benefits to employees with annual earnings above the amount covered by the registered pension plan, as provided under the *Income Tax Act*.

FINANCIAL STATEMENTS

December 31, 2018

Contents

Financial reporting responsibility ... 83

Independent auditors' report ... 84

Financial statements ... 86

Statement of financial position ... 86

Statement of net income and comprehensive income ... 87

Statement of changes in equity ... 88

Statement of cash flows ... 89

Notes to the financial statements ... 90

1. The business of the Bank of Canada ... 90
2. Basis of preparation ... 91
3. Financial instruments ... 98
4. Cash and foreign deposits ... 106
5. Loans and receivables ... 106
6. Investments ... 107
7. Financial risk management ... 107
8. Property and equipment ... 111
9. Intangible assets ... 113
10. Other assets ... 115
11. Bank notes in circulation ... 116
12. Deposits ... 116
13. Other liabilities ... 117
14. Employee benefits ... 118
15. Leases ... 125
16. Commitments, contingencies and guarantees ... 125
17. Equity ... 128
18. Related parties ... 129

Glossary of abbreviations

AFS	available-for-sale	**ITA**	*Income Tax Act*
BIS	Bank for International Settlements	**LVTS**	Large Value Transfer System
CPA Canada	Chartered Professional Accountants of Canada	**OCI**	other comprehensive income
FVOCI	fair value through other comprehensive income	**PSAS**	Public Sector Accounting Standards
FVTPL	fair value through profit or loss	**Pension Plan**	Bank of Canada Pension Plan
HTM	held-to-maturity	**SDR**	Special Drawing Rights
IAS	International Accounting Standard	**SIPP**	Statement of Investment Policy and Procedures
IASB	International Accounting Standards Board	**SPA**	Bank of Canada Supplementary Pension Arrangement
IFRS	International Financial Reporting Standards	**SPRAs**	securities purchased under resale agreements
IMF	International Financial Reporting	**SSRAs**	securities sold under repurchase agreements

Financial Reporting Responsibility

Management of the Bank of Canada (the Bank) is responsible for the financial statements, which are prepared in accordance with International Financial Reporting Standards. The amounts and financial information included in the statements reflect management's best estimates and judgment. Financial information presented elsewhere in the *Annual Report* is consistent with the financial statements.

Management is responsible for the integrity and reliability of the financial statements and the accounting system from which they are derived. The Bank maintains a system of internal controls to provide reasonable assurance that transactions are properly authorized and recognized, that financial information is reliable, that assets are safeguarded and liabilities recognized, and that operations are carried out effectively. The Bank's internal audit department reviews internal controls, including the application of accounting and financial controls.

The Board of Directors is responsible for ensuring that management fulfills its responsibilities for financial reporting and internal controls and exercises this responsibility through the Audit and Finance Committee (the Committee) of the Board. The Committee is composed of members who are neither officers nor employees of the Bank and who are financially literate. The Committee is therefore qualified to review the Bank's annual financial statements and to recommend their approval by the Board of Directors. The Committee meets with management, the Chief Internal Auditor and the Bank's independent auditors who are appointed by Governor-in-Council. The Committee has established processes to evaluate the independence of the Bank's independent auditors and oversees all services provided by them. The Committee has a duty to review the adoption of, and changes in, accounting principles, policies and procedures that have a material effect on the financial statements, and to review and assess key management judgments and estimates material to the reported financial information.

These financial statements have been audited by the Bank's independent auditors, PricewaterhouseCoopers LLP and Ernst & Young LLP, and their report is presented herein. The independent auditors have full and unrestricted access to the Committee to discuss their audit and related findings.

Stephen S. Poloz,
Governor

Carmen Vierula, CPA, CA,
Chief Financial Officer and Chief Accountant

Ottawa, Canada
February 13, 2019

Independent Auditors' Report

To the Minister of Finance, registered shareholder of the Bank of Canada

Our opinion

We have audited the financial statements of the Bank of Canada (the Bank), which comprise the statement of financial position as at December 31, 2018, and the statement of net income and comprehensive income, statement of changes in equity and statement of cash flows for the year then ended, and notes to the financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the Bank as at December 31, 2018 and its financial performance and its cash flows for the year then ended in accordance with International Financial Reporting Standards (IFRSs).

Basis for opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the Auditors' Responsibilities for the Audit of the Financial Statements section of our report. We are independent of the Bank in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Other information

Management is responsible for the other information. The other information comprises the information, other than the financial statements and our auditors' report thereon, included in the 2018 Annual Report.

Our opinion on the financial statements does not cover the other information and we do not express any form of assurance conclusion thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information, identified above and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated.

If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Responsibilities of management and those charged with governance for the financial statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with IFRSs, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Bank's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Bank or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Bank's financial reporting process.

Auditors' responsibilities for the audit of the financial statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Bank's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Bank's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditors' report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditors' report. However, future events or conditions may cause the Bank to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

PricewaterhouseCoopers LLP

Chartered Professional Accountants
Licensed Public Accountants

Ernst & Young LLP

Chartered Professional Accountants
Licensed Public Accountants

Ottawa, Canada
February 13, 2019

Statement of financial position

As at December 31 (in millions of Canadian dollars)

	Note	2018	2017
Assets			
Cash and foreign deposits	3, 4, 7	17.0	14.6
Loans and receivables	3, 5, 7		
Securities purchased under resale agreements		10,673.0	9,478.5
Other receivables		3.1	4.5
		10,676.1	**9,483.0**
Investments	3, 6, 7		
Government of Canada treasury bills		24,217.8	18,370.4
Canada Mortgage Bonds		251.3	-
Government of Canada bonds		79,625.4	82,087.0
Other investments		433.3	403.6
		104,527.8	**100,861.0**
Property and equipment	8	600.3	569.0
Intangible assets	9	44.0	40.1
Other assets	10	189.7	132.6
Total assets		**116,054.9**	**111,100.3**
Liabilities and equity			
Bank notes in circulation	7, 11	90,193.1	85,855.9
Deposits	3, 7, 12		
Government of Canada		21,725.6	21,454.2
Members of Payments Canada		250.5	500.3
Other deposits		2,830.1	2,274.3
		24,806.2	**24,228.8**
Other liabilities	3, 7, 13	530.3	520.0
Total liabilities		**115,529.6**	**110,604.7**
Commitments, contingencies and guarantees	15, 16		
Equity	17	525.3	495.6
Total liabilities and equity		**116,054.9**	**111,100.3**

Stephen S. Poloz,
Governor

Carmen Vierula, CPA, CA,
Chief Financial Officer and Chief Accountant

Claire M. C. Kennedy,
Lead Director, Board of Directors, and
Chair, Audit and Finance Committee

(See accompanying notes to the financial statements.)

Statement of net income and comprehensive income

For the year ended December 31 (in millions of Canadian dollars)

	Note	2018	2017
Income			
Interest revenue			
Investments		1,886.9	1,603.4
Securities purchased under resale agreements		122.6	52.4
Other		0.6	0.3
		2,010.1	**1,656.1**
Interest expense			
Deposits		(363.9)	(187.4)
Other		(0.5)	(0.4)
Net interest revenue		**1,645.7**	**1,468.3**
Dividend revenue		4.2	5.1
Other revenue		8.5	6.1
Total income		**1,658.4**	**1,479.5**
Expenses			
Staff costs		276.1	253.6
Bank note research, production and processing		53.4	53.1
Premises costs		29.6	21.5
Technology and telecommunications		53.9	47.6
Depreciation and amortization		47.1	51.9
Other operating expenses		73.5	76.1
Total expenses		**533.6**	**503.8**
Net income		**1,124.8**	**975.7**
Other comprehensive income (loss)			
Items that will not be reclassified to net income			
Remeasurements of the net defined-benefit liability/asset	14	91.4	(37.1)
Change in fair value of BIS shares	2, 3	29.7	n.a.
Items that may subsequently be reclassified to net income			
Change in fair value of available-for-sale financial assets	2	n.a.	(0.9)
Other comprehensive income (loss)		**121.1**	**(38.0)**
Comprehensive income		**1,245.9**	**937.7**

(See accompanying notes to the financial statements.)

Statement of changes in equity

For the year ended December 31 (in millions of Canadian dollars)

	Note	Share capital	Statutory reserve	Special reserve	Investment revaluation reserve	Retained earnings	Total
Balance as at January 1, 2018 (as restated)	2	5.0	25.0	100.0	365.6	-	**495.6**
Comprehensive income for the year							
Net income		-	-	-	-	1,124.8	**1,124.8**
Remeasurements of the net defined-benefit liability/asset	14	-	-	-	-	91.4	**91.4**
Change in fair value of BIS shares	3	-	-	-	29.7	-	**29.7**
		-	**-**	**-**	**29.7**	**1,216.2**	**1,245.9**
Surplus for the Receiver General for Canada	13, 17	-	-	-	-	(1,216.2)	**(1,216.2)**
Balance as at December 31, 2018		**5.0**	**25.0**	**100.0**	**395.3**	**-**	**525.3**

	Note	Share capital	Statutory reserve	Special reserve	Available-for-sale reserve	Retained earnings	Total
Balance as at January 1, 2017		5.0	25.0	100.0	357.0	-	**487.0**
Comprehensive income for the year							
Net income		-	-	-	-	975.7	**975.7**
Remeasurements of the net defined-benefit liability/asset	14	-	-	-	-	(37.1)	**(37.1)**
Change in fair value of BIS shares	3	-	-	-	8.6	-	**8.6**
Change in fair value of Government of Canada treasury bills		-	-	-	-	(9.5)	**(9.5)**
		-	**-**	**-**	**8.6**	**929.1**	**937.7**
Surplus for the Receiver General for Canada	13, 17	-	-	-	-	(929.1)	**(929.1)**
Balance as at December 31, 2017		**5.0**	**25.0**	**100.0**	**365.6**	**-**	**495.6**

(See accompanying notes to the financial statements.)

Statement of cash flows

For the year ended December 31 (in millions of Canadian dollars)

	2018	2017
Cash flows from operating activities		
Interest received	1,905.1	1,695.7
Dividends received	4.2	5.1
Other revenue received	7.3	8.7
Interest paid	(365.4)	(187.8)
Payments to or on behalf of employees and to suppliers and to members of Payments Canada	(460.8)	(481.1)
Net increase in deposits	577.4	1,397.3
Acquisition of securities purchased under resale agreements—overnight repo	(24,333.2)	(14,590.2)
Proceeds from maturity of securities purchased under resale agreements—overnight repo	24,333.2	14,590.2
Proceeds from securities sold under repurchase agreements	11,150.2	7,800.1
Repayments of securities sold under repurchase agreements	(11,150.2)	(9,300.1)
Net cash provided by operating activities	**1,667.8**	**937.9**
Cash flows from investing activities		
Net purchases of Government of Canada treasury bills	(5,753.3)	(1,562.6)
Purchases of Canada Mortgage Bonds	(251.1)	-
Purchases of Government of Canada bonds	(13,209.0)	(19,084.9)
Proceeds from maturity of Government of Canada bonds	15,685.0	16,775.0
Acquisition of securities purchased under resale agreements—term repo	(87,350.6)	(72,579.8)
Proceeds from maturity of securities purchased under resale agreements—term repo	86,161.9	71,381.7
Additions of property and equipment	(68.6)	(43.0)
Additions of intangible assets	(13.7)	(11.1)
Net cash used in investing activities	**(4,799.4)**	**(5,124.7)**
Cash flows from financing activities		
Net increase in bank notes in circulation	4,337.2	5,377.3
Remittance of surplus to the Receiver General for Canada	(1,204.2)	(1,193.7)
Net cash provided by financing activities	**3,133.0**	**4,183.6**
Effect of exchange rate changes on foreign currency	1.0	(1.5)
Increase (decrease) in cash and foreign deposits	**2.4**	**(4.7)**
Cash and foreign deposits, beginning of year	14.6	19.3
Cash and foreign deposits, end of year	**17.0**	**14.6**

(See accompanying notes to the financial statements.)

Notes to the financial statements of the Bank of Canada

For the year ended December 31, 2018

1. The business of the Bank of Canada

The Bank of Canada (the Bank) is the nation's central bank. The Bank is a corporation established under the *Bank of Canada Act*, is wholly owned by the Government of Canada and is exempt from income taxes. The Bank does not offer banking services to the public.

The address of the Bank's registered head office is 234 Wellington Street, Ottawa, Ontario.

The Bank conforms to the financial reporting requirements of the *Bank of Canada Act* as prescribed in the Bank's bylaws, which require that the Bank's financial statements be prepared in accordance with Generally Accepted Accounting Principles as set out in the *CPA Canada Handbook* published by the Chartered Professional Accountants of Canada (CPA Canada). Consistent with CPA Canada guidance, the Bank is a government business enterprise as defined by the Canadian Public Sector Accounting Standards (PSAS) and, as such, adheres to the standards applicable to publicly accountable enterprises. In compliance with this requirement, the Bank has developed accounting policies in accordance with International Financial Reporting Standards (IFRS).

The Bank's mandate under the *Bank of Canada Act* is to promote the economic and financial welfare of Canada. The Bank's activities and operations are undertaken in support of this mandate and not with the objective of generating revenue or profits. The Bank's four core areas of responsibility are the following:

- **Monetary Policy**: The Bank conducts monetary policy to preserve the value of money by keeping inflation low, stable and predictable.
- **Financial System**: The Bank promotes safe, sound and efficient financial systems, within Canada and internationally, and conducts transactions in financial markets in support of these objectives.
- **Funds Management**: The Bank provides funds-management services for the Government of Canada, the Bank itself and other clients. The Bank is the fiscal agent for the government, providing treasury management services and administering and advising on the public debt and foreign exchange reserves.
- **Currency**: The Bank designs, issues and distributes Canada's bank notes, oversees the note distribution system and ensures a supply of quality bank notes that are readily accepted and secure against counterfeiting.

The corporate administration function supports the management of the Bank's human resources, operations and strategic initiatives, as well as the stewardship of financial, physical, information and technology assets.

The Bank has the exclusive right to issue Canadian bank notes, and the face value of these bank notes is the most significant liability on the Bank's balance sheet. The Bank invests the proceeds from the issuance of bank notes into Government of Canada securities and Canada Mortgage Bonds, which are acquired on a non-competitive basis. These assets enable the Bank to execute its responsibilities for the monetary policy and financial system functions.

The interest income generated from the assets backing the bank notes in circulation (net of bank note production and distribution costs) is referred to as "seigniorage" and is the Bank's primary source of revenue. It provides a stable and constant source of funding for the Bank's operations, which enables the Bank to function independently of government appropriations. A portion of this revenue is used to fund the Bank's operations and reserves, and the remaining net income is remitted to the Receiver General for Canada in accordance with the requirements of the *Bank of Canada Act*.

2. Basis of preparation

Compliance with International Financial Reporting Standards

These financial statements have been prepared in accordance with IFRS as issued by the International Accounting Standards Board (IASB).

The Board of Directors approved the financial statements on February 13, 2019.

Fiscal-agent and custodial activities

Responsibility for the operational management of the Government of Canada's financial assets and liabilities is borne jointly by the Bank (as fiscal agent for the Government of Canada) and the Department of Finance Canada. In this fiscal-agent role, the Bank provides transactional and administrative support to the Government of Canada in certain areas, consistent with the requirements of section 24 of the *Bank of Canada Act*. The Bank does not bear the risks and rewards as part of its role as fiscal agent. The assets, liabilities, expenditures and revenues relating to this support are the Government of Canada's and are not included in the financial statements of the Bank.

Securities safekeeping and other custodial services are provided to foreign central banks, international organizations and other government-related entities. Under the terms governing these services, the Bank is indemnified against losses. Any assets and income that are managed under these services are excluded from the Bank's financial statements, as they are not assets or income of the Bank.

Measurement base

The financial statements have been prepared on a historical cost basis, except for the following items:

- financial instruments classified and measured at amortized cost, using the effective interest method;
- the Bank's shares in the Bank for International Settlements (BIS), which are measured at fair value through other comprehensive income (FVOCI); and
- the net defined-benefit liability/asset of employee benefit plans, which is recognized as the net of the fair value of plan assets and the present value of the defined-benefit obligations.

Functional and presentation currency

The Bank's functional and presentation currency is the Canadian dollar. The amounts in the notes to the financial statements of the Bank are in millions of Canadian dollars, unless otherwise stated.

Significant accounting policies

This section contains the Bank's accounting policies that relate to the financial statements as a whole.

When an accounting policy is applicable to a specific note to the financial statements, the policy and related disclosures are provided within that note as identified in the table below.

Note	Topic	Page	Note	Topic	Page
3	Financial instruments*	98	14	Employee benefits	118
8	Property and equipment	111	15	Leases	125
9	Intangible assets	113	16	Commitments, contingencies and guarantees	125
10	Other assets	115	18	Related parties	129
11	Bank notes in circulation	116			
13	Other liabilities	117			

* The accounting policies for financial instruments as discussed in Note 3 are consistent with those disclosed in the notes to the 2017 year-end financial statements for both current and comparative figures, except for those changes identified in the "Transition to IFRS 9" section below.

Revenue recognition

- Interest revenue is recognized in net income using the effective interest method.
- Dividend revenue from the Bank's investment in BIS shares is recognized as dividends are declared.
- Other revenue is recognized in net income as it is earned, when it can be reliably measured and when collectability is probable. In the current year, *Other interest expense*, which was previously included within *Other revenue*, was reclassified as a separate line item within the statement of net income and comprehensive income to better reflect the nature of the interest stream. Comparative information was updated accordingly.

Foreign currencies

Investment income and expenses denominated in foreign currencies are translated into Canadian dollars at the exchange rate in effect at the dates of the transactions. Monetary assets and liabilities denominated in foreign currencies are translated into Canadian dollars at the exchange rate prevailing at the end of the reporting period. The resulting foreign exchange gains and losses are included in *Other revenue*. Gains or losses on equity investments classified as FVOCI, including those related to the exchange rate, are recognized in other comprehensive income.

Impairment of non-financial assets

Non-financial assets, including *Property and equipment* and *Intangible assets*, are reviewed annually for indicators of impairment, and whenever events or changes in circumstances indicate that the carrying amount exceeds their recoverable amount.

Intangible assets under development are assessed for impairment on an annual basis.

Key accounting judgments, estimates and assumptions

The preparation of the financial statements requires management to make judgments, estimates and assumptions that affect the application of accounting policies and the reported amounts of assets, liabilities, income and expenses, and other related information.

The Bank based its assumptions and estimates on the information available when these financial statements were prepared. Existing circumstances and assumptions about future developments may change, however, in response to market fluctuations or circumstances that are beyond the control of the Bank. In such cases, the impact will be recognized in the financial statements of a future reporting period.

Judgments, estimates and underlying assumptions are reviewed for appropriateness and consistent application on an ongoing basis. Revisions to accounting estimates are recognized in the reporting period in which the estimates are revised and in any future reporting periods affected.

Significant judgment and estimates are used in the measurement of financial instruments (Note 3) and employee benefits (Note 14).

Current changes to IFRS

Effective January 1, 2018, the Bank adopted IFRS 15 *Revenue from contracts with customers* (IFRS 15) and IFRS 9 *Financial instruments* (IFRS 9) as described below. No other new or amended standards were adopted by the Bank during 2018 that had a significant impact on its financial statements.

IFRS 15 Revenue from contracts with customers

IFRS 15 relates to the recognition of revenue that applies to all contracts with customers, except for contracts that are within the scope of the standards on leases, insurance contracts and financial instruments.

The adoption of IFRS 15 did not have a significant impact on the Bank, as substantially all the Bank's revenues are generated by financial instruments within the scope of IFRS 9.

IFRS 9 Financial instruments

Effective January 1, 2018, the Bank has applied IFRS 9 and the related amendments to other IFRSs in accordance with the transition provisions set out in IFRS 9.

IFRS 9 eliminated the existing financial asset categories and adopted a principles-based approach to the classification of financial assets, which is driven by a financial instrument's cash-flow characteristics and the business model in which it is held.

IFRS 9 also introduced an expected loss impairment model for all financial assets not measured at fair value through profit or loss (FVTPL). The model has three stages:

(i) on initial recognition, 12-month expected credit losses (ECLs) are recognized in profit or loss, and interest revenue is calculated on the gross carrying amount of the asset;

(ii) if credit risk increases significantly from initial recognition, lifetime ECLs are recognized in profit or loss, and interest revenue is calculated on the gross carrying amount of the asset; and

(iii) when a financial asset is considered credit-impaired, interest revenue is calculated based on the net carrying amount of the asset (gross carrying amount less the loss allowance), rather than on its gross carrying amount.

Finally, IFRS 9 included a new hedge accounting model, together with corresponding disclosures about risk management activities for those applying hedge accounting. The new model represented a substantial overhaul of hedge accounting that enables entities to better reflect their risk management activities in their financial statements. The most significant changes applied to those entities that hedge non-financial risk.

With regard to the Bank's financial statements, the adoption of IFRS 9 resulted in changes to the Bank's accounting policies for the classification and measurement of financial instruments, and the impairment of financial assets. IFRS 9 also significantly amended other standards relating to financial instruments, such as IFRS 7 *Financial instruments: disclosures* (IFRS 7). The changes to hedge accounting were not applicable to the Bank, as the Bank does not engage in hedging activities.

The Bank's revised accounting policies for financial instruments are discussed in Note 3.

As permitted by the transitional provisions of IFRS 9, the Bank elected not to restate comparative figures since the impact of the adoption is not significant to the Bank's financial statements. As such, the accounting policies for prior-period financial statements are consistent with those disclosed in the Bank's financial statements for the year ended December 31, 2017, as described in the "Transition to IFRS 9" section below. Any adjustments to the carrying amounts of financial instruments at the date of transition were recognized in the opening retained earnings and other reserves of the current period. For note disclosures, the amendments to IFRS 7 have also been applied to the current period only and were primarily qualitative in nature.

The impact of the transition to IFRS 9 is discussed in the following section.

Transition to IFRS 9

IFRS 9 introduces new requirements for financial instrument classification and measurement, impairment of financial assets, and general hedge accounting. As such, the Bank assessed its existing financial assets and liabilities against the requirements of IFRS 9 as of the date of initial application, January 1, 2018.

Summary of impact on the financial statements

Area	Impact
Classification and measurement	Financial instruments were assessed under the classification and measurement requirements of IFRS 9. Reclassification of financial instruments into the IFRS 9 categories had no overall impact on their respective classification or measurement basis, except for cash and foreign deposits and Government of Canada treasury bills. Cash and foreign deposits were previously classified as FVTPL and are now recorded at amortized cost. Government of Canada treasury bills were previously classified as available-for-sale and measured at FVOCI and are now recorded at amortized cost.
Impairment	Financial assets were assessed for impairment under the IFRS 9 ECL model, which had no significant impact on the Bank's financial statements.
General hedge accounting	This is not applicable to the Bank's operations since the Bank does not engage in hedging activities.

Pre-transition accounting policy for the Bank's financial instruments

As the Bank elected not to restate its comparative figures for the transition to IFRS 9, the accounting policies for comparative figures are consistent with those disclosed in the Bank's financial statements for the year ended December 31, 2017, as described within this section.

Classification and measurement

The prior-period classification and measurement bases for each category of the Bank's financial instruments are presented in the section "Assessment of financial instruments held at transition" below, which also includes the current period classification and measurement bases and the rationale for any changes resulting from the transition to IFRS 9 on January 1, 2018.

Impairment

The Bank assessed whether there was objective evidence that a financial asset or group of assets was impaired at the end of the reporting period. Once impaired, financial assets carried at amortized cost were remeasured at the net recoverable amount, with the amount of impairment recognized in net income. Unrealized losses on impaired AFS financial assets were recognized in net income at the time of impairment. The Bank had no impairment allowances recorded in accordance with IAS 39 *Financial instruments: recognition and measurement (IAS 39)*'s incurred loss model as at December 31, 2017.

Changes to the accounting of the Bank's financial instruments

Assessment of financial instruments held at transition

Management assessed the financial instruments held by the Bank in accordance with IFRS 9 as at the date of initial application. Management then classified the instruments into the appropriate categories based on the Bank's business model for the instruments and the nature of each instrument's cash flows. The following table reconciles the carrying amounts of financial instruments from their previous measurement categories in accordance with IAS 39 to their new measurement categories on transition to IFRS 9, effective January 1, 2018.

		Measurement category		Carrying amount		
	Ref	Original (IAS 39)	New (IFRS 9)	Original (IAS 39)	New (IFRS 9)	Difference due to change in measurement category
Financial assets						
Cash and foreign deposits	A	FVTPL	Amortized cost	14.6	14.6	-
Securities purchased under resale agreements	B	Loans and receivables: Amortized cost	Amortized cost	9,478.5	9,478.5	-
Other receivables	B	Loans and receivables: Amortized cost	Amortized cost	4.5	4.5	-
Government of Canada treasury bills	C	Available-for-sale: FVOCI	Amortized cost	18,370.4	18,380.1	9.7
Government of Canada bonds	B	Held-to-maturity: Amortized cost	Amortized cost	82,087.0	82,087.0	-
BIS shares (sole component of *Other investments*)	D	Available-for-sale: FVOCI	Designated FVOCI	403.6	403.6	-
Financial liabilities						
Bank notes in circulation	E	Face value	Face value	85,855.9	85,855.9	-
Deposits	E	Amortized cost	Amortized cost	24,228.8	24,228.8	-
Other liabilities	E	Amortized cost	Amortized cost	520.0	520.0	-
Total difference due to change in measurement category						**9.7**

The application of the new classification and measurement requirements of IFRS 9 led to the following impacts on financial instruments held by the Bank on January 1, 2018.

(A) Change in classification from FVTPL to amortized cost

Cash and foreign deposits have been reclassified to amortized cost. The Bank's business model is to hold cash and foreign deposits for cash flow purposes, and the cash flows represent solely payments of principal and interest. There is no impact on the Bank's financial position, net income or other comprehensive income as a result of this change.

(B) Change in classification of retired categories with no change in measurement

The following debt instruments have been reclassified to new categories with no changes to their measurement basis under IFRS 9, since their previous categories under IAS 39 were retired:

- Debt instruments previously classified as loans and receivables per IAS 39 categorization are now classified and measured at amortized cost.
- Debt instruments previously classified as held-to-maturity per IAS 39 categorization are now classified and measured at amortized cost.

(C) Change in classification from available-for-sale to amortized cost

Government of Canada treasury bills were reclassified from available-for-sale and measured at FVOCI to classified and measured at amortized cost. The Bank's intention is to hold these investments for the collection of contractual cash flows, and the cash flows represent solely payments of principal and interest.

The impact of the transition to the carrying value of the Government of Canada treasury bills is an increase of $9.7 million as at January 1, 2018, and a corresponding increase of $9.7 million in retained earnings. This amount was reclassified from *Retained earnings* to *Surplus payable to the Receiver General for Canada* on January 1, 2018, per the Bank's remittance agreement with the Minister of Finance in accordance with section 27 of the *Bank of Canada Act*. As a result, the balance of the *Surplus payable to the Receiver General for Canada* of $204.2 million as at December 31, 2017, was increased to $213.9 million as at January 1, 2018.

(D) Designation of equity instruments as FVOCI

The Bank's investment in BIS shares, which is the sole component of *Other investments*, was previously classified as available-for-sale equity instruments and is now classified as equity instruments irrevocably designated as FVOCI, since the Bank's business model is to hold these shares to enable its participation as a member of the BIS. The changes in fair value of such instruments will no longer be reclassified to net income if disposed of, and the instruments will no longer be assessed for impairment.

There was no difference between their previous carrying amount and their revised carrying amount, and there is no impact on the Bank's financial position, net income or other comprehensive income. The change in fair value of these assets will be reclassified within the statement of net income and comprehensive income from *Items that may subsequently be reclassified to net income* to *Items that will not be reclassified to net income*. The change in fair value on these assets continues to be accumulated as part of *Equity*, in the *Investments revaluation reserve*, formerly the *Available-for-sale reserve* under IAS 39.

(E) No change in classification or measurement

There were no changes to classification or measurement for any of the Bank's financial liabilities held on transition, and there was no impact on the Bank's financial position, net income or other comprehensive income.

Reconciliation of impairment allowance balances at transition

On the date of initial application of January 1, 2018, the Bank's existing financial assets were assessed for impairment in accordance the requirements of IFRS 9, as discussed in Note 3.

The Bank had no impairment allowances recorded in accordance with IAS 39's incurred loss model as at December 31, 2017, and had no impairment allowances recorded in accordance with IFRS 9's expected loss model as at January 1, 2018, since it was determined that the allowance would be negligible given the nature of the Bank's financial assets.

Impact on the financial statements

The summary financial statements presented below show the changes resulting from the transition to IFRS 9.

Impact on opening financial statements as at date of initial application—January 1, 2018

The total impact of these changes on the Bank's opening financial statements as at January 1, 2018, following the December 31, 2017, year-end is as follows:

Partial statement of financial position

	Ref	December 31, 2017	Effect of transition to IFRS 9	January 1, 2018
Assets				
Investments				
Government of Canada treasury bills		18,370.4	9.7	18,380.1
Total assets		**18,370.4**	**9.7**	**18,380.1**
Liabilities and equity				
Other liabilities	A	520.0	9.7	529.7
Total liabilities		**520.0**	**9.7**	**529.7**
Equity	B	495.6	-	495.6
Total liabilities and equity		**1,015.6**	**9.7**	**1,025.3**

(A) *Other liabilities* includes the *Surplus payable to the Receiver General for Canada* as described in Note 13, which contains the cumulative withholdings of unrealized losses in accordance with the Bank's remittance agreement with the Minister of Finance (Note 17).

Cumulative withholdings of unrealized losses as at December 31, 2017	156.0
Withholdings of unrealized losses on treasury bills as at December 31, 2017 (see (B) below)	(9.7)
Cumulative withholdings as at January 1, 2018	**146.3**

With the elimination of withholdings on transition related to Government of Canada treasury bills, the amount becomes remittable to the Receiver General for Canada and is therefore included in *Other liabilities* as *Surplus payable to the Receiver General for Canada*.

(B) The $9.7 million impact of the reclassification of Government of Canada treasury bills results in an equivalent increase in retained earnings. However, the impact on retained earnings flows immediately to the surplus payable for the Receiver General for Canada in accordance with the Bank's remittance agreement with the Minister of Finance, as stipulated by section 27 of the *Bank of Canada Act*. As a result, the balance of the *Surplus payable to the Receiver General for Canada* of $204.2 million as at December 31, 2017, was increased to $213.9 million as at January 1, 2018.

Future changes to IFRS

The following new standard issued by the IASB was assessed as having a possible effect on the Bank in the future.

IFRS 16 Leases (IFRS 16)

In January 2016, the IASB issued IFRS 16, which provides a comprehensive model for the identification of lease arrangements and their treatment in the financial statements of both lessees and lessors. It supersedes IAS 17 *Leases* (IAS 17) and its associated interpretive guidance. Significant changes have been made to lessee accounting since the distinction between operating and finance leases was eliminated; thus, assets and liabilities must be recognized for all leases (subject to limited exceptions for short-term leases and leases of low-value assets). IFRS 16 does not include significant changes to the requirements for lessors.

The mandatory effective date for the adoption of IFRS 16 is January 1, 2019, as determined by the IASB, although earlier application was permitted for companies that also early-adopted IFRS 15. The Bank has determined that the transition to IFRS 16 will result in the recognition of additional lease assets of $54.2 million and related liabilities on the Bank's statement of financial position, with no impact on opening equity. The Bank has also determined that the changes to lease accounting are not expected to have a significant impact on the Bank's financial statements. As such, the Bank has opted not to restate its comparative information upon adoption of IFRS 16. Additional disclosures related to the Bank's lease accounting policies will be required.

3. Financial instruments

The Bank's financial instruments consist of the following:

- cash and foreign deposits,
- loans and receivables,
- investments,
- bank notes in circulation,
- deposits,
- securities sold under repurchase agreements (SSRAs), and
- other liabilities.

Bank notes in circulation, the net defined-benefit liability/asset for pension benefit plans and other employee benefit plans, and lease contracts are excluded from this note. There were no changes to accounting policies following the adoption of IFRS 9 for bank notes in circulation and lease contracts, and, as a result, these policies are consistent with those disclosed in the notes to the 2017 year-end financial statements. The required disclosures for the net defined-benefit liability/asset for pension benefit plans and other employee benefit plans are discussed in Note 14.

The accounting policies for financial instruments as discussed below are consistent with those disclosed in the notes to the 2017 year-end financial statements, except those changes identified in the "Transition to IFRS 9" section of Note 2.

Accounting policy

Recognition

The Bank accounts for all financial instruments using settlement-date accounting. Financial assets and liabilities are recorded when the Bank becomes party to the contractual provisions of the instruments.

Initial recognition

Financial instruments are initially recognized at fair value plus transaction costs, if any, except for financial assets classified as FVTPL, in which case transaction costs are recognized immediately in net income. See the "Supporting information" section for details on how the Bank determines the fair value of its financial instruments. Subsequent to initial recognition, an ECL assessment is performed for financial assets measured at amortized cost, and any ECLs are recognized in net income.

Derecognition

The Bank derecognizes a financial asset when it considers that substantially all the risks and rewards of the asset have been transferred or when the contractual rights to the cash flows of the financial asset expire. The Bank does not derecognize collateral pledged by the Bank under standard repurchase agreements and securities-lending transactions, since the Bank retains substantially all risks and rewards on the basis of the predetermined repurchase price. The Bank derecognizes financial liabilities when the Bank's obligations are discharged, are cancelled or expire.

Classification

Financial instruments are classified into one of the following categories based on their nature and business purpose:

- Financial assets
  - cash and cash equivalents at amortized cost
  - debt instruments at amortized cost
  - equity instruments at FVOCI
- Financial liabilities
  - financial liabilities at amortized cost

Financial instrument categories	Bank's business model	Cash flow characteristics
Financial assets		
Cash and cash equivalents at amortized cost ▪ Cash and foreign deposits	Collect contractual cash flows; hold for cash flow management purposes	Solely payments of principal and interest
Debt instruments at amortized cost ▪ SPRAs ▪ Advances to members of Payments Canada ▪ Other receivables ▪ Government of Canada treasury bills ▪ Canada Mortgage Bonds ▪ Government of Canada bonds	Collect contractual cash flows	Solely payments of principal and interest
Equity instruments at FVOCI ▪ BIS shares	Do not hold for trading;* hold as part of the Bank's functions as a central bank	Dividend payments
Financial liabilities		
Financial liabilities at amortized cost ▪ Deposits ▪ SSRAs ▪ Other liabilities	Pay contractual cash flows	N/A

* A financial instrument is considered held for trading if it has been acquired for the purpose of selling it in the near term, it is part of a portfolio of identified financial instruments that is managed for trading purposes, or it is a derivative.

Measurement

Subsequent to initial recognition and on derecognition, financial instruments are accounted for based on their classification as described in the table below.

Financial instrument categories	Subsequent measurement	Derecognition
Financial assets		
Cash and cash equivalents at amortized cost ▪ Cash and foreign deposits **Debt instruments at amortized cost** ▪ SPRAs ▪ Advances to members of Payments Canada ▪ Other receivables ▪ Government of Canada treasury bills ▪ Canada Mortgage Bonds ▪ Government of Canada bonds	Amortized cost using the effective interest method,* less any ECLs. ECLs and any subsequent reversals are recognized in net income. Interest income is calculated by applying the effective interest rate to the gross carrying amount of financial assets, unless a financial asset has become credit-impaired, in which case interest revenue is calculated by applying the effective interest rate to its amortized cost net of the ECL provision.	The difference between the financial asset's carrying amount and the sum of the consideration received and receivable is recognized in net income.
Equity instruments at FVOCI ▪ BIS shares	FVOCI. Unrealized changes in the fair value are recognized in other comprehensive income and accumulated in the investment revaluation reserve in *Equity*. Dividends are recognized in net income when they represent a return on equity and not a return of invested capital to shareholders.	The cumulative unrealized gain or loss previously recognized in other comprehensive income is not reclassified from *Equity* to net income.
Financial liabilities		
Financial liabilities at amortized cost ▪ Deposits ▪ SSRAs ▪ Other liabilities	Amortized cost using effective interest method.*	The difference between the financial liability's carrying amount and the sum of the consideration paid and payable (including any non-cash assets transferred or liabilities assumed) is recognized in net income.

* The effective interest method uses the rate inherent in a financial instrument that discounts the estimated future cash flows over the expected life of the financial instrument in order to recognize interest on a constant-yield basis.

Impairment

The Bank calculates a loss allowance for ECLs on investments in debt instruments that are measured at amortized cost, and on foreign currency swap facility commitments and the LVTS guarantee. The amount of ECLs, if any, is updated at each reporting date to reflect changes in credit risk since initial recognition.

The Bank recognizes 12-month ECLs for financial instruments unless there has been a significant increase in credit risk since initial recognition, in which case lifetime ECLs are recognized.

Write-off policy

The Bank writes off a financial asset when there is information indicating that the counterparty is in severe financial difficulty and there is no realistic prospect of recovery. Financial assets written off may still be subject to enforcement activities under the Bank's recovery procedures. Any recoveries made are recognized in net income.

Accounting estimates and judgments

Impairment

Judgment is required when determining whether there is objective evidence that impairment exists and, if so, the appropriate amount of ECLs to recognize. The measurement of ECLs reflects an unbiased and probability-weighted amount that is determined by evaluating a range of possible outcomes, the time value of money, and reasonable and supportable information that is available without undue cost or effort at the reporting date regarding past events, current conditions and forecasts of future economic conditions.

Significant judgments required for measuring ECLs include the following:

- determining criteria for assessing whether a financial asset is considered to have low credit risk;
- determining criteria for assessing what constitutes a significant increase in credit risk;
- choosing appropriate models and assumptions for the measurement of ECLs;
- establishing the number and relative weightings of forward-looking scenarios for each type of financial instrument and the associated ECL; and
- establishing groups of similar financial assets for the purposes of measuring ECLs.

Financial assets are categorized into the following three stages depending on their assessed credit risk:

Stage 1 Financial assets are categorized as Stage 1 when first recognized. The Bank records an allowance for 12-month ECLs in profit or loss, and interest revenue is calculated on the gross carrying amount of the asset.

Stage 2 Financial assets are categorized as Stage 2 when they have experienced a significant increase in credit risk since initial recognition. The Bank records an allowance for lifetime ECLs, and interest revenue is calculated on the gross carrying amount of the asset.

Stage 3 Financial assets are categorized as Stage 3 when they are considered credit-impaired. The Bank records an allowance for lifetime ECLs, and interest revenue is calculated based on the net carrying amount of the asset (gross carrying amount less the loss allowance), rather than on its gross carrying amount.

Key concepts

The Bank uses the following key concepts in assessing impairment considerations on its financial assets:

Default

For internal credit risk management purposes, the Bank considers a financial asset in default and therefore Stage 3 (credit-impaired) for ECL calculations in accordance with the contractual terms of the financial asset. The Bank considers treasury and interbank balances in default when the required intraday payments are not settled by the close of business, as outlined in the individual agreements.

As a part of a qualitative assessment of a counterparty's credit risk, the Bank also considers a variety of instances that may indicate unlikeliness to pay. In certain cases, the Bank may consider an event as a significant increase in credit risk as opposed to a true default, as discussed further in the "significant increase in credit risk" definition. When such events occur, the Bank carefully considers whether the event should result in treating the counterparty as defaulted and therefore assessed as Stage 3 for ECL calculations or whether Stage 2 is appropriate. Such events that would be considered include

- internal assessment of the counterparty indicating default or near-default;
- the counterparty experiencing unusual liquidity constraints;
- the counterparty having other past-due liabilities;
- a significant decrease in the underlying collateral value where the recovery of the loan is expected from the sale of the collateral; and
- the counterparty's listed debt or equity suspended at the primary exchange because of rumours or facts about financial difficulties.

Cure

It is the Bank's policy to consider a financial asset as "cured" and therefore reclassified out of Stage 3 when none of the default criteria has been present for a reasonable period given the nature of the instrument and surrounding circumstances. The decision whether to classify a financial asset as Stage 2 or Stage 1 once cured depends on the updated credit grade at the time of the cure, and whether this indicates there has been a significant increase in credit risk since initial recognition.

Credit-impaired

A financial asset is deemed credit-impaired when one or more events with a detrimental impact on its estimated future cash flows have occurred. Such events could include but are not limited to

- significant financial difficulty of the counterparty;
- a breach of contract, such as a default or past-due event;
- the lenders of the counterparty have granted a concession to the counterparty for economic or contractual reasons relating to the counterparty's financial difficulty that the lender would not otherwise consider;
- the likelihood (or probability) that the counterparty will enter bankruptcy or other financial reorganization; or
- the dissolution of an active market for that financial asset due to financial difficulties.

Significant increase in credit risk

In assessing whether the credit risk on a financial asset has increased significantly since initial recognition, the Bank compares the risk of a default occurring on the financial asset as at the reporting date with the risk as at the date of initial recognition. The Bank considers many factors when assessing a financial asset for a significant increase in credit risk, including

- an actual or expected significant deterioration in the financial asset's credit rating;
- significant deterioration in external market indicators of credit risk for a financial asset (e.g., a significant increase in the credit spread, or the length of time or the extent to which the fair value of a financial asset has been less than its amortized cost);
- existing or forecast adverse changes in business, financial or economic conditions that are expected to cause a significant decrease in the counterparty's ability to meet its debt obligations;
- an actual or expected significant deterioration in the operating results of the counterparty;
- significant increases in credit risk on other financial instruments of the same counterparty; or

- an actual or expected significant adverse change in the regulatory, economic or technological environment of the counterparty that results in a significant decrease in the counterparty's ability to meet its debt obligations.

In certain cases, the Bank may consider that events identified in the definition of default are a significant increase in credit risk as opposed to a true default. In making this assessment, the Bank considers both quantitative and qualitative information that is reasonable and supportable, including historical experience and forward-looking information that is available without undue cost or effort. Forward-looking information considered includes the future prospects of the industries in which the Bank's counterparties operate, and consideration of various external sources of actual and forecast economic information relating to the Bank's core operations.

The Bank regularly monitors the effectiveness of the criteria used to identify whether there has been a significant increase in credit risk and revises them as appropriate.

The Bank assumes that the credit risk on a financial asset has not increased significantly since initial recognition if the financial asset is determined to have low credit risk at the reporting date and monitoring activities do not indicate the presence of a trigger event.

Low credit risk

A financial asset is determined to have low credit risk if

- the financial asset has a low risk of default;
- the counterparty has a strong capacity to meet its contractual cash flow obligations in the near term; and
- adverse changes in economic and business conditions in the longer term may, but will not necessarily, reduce the ability of the counterparty to fulfill its contractual cash flow obligations.

The Bank considers a financial asset to have low credit risk when the asset's creditworthiness is judged to be "investment grade," which the Bank broadly defines as equivalent to BBB or higher.

Expected credit loss approach and assessment

Debt instruments

For debt instruments, ECLs are estimated as the difference between all contractual cash flows that are due to the Bank in accordance with the contract and all the cash flows that the Bank expects to receive, discounted at the original effective interest rate.

The Bank's debt instruments consist solely of Canadian sovereign debt, debt securities that are fully guaranteed by the Government of Canada and instruments that are fully collateralized by collateral with an equivalent credit rating of A- or higher. In assessing ECLs on these instruments, the Bank has applied the low-risk practical expedient available under IFRS 9 due to their high credit quality. The Bank corroborates external credit ratings on Canadian sovereign debt with an internal analysis performed annually, with quarterly updates. The Bank also performs continuous monitoring of relevant economic and financial developments. The Bank has assessed the ECLs for these instruments as negligible.

All the Bank's financial assets subject to impairment assessments are Stage 1 and are considered to have low credit risk. There were no transfers of financial instruments between stages during the reporting period. The Bank did not record any ECLs on its financial instruments as at December 31, 2018. There are no significant past due or impaired amounts as at December 31, 2018. No impairment was recognized as at December 31, 2017, under IAS 39, or at January 1, 2018, under IFRS 9.

Financial guarantees and loan commitments

This category includes the Bank's foreign currency swap facility commitments and the LVTS guarantee. For guarantees and commitments made by the Bank that are not currently in use but there is a clear indication that use can reasonably be expected within the next 12 months, the Bank would assess the guarantee or commitment for any impairment on a case-by-case basis based on expected drawings.

For a financial guarantee contract, since the Bank is required to make payments only in the event of a default by the counterparty in accordance with the terms of the instrument that is guaranteed, the ECL allowance would be calculated as the expected payments to reimburse the holder for a credit loss that it incurs, less any amounts that the Bank expects to receive from the holder, the counterparty or any other party.

For undrawn loan commitments, the ECL is the present value of the difference between the contractual cash flows that are due to the Bank if the holder of the loan commitment draws down the loan and the cash flows that the Bank expects to receive if the loan is drawn down.

As at December 31, 2018, none of the Bank's financial guarantees and commitments were in use, nor does the Bank expect that any will be used within the next 12 months ($nil at December 31, 2017, under IAS 39, and $nil at January 1, 2018, under IFRS 9).

Fair value of financial instruments

Judgment is also required in estimating the fair values of financial instruments. Estimated fair values for financial instruments are designed to approximate amounts for which the instruments could be exchanged in a current arm's-length transaction between knowledgeable, willing parties.

Financial instruments measured at fair value are classified using a fair value hierarchy that reflects the significance of the inputs used in making the measurements:

Level 1 unadjusted quoted prices in active markets for identical assets or liabilities, which represent actual and regularly occurring arm's-length market transactions

Level 2 inputs other than quoted prices included in Level 1, which are observable for the assets or liabilities either directly (e.g., prices for similar instruments, prices from inactive markets) or indirectly (e.g., interest rates, credit spreads)

Level 3 unobservable inputs for the assets or liabilities that are not based on observable market data due to inactive markets (e.g., market participant assumptions)

The fair value hierarchy requires the use of observable market inputs wherever such inputs exist. In measuring fair value, a financial instrument is classified at the lowest level of the hierarchy for which a significant input has been considered.

The tables below explain the valuation methods used to determine the fair value of each financial instrument and its associated level in the fair value hierarchy. There were no changes to valuation methods during the period.

Financial instruments carried at fair value	Valuation method
BIS shares	Significant unobservable inputs (Level 3) Estimated as 70 per cent of the Bank's interest in the net asset value of the BIS at the reporting date. This is consistent with the methodology applied by the BIS for all share repurchases since the 1970s and was further endorsed in a decision by the International Court at The Hague relating to a share repurchase by the BIS in 2001 (the last share repurchase conducted by the BIS). The Bank expects the value of the BIS shares to fluctuate over time in conjunction with the strength of the BIS balance sheet and exchange rates.

Financial instruments carried at amortized cost	Valuation method
Cash and foreign deposits, SPRAs, other receivables, deposits, and financial liabilities	Carrying amount (approximation to fair value assumed due to their nature as short term or due on demand)
Government of Canada treasury bills, Canada Mortgage Bonds, Government of Canada bonds	Quoted market prices (Level 1 and Level 2)

Supporting information

Financial instruments carried at fair value

Financial instruments carried at fair value are the Bank's investment in BIS shares (Level 3). There were no transfers of amounts between levels during the reporting period.

The following table reconciles the estimated fair value of the BIS shares determined using Level 3 fair value measurements:

	2018	2017
Fair value of BIS shares at January 1	403.6	395.0
Change in fair value recorded through other comprehensive income	29.7	8.6
Fair value of BIS shares at December 31	**433.3**	**403.6**

As discussed in Note 2, the Bank's investment in Government of Canada treasury bills was reclassified from FVOCI to amortized cost on January 1, 2018. If the Government of Canada treasury bills had not been reclassified, unrealized gains of $7.9 million would have been recorded in *Other comprehensive income* for the year ended December 31, 2018.

Financial instruments not carried at fair value

The following table shows the fair value of the Bank's financial instruments classified in accordance with the fair value hierarchy described above for the Bank's financial instruments that are not carried at fair value and whose fair value does not approximate their carrying value.

	Level 1	Level 2	Level 3	Total
As at December 31, 2018				
Government of Canada treasury bills	24,225.7	-	-	**24,225.7**
Canada Mortgage Bonds	252.9	-	-	**252.9**
Government of Canada bonds	82,134.5	112.5	-	**82,247.0**
Total	**106,613.1**	**112.5**	-	**106,725.6**
As at December 31, 2017				
Government of Canada treasury bills *	n.a.	-	-	**n.a**
Government of Canada bonds	84,219.7	185.9	-	**84,405.6**
Total	**84,219.7**	**185.9**	-	**84.405.6**

* Prior to the adoption of IFRS 9 on January 1, 2018, Government of Canada treasury bills were classified as AFS, and therefore carried at fair value. The Bank's investments in Government of Canada treasury bills were composed of $18,370.4 million of investments classified as Level 1 as at December 31, 2017.

Transfers may occur between levels of the fair value hierarchy as a result of changes in market activity, or the availability of quoted market prices or observable inputs. There were no transfers during the year ending December 31, 2018 ($nil during the year ending December 31, 2017). However, during the year, certain fixed-income securities were reclassified from Level 1 to Level 2. The presentation of the figures as at December 31, 2017, has been updated for comparability.

The fair value of all other financial instruments approximates their carrying value.

4. Cash and foreign deposits

Cash and foreign deposits is composed of cash on hand and highly liquid demand deposits in foreign currencies with other central banks or international financial institutions. Included in the total balance of $17.0 million ($14.6 million at December 31, 2017) was Can$15.7 million of foreign deposits (Can$13.8 million at December 31, 2017).

The Bank's policies on classifying and measuring financial instruments are discussed in Note 3, and related financial risks are discussed in Note 7.

5. Loans and receivables

Loans and receivables is composed primarily of SPRAs and, if any, advances to members of Payments Canada. These transactions are obligations of Payments Canada members and are fully collateralized in accordance with publicly disclosed collateral eligibility and margin requirements. The remaining amount is composed primarily of trade receivables.

Securities purchased under resale agreements is composed of overnight repurchase (repo) operations and term repo operations, in which the Bank purchases securities from designated counterparties with an agreement to sell them back at a predetermined price on an agreed transaction date. The overnight repo matures the next business day and is used to support the effective implementation of monetary policy by withdrawing intraday liquidity, thereby reinforcing the Bank's target for the overnight rate. The term repo generally matures 1 to 90 business days after issuance and is used for balance sheet management, to promote the orderly functioning of Canadian financial markets and to provide the Bank with information on conditions in short-term funding markets. Balances outstanding as at December 31, 2018, consist of agreements with original terms to maturity ranging from 25 to 84 days (from 17 to 84 days at December 31, 2017).

Advances to members of Payments Canada are collateralized liquidity loans made under the Bank's Standing Liquidity Facility to facilitate overnight settlement in the Large Value Transfer System (LVTS). These advances mature the next business day. Interest on overnight advances is calculated at the Bank Rate, which is the rate of interest that the Bank charges on one-day loans to major financial institutions. Collateral pledged for these advances comes from a pool of eligible collateral in which the Bank has the discretion to choose the highest-quality collateral to cover any advances granted. As at December 31, 2018, there were no advances to members of Payments Canada ($nil at December 31, 2017).

The Bank's policies on classifying and measuring financial instruments are discussed in Note 3, and related financial risks are discussed in Note 7.

6. Investments

The Bank's investments are composed of Government of Canada treasury bills, Canada Mortgage Bonds, Government of Canada bonds and other investments. As part of the regular management of its balance sheet, the Bank acquires securities to offset its liabilities, which consist mainly of bank notes in circulation and Government of Canada deposits. In November 2018, the Bank announced that it was expanding the assets it would acquire to include Canada Mortgage Bonds, which provides the Bank with more flexibility in the range of high-quality assets it can acquire to offset the continued growth in bank notes.

Other investments is composed solely of the Bank's holdings of 9,441 BIS shares (9,441 BIS shares at December 31, 2017), which are held as part of its functions as a central bank and are long-standing in nature. Ownership of BIS shares is limited to central banks, and new shares can be acquired only following an invitation to subscribe extended by the BIS Board of Directors. The shares are non-transferable unless prior written consent is obtained from the BIS.

The Bank operates a securities-lending program to support the liquidity of Government of Canada securities by providing the market with a secondary and temporary source of these securities. These transactions are fully collateralized by securities and are generally one business day in duration. Securities lent through the securities-lending program continue to be accounted for as *Investments* for the duration of the loan period. Lending fees charged by the Bank on these transactions are included in *Other revenue* at the loan maturity date. As at December 31, 2018, the Bank was not engaged in any securities-lending activities ($nil at December 31, 2017).

The Bank's policies on classifying and measuring financial instruments are discussed in Note 3, and related financial risks are discussed in Note 7.

7. Financial risk management

The Bank maintains a comprehensive risk management and control framework to manage its risks. The Executive Council oversees enterprise risk management and the implementation of sound management processes to safeguard the Bank. The Board of Directors has an oversight role in the Bank's performance of risk management.

The Bank is exposed to financial risks associated with its financial instruments, including credit risk, market risk and liquidity risk. The Financial Risk Office monitors and reports on the financial risks related to the Bank's statement of financial position.

The following is a description of those risks and how the Bank manages its exposure to them.

Credit risk

Credit risk is the possibility of loss due to the failure of a counterparty or guarantor to meet payment obligations in accordance with agreed-upon terms.

The Bank is exposed to credit risk through its cash and foreign deposits, investments and advances to members of Payments Canada, and through market transactions conducted in the form of SPRAs and loans of securities. The maximum exposure to credit risk is estimated to be the carrying value of those items. The Bank is also exposed to credit risk through its guarantee of the LVTS and through the execution of foreign currency contracts. The maximum exposure under guarantees and foreign currency contracts is discussed in Note 16.

There are no past due or impaired amounts.

Concentration of credit risk

The Bank's investment portfolio represents 90% of the carrying value of its total assets (91% in 2017). The credit risk associated with the Bank's investment portfolio is low because the securities held are primarily direct obligations of the Government of Canada or are fully guaranteed by the Government of Canada, which holds a credit rating of AAA and has no history of default.

SPRAs represent 9% of the carrying value of the Bank's total assets (9% at December 31, 2017). The fair value of collateral pledged to the Bank against these financial instruments at the end of the reporting period is presented below.

	2018		2017	
As at December 31	**$**	**%**	**$**	**%**
Securities issued or guaranteed by the Government of Canada	469.1	4.2	2,414.9	24.5
Securities issued or guaranteed by a provincial government	10,695.5	95.8	7,444.0	75.5
Total fair value of collateral pledged to the Bank	**11,164.6**	**100.0**	**9,858.9**	**100.0**
Carrying value of advances to members of Payments Canada	-	-	-	-
Carrying value of SPRAs	10,673.0	100.0	9,478.5	100.0
Carrying value of collateralized securities	**10,673.0**	**100.0**	**9,478.5**	**100.0**
Collateral as a percentage of carrying value		**104.6**		**104.0**

In the unlikely event of a counterparty default, collateral can be liquidated to offset credit exposure. Collateral is taken in accordance with the Bank's publicly disclosed eligibility criteria and margin requirements, which are accessible on its website. Strict eligibility criteria are set for all collateral, and the credit quality of collateral is managed through a set of restrictions based on asset type, term to maturity and credit attributes, including ratings of the securities pledged.

Market risk

Market risk is the potential for adverse changes in the fair value or future cash flows of a financial instrument due to changes in market variables, such as interest rates, foreign exchange rates and market prices. It is composed of interest rate risk, currency risk and other price risk.

Interest rate risk

Interest rate risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in interest rates.

The Bank's exposure to interest rate risk arises from fluctuations in the future cash flows of cash and foreign deposits held by the Bank and deposits held at the Bank by other institutions, since these instruments are subject to variable interest rates. The remainder of the Bank's financial assets and liabilities have either fixed interest rates or are non-interest-bearing.

The numbers below show the effect as at December 31 of an increase/(decrease) in interest rates of 25 basis points on the interest paid on Government of Canada deposits, which represent substantially all of the Bank's interest rate risk exposure on financial liabilities.

As at December 31	2018	2017
Interest expense on Government of Canada deposits	**57.3 / (57.3)**	58.1 / (58.1)

Currency risk

Currency risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in foreign exchange rates. Given the small size of the Bank's net foreign currency exposure relative to its total assets, currency risk is not considered significant.

The Bank is exposed to currency risk primarily by holding shares in the BIS. These shares are denominated in Special Drawing Rights (SDRs). The SDR serves as the unit of account for the International Monetary Fund (IMF), and its value is based on a "basket" of five major currencies: the euro, the US dollar, the British pound, the Japanese yen and the Chinese renminbi. SDRs are translated into Canadian-dollar equivalents at the rates prevailing on the date when the fair value is determined.

Other price risk

Other price risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate due to changes in market prices (other than those arising from changes in interest and exchange rates).

The Bank is exposed to other price risk through its investment in the BIS. As discussed in Note 3, the fair value of these shares is estimated on the basis of the net asset value of the BIS, less a discount of 30%. Accordingly, the fair value fluctuations of these shares reflect movements in the net asset value of the BIS and exchange rates as discussed above. The other price risk associated with BIS shares is incidental to the reason for holding them, as discussed in Note 6.

Liquidity risk

Liquidity risk is the potential for loss if the Bank is unable to meet its financial obligations as they fall due. Liabilities with no fixed maturity include bank notes in circulation and Government of Canada deposits, with the remaining liabilities (deposits of members of Payments Canada, SSRAs (if any) and other financial liabilities) due within 12 months. The Bank is also exposed to liquidity risk through its guarantee of the LVTS, as discussed in Note 16.

Historical experience has shown that bank notes in circulation provide a stable source of long-term funding for the Bank. Government of Canada deposits are deposits held in the Bank's capacity as the Government of Canada's fiscal agent. As a counterpart to these liabilities with no fixed maturity, the Bank holds a portfolio of highly liquid securities, composed primarily of Government of Canada treasury bills, Canada Mortgage Bonds, Government of Canada bonds and SPRAs. In the event of an unexpected redemption of bank notes or a significant withdrawal from the Government of Canada's deposit for the prudential liquidity-management plan, the Bank can settle the obligation by means of several tools, including the sale of investments backing those liabilities.

Also, as the nation's central bank, the Bank is the ultimate source of liquid funds to the Canadian financial system and has the power and operational ability to create Canadian-dollar liquidity in unlimited amounts at any time. This power is exercised within the Bank's commitment to keeping inflation low, stable and predictable.

The following table presents a maturity analysis of the Bank's financial assets and liabilities. The balances in this table do not correspond to the balances in the statement of financial position since the table presents all cash flows on an undiscounted basis.

As at December 31, 2018	No fixed maturity	Within 12 months	1 to 5 years	Over 5 years	Total
Financial assets					
Cash and foreign deposits	17.0	-	-	-	**17.0**
Loans and receivables	-	10,687.3	-	-	**10,687.3**
Investments					
Government of Canada treasury bills	-	24,375.0	-	-	**24,375.0**
Canada Mortgage Bonds	-	-	253.2	-	**253.2**
Government of Canada bonds	-	16,744.3	42,287.8	33,543.4	**92,575.5**
BIS shares	433.3	-	-	-	**433.3**
	450.3	**51,806.6**	**42,541.0**	**33,543.4**	**128,341.3**
Financial liabilities					
Bank notes in circulation	90,193.1	-	-	-	**90,193.1**
Deposits					
Government of Canada	21,725.6	-	-	-	**21,725.6**
Members of Payments Canada	-	250.5	-	-	**250.5**
Other deposits	2,830.1	-	-	-	**2,830.1**
Other financial liabilities	-	303.2	-	-	**303.2**
	114,748.8	**553.7**	-	-	**115,302.5**
Net maturity difference	**(114,298.5)**	**51,252.9**	**42,541.0**	**33,543.4**	**13,038.8**

As at December 31, 2017	No fixed maturity	Within 12 months	1 to 5 years	Over 5 years	Total
Financial assets					
Cash and foreign deposits	14.6	-	-	-	**14.6**
Loans and receivables	-	9,495.6	-	-	**9,495.6**
Investments					
Government of Canada treasury bills	-	18,450.0	-	-	**18,450.0**
Government of Canada bonds	-	17,139.3	43,069.8	34,930.4	**95,139.5**
BIS shares	403.6	-	-	-	**403.6**
	418.2	**45,084.9**	**43,069.8**	**34,930.4**	**123,503.3**
Financial liabilities					
Bank notes in circulation	85,855.9	-	-	-	**85,855.9**
Deposits					
Government of Canada	21,454.2	-	-	-	**21,454.2**
Members of Payments Canada	-	500.3	-	-	**500.3**
Other deposits	2,274.3	-	-	-	**2,274.3**
Other financial liabilities	-	277.3	-	-	**277.3**
	109,584.4	**777.6**	**-**	**-**	**110,362.0**
Net maturity difference	**(109,166.2)**	**44,307.3**	**43,069.8**	**34,930.4**	**13,141.3**

8. Property and equipment

Property and equipment consists of land, buildings, computer equipment, other equipment and related projects in progress.

Accounting policy

Property and equipment is measured at cost less accumulated depreciation, except for land, which is not depreciated, and is net of any related impairment losses. Projects in progress are measured at cost but are not depreciated until the asset is available for use. Cost includes expenditures that are directly attributable to the acquisition or construction of the asset.

When major components of an item of property and equipment have different useful lives, they are accounted for as separate items of property and equipment. Upon replacing a significant part of an item of property and equipment, the carrying amount of the replaced part is derecognized and any gain or loss is recognized in depreciation.

Depreciation is calculated using the straight-line method and is applied over the estimated useful lives of the assets. The estimated useful lives and the depreciation method are reviewed at the end of each annual reporting period, with the effect of any changes in estimate being accounted for on a prospective basis. The estimated useful lives for major asset classes are as follows:

Buildings	15 to 65 years
Computer equipment	3 to 10 years
Other equipment	5 to 20 years

Leasehold improvements (included in *Other equipment*) are depreciated over the lesser of their useful life or the term of the lease.

Accounting estimates and judgments

Judgment is required when determining

- which costs are directly attributable to a fixed asset (e.g., labour, overhead, etc.);
- when income or expenses derived from projects in progress are recognized as part of the asset cost;
- the appropriate useful life over which such costs should be depreciated; and
- whether existing assets are subject to impairment.

Supporting information

Carrying value of property and equipment

2018	Land and buildings	Computer equipment	Other equipment	Total
Cost				
Balances as at December 31, 2017	578.5	82.4	81.9	**742.8**
Additions	-	60.1	8.5	**68.6**
Disposals	(2.7)	-	(13.2)	**(15.9)**
Transfers to other asset categories	-	-	-	**-**
Balances as at December 31, 2018	**575.8**	**142.5**	**77.2**	795.5
Depreciation				
Balances as at December 31, 2017	(106.1)	(34.0)	(33.7)	**(173.8)**
Depreciation expense	(18.3)	(12.7)	(6.3)	**(37.3)**
Disposals	2.7	-	13.2	**15.9**
Transfers to other asset categories	-	-	-	**-**
Balances as at December 31, 2018	**(121.7)**	**(46.7)**	**(26.8)**	(195.2)
Carrying amounts				
Balances as at December 31, 2017	472.4	48.4	48.2	**569.0**
Balances as at December 31, 2018	**454.1**	**95.8**	**50.4**	600.3

2018	Land and buildings	Computer equipment	Other equipment	Total
Projects in progress				
Included in *Carrying amounts* at December 31, 2018	1.0	60.4	8.3	**69.7**
Commitments at December 31, 2018	1.1	11.8	4.2	**17.1**

The commitments at December 31, 2018, consist primarily of computer and mechanical equipment related to resiliency initiatives.

2017	Land and buildings	Computer equipment	Other equipment	Total
Cost				
Balances as at December 31, 2016	560.8	68.8	113.8	**743.4**
Additions	21.2	11.4	10.4	**43.0**
Disposals	(2.9)	(1.0)	(37.0)	**(40.9)**
Transfers to other asset categories	(0.6)	3.2	(5.3)	**(2.7)**
Balances as at December 31, 2017	**578.5**	**82.4**	**81.9**	**742.8**
Depreciation				
Balances as at December 31, 2016	(90.3)	(23.1)	(59.3)	**(172.7)**
Depreciation expense	(18.7)	(11.6)	(11.3)	**(41.6)**
Disposals	2.9	0.7	36.9	**40.5**
Transfers to other asset categories	-	-	-	**-**
Balances as at December 31, 2017	**(106.1)**	**(34.0)**	**(33.7)**	**(173.8)**
Carrying amounts				
Balances as at December 31, 2016	470.5	45.7	54.5	**570.7**
Balances as at December 31, 2017	**472.4**	**48.4**	**48.2**	**569.0**

2017	Land and buildings	Computer equipment	Other equipment	Total
Projects in progress				
Included in *Carrying amounts* at December 31, 2017	-	3.8	3.1	**6.9**
Commitments at December 31, 2017	0.9	13.6	1.1	**15.6**

9. Intangible assets

Intangible assets are identifiable non-monetary assets without physical substance that represent future economic benefits and are controlled by the Bank. The Bank's intangible assets consist of computer software that has been internally developed or externally acquired.

Accounting policy

Costs that are directly associated with the internal development of identifiable software are recognized as intangible assets if, in management's best estimate, the asset can technically be completed and will provide a future economic benefit to the Bank. Subsequent expenditure is capitalized only when it increases the future economic benefits embodied in the specific asset to which it relates.

Computer software assets that are acquired by the Bank and have finite useful lives are measured at cost less accumulated amortization and impairment losses.

Amortization is calculated using the straight-line method and is applied over the estimated useful lives of the assets, which may vary from 3 to 15 years. The estimated useful life and amortization method are reviewed at the end of each annual reporting period, with the effect of any changes in the estimate being accounted for on a prospective basis.

Accounting estimates and judgments

Judgment is required when determining

- which costs related to non-tangible expenditures are eligible for capitalization;
- the appropriate useful life over which such costs should be amortized; and
- whether existing assets are subject to impairment.

Supporting information

Carrying value of intangible assets

2018	Internally generated software	Other software	Total
Cost			
Balances as at December 31, 2017	58.7	71.6	130.3
Additions	4.0	9.7	13.7
Disposals	-	-	-
Transfers to other asset categories	-	-	-
Balances as at December 31, 2018	**62.7**	**81.3**	**144.0**
Amortization			
Balances as at December 31, 2017	(44.7)	(45.5)	(90.2)
Amortization expense	(2.7)	(7.1)	(9.8)
Disposals	-	-	-
Transfers to other asset categories	-	-	-
Balances as at December 31, 2018	**(47.4)**	**(52.6)**	**(100.0)**
Carrying amounts			
Balances as at December 31, 2017	**14.0**	**26.1**	**40.1**
Balances as at December 31, 2018	**15.3**	**28.7**	**44.0**

2018	Internally generated software	Other software	Total
Projects in progress			
Included in *Carrying amounts* at December 31, 2018	0.2	7.8	8.0
Commitments at December 31, 2018	7.4	1.4	8.8

2017	Internally generated software	Other software	Total
Cost			
Balances as at December 31, 2016	53.4	63.1	**116.5**
Additions	5.3	5.8	**11.1**
Disposals	-	-	**-**
Transfers from other asset categories	-	2.7	**2.7**
Balances as at December 31, 2017	**58.7**	**71.6**	**130.3**
Amortization			
Balances as at December 31, 2016	(42.5)	(37.8)	**(80.3)**
Amortization expense	(2.2)	(7.7)	**(9.9)**
Disposals	-	-	**-**
Transfers from other asset categories	-	-	**-**
Balances as at December 31, 2017	**(44.7)**	**(45.5)**	**(90.2)**
Carrying amounts			
Balances as at December 31, 2016	10.9	25.3	**36.2**
Balances as at December 31, 2017	**14.0**	**26.1**	**40.1**

2017	Internally generated software	Other software	Total
Projects in progress			
Included in *Carrying amounts* at December 31, 2017	7.7	3.7	**11.4**
Commitments at December 31, 2017	1.2	3.1	**4.3**

10. Other assets

Other assets is composed of bank note inventory (production materials, including the polymer substrate and ink), the net defined-benefit asset related to the Bank of Canada Pension Plan, and all other assets, which are primarily prepaid expenses.

Accounting policy

Bank note inventory is measured at the lower of the cost or the net realizable value. The cost to produce finished bank notes is expensed as incurred. All other assets are recorded at amortized cost using the effective interest method.

The accounting policy for the net defined-benefit asset related to the Bank of Canada Pension Plan is discussed in Note 14.

Supporting information

Composition of other assets

As at December 31	Note	2018	2017
Bank note inventory		12.1	7.2
Net defined-benefit asset	14	149.5	109.0
All other assets		28.1	16.4
Total other assets		**189.7**	**132.6**

11. Bank notes in circulation

Bank notes in circulation represents those bank notes that have been produced and issued for use in the economy. They are non-interest-bearing liabilities and are due on demand.

Accounting policy

Bank notes in circulation are recorded at face value. The fair value of bank notes in circulation approximates their carrying value. The Bank's assessment of related financial risks is discussed in Note 7.

Supporting information

In accordance with the *Bank of Canada Act*, the Bank has the sole authority to issue bank notes for circulation in Canada. Currently, bank notes are issued in denominations of $5, $10, $20, $50 and $100. Other bank notes, as described in the table below, are denominations that are still in circulation but are no longer issued.

The face value of notes in circulation, presented by denomination, is as follows:

As at December 31	2018	2017
$5	1,428.7	1,346.9
$10	1,632.8	1,503.4
$20	19,570.2	19,946.4
$50	16,405.6	14,845.5
$100	50,111.6	47,099.1
Other bank notes	1,044.2	1,114.6
Total bank notes in circulation	**90,193.1**	**85,855.9**

12. Deposits

Deposits is composed of deposits by the Government of Canada, members of Payments Canada and other financial institutions, and also includes unclaimed balances remitted to the Bank in accordance with governing legislation. The Bank pays interest on the deposits for the Government of Canada, members of Payments Canada and some other financial institutions at short-term market rates. The Bank pays interest on unclaimed balances in accordance with governing legislation. Interest expense on deposits is included in net income.

Deposits from the Government of Canada were $21,725.6 million as at December 31, 2018 ($21,454.2 million as at December 31, 2017). They consist of $1,725.6 million for operational balances and $20,000.0 million held for the prudential liquidity-management plan ($1,454.2 million and $20,000.0 million, respectively, at December 31, 2017).

The Bank's policies on classifying and measuring financial instruments are discussed in Note 3, and related financial risks are discussed in Note 7.

13. Other liabilities

Other liabilities consists of accounts payable and accrued liabilities, provisions and the net defined-benefit liability of the Bank of Canada Supplementary Pension Arrangement and other employee benefit plans.

Accounting policy

The Bank's policies on classifying and measuring financial instruments (accounts payable and accrued liabilities, within the context of *Other liabilities*) are discussed in Note 3, and related financial risks are discussed in Note 7. The Bank's accounting policy for the net defined-benefit liability of the Bank of Canada Pension Supplementary Arrangement and other employee benefit plans is discussed in Note 14.

A provision is recognized if, as a result of a past event, the Bank has a present legal or constructive obligation that can be estimated reliably as at the statement of financial position date, and it is probable that an outflow of economic benefits will be required to settle the obligation.

Accounting estimates and judgments

Estimates for provisions consider the present value of the cash flows expected to be required to settle the obligation.

Supporting information

Composition of other liabilities

As at December 31	Note	2018	2017
Surplus payable to the Receiver General for Canada		225.9	204.2
Net defined-benefit liability	14		
Pension benefit plans		66.2	64.4
Other benefit plans		160.9	178.3
All other liabilities and provisions		77.3	73.1
Total other liabilities		**530.3**	**520.0**

Surplus payable to the Receiver General for Canada

The following table reconciles the opening and closing balances of the surplus payable to the Receiver General for Canada, which is based on the requirements of section 27 of the *Bank of Canada Act* and the Bank's remittance agreement with the Minister of Finance, as discussed in Note 17.

As at December 31	Note	2018	2017
Opening balance at beginning of year (as restated)	2	213.9	468.8
Remittance of surplus to the Receiver General for Canada		(1,204.2)	(1,193.7)
Surplus for the Receiver General for Canada		1,216.2	929.1
Closing balance at end of year		**225.9**	**204.2**

14. Employee benefits

The Bank provides employees with several employee benefit plans, consisting of short-term employee benefits, post-employment benefits, long-term employee benefits and termination benefits.

The Bank of Canada Pension Plan (the Pension Plan) was established under the provisions of the *Bank of Canada Act*, 1934, and has remained in accordance with the *Bank of Canada Act* as subsequently amended. The Pension Plan is a registered pension plan as defined in the *Income Tax Act* (ITA) and, consequently, is not subject to income taxes.

The Bank of Canada Supplementary Pension Arrangement (SPA) was created to pay pension benefits to Bank employees with annual earnings above the amount covered by the Pension Plan, as provided under the ITA. The Supplementary Trust Fund, which holds and invests the funds of the SPA, is a retirement compensation arrangement as defined in the ITA.

The Bank is the administrator of the pension plans. The Bank's Board of Directors has established a Pension Committee and has delegated to it the responsibility for carrying out the Bank's duties as administrator of the plans, including adherence to the guidelines established in the Statement of Investment Policy and Procedures (SIPP) for each plan, which are approved annually by the Board. A separate trust fund has been established for each plan to receive and invest contributions and pay benefits due under the plans. The assets cannot be used for any purpose other than payment of pension benefits and related administration fees.

The Bank also sponsors other benefit plans provided to employees, specifically the unfunded post-employment defined-benefit plans for life insurance and eligible health and dental benefits, the unfunded long-service benefit program for employees hired before January 1, 2003, and the long-term disability program.

Accounting policy

Employee benefits refer to all forms of consideration given by an entity in exchange for services rendered by employees or for the termination of employment as described in the following table:

Category	Description	Measurement and recognition
Short-term employee benefits	Benefits expected to settle wholly within 12 months of when the service was rendered. Refers to salary, bonus, annual leave, health benefits, dental care and statutory benefits.	The liability and related expense are recognized in the reporting period in which they occur and are measured on an undiscounted basis.

Category	Description	Measurement and recognition
Post-employment benefits	Benefits payable after the completion of employment (pension plans and other benefits). Refers to ▪ the Pension Plan, ▪ the SPA, ▪ life insurance and eligible health and dental benefits, and ▪ the long-service benefit program.	The net asset or liability recognized is composed of the present value of the defined-benefit obligation less the fair value of plan assets, when applicable. The defined-benefit obligation is calculated by discounting estimated future cash flows using an appropriate interest rate.* The plan assets of funded benefit plans are measured at their fair value at the end of the reporting period. The expense recognized in net income for the reporting period consists of current service costs, past service costs, net interest on the net defined-benefit liability/asset, gains or losses arising on settlement (if applicable) and administrative costs. Net interest is calculated by applying the discount rate to the net defined-benefit liability/asset. Remeasurements† are recognized immediately in other comprehensive income in the reporting period in which they occur and are accumulated in *Equity*. Remeasurements comprise actuarial gains and losses, the return on plan assets and the effect of the asset ceiling (if applicable). They exclude amounts included in net interest on the net defined-benefit liability/asset. Past service costs are recognized at the earlier of when the plan amendment or curtailment occurs, or when the Bank recognizes related restructuring costs or termination benefits.
Long-term employee benefits	Refers to the long-term disability program.	The liability recognized is the present value of the defined-benefit obligation, calculated by discounting estimated future cash flows using an appropriate interest rate.* The expense recognized in net income for the reporting period consists of current service costs, interest costs, remeasurement gains and losses, and past service costs. The current service costs and the benefit obligations of the plan are actuarially determined on an event-driven accounting basis.
Termination benefits	Benefits provided in exchange for termination.	The liability and related expense is recognized in net income at the earlier of when the Bank can no longer withdraw the offer of the termination benefit or when the Bank recognizes any related restructuring costs.

* The interest rate used is based on those of AA-rated Canadian corporate bonds with terms to maturity approximating the estimated duration of the obligation.

† The current service costs and the benefit obligations of the plans are actuarially determined using the projected unit credit method.

Accounting estimates and judgments

The cost of the defined-benefit pension plans and other benefit plans and the present value of the benefit obligations are determined using actuarial valuations. An actuarial valuation involves using various assumptions determined by management and reviewed annually by the actuary that may differ from future developments. These assumptions include

- discount rates,
- inflation rates,
- rates of compensation increases,
- rates of pension increases,
- medical cost trends, and
- mortality rates.

The most recent actuarial valuation for the purposes of funding the pension plans was done as at January 1, 2018, and the next required valuation will be as at January 1, 2019. Benefits are based on years of service and the average full-time salary for the best five consecutive years. They are indexed to reflect changes in the consumer price index on the date payments begin and each January 1 thereafter.

The significant assumptions used are as follows (on a weighted-average basis):

	Pension benefit plans		Other benefit plans	
As at December 31	**2018**	**2017**	**2018**	**2017**
Defined-benefit obligation				
Discount rate*	4.00%	3.50%	3.90%	3.44%
Inflation rate†	2.00%	2.00%	n.a.	n.a.
Rate of compensation increase	3.00% + merit	3.00% + merit	3.00% +merit	3.00% + merit
Mortality table‡	CPM2014Publ (scale CPM-B)	CPM2014Publ (scale CPM-B)	CPM2014Publ (scale CPM-B)	CPM2014Publ (scale CPM-B)
Benefit plan expense				
Discount rate*	3.50%	3.90%	3.10 – 3.50%	3.20 – 4.00%
Inflation rate†	2.00%	2.00%	n.a.	n.a.
Rate of compensation increase	3.00% + merit	3.00% + merit	3.00% +merit	3.20% + merit
Assumed medical cost trend				
Medical cost trend rate	n.a.	n.a.	5.12 – 4.00%	5.57 – 4.50%
Year that the rate reaches the ultimate trend rate	n.a.	n.a.	2040	2029

* The parameter most subject to change is the discount rate, which is determined by reference to Canadian AA-rated corporate bonds with terms to maturity approximating the duration of the obligation. The weighted-average duration of the defined-benefit obligation is approximately 17 to 18 years for the pension benefit plans (17 to 18 years in 2017) and 6 to 22 years for the other benefit plans (6 to 23 years in 2017).

† "Other benefit plans" does not include an inflation rate adjustment since the adjustment is a component of Assumed medical cost trend.

‡ In 2018, the assumption for life expectancy for the plan valuations assumes that a male member reaching 60 will live for approximately 28 years (27 years in 2017) and a female member approximately 30 years (29 years in 2017).

The mortality assumptions used in the plan valuations are based on tables issued by the Canadian Institute of Actuaries. Actuarial adjustments to the tables are applied when recommended by the plan's actuaries.

Sensitivity analysis

Due to the complexities involved in the valuation and its long-term nature, a defined-benefit obligation is highly sensitive to changes in these assumptions.

The following table outlines the potential impact of changes in certain key assumptions used in measuring the defined-benefit obligations and benefit costs.

	Increase (decrease) in obligation*	
	Pension benefit plans	Other benefit plans
Discount rate		
Impact of 0.10% increase	(28.4)	(2.6)
Impact of 0.10% decrease	29.2	2.6
Rate of compensation increase		
Impact of 0.10% increase	5.3	0.3
Impact of 0.10% decrease	(5.2)	(0.3)
Mortality rate		
Impact of 10.00% increase	(35.2)	(2.0)
Impact of 10.00% decrease	39.0	2.4
Inflation rate		
Impact of 0.10% increase	26.0	n.a.
Impact of 0.10% decrease	(25.4)	n.a.
Medical cost trend rates		
Impact of 1.00% increase	n.a.	26.4
Impact of 1.00% decrease	n.a.	(20.6)

* The sensitivity analysis presented in this table is hypothetical and should be used with caution. The analysis is based on a change in assumptions while holding all other assumptions constant. In practice, this is unlikely to occur, and changes in some of the assumptions may be correlated. The method and types of assumptions used in preparing the sensitivity analysis did not change compared with the previous year.

Supporting information

The changes to the net defined-benefit asset (liability) for the year are as follows:

	Pension benefit plans		Other benefit plans	
	2018	2017	2018	2017
Fair value of plan assets				
Fair value of plan assets as at January 1	1,868.3	1,701.6	-	-
Interest income	65.0	66.2	-	-
Remeasurement gains (losses)				
Return on plan assets*	(85.0)	117.1	-	-
Bank contributions	21.4	29.6	-	-
Employee contributions	16.0	12.2	-	-
Benefit payments and transfers	(57.3)	(56.3)	-	-
Administration costs	(2.3)	(2.1)	-	-
Fair value of plan assets as at December 31	**1,826.1**	**1,868.3**	**-**	**-**
Defined-benefit obligation				
Benefit obligation as at January 1	1,823.7	1,608.6	178.3	172.0
Current service cost	50.9	42.2	5.4	5.3
Interest cost	64.8	63.3	6.2	6.7
Past service cost	-	-	-	0.8
Employee contributions	16.0	12.2	-	-
Remeasurement (gains) losses				
Arising from changes in demographic assumptions	-	(2.7)	-	-
Arising from changes in experience	(1.4)	41.3	-	-
Arising from changes in financial assumptions	(153.9)	115.1	(21.6)	1.0
Benefit payments and transfers	(57.3)	(56.3)	(7.4)	(7.5)
Defined-benefit obligation as at December 31	**1,742.8**	**1,823.7**	**160.9**	**178.3**
Net defined-benefit asset (liability)	**83.3**	**44.6**	**(160.9)**	**(178.3)**
Net defined-benefit asset	149.5	109.0	-	-
Net defined-benefit liability	(66.2)	(64.4)	(160.9)	(178.3)
Net defined-benefit asset (liability)	**83.3**	**44.6**	**(160.9)**	**(178.3)**
Benefit plan expenses recognized in net income	53.0	41.4	11.1	13.3
Remeasurement losses (gains) recognized in other comprehensive income	(70.3)	36.6	(21.1)	0.5

* The return on plan assets excludes interest income.

The defined-benefit obligation, presented by membership category, is as follows:

As at December 31	Pension benefit plans 2018	2017	Other benefit plans 2018	2017
Membership category				
Active members	694.7	757.6	77.7	87.8
Pensioners	949.8	956.1	83.2	90.5
Deferred members	98.3	110.0	-	-
Total defined-benefit obligation	**1,742.8**	**1,823.7**	**160.9**	**178.3**

The cumulative remeasurement losses recognized in other comprehensive income are as follows:

As at December 31	Pension benefit plans 2018	2017	Other benefit plans 2018	2017
Cumulative remeasurement losses recognized, beginning of year	(248.8)	(212.2)	(17.3)	(16.8)
Remeasurement gains (losses) recognized in current year	70.3	(36.6)	21.1	(0.5)
Cumulative remeasurement gains (losses) recognized, end of year	**(178.5)**	**(248.8)**	**3.8**	**(17.3)**

Pension benefit plans asset mix

The pension plans' SIPPs require that investments be held in a diversified mix of asset types and also set out requirements for investment eligibility. The diversification of assets serves to decrease the variations in the expected return performance of the portfolio. For the Pension Plan, the current practice is to conduct an asset-liability modelling (ALM) study every three years. The ALM assists the Pension Committee in establishing an asset allocation that is consistent with the Pension Plan's objectives and the Bank's risk tolerance. The latest ALM report was prepared and presented to the Pension Committee in September 2018.

The pension plans' investments are subject to credit, liquidity and market risks, the latter being the most significant risk due to the volatility of the assets. The pension plans' liabilities are calculated using a discount rate determined by reference to Canadian AA-rated corporate bonds; a rate of return on plan assets inferior to the discount rate would result in a deficit. Requirements for asset diversification and investment eligibility serve as basic risk management tools for the investment portfolio.

The pension benefit plans assets consist of the following:

As at December 31	2018 Quoted	2018 Unquoted	2018 Total	2018 %	2017 Quoted	2017 Unquoted	2017 Total	2017 %
Money market instruments	10.5	-	**10.5**	0.6	11.9	-	**11.9**	0.6
Equity instruments								
Canadian equity funds	298.3	-	**298.3**	16.3	333.8	-	**333.8**	17.9
Foreign equity funds	474.1	-	**474.1**	26.0	573.2	-	**573.2**	30.7
Debt instruments*								
Securities issued or guaranteed by the Government of Canada	134.5	-	**134.5**	7.4	137.4	-	**137.4**	7.3
Securities issued or guaranteed by a provincial government	130.2	-	**130.2**	7.1	117.1	-	**117.1**	6.3
Fixed-income funds	399.1	-	**399.1**	21.9	392.9	-	**392.9**	21.0
Other securities	6.4	-	**6.4**	0.3	7.9	-	**7.9**	0.4
Real estate funds	-	332.9	**332.9**	18.2	-	257.2	**257.2**	13.8
SPA statutory deposit	-	40.1	**40.1**	2.2	-	36.9	**36.9**	2.0
	1,453.1	**373.0**	**1,826.1**	**100.0**	**1,574.2**	**294.1**	**1,868.3**	**100.0**

* Debt instruments consist of fixed-income securities and inflation-linked assets.

Total cash payments

Regulations governing federally regulated pension plans establish certain solvency requirements calculated under the assumption that the plans are terminated at the valuation date. In addition, actuarial valuations for funding purposes are required annually under the *Pension Benefits Standards Act*. The actuarial valuations of the Pension Plan completed as at January 1, 2018, reflect the Pension Plan's strong performance in 2017.

On a solvency basis (which assesses the Pension Plan on the assumption that it would be terminated on the date of the valuation), the funding status of the Pension Plan had a solvency ratio of 111 per cent (104 per cent as at January 1, 2017). The valuation reported a solvency surplus of $169.4 million and a three-year average solvency surplus of $86.7 million ($66.5 million and $41.8 million, respectively, for the valuation completed at January 1, 2017).

On a going-concern basis (which assesses the Pension Plan over the long term on the assumption that it will operate indefinitely), the Pension Plan had a funding ratio of 140 per cent (135 per cent as at January 1, 2017). The valuation reported a going-concern surplus of $478.1 million ($410.2 million for the valuation completed at January 1, 2017).

The funding requirements of the Pension Plan are determined by the going-concern and solvency valuation results. Given the Pension Plan's January 1, 2018, funding and solvency ratios, regulations under the ITA prohibited the Bank from making further contributions after June 2018. Bank contributions to the Pension Plan will resume depending on the results of actuarial valuations in subsequent years, with the next one scheduled for January 1, 2019. Contributions in 2019 will be based on the actuarial valuation as at January 1, 2019, and the Bank anticipates that, if the results of 2018 are in line with actuarial assumptions, its contributions will not resume in 2019 ($14.0 million in contributions to the Pension Plan were made by the Bank in 2018).

15. Leases

The Bank occupies leased premises throughout Canada, including in Ottawa, Halifax, Montréal, Toronto, Calgary and Vancouver.

Accounting policy

Payments made for leases classified as operating leases are charged to net income on a straight-line basis over the term of the lease. The Bank is not party to any significant finance leases.

Supporting information

The minimum payments are determined at the beginning of the lease and may vary during its term. Contingent rent on premises leases is based on building operating costs. The expiry dates vary for each lease, ranging from fiscal 2019 to 2027.

The future minimum payments for rent, real estate taxes and building operations as at December 31, 2018, are presented below.

As at December 31	2018
Due within one year	3.9
Due within one to five years	14.8
Due later than five years	6.9
Total premises lease commitments	**25.6**
Lease payments expensed	**3.8**

16. Commitments, contingencies and guarantees

Commitments

A commitment is an enforceable, legally binding agreement to make a payment in the future for the purchase of goods or services. These amounts are not recorded in the statement of financial position since the Bank has not yet received the goods or services from the supplier. The amounts below are what the Bank has committed to pay based on current expected contract prices.

Commitments related to *Property and equipment, Intangible assets* and *Leases* are discussed in Note 8, Note 9 and Note 15, respectively.

The Bank has a long-term contract with an outside service provider for retail debt services that expires in 2021. As at December 31, 2018, fixed payments totalling $50.9 million remained, plus a variable component based on the volume of transactions.

The Bank has long-term contracts with outside service providers for business recovery and data centre services, which expire between 2022 and 2026. As at December 31, 2018, fixed payments totalling $49.5 million remained.

As at December 31, 2018, the total minimum payments for long-term contracts, other than leases, property and equipment, and intangible assets, were as follows:

As at December 31	2018
Due within one year	33.9
Due within one to three years	57.3
Due within three to five years	7.0
Thereafter	2.2
Total minimum payments	**100.4**

Foreign currency swap facilities

The Bank is a counterparty to several foreign currency swap facilities as follows:

As at December 31, 2018	Denominated in	Expiry date	Maximum available
Bilateral liquidity swap facilities with other central banks			
Bank of England	British pounds	No expiry	Unlimited
Bank of Japan	Japanese yen	No expiry	Unlimited
Bank of Korea	South Korean won	No expiry	Unlimited
European Central Bank	euros	No expiry	Unlimited
Federal Reserve Bank of New York	US dollars	No expiry	Unlimited
Swiss National Bank	Swiss francs	No expiry	Unlimited
People's Bank of China	renminbi	November 8, 2020	200,000.0
Other swap facilities			
Exchange Fund Account of Canada	Canadian dollars	No expiry	Unlimited
Federal Reserve Bank of New York	US dollars	December 12, 2019	2,000.0
Banco de México	Canadian dollars	December 12, 2019	1,000.0
Bank for International Settlements	Canadian dollars	No expiry	100.0

Bilateral liquidity swap facilities with other central banks
The bilateral liquidity swap facilities were established to provide liquidity in each jurisdiction in any of their currencies, should market conditions warrant.

These facilities can be structured as either a Canadian-dollar liquidity swap or a foreign-currency liquidity swap arrangement and can be initiated by either party. The exchange rate applicable to the swap facilities is based on the prevailing market spot exchange rate as mutually agreed upon by the parties.

Other swap facilities
The other swap facilities established with the Federal Reserve Bank of New York and with the Banco de México, which expire on December 12, 2019, have indefinite terms and are subject to annual renewal.

The Bank is party to a standing foreign currency swap facility with the Exchange Fund Account of Canada. There is no stated maximum amount under this agreement.

The Bank is also party to a swap facility with the BIS for operational purposes. Transactions executed under this agreement are generally one business day in duration. The BIS swap was accessed for operational purposes in 2018 and was not accessed in 2017. None of the other liquidity or other swaps were accessed, by either party, in 2018 or 2017. No related commitments existed as at December 31, 2018 ($nil as at December 31, 2017).

Contingencies

Contingent liabilities are possible obligations that could result from uncertain future events outside of the Bank's control, or present obligations not recognized because the amount cannot be adequately measured or payment is not probable. Contingent liabilities are not recognized in the financial statements but are disclosed if significant.

BIS shares

The 9,441 shares in the BIS have a nominal value of 5,000 Special Drawing Rights per share, of which 25% (i.e., SDR1,250) is paid up. The balance of SDR3,750 is callable at three months' notice by a decision of the BIS Board of Directors. The Canadian equivalent of this contingent liability was $67.2 million as at December 31, 2018 ($63.3 million at December 31, 2017) based on prevailing exchange rates.

Guarantees

LVTS guarantee

The LVTS is a large-value payment system, owned and operated by Payments Canada. Any deposit-taking financial institution that is a member of Payments Canada can participate in the LVTS, provided that it maintains a settlement account at the Bank of Canada, has the facilities to pledge collateral for LVTS purposes, and meets certain technical requirements. The system's risk-control features, which include caps on net debit positions and collateral to secure the use of overdraft credit, are sufficient to permit the system to obtain the necessary liquidity to settle in the event of the failure of the single LVTS participant with the largest possible net amount owing. The Bank guarantees to provide this liquidity, and, in the event of a single-participant failure, the liquidity loan will be fully collateralized.

In the extremely unlikely event that there were defaults by more than one participant during the LVTS operating day in an aggregate amount greater than the largest possible net amount owing by a single participant, there would not likely be enough collateral to secure the amount of liquidity that the Bank would need to provide to settle the system. This may result in the Bank having unsecured claims on the defaulting participants in excess of the amount of collateral pledged to the Bank to cover the liquidity loans. The Bank would have the right, as an unsecured creditor, to recover any amount of its liquidity loan that was unpaid.

Since the guarantee would be called upon only if a series of extremely low-probability events were to occur, the likelihood of the guarantee being executed is remote. Furthermore, the Bank's maximum exposure under this guarantee is not determinable, as the extent of exposure would be based on the unique circumstances of the failure event. No amount has ever been paid as a result of this guarantee. For that reason, no amount is or has ever been provided for in the liabilities of the Bank.

Other indemnification agreements

In the normal course of operations, the Bank includes indemnification clauses within agreements with various counterparties in transactions such as service agreements, software licences, leases and purchases of goods. Under these agreements, the Bank agrees to indemnify the counterparty against loss or liability arising from acts or omissions of the Bank in relation to the agreement. The nature of the indemnification agreements prevents the Bank from making a reasonable estimate of the maximum potential amount that the Bank would be required to pay. No indemnification amount has ever been paid under such agreements.

Insurance

The Bank does not normally insure against direct risks of loss to the Bank, except for potential liabilities to third parties, and when there is a legal or contractual obligation to carry insurance.

Any costs arising from risks not insured are recognized in the financial statements if, due to a past event, the Bank has a present legal or constructive obligation that can be estimated reliably as at the reporting date, and it is probable that an outflow of economic benefits will be required to settle the obligation.

17. Equity

The Bank manages its capital to ensure compliance with the *Bank of Canada Act*. There were no other externally imposed capital requirements at the end of the reporting year.

The Bank's equity is composed of the following elements, as shown below.

As at December 31	2018	2017
Share capital	5.0	5.0
Statutory reserve	25.0	25.0
Special reserve	100.0	100.0
Investment revaluation reserve*	395.3	365.6
Retained earnings	-	-
Total equity	**525.3**	**495.6**

* The investment revaluation reserve was previously known as the available-for-sale reserve under IAS 39, as discussed in Note 2.

Share capital

The authorized capital of the Bank is $5.0 million divided into 100,000 shares with a par value of $50 each. The shares are fully paid and have been issued to the Minister of Finance, who holds them on behalf of the Government of Canada.

Statutory reserve

The statutory reserve was accumulated out of net income until it reached the stipulated maximum amount of $25.0 million in 1955, consistent with the requirement of section 27 of the *Bank of Canada Act*.

Special reserve

Following an amendment to section 27.1 of the *Bank of Canada Act*, the special reserve was created in 2007 to offset potential unrealized valuation losses due to changes in the fair value of the Bank's investment portfolio. An initial amount of $100 million was established at that time, and the reserve is subject to a ceiling of $400 million.

The amount held in the special reserve is reviewed regularly for appropriateness using value-at-risk analysis and scenario-based stress tests and may be amended, pursuant to a resolution passed by the Board of Directors.

Investment revaluation reserve

The investment revaluation reserve (previously the available-for-sale reserve under IAS 39, as discussed in Note 2) represents the net unrealized fair value gains of each of the Bank's financial assets classified and measured at FVOCI, as shown below.

As at December 31	2018	2017
Government of Canada treasury bills	n.a.	-
BIS shares	395.3	365.6
Total investment revaluation reserve	**395.3**	**365.6**

Retained earnings

The net income of the Bank, less any allocation to reserves, is considered ascertained surplus (surplus) and is transferred to the Receiver General for Canada, consistent with the requirement of section 27 of the *Bank of Canada Act*. Changes to the surplus payable to the Receiver General for Canada are presented in Note 13.

The Bank's remittance agreement with the Minister of Finance was designed to enable the Bank to manage its equity requirements with consideration given to the volatility arising from fair value changes and remeasurements, which are recorded in other comprehensive income. This agreement allows the Bank to withhold from its remittance to the Receiver General for Canada any increase in cumulative net unrealized losses on financial assets that are classified and measured at FVOCI, unrealized remeasurements of the net defined-benefit liability/asset on defined-benefit plans, and other unrealized or non-cash losses arising from changes in accounting standards or legislation. Any decrease in previously withheld cumulative net unrealized non-cash losses is added to the remittance.

During 2018, the Bank remitted $91.4 million of previously withheld remittances to the Receiver General for Canada (in 2017, withheld $46.6 million). As at December 31, 2018, $54.9 million in withheld remittances was outstanding ($156.0 million as at December 31, 2017, and $146.3 million as at January 1, 2018, as a result of the transition to IFRS 9 as described in Note 2).

18. Related parties

Persons or entities are considered related parties to the Bank if they are

- under common ownership to the Government of Canada;
- a post-employment benefit plan for the benefit of Bank employees; or
- a member of key management personnel, which include members of the Executive Council, Senior Management Council or the Board of Directors, and their families.

Government of Canada

The Bank is related in terms of common ownership to all Government of Canada departments, agencies and Crown corporations. To achieve its monetary policy objectives, the Bank maintains a position of structural and functional independence from the Government of Canada through its ability to fund its own operations without external assistance, and through its management and governance.

In the normal course of its operations, the Bank enters into transactions with related parties, and significant transactions and balances are presented in these financial statements. Not all transactions between the Bank and government-related entities have been disclosed, as permitted by the partial exemption available to wholly owned government entities in International Accounting Standard 24 *Related Party Disclosures* (IAS 24).

The Bank provides funds-management, fiscal agent and banking services to the Government of Canada, as mandated by the *Bank of Canada Act*, and does not recover the costs of these services.

Bank of Canada Pension Plan

The Bank provides management, investment and administrative support to the Pension Plan. Services in the amount of $1.0 million ($0.9 million in 2017) were fully recovered from the Pension Plan in 2018. Disclosures related to the Bank's post-employment benefit plans are included in Note 14.

Key management personnel and compensation

The key management personnel responsible for planning, directing and controlling the activities of the Bank are the members of the Executive Council, the Senior Management Council and the Board of Directors. The number of key management personnel as at December 31, 2018, was 28 (30 in 2017).

The compensation of key management personnel is presented in the following table. Short-term employee benefits and post-employment benefits apply to Bank employees only.

As at December 31	2018	2017
Short-term employee benefits	5.9	6.6
Post-employment benefits	2.0	1.8
Directors' fees	0.3	0.3
Total compensation	**8.2**	**8.7**

There were no other long-term employee benefit costs or termination benefits related to key management personnel in 2018 ($nil in 2017).

Bank of Canada offices

Head office

Bank of Canada
234 Wellington Street
Ottawa, ON K1A 0G9

Regional offices

Atlantic Provinces
1701 Hollis Street, Suite 1300
Halifax, NS B3J 3M8

Quebec
1501 McGill College Avenue,
Suite 2030
Montréal, QC H3A 3M8

Ontario
150 King Street West, Suite 2000
Toronto, ON M5H 1J9

Prairie Provinces, Nunavut and Northwest Territories
308–4th Avenue S.W., Suite 2411
Calgary, AB T2P 0H7

British Columbia and Yukon
200 Granville Street, Suite 2160
Vancouver, BC V6C 1S4

New York Office
Canadian Consulate General
1251 Avenue of the Americas
New York, NY 10020-1151

Website

Timely access to press releases, speeches, major publications and current financial data is available on the Bank's website.
bankofcanada.ca

Public information

General inquiries about the Bank of Canada
Telephone: 1-800-303-1282
Fax: 613-782-7713
Email: info@bankofcanada.ca

Information on unclaimed balances

Telephone: 1-800-303-1282
Fax: 613-782-7713
Email: info@bankofcanada.ca
Unclaimed balances website:
bankofcanada.ca/unclaimed-balances/