BANK OF CANADA
BANQUE DU CANADA

ANNUAL REPORT 2019

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Contents

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GOVERNOR'S FOREWORD

2019: Emphasis on stewardship

The Bank of Canada has always prided itself on its stewardship—of the Canadian economy, of course, but also of the organization, its people and its resources. As I approach the end of my seven-year mandate as Governor, I find myself thinking more and more about the situation that I will hand over to the next Governor.

Governor of the Bank of Canada, Stephen S. Poloz.

Let me begin with stewardship of the organization. The Bank manages its resources through its medium-term plan (MTP), which is developed every three years in collaboration with the Board of Directors. Our 12 outside directors bring a wide diversity of experience to our boardroom, from the private and public sectors and from all regions of the country. Development of the MTP includes thinking about alternative futures and ensuring that the Bank is prepared to deal with them. For example, several years ago we decided that the Bank needed to prepare itself for the possibility that bank notes would someday become obsolete. That led us to invest early in experiments using distributed ledger technology (blockchain) and to think through the issues around central bank digital currencies. Today, we believe that cash will remain a popular payment vehicle, but we are already close to having a full contingency plan should it not.

The Bank's MTP is particularly rigorous around resources. We separate our resource plan into three buckets: core operations, investments and new mandates. The operational envelope has been stable for many years, consisting of 1,500 people (plus or minus 1 percent) and a 2 percent cap on annual expenditure growth. Investments are in addition to that and include spending on such things as renewing our headquarters, replacing technology and cyber resilience. For example, replacing our Canada bond auction system requires new purchases, plus some temporary hands to do the build. When the job is done, the system builders and consultants will leave; but some people will need to maintain the system, and they must then become part of the core operational envelope and fit within the cap. New mandates, in contrast, are about new tasks the Bank takes on, such as retail payments system oversight, which is expected to happen in 2020; this will eventually require a permanent increase in our core resource envelope.

This planning framework prevents the sort of incremental thinking and spending that can enter any organization. Investments create temporary bulges in total spending but are overseen directly by management and by the Board of Directors. These extra layers of oversight help to prevent mission creep and cost overruns, especially in technology investments. Initiatives that do not represent an investment or a new mandate must be financed out of the core envelope through efficiency gains or reallocations, which can mean abandoning less important activities. For example, in developing the MTP for 2019–21, our leadership group identified the need to allocate resources dedicated to (1) developing a next-generation macroeconomic forecasting model, (2) creating a concrete contingency plan should issuance of digital currency prove necessary sometime in the future, and (3) advancing our analysis of the implications of climate change. Given these new priorities, our leaders reallocated more than 30 positions within our 1,500-person cap this past year. This was done collaboratively by our cadre of managers. All this fine stewardship is supported by top-notch succession planning and leadership development and a performance and compensation system with a heavy emphasis on leadership behaviours. Personally, I devoted more than 80 hours to one-on-one mentoring of senior leaders in 2019, as agreed with the Board of Directors.

The organization accomplished many important things in 2019. The Bank opened and staffed a new operational site in Calgary, which is designed to take over all essential operations in case of a major disruption in Ottawa. Already, critical operations are being routinely managed jointly or being rotated between the two locations. We launched and began to implement a new cyber security strategy, integrating the Bank's critical role within the Canadian financial system. We also provided material support to Payments Canada's initiative to modernize Canada's core payment systems: the new wholesale system will go live in 2021, and the retail system about two years later. In addition, the Bank pressed on with its own digital transformation, experimenting with several emerging technologies and exploring ways to deploy artificial intelligence and advanced analytics into its routine processes. Nowhere is this more evident than in the Bank's communications. We have broadened the Bank's reach and external impact; we published the first fully digital *Financial System Review* in 2019 and began layering our articles and speeches to make them more accessible and relevant to different types of readers. *The Economy, Plain and Simple* is our first series to use multiple media, and the Bank of Canada Museum set a new attendance record in 2019.

Let us turn now to stewardship of the Canadian economy. Amid the hype and breathless commentary around each variation in the data, one can lose sight of just how

resilient the economy has been. That resilience has been sorely tested over the past three years, mostly through rhetoric and actions related to international trade. This has fostered deep uncertainty about the future of many businesses, in Canada and elsewhere, causing significant pullbacks in business investment and international trade. On top of this, there was yet another downdraft in global and especially Canadian oil prices to start 2019, deepening the already-severe adjustments to lower prices that had been underway since 2015. Finally, 2018 had seen several new prudential measures put in place to manage risks related to mortgages, along with several interest rate hikes. Last year at this time, the Bank was carefully watching to see how these developments would affect the Canadian economy, particularly the housing market.

Inflation is on target and has been there for most of the past two years—a significant achievement in light of the turbulence the economy has been through.

The global economy slowed significantly in 2019, but by year-end there were signs that things were levelling off. Indeed, the Bank expects global economic growth to edge slightly higher in 2020. This does not mean that trade turmoil and related uncertainty are no longer having negative effects: the level of global gross domestic product (GDP) is now permanently lower than it otherwise would have been in the absence of new trade policies. By the end of 2020, we expect the cumulative cost to the world to approach US$1 trillion, or over 1 percent of GDP. However, as companies adapt to the new situation, economic growth should pick up, albeit more moderately and from a lower level of output.

Despite all this, the Canadian economy grew just a touch less during 2019 than we expected a year ago. This is because housing and related household spending stabilized and contributed to growth, even as soft investment and exports continued to hold back the economy's expansion. In other words, Canada is not immune to global trade conflict, but for most of 2019 the negatives were offset by some positives. While many central banks cut interest rates during 2019, rates in Canada held steady amid these contrary forces. This prompted considerable commentary about policy divergence between Canada and the United States—even though US rates have now declined to Canadian levels, having previously diverged on the upside. Even so, Canadian mortgage rates were drawn down in 2019 by developments in the global bond market. This helped to support household spending and the housing market. It also served as a reminder that Canadian households are already carrying record levels of debt, which makes them vulnerable to future shocks. However, the new mortgage lending rules are having their intended effect, making the household sector more resilient to future developments.

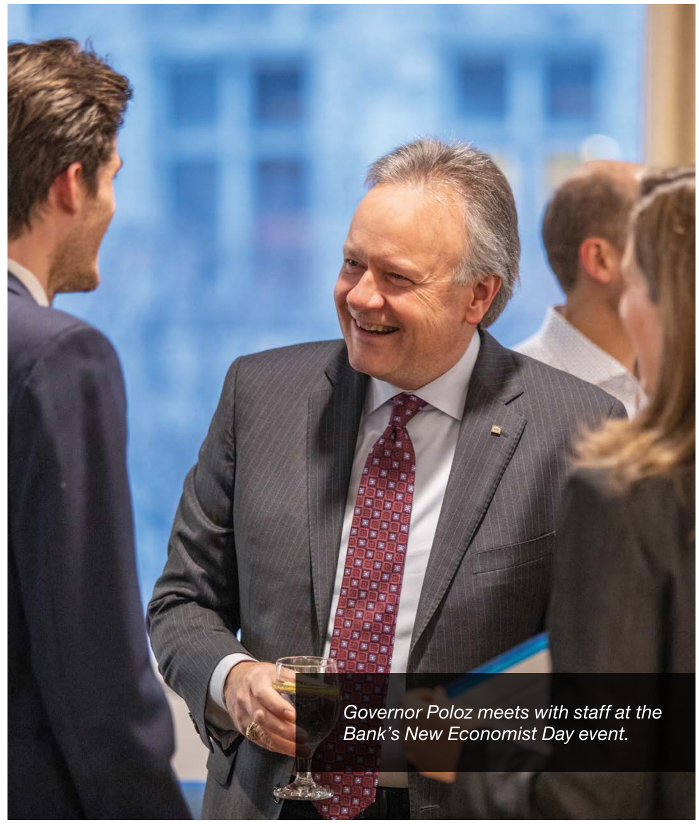
All this to say that the Canadian economy is in a good place overall, even if it is not in a good place everywhere. For one thing, we would prefer a more sustainable situation with more growth in exports and investment and more moderation in housing and household indebtedness. We would also prefer that the economy be better balanced regionally. Given continuing adjustments to low oil prices and ongoing transportation constraints, oil-producing regions of Canada continue to struggle relative to the rest of the country. Over history, it has been rare for all regions and all sectors of the Canadian economy to be expanding at the same time. Today's conditions are in many ways the reverse of what we saw from 2008 to 2014, when oil prices and the Canadian dollar were high and conditions outside the oil-producing regions were challenging. In other words, even if the economy is roughly where it belongs, it is not true for every region or for every individual. There is work yet to be done—adjustments are ongoing, and confidence remains soft.

The good news is that inflation is on target and has been there for most of the past two years—a significant achievement in light of the turbulence the economy has been through. Maintaining low and stable inflation is the central tenet of our policy framework, delivering financial stability to all Canadians and a well-functioning real economy and labour market. Today, unemployment is near its all-time low. In the past seven years, unemployment rates have fallen significantly across all age groups, even as labour force participation has risen. Overall, the economy is operating close to full capacity, with evidence of slack only in certain regions and specific sectors. In other words, the macroeconomy has made it home, after more than 10 years of difficult adjustments.

Looking back on my term as Governor, I could not be more proud of the researchers and forecasters at the Bank, who have consistently done a superb job of guiding our policy deliberations. They have done timely analysis of trade actions; of new housing policies; of complex developments in the labour market, including rapid immigration; of large fluctuations in oil prices; and of the effects of uncertainty on business investment. The Bank's forecast performance can easily get lost in the daily ebb and flow of economic data and private sector forecast updates because Bank staff deliver their forecasts only four times per year and let them stand for the subsequent three months. This is because monetary policy must act in a longer-term context that fosters stability, with a view to achieving the inflation target, rather than being blown around by shifting winds. A key complicating ingredient of policy making today is the presence of risks associated with elevated household indebtedness. Bank researchers have leveraged new datasets to help us understand consumer financial stresses as well as vulnerabilities in corporate debt funding. They have also developed new tools to allow us to take these risks into account in a formal way, which is a major advance in policy formulation and communication.

Looking back on my term as Governor, I could not be more proud of the researchers and forecasters at the Bank, who have consistently done a superb job of guiding our policy deliberations.

Fundamentally, monetary policy depends on forming judgments across a wide array of such considerations, each of which is wrapped in uncertainty. Indeed, if one phrase can sum up the past few years, it is unprecedented uncertainty, for it has been far greater than normal and has touched every dimension of the economy. And these judgments simply could not have been made without exceptionally good advice from cutting-edge researchers and seasoned policy-makers.



Governor Poloz meets with staff at the Bank's New Economist Day event.

To sum up, I am increasingly confident that the next Governor will begin work with a vibrant, healthy and balanced organization, one that was just named a Top 100 Employer in Canada for the 10th consecutive year. The new Governor will also begin with the Canadian economy in a much-improved condition, albeit still vulnerable to new adverse developments, whether international or domestic. The progress that has been made on both fronts can only be attributed to outstanding teamwork, from both my own executive team and our Board of Directors. My thanks to them all for their dedication to the Bank's vision: to be a leading central bank—dynamic, engaged and trusted—committed to a better Canada.

Stephen S. Poloz
Governor

2019 AT A GLANCE

1.6%
Canada's real GDP growth as estimated at December 31, 2019

2%
Inflation-control target

1.9%
CPI inflation

1.75%
Policy interest rate at year-end

$111.8B
Gross value of marketable bonds issued in 2019

$73.6B
Market value of liquid reserves held in the Exchange Fund Account in US dollars as at December 31, 2019

2.5B
Number of bank notes in circulation

$93.1B
Total value of bank notes in circulation

$1.3B
Net income for the Bank in 2019

$1.0B
Amount remitted by the Bank to the Receiver General for Canada

76.99 US cents
Exchange rate for 1 Canadian dollar as at December 31, 2019

47
Bank research papers published in peer-reviewed academic journals

10
Consecutive years the Bank has been named one of Canada's Top 100 Employers

5,000
Number of trees the Bank will plant to commemorate its 10th consecutive Top 100 Employers Award

72,310
Number of visitors to the Bank of Canada Museum

1,800
Approximate number of Bank employees (1,500 core + 300 projects)

50%
New visiting scholars who are women

$281,456
Total staff donations to the Bank of Canada workplace charitable campaign

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 a stable and efficient financial system by assessing systemic risks, overseeing major payment clearing and settlement systems and acting as the ultimate supplier of liquidity and lender of last resort.

CURRENCY
The Bank designs, issues and distributes Canada's bank notes. It also oversees the bank 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 the fiscal agent for public debt and foreign exchange reserves.

Planning framework

The Bank has a robust planning framework in place to support 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 anticipate and adapt to the realities of its operating environment, guides annual planning and budgeting activities and serves as the foundation for departmental and employee performance agreements.

The Bank's 2019–21 MTP, *Leading in the New Era,* is helping to bring the Bank's vision to life. Its three themes set a course for continued leadership and achievement over the medium term—enabling the Bank to continue its tradition of excellence while enhancing its readiness for the future.

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 and condensed interim financial statements.

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

- Bank of Canada. *2019–21 Medium-Term Plan: Leading in the New Era*.

REINVENT RENEW REINFORCE

2019–21 medium-term plan: progress and priorities

The Bank made significant progress against its strategic priorities in 2019 and will continue working toward its MTP goals in 2020.

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
Progress in 2019	▪ Evaluated alternative monetary policy frameworks and enhanced the Bank's understanding of the effectiveness of unconventional monetary policy ▪ Analyzed various tariff scenarios and their related effects, which highlighted the negative balance of risks for growth and the potential trade-offs for monetary policy ▪ Made progress in leveraging insights from vulnerability assessments of the financial system to support monetary policy discussions; developed models that more accurately capture household diversity ▪ Exploited new data and analysis to deepen the Bank's assessment of the vulnerabilities and risks of the financial system and enhanced the risks and resilience framework ▪ Continued to provide direction to, and participate in, the Payments Canada program to design and implement a modernized core payments system in Canada ▪ Assumed a new mandate as the resolution authority for Canadian financial market infrastructures ▪ Joined the Network for Greening the Financial System (NGFS), began chairing an NGFS research sub-group and started testing two climate-economy models for assessing climate-related risks
Key areas of focus in 2020	▪ Continue to deepen the Bank's understanding of the interactions between financial stability risks and monetary policy ▪ Strengthen economic models and explore alternative modelling approaches and paradigms ▪ Advance research toward the 2021 renewal of the inflation-control target agreement with the Government of Canada ▪ Implement the enhanced methodology for the Canadian Overnight Repo Rate Average and assume the role of benchmark administrator ▪ Continue to provide direction to and participate in the Payments Canada project to design and implement a modernized core payment system in Canada ▪ Prepare for the issuance of the next bank note, with a focus on public consultation, stakeholder engagement and research ▪ Continue to implement the new resolution regime for financial market infrastructures ▪ Expand the Bank's understanding of the implications of climate change for the economic and financial system ▪ Prepare for a new mandate to oversee retail payment service providers (conditional on the introduction of legislation)

Theme 2: Renewing ways of doing business

Strategic goals	2.1 Be connected and transparent 2.2 Be nimble and resilient
Progress in 2019	▪ Continued to enrich and expand the Bank's stakeholder engagement activities, with a focus on the 2021 renewal of the inflation-control target agreement ▪ Launched the first fully digital *Financial System Review* (FSR), accompanied by a new FSR summary; promoted Governing Council speeches through new, plain language speech summaries ▪ Opened the Calgary Operational Site, which is equipped to take over the Bank's critical market and banking functions if needed ▪ Began moving the Bank's critical systems into new, resilient infrastructure ▪ Established the Canadian Financial Sector Resiliency Group: a public-private partnership to strengthen the operational resilience of Canada's financial sector ▪ Initiated a variety of construction, system and equipment upgrades as part of the multi-year project to modernize the Bank's cash-processing centres ▪ Published and began implementing the Bank's 2019–21 Cyber Security Strategy
Key areas of focus in 2020	▪ Leverage the Bank's stakeholder engagement framework to develop or continue work on targeted strategies for a variety of audiences ▪ Work toward the full operation of the Calgary Operational Site ▪ Continue migrating Bank systems into the new, resilient environment ▪ Lead an initiative to promote greater information sharing among federal and provincial authorities on vulnerabilities and risks of the financial system ▪ Work with partners in the Canadian Financial Sector Resiliency Group to strengthen the financial system and support the continuity of Canada's wholesale payments ecosystem ▪ Operationalize the Bank's Emergency Lending Assistance policy and Standing Term Liquidity Facility ▪ Continue work on the multi-year project to modernize the Bank's cash-processing centres and auction system ▪ Continue to implement the Cyber Security Strategy ▪ Continue work on a corporate sustainability strategy ▪ Continue to implement the Bank's Third-Party Risk Management Framework

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 3.3 Consider the implications of alternative futures
Progress in 2019	▪ Developed a comprehensive diversity and inclusion strategy ▪ Supported the efforts of staff-driven employee resource groups to raise awareness about the dimensions of diversity ▪ Consulted with leaders across the Bank to begin assessing what skills will be needed over the medium term ▪ Advanced the Bank's digital transformation through the launch of the 2019–21 Enterprise Data and Analytics Strategy ▪ Leveraged work initiated and networks established under Canada's 2018 G7 presidency to better understand the implications of digitalization on the economy and financial system ▪ Continued experiments with central banks and private sector partners to better understand the benefits and risks of distributed ledger technology ▪ Conducted research into the potential risks and benefits of a central bank digital currency, and explored how conditions would need to evolve for the Bank to consider issuing its own ▪ Completed a successful first year running the Partnerships in Innovation and Technology (PIVOT) program
Key areas of focus in 2020	▪ Continue to implement the diversity, inclusion and wellness strategies ▪ Begin to develop a people plan for the Bank's next MTP ▪ Complete data maturity assessments and continue enhancing data skills and literacy across the Bank ▪ Continue to evolve the Bank's analytic environment into a more modern and flexible technical space ▪ Continue to develop a project roadmap for the digital transformation of the Bank ▪ Continue to conduct research and collaborate with international partners on the implications of digitalization for monetary policy and the Canadian and global economies ▪ Continue to conduct research, participate in experiments and collaborate on the regulatory agenda for new and emerging financial technologies ▪ Advance research into the technological options for and potential implications of a central bank digital currency, while monitoring evolving conditions and engaging with stakeholders ▪ Continue to collaborate with external experts through PIVOT

MONETARY POLICY

Senior Deputy Governor Wilkins and Governor Poloz make their way to the National Press Theatre for the October Monetary Policy Report *press conference.*

Monetary policy in 2019

The Canadian economy grew at a moderate pace in 2019. However, economic activity in Canada slowed in the last quarter. A healthy labour market and increased household spending—including a recovery in housing activity—supported the expansion. In contrast, global trade conflicts and related uncertainty, as well as constraints in energy transportation and lower oil prices, dampened business investment and exports.

Consumer price index (CPI) inflation remained close to the Bank's inflation-control target of 2 percent in 2019, with fluctuations reflecting temporary factors. All three measures of core inflation also stayed around 2 percent. This was consistent with the view that, outside the oil-producing regions, the economy was continuing to operate close to full capacity.

In this context, the Bank kept its policy interest rate at 1.75 percent in 2019, below its estimated range for the neutral policy rate. As such, monetary policy remained accommodative as the Canadian economy continued to adjust to economic challenges globally and in the oil sector.

Deputy Governor Lawrence Schembri participates in the October "Case A" meeting, where the staff projection is presented to Governing Council in the lead-up to an interest rate decision.

Economic context

Trade conflicts, geopolitical risks and related uncertainty weakened the global economy in 2019. Global economic growth slowed to below 3 percent, its weakest pace since the 2007–09 global financial and economic crisis. This slow growth weighed on commodity prices. The slowdown has been most pronounced in business investment and the manufacturing sector and has coincided with a contraction in global trade. In response, many central banks eased monetary policy.

Business investment growth in Canada softened in 2019 due to the slowdown in global growth, the increase in trade conflicts and related uncertainty, and the ongoing adjustment in energy-intensive regions. These factors, along with the end of motor vehicle production at the General Motors plant in Oshawa, Ontario, also dampened export growth.

THE BANK OF CANADA'S ROLE

The objective of monetary policy is to preserve the value of money by keeping inflation low, stable and predictable. This allows Canadians to make spending and investment decisions with more confidence. It also encourages longer-term investment in Canada's economy and contributes to sustained job creation and greater productivity. These effects in turn lead to an improved standard of living for Canadians.

For more information about this area of responsibility, please visit the Bank's website.

Medium-term inflation expectations have continued to remain at the 2 percent target

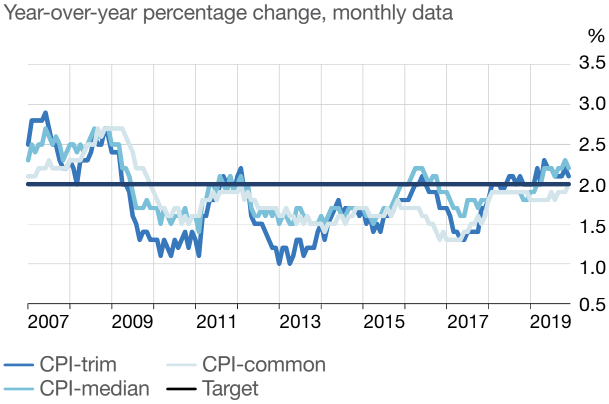
Objectives and indicators	Reference level (percent)	2015 (percent)	2016 (percent)	2017 (percent)	2018 (percent)	2019 (percent)
Achievement of Bank target for CPI inflation						
CPI inflation*	2.0	1.1	1.4	1.6	2.3	1.9
Average CPI inflation since 2001†				1.9		
Expectations of inflation remaining anchored to our target						
Inflation expectations at a 10-year horizon†	2.0	2.0	2.0	2.0	2.0	2.0

* CPI inflation for a given year is defined as the growth rate in the average price level for that year compared with the average price level for the prior year.
† Consensus Economics—10-year projections

In contrast, the labour market in Canada remained resilient throughout most of the year. The demand for labour was strong in 2019, with employment growing by 2.1 percent. The unemployment rate reached an all-time low, while growth in wages picked up. Although household spending softened late in the year, it held up well overall—supported by the solid labour market. The housing sector, boosted by strong immigration and low mortgage rates, rebounded after adjusting to policy changes made in 2016–18.

Core inflation measures remain close to 2 percent

Year-over-year percentage change, monthly data



Sources: Statistics Canada and Bank of Canada
Last observation: December 2019

Supporting the Bank's policy function

The Bank's accommodative monetary policy helped maintain inflation near target in 2019, despite the increasingly challenging global trade environment and the ongoing adjustments in Canada's energy-producing regions. Thorough and timely staff analysis of the major global and domestic developments affecting the Canadian economy supported policy decisions. Bank staff accurately forecasted the weakness in activity at the beginning of the year, the rebound in activity in the second quarter and the subsequent slowdown in the second half of the year.

To assess the implications of escalating trade conflicts for the Canadian economy, Bank staff analyzed various tariff scenarios. These scenarios highlighted the balance of risks for economic growth and the potential trade-offs for monetary policy. Bank staff also conducted analysis to better gauge the persistence of the slowing in global growth that began in the second half of 2018.

In addition, staff produced several analyses related to the housing market. These included the impact of mortgage stress tests on housing resales, the role of non-resident taxes on house price expectations and a reassessment of the growth of home equity lines of credit. Staff also completed novel analyses that deepened the Bank's understanding of the Canadian labour market, including labour market churn and the size and characteristics of informal (or gig) work.

Jing Yang, Managing Director of the Bank's Financial Stability Department, and Senior Deputy Governor Carolyn A. Wilkins share a gondola at the spring Canadian Economics Association meeting in Banff, Alberta.

The Bank conducted research and analysis and organized conferences in support of the 2021 renewal of the inflation-control target agreement with the Government of Canada. Staff advanced the evaluation of alternative monetary policy frameworks, with a focus on the frequency and severity of episodes where interest rates are at their effective lower bound. The Bank also made progress in deepening its understanding of the effectiveness of unconventional monetary policy as well as how fiscal and monetary policy complement each other.

Looking forward

In 2020, the Bank will:

- continue to monitor the macroeconomic effects of trade conflict on the global and Canadian economies. It will also pay close attention to developments in consumer spending, the housing market, business investment and the digital economy.
- explore what structural change means for both the economy and the conduct of monetary policy. It will:
  - consider the impact of digitalization on measuring output and inflation, as well as on investment, productivity, potential output and the transmission of monetary policy
  - explore whether technological change and changes in the labour market have led to a change in the relationship between inflation and unemployment (i.e., the Phillips curve)
  - continue to examine the implications for monetary policy of a lower neutral interest rate, population aging and the risk of chronic demand deficiency (i.e., secular stagnation)

The Senior Deputy Governor and Governor take questions at the April Monetary Policy Report *press conference, held at the Bank's head office.*

   - improve its estimate of potential output and enhance the Bank's understanding of the implications of shifting toward a more service-based economy
   - investigate how climate change and the transition to a low-carbon economy will affect economic activity, macroeconomic forecasting and monetary policy
- conduct research toward the 2021 renewal of the inflation-control target agreement. It will:
   - re-examine its current flexible inflation-targeting framework and deepen its understanding of alternative monetary policy approaches by:
      - continuing to examine the advantages and disadvantages of price-level, average inflation and nominal GDP targeting as well as a dual mandate (low inflation and maximum employment)
      - assessing the robustness of these alternative frameworks across a variety of models that embody competing views of the economy
   - examine the effectiveness of alternative monetary policy tools, fiscal policy and macroprudential policy in the current low interest rate environment
- continue to build richer models and explore alternative data to inform monetary policy. It will:
   - investigate the role of financial vulnerabilities in the conduct of monetary policy as well as the properties of models that better account for differences across households and firms and their implications for monetary policy
   - continue to expand its use of non-traditional sources of data (e.g., social media and big data) to more accurately monitor and forecast the economy
   - continue to adopt state-of-the art methods, with a focus on density forecasting, predictive artificial intelligence and machine learning
- participate in a network of central banks undergoing reviews of their monetary policy frameworks and consult with domestic experts to review best practices in support of the Bank's inflation-targeting mandate
- reach out to targeted groups to describe and explain developments in the Canadian economy and the role of monetary policy as well as to listen and learn from them. This will include the hosting of a workshop on the Indigenous economy in collaboration with the Tulo Centre of Indigenous Economics.
- make public the results of the quarterly Canadian Survey of Consumer Expectations, providing timely information on household expectations for inflation, income and spending, as well as for the labour and housing markets

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IN FOCUS: DIGITALIZATION AND THE BANK

IN RECENT YEARS, THE BANK HAS DEDICATED significant time and resources to understanding digitalization and its implications for monetary policy and the Canadian economy. These implications include the current and potential effects on labour markets, productivity and inflation. At the same time, the Bank has been exploring how it can use digital tools to enhance its own work and output. The Bank's established partnerships—both internationally and here in Canada—support this work.

Leading the G7 central bank policy discussion

The Bank established the G7 Central Bank Digitalization Working Group (DWG) during Canada's 2018 G7 presidency. The DWG's members represent the G7 central banks and the International Monetary Fund. The Bank, which chairs the group, hosted a working session at the Creative Destruction Lab at the University of Toronto in May 2019. This was a novel setting for a global policy discussion, as members were able to work with experts in the economics of artificial intelligence (AI).

The DWG produced a report that raised international awareness of the measurement challenges digitalization poses for monetary policy (see DWG 2019). The report notes that without reliable estimates of inflation, output and productivity, there is a risk of error in monetary policy. As such, the report encourages national statistical agencies to continue to identify new data sources and to coordinate the measurement of digital-based economic activity across jurisdictions.

The report also discusses the link between digitalization and market power. If digitalization leads to an increase in market power, there will be important implications for the gauging of inflation pressures, the transmission of monetary policy and the real neutral rate of interest.

Senior Deputy Governor Carolyn Wilkins explored similar themes as a participant on the G7 expert panel on competition and monetary policy in April (see Wilkins 2019a). There, she emphasizes that the gains from digitalization will depend on the competitive landscape and how workers and businesses adjust.

The Bank also continued to conduct research, participate in experiments and collaborate on the regulatory agenda for new and emerging financial technologies. This work is summarized on the Bank's website.

Partnering to drive the Bank's digital transformation

Bank staff work closely with innovators in the private sector and academia to explore opportunities to overcome contemporary central bank challenges. This work includes conducting experiments using digital tools, such as AI

(continued...)

and machine learning. One of the ways the Bank does this is through its Partnerships in Innovation and Technology (PIVOT) program. Five PIVOT experiments were completed in 2019, with more to come in 2020.

Outside of PIVOT, the Bank continued to conduct experiments with tools and techniques for advanced analytics—often partnering with external technology firms to accelerate results. This included a partnership with Cerebri AI, which is leading to the design of a new "nowcasting" model that uses machine-learning techniques in its prediction of real GDP growth. Another partnership—with IBM AI—is helping the Bank to explore the impact of climate change on Canadian economic activity.

The Bank is also counting on the ingenuity of its own employees to help drive its digital transformation. In 2019, it launched an internal project to engage staff and build momentum for digital initiatives. Employees participated in brainstorming sessions hosted by an external AI firm. They came up with more than 120 proposals for how the Bank might use new and emerging technologies to improve its analysis and operations.

The Governor's Advisor on Digitalization consulted with numerous central banks this year to share the Bank's experience with digital transformation and further its reputation as a leader in this area.

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FINANCIAL SYSTEM

Financial system in 2019

Canada's financial system remained highly resilient in 2019. Its ability to withstand shocks has been enhanced by policies that have strengthened the banking system and improved the operational resilience of important financial institutions and major payment systems. Risks rose slightly due to increased global uncertainty, but long-standing vulnerabilities showed signs of stabilizing.

Canada progressed in controlling vulnerabilities related to high household debt and imbalances in housing markets in 2019. Past tightening of mortgage rules and increases in policy interest rates slowed household credit growth to a rate more in line with income growth. The share of households becoming highly indebted through mortgage lending decreased. Tax measures in British Columbia and Ontario helped reduce housing demand of non-residents. Growth in house prices in the Toronto area slowed to a more sustainable pace, while in the Vancouver area prices fell. But house prices in Toronto and Vancouver remained about 40 percent higher than in 2015, when the pickup began. And toward the end of the year, mortgage credit growth and the fraction of highly indebted households started to rise again, supported by a decline in mortgage interest rates. This points to a continued need for vigilance.

Areas of increased concern through 2019 were the following:

- the larger quantity and poorer quality of non-financial corporate debt in both advanced and emerging economies
- the possibility that cyber threats could spread across the financial system and disrupt crucial financial services
- new financial technologies, including new kinds of cryptoassets
- climate change

Assessing financial vulnerabilities and risks

The Bank presented its analysis of the Canadian financial system in several ways: in the May publication of the *Financial System Review* (FSR), in a November speech by Senior Deputy Governor Carolyn Wilkins (see Wilkins 2019) and throughout the year on the Financial System Hub of the Bank's website.

The Bank enhanced its assessment of household and housing market vulnerabilities in 2019 through innovative use of anonymized household-level data. New analysis in the FSR drew attention to vulnerabilities tied to corporate debt funding, cyber threats and, for the first time, climate change (see page 51 for information about the Bank's work on climate change).

THE BANK OF CANADA'S ROLE

The Bank promotes a stable and efficient financial system. This includes banks and credit unions, financial markets, and payment clearing and settlement systems.

In this role, the Bank:

- is the ultimate supplier of liquidity to the financial system, including through lender-of-last-resort facilities
- oversees and acts as the resolution authority for critical financial market infrastructures
- assesses systemic risks that might impair the functioning of the financial system
- conducts and publishes research and analysis that help develop and implement policy

For more information about this area of responsibility, please visit the Bank's website.

The Bank enhanced its framework for analyzing risks and resilience by developing stress tests that examine extreme scenarios that might affect mutual funds (see Arora et al. 2019) or the Canadian banking system (see Gaa et al. 2019). It also used the growth-at-risk framework to quantify how financial system vulnerabilities increase downside risks to the economy.

Through extensive collaboration with staff from the International Monetary Fund as well as Canadian federal and provincial authorities, the Bank also contributed to the *Canada: Financial System Stability Assessment* report (see IMF 2019). The report concluded that the Canadian financial system would be able to manage severe macrofinancial shocks if they were to arise.

Integrating financial stability considerations into monetary policy

The Bank continued to make progress in how it leverages insights from its assessment of vulnerabilities to support monetary policy discussions. For example, the growth-at-risk framework was used to better understand how financial vulnerabilities interact with the conduct of monetary policy (see Poloz 2019a).

Using its housing market activity framework, the Bank was able to highlight how expectations for price growth based on prior appreciation rather than fundamentals played a role in the surge in house prices and their subsequent adjustment in Toronto and Vancouver (see Khan and Webley 2019). In addition, new analysis of borrowing against home equity helped the Bank to better gauge the macroeconomic effects of housing market adjustments (see Ho et al. 2019).

Senior Deputy Governor Wilkins and Governor Poloz at the May Financial System Review *press conference, held at the Bank's head office.*

The Bank also developed models that more accurately capture the diverse characteristics of Canadian households—what economists refer to as household heterogeneity. This allows the Bank to better understand the effects of monetary policy actions.

Promoting financial system resilience

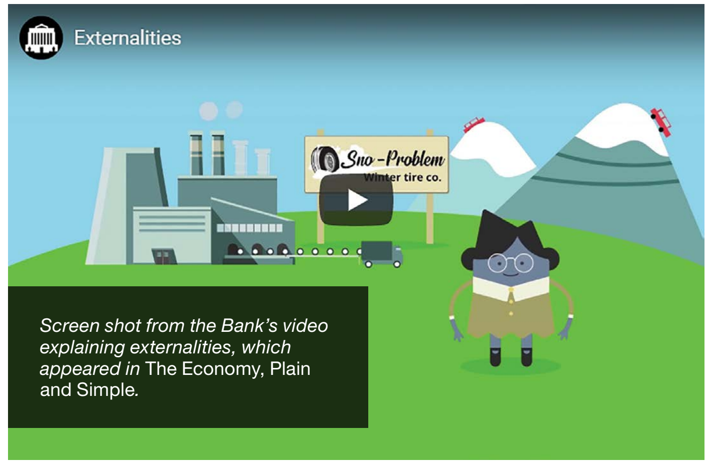
The Bank promotes financial system resilience by collaborating with both public and private sector partners in Canada and around the world. In June, it announced the launch of the Canadian Financial Sector Resiliency Group (CFRG), a public-private partnership focused on enhancing the operational resilience of Canada's financial sector. Chaired by the Bank, CFRG will help coordinate sector-wide responses to systemic cyber incidents and collaborative resiliency initiatives. CFRG grew out of another Bank-led partnership: the Resiliency of the Wholesale Payments System program. These partnerships are helping reduce risk and promote robust recoveries in the event of an incident.

The Bank's new mandate as the resolution authority for Canadian financial market infrastructures (FMIs) came into force in 2019. In the unlikely event that a designated FMI were to fail, the Bank now has the legislative powers and tools to continue the FMI's critical functions and limit the impact on Canada's financial system and economy.

A review of the cyber practices of Canadian FMIs enabled the Bank to better understand how resilient the financial system is to cyber risks. This effort provided insights into possible improvements in the contingency plans of financial institutions, FMIs and authorities.

The Bank is the ultimate source of Canadian-dollar liquidity and can support financial stability by providing liquidity to financial markets or institutions when necessary. The Bank announced its intention to enhance its liquidity provision tool kit by introducing a new bilateral liquidity facility. The Standing Term Liquidity Facility will be available for individual prudentially regulated financial institutions facing idiosyncratic liquidity stress. For example, this might be used to assist a financial institution suffering liquidity stress resulting from a cyber attack or a natural disaster.

The Bank also increased efforts to encourage more innovation in mortgage products, including through greater consumer awareness of the potential benefits of longer-term mortgages (see Poloz 2019b). Greater diversity in mortgage terms can increase consumer choice and contribute to a safer financial system and a more stable economy.



Screen shot from the Bank's video explaining externalities, which appeared in The Economy, Plain and Simple.

The Canadian Alternative Reference Rate Working Group, which includes the Bank and industry stakeholders, recently concluded its efforts to enhance the existing Canadian risk-free rate benchmark, known as the Canadian Overnight Repo Rate Average (CORRA). These enhancements will result in a substantial increase to CORRA's robustness and align with the global benchmark reform efforts to develop viable, risk-free benchmarks for use across the financial system. The Bank will be the new administrator of CORRA when the enhancements take effect in the second quarter of 2020.

The Bank has also started planning to take on a new role overseeing retail payment service providers, as announced in the federal government's Budget 2019 (see Government of Canada 2019, 329–330). Under the proposed framework, the Bank will oversee payment service providers' compliance with operational and financial requirements. It will also maintain a public registry of regulated payment service providers.

Experimenting with financial technologies

Working closely with the Monetary Authority of Singapore and private sector partners, the Bank completed a new phase of Project Jasper in 2019. This was the latest in a series of experiments to better understand the benefits and risks of the distributed ledger technology (DLT) that forms the foundation of many cryptoassets.

For this phase, participants built a proof-of-concept version of a cross-border wholesale payments system linking DLT payment systems in two different countries. The experiment enabled the team to investigate technical questions related to providing safe and efficient payments across different payment platforms. (See page 50 for more information about the Bank's work on financial and technological innovation, and page 34 for more information about its research into a central bank digital currency.)

Enhancing the Bank's operations

Changes to the Bank's operational framework in 2019 will support the efficiency and stability of the Canadian financial system. Notably, the Bank began accepting *National Housing Act* Mortgage-Backed Securities (NHA MBS) as acceptable collateral for the Bank's term repo operations (see Bank of Canada 2019c). This change will provide the Bank with greater flexibility to source a range of high-quality assets to support balance sheet management. It will also strengthen the Bank's response to periods of heightened market stress.

The addition of NHA MBS as acceptable collateral will also reduce the Bank's reliance on acquiring Government of Canada securities in the primary market. This should benefit the liquidity and well-functioning of the Canadian Government bond market. The Bank also continued to enhance its collateral policy for the Standing Liquidity Facility.

In the area of readiness for extraordinary operations, the Bank completed several tests of existing central bank swap lines. Swap lines are temporary reciprocal arrangements that enable central banks to exchange currencies, thereby improving liquidity conditions in times of stress. The Bank also coordinated the overall G5 central bank swap tests and successfully tested two distinct swap lines on the same day for the first time.

Senior Deputy Governor Wilkins speaks in November at Le Cercle de la finance internationale de Montréal.

Looking forward

In 2020, the Bank will:

- continue to develop a framework for incorporating financial stability considerations into monetary policy
- broaden and deepen Bank frameworks and address data gaps to better analyze and assess financial system vulnerabilities and risks
- lead an initiative to promote greater information sharing among federal and provincial authorities on financial system vulnerabilities and risks
- continue to work with Payments Canada and a range of financial institutions to enhance the resilience of the country's wholesale payments system
- continue to work with stakeholders and the Department of Finance Canada to plan for the Bank's new role overseeing retail payment service providers
- co-lead a working group focused on designing a framework to promote the well-functioning of the Government of Canada bond market—specifically in a low interest rate environment
- continue to expand and strengthen the data, research and analytical tools to map the financial system and further develop new approaches to enhance the Bank's understanding of how behavioural interactions between market participants drive trading flows and affect prices
- implement a flexible and automated collateral management system

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IN FOCUS: MODERNIZING CANADA'S PAYMENT SYSTEMS

THE BANK CONTINUED TO SUPPORT PAYMENTS Canada's program to modernize the payment systems that underpin the Canadian financial system and economy. One of the key outcomes of the project will be to replace Canada's current core payment systems. These are the Large Value Transfer System (LVTS) and the Automated Clearing and Settlement System (ACSS). These systems process payments related to the purchase of goods and services, the transfer of financial investments and large-value transactions between financial institutions.

New systems that use more modern technology and have enhanced resilience and risk features will replace the LVTS and ACSS. The project will also introduce a new retail payments infrastructure to support instant payments between individuals and businesses, referred to as the Real-Time Rail (RTR). The RTR is designed to facilitate the development of new, fast and more convenient payment services for Canadians.

This year, the Bank contributed to significant progress toward launching Lynx, the new high-value payment system that is due to replace the LVTS in 2021. The Bank also played a key role in important progress on the design of the RTR, including helping to develop a revised implementation approach that received broad stakeholder support.

To focus industry efforts and manage implementation risk, the last delivery for the project will be to replace the ACSS. In the interim, the Bank has continued to promote improvements in the operation of this system.

More information

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FUNDS MANAGEMENT

Funds management in 2019

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.

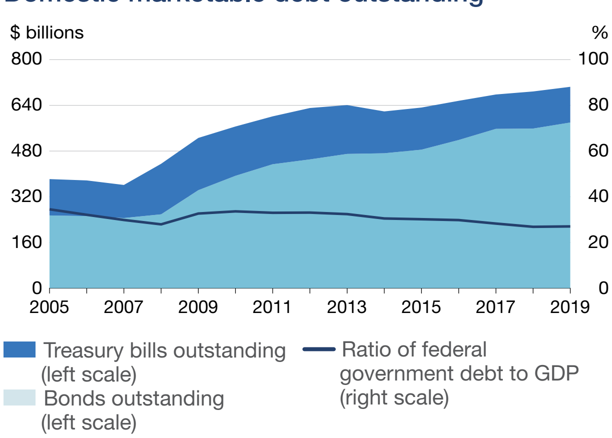
To address higher overall borrowing requirements, the government's Debt Management Strategy for the 2019–20 fiscal year included an increase in the issuance of both treasury bills and bonds (see Government of Canada 2019b, 333–339). It provided additional support for the liquidity of the treasury bill sector by raising the year-end target for the stock of treasury bills from $131 billion at the end of 2018–19 to $151 billion for this Government of Canada fiscal year. Meanwhile, annual bond issuance grew from about $100 billion to $119 billion. The debt strategy included an increase in issuance in the 30-year sector.

Modernizing systems and managing risk

The Bank is in the process of upgrading internal systems related to its domestic market operations, which it conducts both as fiscal agent for the government and on its own behalf. This upgrade includes modernizing the auction system that supports the Bank's responsibilities for the financial system, monetary policy and funds management. The Bank continued work related to automating domestic market operations and renewing collateral management capabilities.

The Bank also advanced the implementation of its Banking Operations Financial Crimes Risk Management Policy. Developed in 2018, this policy protects operational systems, processes, controls and services from fraud, money laundering, terrorist financing and sanctions violations.

Domestic marketable debt outstanding



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

THE BANK OF CANADA'S ROLE

The Bank acts as fiscal agent and banker for the Government of Canada. It also provides efficient and resilient banking, settlement and custodial services to itself as well as to:

- the federal government
- official international financial organizations
- foreign central banks
- designated financial market infrastructures
- financial institutions that are members of those infrastructures
- some federal Crown corporations

For more information about this area of responsibility, please visit the Bank's website.

A new approach to unclaimed properties

In 2017, the Government of Canada announced it would no longer issue new Canada Savings Bonds and Canada Premium Bonds. Since then, the Bank has taken important steps to ensure it can continue to answer the public's queries about the program while managing the stock of unredeemed retail debt instruments in a cost-effective manner.

In addition to launching communications initiatives to encourage the timely redemption of matured bonds, the Bank amended its contractual arrangement for the retail debt program's back-office operations to reduce costs and increase flexibility.

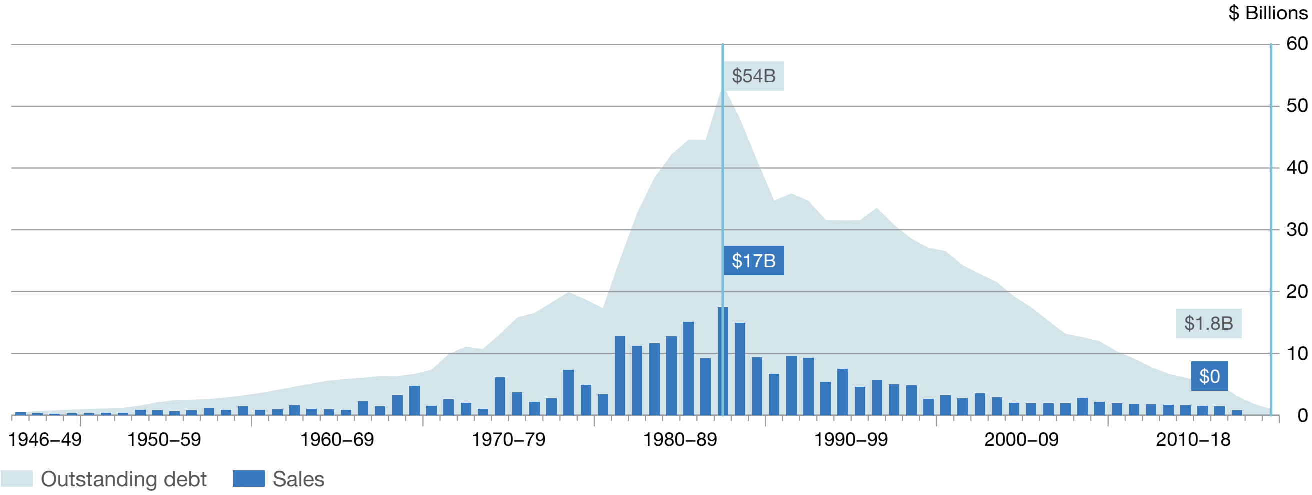
The Bank also merged its operations for administering unredeemed retail bonds with those for managing unclaimed bank balances into the new unclaimed properties office. Merging these operations will create capacity by enabling the Bank to take advantage of similarities between processes, allowing it to continue to reunite Canadians with lost or forgotten money as efficiently as possible.

Funds management policy

The Bank and the Department of Finance Canada jointly undertook a review of the design and operation of the Real Return Bond program in 2019 to ensure that the program continues to support the objectives of debt management.

The Bank, in collaboration with the Department of Finance Canada, enhanced the set of risk measures used to develop the annual debt management strategy.

Retail debt—sales and outstanding debt



Projected value for March 31, 2020; actual as at December 31, 2019, was $1.1B O/S, $0 Sales

It also analyzed contingency measures to support well-functioning markets and continued work to prepare for the industry-wide transition from the London Interbank Offered Rate and other risk-free reference rates to alternative benchmarks. (See page 22 for more information about interest rate benchmark reform.)

In its role as administrator of the Bank of Canada Pension Plan, the Bank completed its triennial study of the plan's assets and liabilities. In response to the study's recommendations, it began to explore ways to diversify assets within the portfolio.

Looking forward

In 2020, the Bank will:

- continue to enhance tools for providing strategic advice regarding the management of the government's debt and foreign reserves. This includes developing financial models in both areas and benchmarks for the Exchange Fund Account.
- further optimize processes for unclaimed properties. If authorized by Parliament, it will work with the Department of Finance Canada to expand the scope of the framework for unclaimed properties to include foreign-denominated bank accounts and unclaimed pension balances from terminated federally regulated pension plans, as announced in Budget 2019.
- further enhance the Banking Operations Financial Crimes Risk Management Policy by implementing and enhancing tools, including those supporting sanctions compliance and fraud detection
- work toward integrating environmental, social and governance principles into the management of the Bank of Canada Pension Plan

More information

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IN FOCUS:

ENHANCING OPERATIONAL RESILIENCE

THE BANK PLAYS A VITAL ROLE IN THE CANADIAN financial system. It acts as the government's fiscal agent, provides liquidity to the Canadian financial system, plays the role of lender of last resort and supports the settlement of designated financial market infrastructures. If a major disruption occurred in the National Capital Region, the Bank's inability to perform market and banking operations would have important ramifications for the Canadian financial system. Therefore, the Bank's operations must be resilient.

To enhance this resilience, the Bank opened a new location in Calgary in 2019 (pictured above). The Calgary Operational Site (COS) will ensure the Bank can continue to perform its essential functions if a natural disaster or other major incident were to occur. COS employees are fully integrated with the banking and market operations teams at head office in Ottawa. They perform daily operations jointly with staff from head office and would be able to take over the Bank's critical functions at a moment's notice.

Since its opening, the COS has been conducting banking and market operations in conjunction with head office. By the end of 2019, the Calgary site was functional in most day-to-day operations and could independently lead routine activities. This is a significant milestone in the Bank's resilience journey.

The COS includes more than 60 staff across a range of office functions as well as information technology support for critical systems. The site is staffed to operate on a fully stand-alone basis should head office be unavailable for a prolonged period.

In 2019, the Bank focused on relocating, hiring and training staff for the new site. It set up resilient transactional systems and established new technology and communication protocols between the COS and head office. Another important goal was to establish processes for sharing operational responsibilities between sites that are more than 3,000 kilometres apart and in different time zones.

The COS is expected to be fully resilient by the end of 2021, when staffing and cross-training are complete and all systems are online.

CURRENCY

Currency in 2019

The Bank provides Canadians with secure, polymer notes whose cutting-edge security features make them easy to check and difficult to counterfeit. This is reflected in Canada's low counterfeiting rate, which was 15 parts per million (ppm) at the end of 2019—below the Bank's target of 30 ppm.

The Bank is committed to staying one step ahead of counterfeiters. It continued its counterfeit deterrence activities with retailers and law enforcement partners, including municipal and provincial law enforcement agencies, the Royal Canadian Mounted Police, Public Safety Canada and the Canada Border Services Agency.

As part of its responsibility for the full life-cycle of Canadian bank notes, the Bank also continued to practise rigorous supply chain management and quality assurance.

THE BANK OF CANADA'S ROLE

The Bank is the country's sole authority for issuing bank notes. It is responsible for their design, production and distribution—and ultimately for their removal and destruction. The Bank ensures that notes in circulation continue to meet the needs of Canadians. This means they are secure against counterfeiting, meet a high standard for quality and are available in sufficient supply.

For more information about this area of responsibility, please visit the Bank's website.

Award-winning bank notes

The Bank earned three international bank note awards.

Vertical $10 featuring Viola Desmond

- Best Bank Note or Bank Note Series—International Association of Currency Affairs (IACA)
- Bank Note of the Year—International Bank Note Society

Commemorative $10 celebrating Canada's 150th anniversary

- Best New Commemorative or Limited Circulation Note—IACA

Commemorating Viola Desmond, portrait subject for the vertical $10 note, at the second edition of the Salon International de la Femme Noire, in Montréal.

The Commemorative $10 celebrating Canada's 150th anniversary was awarded Best New Commemorative or Limited Circulation Bank Note by the International Association of Currency Affairs.

Removal of legal tender status

The Government of Canada announced in 2019 that it will remove the legal tender designation from certain bank notes beginning January 1, 2021. The $1, $2, $25, $500 and $1,000 notes are no longer being produced, and this is the final step to fully removing them as transactional notes in Canada. The Bank supports this initiative because it ensures that notes in circulation remain current and are easy to use and difficult to counterfeit.

Currency research

To advance the Bank's currency research agenda, staff monitored how Canadians make payments—including through the use of digital currencies and cash—and considered what the future of payments might look like in this country. (See page 34 for more information on the Bank's research into a central bank digital currency.)

Bank staff also conducted research and testing on existing and emerging bank note security features and technologies. They worked closely with partners on potential future security features.

In collaboration with other central banks, the Bank conducted research on how people perceive and authenticate bank notes. The findings will serve as guidelines for future bank note design.

Modern processing and distribution of bank notes

As part of its multi-year project to modernize its cash-processing centres, the Bank began several system and equipment upgrades in 2019.

The Bank uses these facilities to manage its bank note inventories and monitor the quality of notes in circulation. The centres remove surplus notes from the system, destroy unfit notes and return fit and new notes into circulation. It is therefore important to ensure these processing centres have resilient technology and continue to operate efficiently.

The Bank also continued to enhance the country's bank note distribution system. It is applying data analytics and machine-learning techniques to improve inventory management. It is also continuing work to ensure the distribution system remains cost-effective and that Canadians have constant, ready access to cash.

Bank researcher Ben Fung (now retired) presents at the October central bank digital currency conference, hosted by the Bank.

Stakeholder engagement

The Bank continued to collaborate with other central banks and external partners to share knowledge. It hosted conferences on a variety of currency-related topics, including counterfeit deterrence and currency microeconometrics—an approach that uses statistical methods to answer research questions.

Staff at regional offices in Vancouver, Calgary, Toronto, Montréal and Halifax continued their work with law enforcement partners, financial institutions, the retail community and the general public. They informed Canadians about bank note authentication and counterfeit deterrence.

The Bank also formalized plans to support a more consistent, comprehensive and coordinated approach for outreach and engagement with currency stakeholders. These include research affiliates, bank note equipment manufacturers, financial institutions and law enforcement.

Looking forward

In 2020, the Bank will:

- conduct a public consultation in early 2020 to select the portrait subject for the next $5 bank note
- continue to monitor the payments environment, including the use of digital currencies and cash
- conduct further research and testing into bank notes—their quality, future technologies and security features
- continue to use the Bank's investment in data analytics by implementing a bank note analytics pipeline to apply data-driven solutions in support of its business objectives
- advance the modernization of the facilities, equipment and systems at the Bank's cash-processing centres

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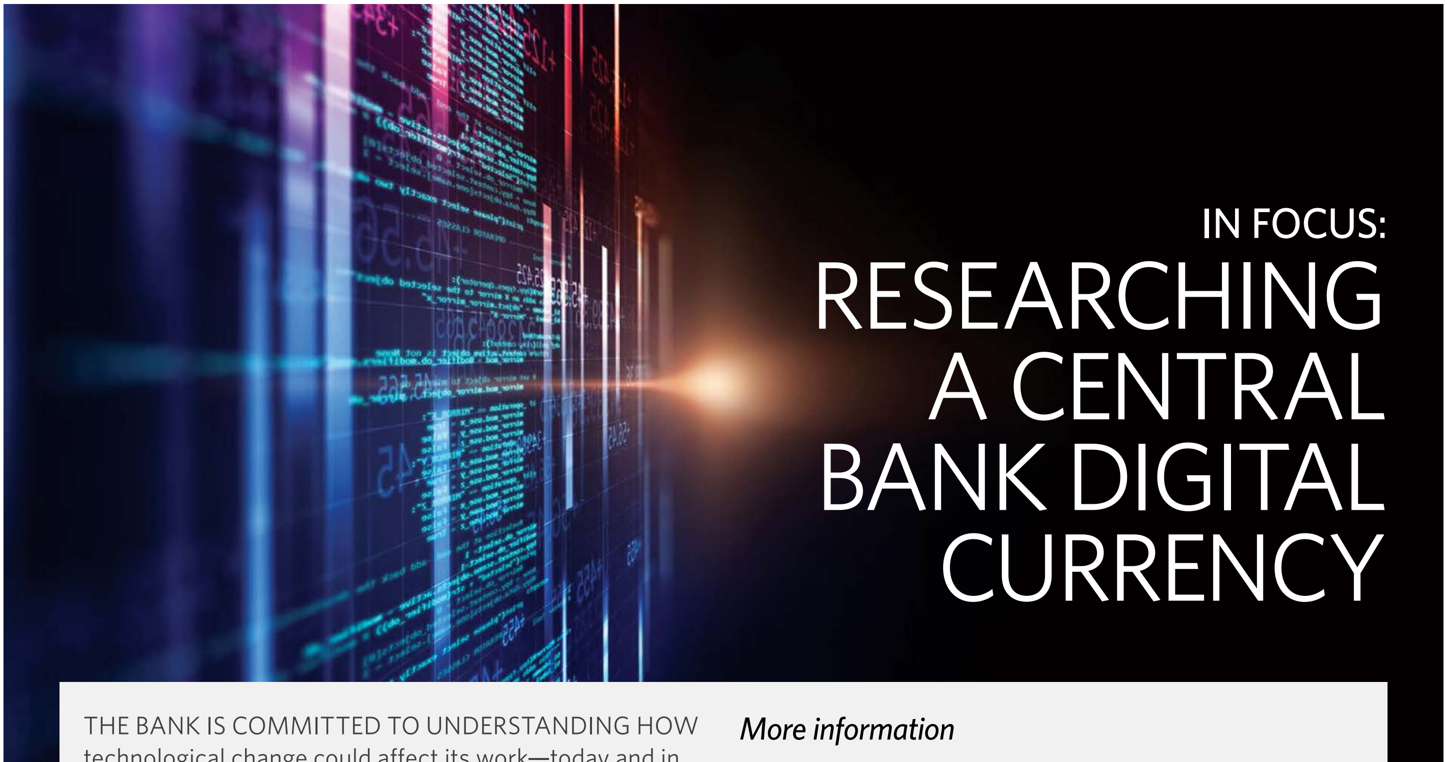

IN FOCUS: RESEARCHING A CENTRAL BANK DIGITAL CURRENCY

THE BANK IS COMMITTED TO UNDERSTANDING HOW technological change could affect its work—today and in the future. Innovation in financial technologies and digital forms of payment have potential implications for the Bank's core functions, including its currency function. This is why the Bank stays up-to-date with developments in this area.

For several years, the Bank has conducted research into cryptoassets, cryptocurrencies and digital currencies. More recently, it began a project to identify the conditions under which the Bank would consider issuing its own digital currency. It conducted additional research and experimentation and consulted with potential digital currency users in 2019. Central banks around the world are engaged in similar work.

The Bank has also been examining how a central bank digital currency would fit with other major initiatives. These include the Bank's project to modernize its cash-processing centres and distribution system as well as the Payments Canada program to design and implement a modernized core payment system in Canada.

Going into 2020, the Bank is continuing its research and will be actively consulting with stakeholders, including government bodies, commercial entities and end-users. In the spirit of openness and transparency, the Bank will share results as they become available.

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MANAGING THE BANK

Managing the Bank in 2019

- For the 10th 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.
- The Canada Green Building Council awarded the Bank's head office in Ottawa with Gold Certification in Leadership in Energy and Environmental Design (LEED).
- Bank employees raised $281,456 for the United Way and Health Partners through the Bank's annual workplace charitable campaign.

MANAGING THE BANK OF CANADA

The Bank's core functions and activities are built upon strong operations and management. Efficient, cost-effective and innovative operations help the Bank to achieve its business objectives. This takes place within the context of ongoing efforts to enhance and sustain operational resilience. At the same time, strong leadership and effective communications support the engagement and productivity of employees.

A diverse and inclusive Bank

The Bank developed a comprehensive diversity and inclusion strategy in 2019. It integrates lessons learned through:

- extensive consultations with leaders and employees
- research on best practices at peer organizations

An important area of focus is to increase the representation of equity-seeking groups in the Bank's workforce. The Bank will build on past successes, including efforts to ensure women are represented at more senior levels (they currently make up 39 percent of Bank officers). The new strategy also responds to the findings of a 2019 enterprise-wide survey on the inclusiveness of the Bank's work environment. Employees gave the Bank high marks overall, but the results from equity-seeking groups did identify areas for improvement.

As part of its strategy, the Bank began equipping leaders with enhanced data on diversity and inclusion so they can make better-informed decisions around hiring and staffing. In addition, staff-driven employee resource groups (ERGs) continued to heighten awareness about the different dimensions of diversity. In this way, they significantly contributed to inclusiveness at the Bank. In 2019, for example, ERGs:

- organized a career panel for staff featuring women serving on the Bank's Board of Directors
- coordinated the Bank's participation at the Ottawa Pride parade
- hosted an external speaker to talk about his experience working with a disability

Bank staff and friends take part in the Ottawa Pride Parade in August.

Recognition of the Bank's LEED® Gold certification on the main doors to head office.

Developing the workforce of the future

To respond to major workforce trends—including a rapidly increasing need for digital and data expertise—leadership teams worked to identify the skills the Bank will need over the medium term. Findings will feed into a comprehensive people plan to be integrated into the next medium-term plan.

The Bank also continued to invest in new learning and development programs for employees. Various employee communications and events encouraged staff to take charge of their development by tapping into the wealth of programs the Bank offers.

Commitment to sustainability

Following extensive renovations completed in 2016, the Bank's Ottawa head office building was awarded Gold Certification in Leadership in Energy and Environmental Design (LEED) by the Canada Green Building Council in 2019.

Thanks to design innovations introduced as part of renovations, electricity consumption at head office has decreased by 50 percent—as compared with pre-renovation levels. This is equivalent to removing 1,300 homes from the grid. In addition, head office now uses 35 percent less potable water than comparable buildings, saving roughly 3.7 million litres a year.

The LEED rating system distinguishes building projects that meet the highest sustainability performance standards. Gold certification was therefore an important recognition of the Bank's commitment to a sustainable environment. (See page 52 for more information about the Bank's efforts to reduce its environmental footprint.)

New era of resilience

Over the past five years, the Bank has made significant investments to enhance the resilience of its data centres, network and technology infrastructures, and business systems. In 2019, the Bank began to move critical systems into a new infrastructure designed to mitigate risks related to system outages and data corruption.

The management practices of the Bank's data centre earned a high grade overall in an independent third-party assessment. This achievement validates the behaviours and processes the Bank has put in place to support the resilience of its business-critical data centre.

The Bank also continued to progress in its cloud adoption strategy. It successfully moved email systems to the cloud. This ensures employees have uninterrupted access and immediate use of new features and other updates the vendor releases. It also began to move its document management system to the cloud.

In terms of hardware, the Bank continued to ensure that the technologies employees rely on are current and supported by their vendors.

A new strategy for cyber security

As part of its response to the evolving nature of cyber threats, the Bank published a new Cyber Security Strategy in 2019 (see Bank of Canada 2019). The strategy integrates the Bank's critical role within the financial system with internal cyber security operations and emphasizes the importance of reducing overall risk and increasing resilience internally.

The strategy focuses on three goals:

- strengthening the Bank's cyber capabilities to enable secure and innovative operations
- collaborating with external partners to improve individual and collective resilience
- promoting robust cyber security standards through the Bank's oversight roles

Leading the way in data and analytics

Over the past few decades, rapid technological advances have dramatically changed the economic landscape and the work of central banks. Global growth in the amount of data generated, collected and analyzed has exploded. In response, the Bank has been enhancing its data and analytics capabilities.

To guide this effort, the Bank launched an Enterprise Data and Analytics Strategy (EDAS) in 2019. Through the strategy, the Bank will improve data skills, tools, technology and infrastructure and at the same time strengthen data management and governance practices. Better use of data and analytics improves policy, research and business decision making. The strategy provides the foundation for the Bank to become digital-first in all aspects of its business.

In support of the EDAS, the Bank launched several initiatives in 2019 to enhance how it stores, manages and makes accessible a broad range of increasingly high volume and sensitive data. Focus to date has been on:

- defining business and technical requirements for new data solutions
- piloting a new collaborative cloud-based research environment for Bank economists
- completing a series of enhancements to the Bank's existing data collection and dissemination programs

Looking forward

In 2020, the Bank will:

- implement the diversity and inclusion strategy through new programs and additional leader development
- begin to develop a people plan for the next medium-term plan
- continue work on a corporate sustainability strategy to reduce waste and start measuring—and shrinking—the Bank's carbon footprint
- continue to move its information systems to the new, resilient infrastructure
- continue to implement the Cyber Security Strategy
- advance the Bank's data maturity and enhance related tools

For the 10th consecutive year, the Bank was named one of Canada's Top 100 Employers.

Composition of Bank staff, by role
Approximate, for 2019*

* Total number includes approximately 1,500 employees for core operations, 285 employees for projects (temporary), and 15 employees for new mandates.

More information

- Bank of Canada. "Bank of Canada Head Office Renewal: Detailed Case Study." Sustainability Educational Pamphlet.
- Bank of Canada. 2019. *2019–2021 Cyber Security Strategy: Reducing Risk, Promoting Resilience*.

Staff meet in the atrium at the Bank's head office in Ottawa.

COMMUNICATIONS AND OUTREACH

Communications and outreach in 2019

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

In support of this commitment, it continued its efforts to:

- align its communications and outreach with the needs and preferences of audiences
- increase the public's understanding of economic issues and the Bank's work
- deepen relationships with stakeholders to create opportunities for discussion

The Bank continued to pursue new and innovative approaches to achieve these objectives. These approaches are reflected in its 2019 communications and engagement activities with various stakeholder groups, including the media, financial market participants and the public.

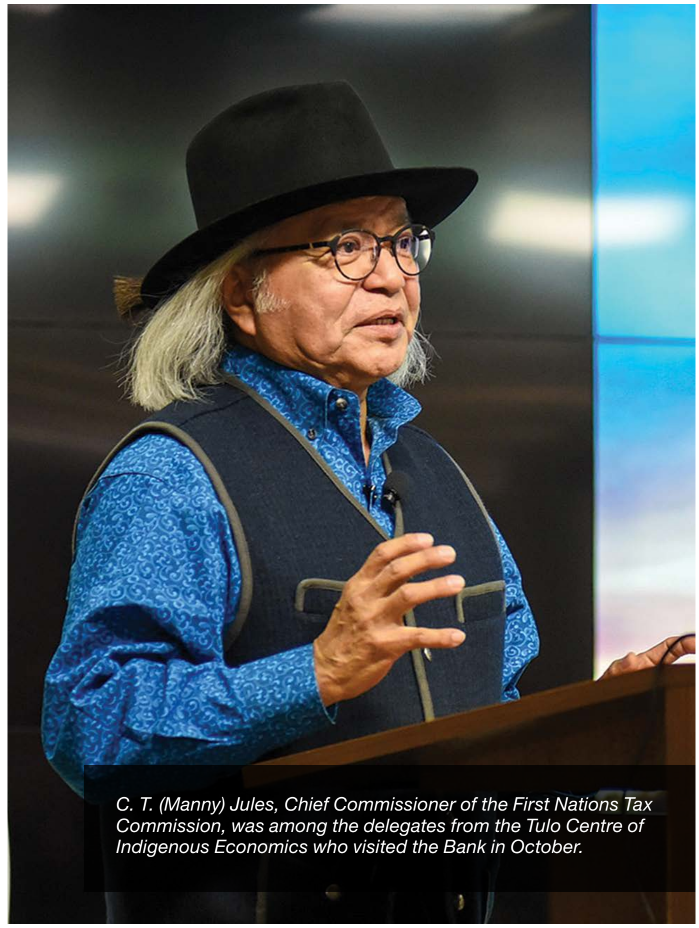
Plain, simple and digital

A national public opinion research program, now in its second year, continued to enhance the Bank's understanding of its audiences and their communication needs. Once again, Canadians showed a strong preference for simple, visual and digital communications.

These results supported the Bank's continued efforts to produce content accessible to a broader audience in *The Economy, Plain and Simple* (EPS), a digital magazine launched in 2018. The Bank published six multimedia EPS articles in 2019 covering a variety of topics, including wages, inflation, digital currencies and climate change. These short articles combine text, visuals and video to promote understanding of key economic concepts and the Bank's work.

The Bank also developed a new approach to promoting Governing Council (GC) speeches this year using speech summaries in plain language (see, e.g., Wilkins 2019). These digital summaries highlight the essential elements and key messages of GC speeches and are helping to drive a significant increase in online page views for speech content.

Social media tools continue to support the Bank's efforts to connect with and inform broader audiences. This year, the Bank implemented new processes for measuring engagement with its online and social media content. This work helps the Bank better assess the impact and reach of its communications.



C. T. (Manny) Jules, Chief Commissioner of the First Nations Tax Commission, was among the delegates from the Tulo Centre of Indigenous Economics who visited the Bank in October.

The Bank also progressed in its efforts to transform publications and research into digital products. Notably, it launched the first fully digital *Financial System Review* (FSR) in 2019, along with an FSR summary that distilled the report down to its key messages. Together, these products generated over 350 percent more page views than past FSRs.

In 2019, the Bank also expanded its platform for sharing economic and financial data with the public. Through the Bank's website, users now have access to more than 7,000 data series and 3 million observations and can retrieve data in contemporary formats. An average of 500,000 users per month were accessing this service by year-end. In 2019, the Bank increased the number of available datasets by 30 percent.

Deeper relationships, more meaningful dialogue

The Bank continued to enrich and expand its stakeholder engagement activities in 2019. As part of the lead-up to the 2021 renewal of the inflation-control target agreement with the Government of Canada, engagement activities focused on supporting this important objective.

Bank officials consulted with more than a dozen civil society, labour, Indigenous and business groups across the country to discuss their priorities and economic

The Bank of Canada Museum offers a little something for everyone.

Social media:
161,389 Twitter followers,
48,537 LinkedIn followers, and
5,560 YouTube subscribers

Speeches:
14 speeches by members
of Governing Council

Media: 12 press conferences,
38 media interviews,
291 media info requests

Bank of Canada Museum:
72,310 visitors

Website:
32.3 million unique page views
and 7.1 million users

Public information:
8,041 calls and
3,980 emails received

concerns. This included a visit to the Bank by the Tulo Centre of Indigenous Economics; a special information session for the Standing Senate Committee on Banking, Trade and Commerce; and surveys and focus groups with the general public.

The Bank created new web content to promote transparency around these activities and to offer a preview of work that will carry over into 2020. This work includes online consultations, round tables and a second round of focus groups.

The Bank is continuing research exploring the implications of a central bank digital currency (CBDC). To support this work, it held focus group discussions in Montréal, Toronto and Vancouver to investigate Canadians' awareness, knowledge and perceptions of methods of payment. The Bank will increase its education and awareness efforts on this topic, reinforcing its commitment to ensuring safe and secure currency so that Canadians can continue to have confidence in their money. (See page 34 for more information on the Bank's research into a central bank digital currency.)

In line with the Bank's principles for external communication, Bank leaders participated in a range of public activities in 2019:

- 116 public and private speaking engagements
- 77 media activities
- 34 consultations and round tables
- 12 regional outreach activities, including 3 in smaller urban centres

These efforts were supported by the Bank's regional offices, which maintain close ties with industry, government, schools and universities.

Bank of Canada Museum

The Museum received a record number of visitors in 2019; 72,310 individuals visited, up from 61,396 in 2018. This increase underscored the success of the Museum's enhanced programming as well as the public's growing awareness of the space.

Governor Poloz attends an event hosted by the Chambre de commerce du Montréal métropolitain in February. Credit: Thierry Du Bois / Cosmos Image

The Bank launched digital visitor experience surveys, which yielded positive results overall. In 2019, 81 percent of guests rated their experience at the Museum as "superior" or "excellent." This positive feedback was reflected in online reviews and helped earn the Museum a Certificate of Excellence from the popular travel website TripAdvisor. The results of a national teacher survey also launched in 2019 will inform the development of the Museum's educational programs and activities.

The Bank also introduced virtual and onsite education resources to help bring economic education to classrooms. These include two new school programs, "Inflation Busters" and "Trading Planets," as well as online lesson plans. A new bursary program provides schools with funding to pay for transportation to visit the Museum. To date, 15 schools have registered to participate.

In the fall, the Museum launched a new exhibit, "Luck and Lore," which explores the spiritual, ceremonial and superstitious uses for money and the surprising roots of some very familiar traditions.

Academic outreach and awards

The Bank engages with academic and other research partners through a variety of initiatives and programs.

The Visiting Scholar Program recruits leading academics and researchers to visit the Bank and provide guidance and coaching to Bank researchers.

In 2019, the Bank prioritized identifying new visiting scholars and took steps to recruit leading women researchers. Of the eight 2019 visiting scholars, six are new to the program and three are women:

- Michael Ehrmann, European Central Bank
- Itay Goldstein, Wharton School of the University of Pennsylvania
- Greg Kaplan, University of Chicago
- Charles M. Kahn, University of Illinois
- Evi Pappa, European University Institute
- Christine Parlour, Haas School of Business, University of California, Berkeley
- Julia Thomas, Ohio State University
- Gianluca Violante, Princeton University

The Bank of Canada's Top Research Award recognizes achievements in economic and financial system research coming from within the Bank. The award went to Jason Allen in 2019 (see Allen, Clark and Houde 2017).

The Fellowship Award recognizes excellence among well-established researchers in Canada. The 2019 recipients were Diego Restuccia and Michelle Alexopoulos, both of the University of Toronto.

The Governor's Award recognizes exceptional assistant and associate professors doing exemplary work in fields related to central banking. The 2019 award went to Ryan Riordan of Queen's University.

The Governor's Challenge is an annual university competition that promotes students' understanding of the role of monetary policy in Canada's economy. Wilfrid Laurier University won the challenge in 2019 for the second year in a row.

Published research

The Bank published a total of 52 staff working papers, 12 staff discussion papers, 34 staff analytical notes and 1 technical report this year. Additionally, 64 papers by Bank staff were published or accepted in academic, peer-reviewed journals.

Deputy Governor Paul Beaudry and Senior Deputy Governor Carolyn A. Wilkins present Senior Research Officer Jason Allen with the Bank's Top Research Award at the Employee Conference in March.

More information

- Allen, J., R. Clark and J. F. Houde. 2017. "Search Frictions and Market Power in Negotiated Price Markets."
- Bank of Canada. "Awards."
- Bank of Canada. "Principles for External Communication by Members of Governing Council."
- Bank of Canada. *The Economy, Plain and Simple*.
- Bank of Canada Museum. "Lesson Plan."
- Bank of Canada Museum. "Luck and Lore."
- Bank of Canada Museum. "School Programs."
- Wilkins, C. A. 2019. "Financial Stability in an Uncertain World." Plain language speech summary of her remarks to the International Finance Club of Montréal, Montréal, Quebec, November 19.

IN FOCUS: COMMUNICATING WITH CANADIANS

THE BANK ENGAGES IN EXTENSIVE OUTREACH AND stakeholder engagement activities. These ensure that the Bank not only communicates its policies and decisions effectively but also considers the views of Canadian individuals, businesses and organizations as it conducts its policy actions.

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

The Bank also publishes the *Financial System Review* (FSR) once a year to help Canadians understand risks to the stability of Canada's financial system. The FSR features prominently on the Bank website's Financial System Hub, which offers timely access to Bank analysis and research on financial stability issues.

The Economy, Plain and Simple is another digital publication that aims to help Canadians better understand the economy. The short articles explain key economic concepts and issues in a way that is easy to understand.

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

News conferences and media interviews with the Governor and the Senior Deputy Governor (SDG) follow the release of major publications like the MPR and the FSR. Members of the media attend lock-ups at the Bank's head office to obtain copies of speeches and publications under embargo.

The Governor and the SDG appear twice a year before the House of Commons Standing Committee on Finance and the Standing Senate Committee on Banking, Trade and Commerce.

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.

GLOBAL ENGAGEMENT

Global engagement in 2019

Multilateralism faced challenges once again in 2019. The escalation of trade tensions and heightened uncertainty about future trade policies contributed to growing concerns about the stability of the rules-based global order. The Bank was nonetheless able to work effectively with partners and made important contributions to global policy dialogue.

Taking an active role in the G7 and G20

The Bank actively participated in G7 and G20 discussions, where policy-makers remained focused on promoting strong, sustainable, balanced and inclusive growth. To this end, members explored opportunities to address risks in the global economy and financial system. The G7's focus was on the need to address competition issues stemming from digitalization and to ensure that the benefits of growth are more widely shared. G20 members focused on the macroeconomic challenges and opportunities related to demographic changes (such as aging populations) and on assessing the risks associated with global imbalances.

The Bank built upon work and networks developed under Canada's 2018 G7 presidency to better understand the implications of digitalization on the economy and financial system and to promote diversity and inclusion in central banks. It also joined the growing international effort to understand and address what climate change may mean for the economy and financial system. (See page 17 for more information about the Bank's work with the G7 Central Bank Digitalization Working Group and page 51 for more information about the Bank's work on climate change.)

The Bank continued to steer global policy discussions of the risks and challenges in the global economy. At international meetings and in its monetary policy communications, the Bank highlighted the risks that persistent trade tensions and related uncertainty pose—not only to near-term growth but also to long-term global economic potential.

Promoting financial system resilience

The Bank continued to work closely in 2019 with international partners to monitor and enhance the resilience of global financial systems. It supported a range of activities of the Financial Stability Board (FSB) to develop and promote effective regulatory, supervisory and other financial sector policies in the interest of financial stability around the world.

Senior Deputy Governor Carolyn A. Wilkins continued her work with the FSB Plenary and the FSB Standing Committee on Assessment of Vulnerabilities. In 2019, the Bank supported the FSB's efforts to enhance its framework for assessing global vulnerabilities and identifying and addressing new and emerging risks to global financial stability.

The Bank also made important contributions to evaluating the effects of reforms to address the too-big-to-fail phenomenon, implemented in the aftermath of the global financial crisis. Together with FSB partners, Bank representatives worked to better understand how much the reforms are reducing the systemic and moral hazard risks for systemically important banks.

In addition, the Bank participated in the FSB's Regional Consultative Group (RCG) for the Americas—one of six RCGs that enable financial authorities to exchange views on financial stability issues. The Senior Deputy Governor co-chaired the Regional Consultative Group Review, collaborating with RCG members on how to enhance the effectiveness of RCGs as an outreach and feedback mechanism for the FSB.

The Bank also continued to participate in CPMI-IOSCO,[1] the global standard-setting group for financial market infrastructures. Bank staff helped to assess standards

THE BANK OF CANADA'S INTERNATIONAL ROLE

Sharing information and insights with global counterparts helps the Bank understand the global economy. This engagement is essential to both formulating monetary policy and identifying risks to the financial system. It prepares the Bank to address global economic, financial and regulatory challenges, which can be complex and are often interrelated. As well, the Bank and its global partners discuss a range of common issues related to financial system policies and central bank operations.

The Governor, Senior Deputy Governor, Deputy Governors and other Bank leaders work closely with such bodies as the G7, the G20, the Financial Stability Board, the Bank for International Settlements, the Organisation for Economic Co-operation and Development, and the International Monetary Fund.

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

1 CPMI-IOSCO is 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.

Senior Deputy Governor Carolyn A. Wilkins takes part in a panel discussion about fintech and capital markets at the World Bank spring meetings in April. Photo: World Bank Group

Deputy Governor Tim Lane takes part in an April panel discussion about central bank digital currencies at the International Monetary Fund New Economy Forum in Washington D.C. Photo: IMF

Governor Stephen Poloz chats with Christine Lagarde of the European Central Bank and Jerome Powell of the US Federal Reserve at an IMF event in October.

implementation in CPMI-IOSCO member countries and studied default auction practices at central counterparties around the world.

This work complements the Bank's domestic efforts to promote a safe and secure financial system. (See page 22 for more information about the Bank's work to promote financial system resilience in Canada.)

Enhancing international cyber security

The Bank continued its work with industry, international bodies and federal and provincial authorities to improve cyber security policies and practices at all levels. In November, Chief Operating Officer Filipe Dinis spoke on the importance of cyber security co-operation and information sharing, both within the financial sector and between the public and private sectors (see Dinis 2019).

Through its membership in the G7 Cyber Expert Group (CEG), the Bank supported G7 finance ministers, central bank governors and bank supervisors in their efforts to promote the cyber resilience of the global financial system. In 2019, the CEG held a multi-day cyber exercise to test authorities' readiness for an international cyber incident. In 2020, the Bank will contribute to implementing the lessons learned.

The Basel Committee on Banking Supervision (BCBS) provides a forum for co-operation among banking supervisors. The Bank collaborated with BCBS colleagues to continue integrating cyber risk into the international supervisory framework for banking.

As a member of the Global Oversight College for SWIFT, the global financial messaging network, the Bank continued to support domestic and global financial systems. In 2019, important progress was made toward ensuring global SWIFT customers have appropriate end-user security controls in place—an effort that promotes the resilience of the SWIFT messaging ecosystem.

Through its membership in the High Value Payment System Operator Resilience Interest Group, which comprises representatives from central banks and other like institutions, the Bank continued to explore resilience issues related to these systems.

Responding to financial and technological innovation

The Bank continued to collaborate with authorities around the world to assess the financial stability implications of financial and technological innovation. The Bank helped put the challenges and opportunities related to cryptoassets on the global policy agenda during Canada's G7 presidency in 2018, and it continued these discussions in 2019.

Bank representatives worked closely with counterparts at the FSB to analyze the implications of large technology firms entering the finance industry, as well as the growth in decentralized financial technologies. These issues were discussed at a meeting of the FSB's Financial Innovation Network hosted by the Bank in Toronto. The Bank also contributed to the ongoing monitoring of cryptoassets, including work related to the potentially disruptive emergence of global stablecoins.

Stablecoins are a new form of cryptoasset whose value is pegged to an external reference, such as a national currency. Facebook gained considerable attention in 2019 with its proposal for a global stablecoin called Libra. In response, France leveraged its G7 presidency to create G7 working and technical groups focused on global stablecoins. Bank representatives actively participated in both groups and contributed to a report on the challenges, risks and benefits that this new technology may pose—including for financial stability and monetary policy transmission (see BIS 2019). The Bank is also participating in an FSB group on regulatory issues in stablecoins that will assess existing approaches and advise on possible multilateral responses to address regulatory concerns (see FSB 2019).

This quick response demonstrated the Bank's commitment and ability to work effectively with international partners on emerging technology issues.

The Bank also made important contributions in 2019 to a CPMI-IOSCO report on wholesale tokens. This work added to the committee's previously published reports on distributed ledger technology and central bank digital currencies. This helped to reinforce the Bank's position as an important contributor to the global discussion on the future of payments and settlement.

Collaborating with central banks on administration and operations

The Bank also routinely engages with other central banks on matters related to its administration and operations. Through formal and informal partnerships, it shares information on challenges and opportunities and develops relationships with peers that can be leveraged for a variety of purposes. Some of the more notable engagements in 2019 include:

Governor Poloz and Senior Deputy Governor Wilkins in Fukuoka, Japan, where the G20 finance ministers and central bank governors meeting was held in June.

- the Bank for International Settlements' Group of Computer Experts (GCE), which considered issues related to digitalization, innovation and operations
- the Heads of HR of G7 Central Banks, which focused this year on promoting diversity and inclusion in central banks
- the Central Banks Heads of Security Executive Committee, which collaborated on system-wide and central bank–specific threat analysis
- the Bank for International Settlements' Central Bank Legal Experts meeting, which addressed legal considerations concerning cryptocurrencies and central bank digital currencies

The Bank readily shares its experience and expertise with others in the community, providing technical assistance to central banks and other international agencies. In 2019, the Bank accommodated 71 requests for technical assistance from central banks all over the world.

More information

- Bank for International Settlements (BIS). 2019. "Investigating the Impact of Global Stablecoins." October 18.
- Dinis, F. 2019. "Cyber Security: Breaking Down Barriers." Remarks to the Information Technology Association of Canada, Toronto, Ontario, November 12.
- Financial Stability Board (FSB). 2019. "Regulatory Issues of Stablecoins." October 18.

IN FOCUS: THE ECONOMICS OF CLIMATE CHANGE

CLIMATE CHANGE EMERGED AS AN IMPORTANT focus for the Bank in 2019. Through research and collaboration with partners, the Bank improved its understanding of climate risks as they relate to its mandate.

Participating in a growing international effort

In the spring, the Bank joined the Central Banks and Supervisors Network for Greening the Financial System (NGFS), which was established in December 2017. The NGFS defines and promotes best practices in climate risk management for the financial sector and conducts analytical work on green finance. By participating in the NGFS, the Bank contributed significantly to international efforts to understand climate risks to the economy and financial system and identify barriers to greener financial flows.

The Bank devoted senior staff to various NGFS workstreams in 2019. It chaired a subgroup on climate change research and provided innovative work on climate-economy modelling to a monetary policy subgroup. These models explore the impacts of climate change under various scenarios. The Bank also contributed to an NGFS handbook on sustainable investing for asset managers (see NGFS 2019).

The Bank is collaborating with a variety of international bodies to work toward a better understanding of climate change and the implications it may have for the economy and financial system. These groups include the Financial Stability Board and the Basel Committee on Banking Supervision.

In addition, the Bank hosted a climate change conference earlier this year that brought together academics and central banks from around the world to discuss the economics of climate change.

Through collaboration, the Bank is sharing its expertise and leveraging the knowledge of international experts. As such, it is building analytical capacity and advancing its own work in this area.

Contributing to the domestic dialogue

For the first time, the Bank's *Financial System Review* (FSR) identified climate change as a vulnerability. Published in May, the FSR described economic activity and the environment as intertwined. It presented the Bank's high-level approach to incorporating climate change risk into the analysis of the Canadian economy and financial system—as viewed through the Bank's risk assessment framework.

In a public speech in November, Senior Deputy Governor Carolyn A. Wilkins elaborated on the physical and transition risks associated with climate change (see Wilkins 2019). On the same day, the Bank published an article about the implications of climate change for Bank policy and launched a new multi-year research strategy. The strategy will enable the Bank to better assess the implications of climate change that are relevant to its mandate—namely, implications for macroeconomic forecasting, monetary policy-making and financial stability. In addition, the Bank's autumn Financial System Survey explored how market participants perceive the

(continued...)

risks associated with climate change. This was part of the broader effort to better understand how companies and investors are assessing and mitigating climate risks.

This work was supplemented by the Bank's ongoing discussions with federal and provincial partners, as well as through outreach to bank and pension fund executives.

Greening the Bank's operations

The Bank also continued its efforts to reduce its own environmental footprint and address operational risks related to climate change. It published its Greening the Bank of Canada strategy, which rests on five pillars:

- creating more energy-efficient work spaces
- cutting waste
- managing the Bank's carbon footprint
- managing risks to the Bank from climate change
- greening the pension fund

The Bank received recognition in 2019 for its long-standing commitment to the sustainability of its operations. The Canada Green Building Council awarded the Bank's Ottawa head office building Leadership in Energy and Environmental Design (LEED) Gold Certification. (See page 37 for more information about the Bank's LEED certification.)

More information

- Bank of Canada. *Financial System Review*.
- Bank of Canada. "Greening the Bank of Canada."
- Ens, E. and A. Guerin. 2019. "Climate Change Is a Big Issue for Central Banks." *The Economy, Plain and Simple.* Bank of Canada, November 19.
- Molico, M. 2019. "Researching the Economic Impacts of Climate Change." Bank of Canada, November 19.
- Network for Greening the Financial System (NGFS). 2019. "A Sustainable and Responsible Investment Guide for Central Banks' Portfolio Management." Technical Document, October.
- Wilkins, C. A. 2019. "Financial Stability in an Uncertain World (Full Remarks)." Remarks to the International Finance Club of Montréal, Montréal, Quebec, November 19.

GOVERNANCE

Governance in 2019

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. This includes formulating and implementing monetary policy, providing fiscal-agent services to the Government of Canada, issuing bank notes and providing 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 the role of 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.

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 the table below for committee descriptions). There were no changes to committee leadership roles in 2019.

The *Bank of Canada Act* provides for an Executive Committee to act in place of the Board (see page 55 for membership). In 2019, this committee met in November to receive the Bank's annual Senior Officer and Succession Planning report.

In addition, a special committee was formed in June to lead the recruitment process for a Deputy Governor to replace Lynn Patterson (see page 57 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 2019, the Board met six times, and the external meeting was held in St. John's, Newfoundland and Labrador.

Standing committees

Committee	Chair	Mandate	Number of meetings in 2019*
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 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, and succession planning	4
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, 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 consists of four independent directors, the Senior Deputy Governor and three other senior officers of the Bank.

The Board of Directors

Stephen S. Poloz[2*]
Governor

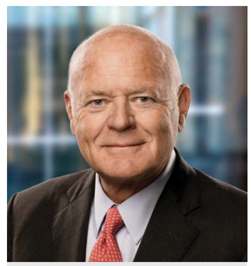
Carolyn A. Wilkins[2, 7*]
Senior Deputy Governor

Debora Bielecki[4, 5]
Toronto, Ontario

Stephanie Bowman[4, 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[3, 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. Executive Committee
3. Corporate Governance Committee
4. Audit and Finance Committee
5. Capital Projects Committee
6. Human Resources and Compensation Committee
7. Pension Committee
8. Fellowship Nominating Committee

* Indicates committee chair

Board independence

The Governor is both the Chief Executive Officer of the Bank and Chair of its Board of Directors. Therefore, 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. Claire M. C. Kennedy has acted as lead director since June 2018.

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 of Directors meets privately on a regular basis with the Chief Risk Officer.

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 also 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.*

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

Women members of the Bank's Board of Directors took part in a September career panel for staff. From left: Claire M. C. Kennedy, Mariette Mulaire, Anne Whelan and Debora Bielecki

Executive Council, from left: Deputy Governor Toni Gravelle, Deputy Governor Paul Beaudry, Deputy Governor Lawrence Schembri, Senior Deputy Governor Carolyn A. Wilkins, Governor Stephen S. Poloz, Deputy Governor Timothy Lane, Chief Operating Officer Filipe Dinis.

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.

Governor Stephen S. Poloz was appointed in 2013 for a seven-year term ending in June 2020. In December, Governor Poloz publicly announced his intention not to seek a second term as Governor. The Board has formed a special committee of its independent directors with a mandate to undertake a recruitment process for the next Governor.

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

Governing Council

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

In September, the Board of Directors appointed Toni Gravelle as Deputy Governor, effective October 1, 2019. His appointment filled the vacancy created by the retirement of Lynn Patterson in July 2019.

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.

Monetary Policy Review Committee

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

The MPRC consists of the Governing Council, the General Counsel and Corporate Secretary, advisors, managing directors of the analytic 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.

Financial System Review *Committee*

The Financial System Review Committee (FSRC) is the main forum for presenting and discussing 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.

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.

Lynn Patterson, who served as Deputy Governor until her retirement in July, appeared before the Hamilton Chamber of Commerce in March. Photo: Mike Lalich Photography

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.

Executive Council

(as at December 31, 2019)

Governor	Stephen S. Poloz*
Senior Deputy Governor	Carolyn A. Wilkins*
Deputy Governors	Paul Beaudry,* Toni Gravelle,* Timothy Lane,* Lawrence Schembri*
Chief Operating Officer	Filipe Dinis

For a full list of senior management, please visit the Bank's website.

* Also a member of Governing Council

RISK MANAGEMENT

Risk management in 2019

The Bank maintains a strong risk management culture. This allows it to face a range of risks from internal and external sources that could affect its ability to fulfill its mandate and achieve its strategic goals. It applies its enterprise risk management (ERM) policy using a framework to consistently manage strategic, operational, financial and environmental risks.

The Bank integrates ERM processes into its governance and decision making. It identifies and appropriately manages enterprise-wide and emerging risks, in keeping with the Bank's risk appetite.

Enhancing the Bank's risk management culture

The Bank integrated its risk management functions in 2019, creating the Financial and Enterprise Risk Department (FER). FER unites the Bank's Enterprise Risk Office, the Credit Risk Advisory Office and the Financial Risk Office. The Chief Risk Officer (CRO) serves as Managing Director. This new structure supports co-operation across the different offices, demonstrates industry best practices and reflects the Bank's strong culture of informed risk taking.

The Bank developed new tools in 2019 to more fully understand and appropriately manage risk in all business practices and decisions. This includes the explicit incorporation of environmental risks, including climate-related risks. It also changed its risk assessment process to enable more robust discussion and analysis. These changes enhanced existing policies and frameworks to ensure clarity, consistency and rigour in the management of risk at the Bank.

The Bank hosted a panel discussion on digitalization and risk, in which industry experts and Bank staff discussed current digitalization trends and their implications for risk management. In partnership with the Global Risk Institute, the Bank also developed educational workshops on effective key risk indicators.

The 15th annual Central Bank Risk Managers Conference took place at the Bank in October. The conference brought together representatives from 29 central banks to share information and insights on financial risk topics, such as risk control and measurement, risk budgeting and credit risk assessment. Participants also considered new and emerging topics, such as environmental, social and corporate governance and climate risks.

THE BANK OF CANADA'S RISK APPETITE

The Bank operates in a specialized and complex environment. It uses sound internal controls to manage a range of operational and financial risks from both external forces and its own activities. At the same time, its policy work is highly strategic and dynamic. This is because the central bank makes decisions about the future in the context of uncertainty and, sometimes, public debate. The Bank therefore regularly monitors known risks and scans the horizon for emerging risks in both policy and operational areas. It uses judgment to weigh all risks in light of their potential impact on its credibility, reputation and capacity to achieve long-term objectives, and it manages them accordingly.

The Bank achieves this by:

- minimizing and managing the impact of risks that could affect the Bank's ability to fulfill its mandate
- taking informed risks to foster innovation, advance the Bank's research and policy development, and improve operations and business practices

Risk governance

ERM embeds risk considerations into governance. This allows the Bank to make risk-informed decisions in day-to-day operations to meet the vision, mandate and strategic goals laid out in its medium-term plan.

The Governor, as Chief Executive Officer, has ultimate responsibility for risk management at the Bank, reporting to the Board of Directors. The Senior Deputy Governor and other members of the Executive Council oversee ERM implementation. 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.

The CRO is the executive owner of the ERM program and chairs the ROC. The CRO:

- is a member of the Senior Management Council
- participates in enterprise-wide discussions on the Bank's risks
- helps develop the Bank's risk profile
- monitors risk-related activities and issues
- prepares regular reports for the ROC, the Senior Management Council, the Executive Council and the Board of Directors

Risk management lines of defence

The Bank follows the Institute of Internal Auditors' Three Lines of Defence model. This model is the industry standard for effective risk management and governance.

The first line of defence has primary responsibility for identifying and managing risk, including the operationalization of controls in keeping with associated policies, frameworks and risk appetites. This line consists of departmental leadership and staff.

The second line of defence sets the standards, provides advice and challenges the first line of defence. It also oversees risk management according to associated policies, frameworks and risk appetites. This line consists of the CRO, the Enterprise Risk Office, the Financial Risk Office and other operational units within the Bank that have risk mitigation among their core functions.

The third line of defence objectively assesses risk management, control and governance processes. It also advises on the design and implementation of these processes (while maintaining its independence). This line consists of the Bank's Internal Audit function.

Principal risks

Bank risks are classified as strategic, operational, financial and—new in 2019—environmental and climate-related. This classification scheme is the basis for including risk information in enterprise-wide communications and decision-making processes. In assessing its risks, the Bank considers the potential impact on its reputation.

Strategic risks

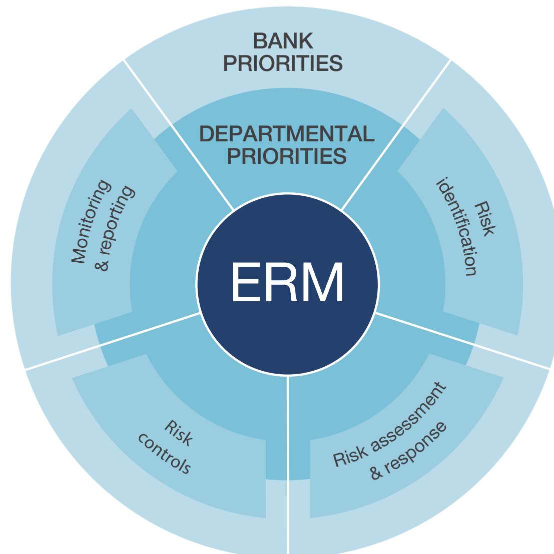
Strategic risks arise from external conditions, such as widespread shifts in public opinion or changes in economic or legal parameters. These risks threaten to disrupt the assumptions core to the Bank's mandate or strategic goals.

The Bank manages strategic risks by continuously scanning the environment, maintaining extensive domestic and international networks and conducting research to develop effective mitigation measures. The Bank's stakeholder engagement and communications functions also play an important role.

Operational risks

Operational risks stem from inadequate or failed internal processes or systems, underprepared people, or external events. The Bank pays close attention to operational risks that could affect the systems and tools that support its core functions.

Risk profiling process



The Bank operates in a complex security and threat landscape and faces operational risks that could affect its cyber security, business continuity or physical and personnel security. It has comprehensive programs to manage and mitigate operational risks. The Bank has also made significant investments in strategic initiatives to further enhance its resilience. These initiatives may involve collaborating with other central banks or the federal security and intelligence communities.

The Bank is also exposed to operational risks related to its human resources. The highly competitive labour market affects the Bank's ability to attract and retain experts in specialized and emerging fields, such as the economy and financial system, cyber security and data science. The Bank regularly reviews and updates its human resources approaches to meet these challenges and monitors its workforce to ensure staffing and skills support its strategic objectives. Efforts to improve employee retention, develop leaders, promote employee wellness and enhance diversity and inclusion also help mitigate human resource risks. (For more information about the Bank's people planning, see page 37.)

The global economic and financial environment changes rapidly. This means that the Bank may not have access to, or be able to exploit, the data required to inform its policy and research or to support internal business decisions. The Enterprise Data and Analytics Strategy (EDAS) launched this year will help to manage these risks. (For more information about EDAS, see page 38.)

Staff attend a panel discussion focused on the risks associated with digitalization.

Like similar organizations, the Bank manages operational risk with third parties to successfully deliver its activities and, ultimately, its mandate. The Bank's Third-Party Risk Management Policy ensures consistent, sound practices to address risks at each stage of third-party relationships. In 2019, the Bank developed tools and processes for the policy and conducted a pilot of the Third-Party Risk Management Framework before its full launch in 2020.

Financial risks

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 mainly 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.

The Bank discusses financial risks in detail in the notes to its financial statements.[2] The financial statements do not reflect financial risks associated with the Bank's role as a fiscal agent. These risks are borne by the government, subject to oversight according to the Funds Management Governance Framework of the Government of Canada and the Bank of Canada.

Environmental and climate-related risk

This risk is a 2019 addition to the corporate risk taxonomy. Bank leaders considered environmental risks and opportunities as part of 2019's departmental risk self-assessment process. Leaders were asked to consider the potential impacts of climate change on key aspects of the Bank's work—such as macroeconomic forecasting and monetary policy—as well as the risks associated with the Bank's impact on the environment. The Bank is now cataloguing the results of that process.

2 Additional information on financial risk management starts on page 97.

2019 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; it does not have a budget appropriation from the government. 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*.

This section provides a narrative discussion outlining the Bank's financial results and operational changes for the year ended December 31, 2019. This discussion should be read with the financial statements and accompanying notes for the year ended December 31, 2019, which were prepared in accordance with International Financial Reporting Standards (IFRS) and are presented in Canadian dollars. Management is responsible for the information presented in the Annual Report.

Managing the balance sheet

Financial position

(in millions of Canadian dollars)

As at December 31	2019	2018	2017
Assets			
Cash and foreign deposits	6.4	17.0	14.6
Loans and receivables	15,521.9	10,676.1	9,483.0
Investments	103,346.9	104,527.8	100,861.0
Capital assets	700.9	644.3	609.1
Other assets	66.7	189.7	132.6
Total assets	**119,642.8**	**116,054.9**	**111,100.3**
Liabilities and equity			
Bank notes in circulation	93,094.3	90,193.1	85,855.9
Deposits	25,243.3	24,806.2	24,228.8
Other liabilities	774.9	530.3	520.0
Equity	530.3	525.3	495.6
Total liabilities and equity	**119,642.8**	**116,054.9**	**111,100.3**

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 outstanding nominal domestic debt. 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	2019	2018	Variance $	Variance %
Cash and foreign deposits	**6.4**	**17.0**	**(10.6)**	**(62)**
Loans and receivables	**15,521.9**	**10,676.1**	**4,845.8**	**45**
Investments				
Government of Canada treasury bills	23,367.4	24,217.8	(850.4)	(4)
Canada Mortgage Bonds	510.7	251.3	259.4	103
Government of Canada bonds	79,030.5	79,625.4	(594.9)	(1)
Other investments	438.3	433.3	5.0	1
	103,346.9	**104,527.8**	**(1,180.9)**	**(1)**
Capital assets*	**700.9**	**644.3**	**56.6**	**9**
Other assets	**66.7**	**189.7**	**(123.0)**	**(65)**
Total assets	**119,642.8**	**116 054.9**	**3,587.9**	**3**

* *Capital assets* includes *Property and equipment*, *Intangible assets* and, effective January 1, 2019, *Right-of-use leased assets*.

The Bank's total assets have increased by 3 percent over the year to $119,642.8 million as at December 31, 2019. This increase predominantly reflects the greater demand for bank notes and the impact of fluctuations in deposits held by the Bank, as described in the section "Managing the balance sheet."

Loans and receivables is composed primarily of SPRAs totalling $15,516.5 million as at December 31, 2019 ($10,673.0 million as at December 31, 2018). SPRAs are high-quality assets temporarily acquired through the repo market, in line with the Bank's framework for financial market operations. These operations are 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.[3]

Investments decreased by 1 percent to $103,346.9 million as at December 31, 2019. This decrease was a result of the following movements within the Bank's holdings:

- Government of Canada treasury bills decreased by 4 percent to $23,367.4 million as at December 31, 2019. Purchases of Government of Canada treasury bills are based on the Bank's balance sheet needs.
- Canada Mortgage Bonds increased by $259.4 million during the year. Purchases of these bonds are conducted in the primary market on a non-competitive basis and are intended to provide 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.
- Government of Canada bonds decreased by 1 percent to $79,030.5 million as at December 31, 2019. This decrease primarily reflects past reductions in the Bank's minimum purchase amount of nominal bonds at auctions as well as fluctuations in Government of Canada debt issuances.[4]
- The value of the Bank's investment in shares of the Bank for International Settlements (BIS) increased by 1 percent to $438.3 million as at December 31, 2019. The growth in BIS equity resulted in an increase of $28.5 million, which was offset by a $23.5 million decrease due to fluctuations in the Special Drawing Rights exchange rate.

3 Demand for bank notes is typically at its lowest level in the first quarter and peaks in the second and fourth quarters around holiday periods.

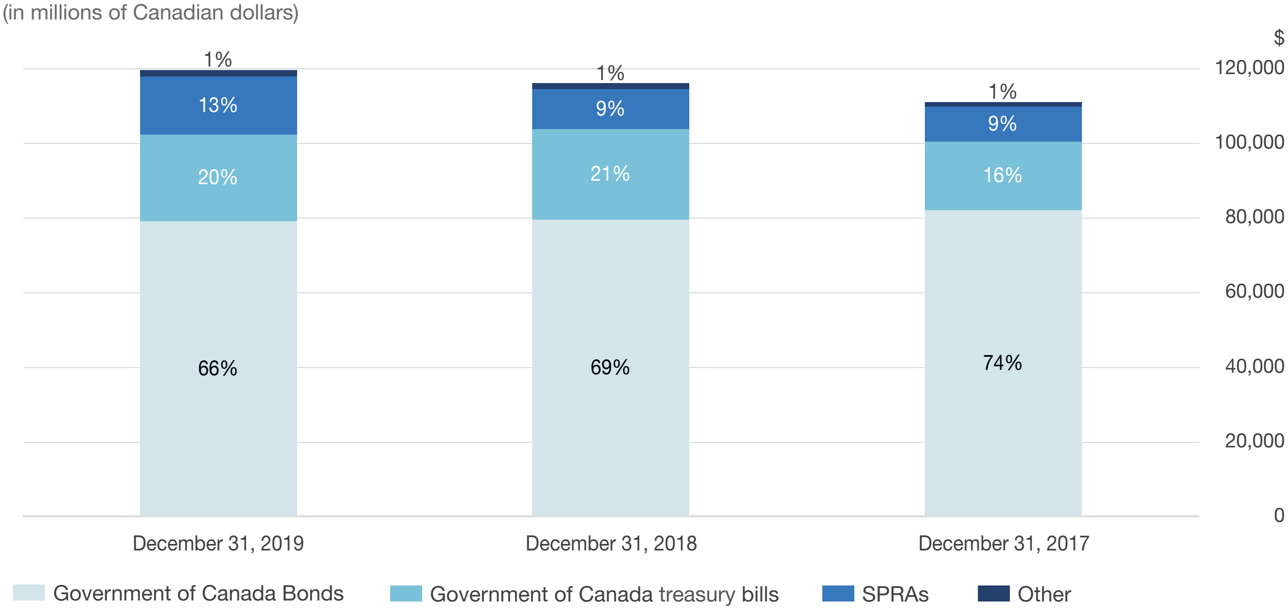
4 The Bank of Canada made the following changes to the Bank's minimum purchase amount of nominal Government of Canada bonds at auctions: October 1, 2015, reduced to 15 percent from 20 percent; February 3, 2017, further reduced to 14 percent; and December 21, 2017, further reduced to 13 percent.

Capital assets increased by 9 percent to $700.9 million as at December 31, 2019. This increase is mainly the result of the adoption of IFRS 16 Leases on January 1, 2019. As described in Note 2 to the Financial Statements, the adoption of IFRS 16 resulted in the recognition of $54.4 million of leased assets on the Bank's balance sheet. The Bank also maintained its ongoing investments in the resiliency initiatives of the Bank's medium-term plan (MTP), including enhancements to cyber security and business recovery.

Other assets decreased by 65 percent to $66.7 million as at December 31, 2019. This decrease is primarily due to an 80-basis-point decrease in the discount rate used to measure the pension plan's defined-benefit obligation since December 31, 2018.

Asset profile

(in millions of Canadian dollars)



Liabilities

Summary of liabilities

(in millions of Canadian dollars)

As at December 31	2019	2018	Variance $	Variance %
Bank notes in circulation	93,094.3	90,193.1	2,901.2	3
Deposits				
Government of Canada	21,765.6	21,725.6	40.0	0
Members of Payments Canada	249.5	250.5	(1.0)	0
Other deposits	3,228.2	2,830.1	398.1	14
	25,243.3	24,806.2	437.1	2
Other liabilities*	774.9	530.3	244.6	46
Total liabilities	119,112.5	115,529.6	3,582.9	3

* *Other liabilities* includes *lease liabilities*, effective January 1, 2019.

The Bank's total liabilities have increased by 3 percent to $119,112.5 million since December 31, 2018, generally driven by increases in bank notes in circulation and deposits.

Bank notes in circulation represents approximately 78 percent (78 percent as at December 31, 2018) of the Bank's total liabilities. The value of bank notes in circulation increased by 3 percent to $93,094.3 million as at December 31, 2019, driven by the continued growth in demand for bank notes.

Deposits represents the second-largest liability on the balance sheet. Deposits, which increased by 2 percent to $25,243.3 million as at December 31, 2019, consist of the following:

- Government of Canada deposits totalling $20,000.0 million held for the government's prudential liquidity-management plan ($20,000.0 million as at December 31, 2018) and $1,765.6 million held for the government's operational balance ($1,725.6 million as at December 31, 2018). The operational balance fluctuates based on the cash requirements of the Government of Canada.
- Deposits by members of Payments Canada of $249.5 million as at December 31, 2019. 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.
- *Other deposits,* which increased by 14 percent to $3,228.2 million as at December 31, 2019. This consists of deposits from central banks and other financial institutions, over which the Bank does not exercise control, as well as unclaimed balances remitted to the Bank in accordance with governing legislation.

Although there were no SSRAs outstanding as at December 31, 2019 ($nil as at December 31, 2018), 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.

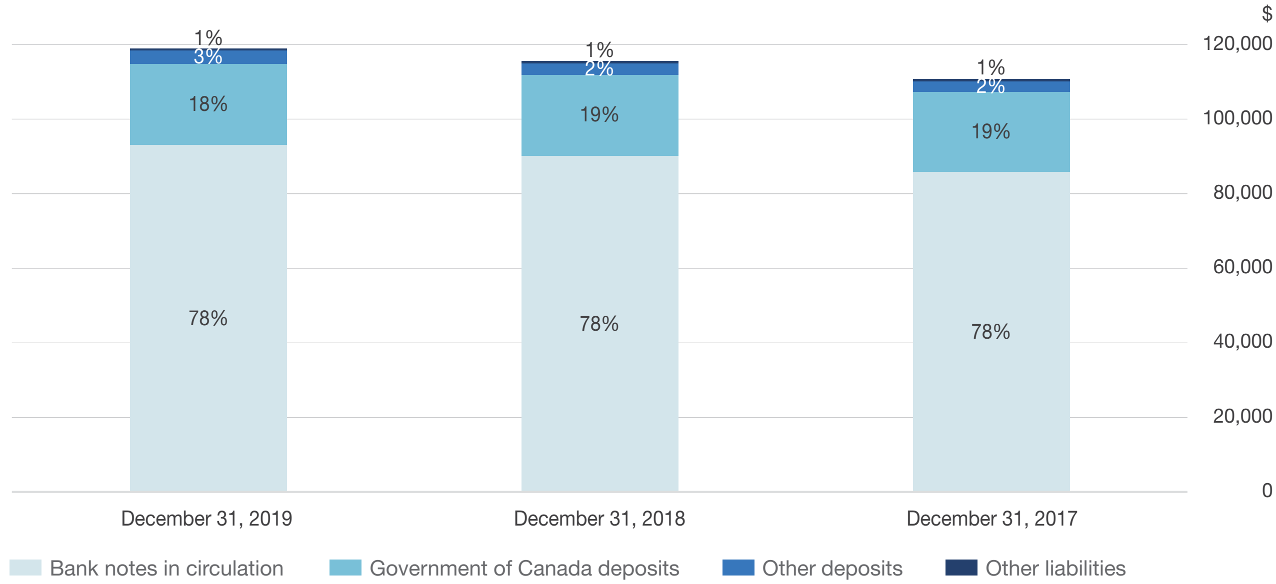
Other liabilities consists mainly of the surplus payable to the Receiver General for Canada and the net defined-benefit liabilities of the Bank's employee benefit plans. Other liabilities increased by 46 percent to $774.9 million as at December 31, 2019, primarily as a result of the following changes:

- The surplus payable to the Receiver General for Canada was $368.3 million as at December 31, 2019 ($225.9 million as at December 31, 2018). 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 remittances to the Receiver General for Canada. The Bank remitted $1,025.9 million during 2019 ($1,204.2 million in 2018).
- 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 increased by $60.7 million (or 27 percent) to $287.8 million as at December 31, 2019 ($227.1 million as at December 31, 2018), primarily reflecting decreases in the discount rates[5] used to measure the defined-benefit obligations.
- Following the adoption of IFRS 16, the Bank recognized $52.7 million in lease liabilities (as described in Note 2 to the Financial Statements) and had $50.6 million in lease liabilities outstanding as at December 31, 2019 (n.a. as at December 31, 2018).

5 The defined-benefit obligation component of 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, 2019, ranged from 2.9 to 3.2 percent (3.5 to 4.0 percent as at December 31, 2018). The lower the discount rates are, the higher the related defined-benefit obligations will be. See Note 15 to the Financial Statements for more information.

Liability profile

(in millions of Canadian dollars)



Equity

Summary of equity

(in millions of Canadian dollars)

			Variance	
As at December 31	**2019**	**2018**	**$**	**%**
Share capital	5.0	5.0	-	-
Statutory reserve	25.0	25.0	-	-
Special reserve	100.0	100.0	-	-
Investment revaluation reserve	400.3	395.3	5.0	1
Retained earnings	-	-	-	-
Total equity	**530.3**	**525.3**	**5.0**	**1**

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 foreign reserves in 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 because 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 because 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, 2019, this reserve totalled $400.3 million—an increase of 1 percent from December 31, 2018.

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	2019	2018	2017
Total income	1,881.2	1,658.4	1,479.5
Total expenses	(579.5)	(533.6)	(503.8)
Net income	**1,301.7**	**1,124.8**	**975.7**
Other comprehensive income (loss)	(128.4)	121.1	(38.0)
Comprehensive income	**1,173.3**	**1,245.9**	**937.7**

Income

Total income

(in millions of Canadian dollars)

For the year ended December 31	2019	2018	Variance $	Variance %
Interest revenue				
Investments	2,083.4	1,886.9	196.5	10
Securities purchased under resale agreements	191.4	122.6	68.8	56
Other	0.8	0.6	0.2	33
	2,275.6	2,010.1	265.5	13
Interest expense	(406.6)	(364.4)	(42.2)	12
Net interest revenue	1,869.0	1,645.7	223.3	14
Dividend revenue	4.2	4.2	-	-
Other revenue	8.0	8.5	(0.5)	(6)
Total income	1,881.2	1,658.4	222.8	13

Total income for 2019 was $1,881.2 million, an increase of 13 percent 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. The market rates, which apply to the Bank's interest-bearing assets and liabilities, increased in 2019 compared with 2018. This raises 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. It also increases interest that the Bank pays 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 with an average term to maturity of six years.

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 2019, the Bank recorded $2,083.4 million in interest revenue—an increase of 10 percent over the previous year. The increase was primarily the result of higher yields on newly acquired bonds and treasury bills offset by lower volume held on average during the year.

In 2019, interest earned on SPRAs was $191.4 million, representing an increase of 56 percent over the previous year. This was driven primarily by higher overall yields, supplemented by higher average holdings throughout the year.

The Bank also earns interest revenue on its cash and foreign deposits and on advances to members of Payments Canada.

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 $406.6 million in 2019—an increase of 12 percent over the previous year.

The Bank's revenue from its remaining sources was $12.2 million for the year ended December 31, 2019 ($12.7 million for the year ended December 31, 2018) 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)

			Variance	
For the year ended December 31	**2019**	**2018**	**$**	**%**
Staff costs	285.5	276.1	9.4	3
Bank note research, production and processing	60.9	53.4	7.5	14
Premises costs	32.0	29.6	2.4	8
Technology and telecommunications	72.3	53.9	18.4	34
Depreciation and amortization	54.9	47.1	7.8	17
Other operating expenses*	73.9	73.5	0.4	1
Total expenses	**579.5**	**533.6**	**45.9**	**9**

* *Other operating expenses* consists of outsourced operations services, business consulting services, professional fees, reference information and other miscellaneous expenses.

Total expenses increased by 9 percent over the previous year, primarily reflecting increases in both staffing costs and expenditures on MTP resiliency initiatives, including enhancements to cyber security and business recovery.

Staff costs increased by 3 percent to $285.5 million in 2019 as a result of the following changes:

- $12.1 million (or 7 percent) increase in salary costs, from $175.1 million to $187.2 million, resulting from the annual compensation adjustment and strategic initiatives positions being filled.
- $2.7 million (or 3 percent) decrease in benefit costs, from $101.0 million to $98.3 million, associated with the Bank's defined-benefit plans. The decrease in benefit costs is mainly the result of the discount rates used for their calculation.[7]

Bank note research, production and processing costs were 14 percent higher than the previous year at $60.9 million because a higher volume of bank notes was received during the year.

Premises costs were 8 percent higher in 2019 at $32.0 million. Specifically, equipment repair and building maintenance costs related to the Bank's head office were higher. These were partially offset by lower costs for utilities and building repair and alterations.

Technology and telecommunications expenses were 34 percent higher for 2019, at $72.3 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.

7 Benefit costs are based on the discount rate as at December 31 of the preceding year (e.g., the rate as at December 31, 2018, was used to calculate the benefit expenses for 2019). 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 plan and other benefit plan expenses increased by an average of 50 basis points between the measurement dates as follows:

	2019 (rate as at December 31, 2018)	2018 (rate as at December 31, 2017)
Pension benefit plans	4.0%	3.5%
Other benefit plans	3.5% to 4.0%	3.1 to 3.5%

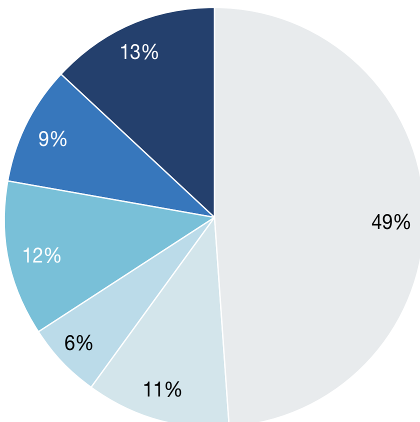
The decrease in the discount rate for December 31, 2019, as discussed in the "Assets" and "Liabilities" sections, will be reflected in the calculation of the 2020 expense and will result in increased benefit costs for that period, all else being equal.

Depreciation and amortization of $54.9 million in 2019 represented an increase of 17 percent over the previous year. The increase was primarily the result of the recognition of depreciation related to leased assets following the adoption of IFRS 16, as described in Note 2 to the Financial Statements.

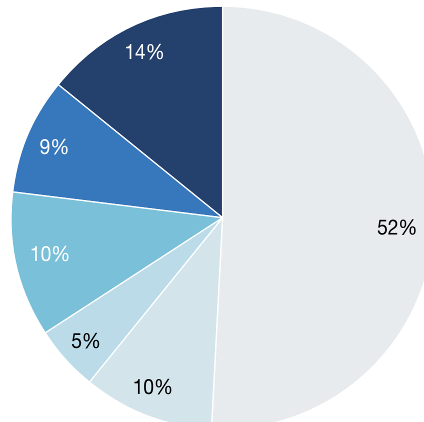
Other operating expenses represented 13 percent of the Bank's total operating expenses for 2019 (14 percent for 2018). They are mostly composed of outsourced operations and business consulting services in support of the Bank's operations.

Composition of expenses

For the year ended December 31, 2019



For the year ended December 31, 2018



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	2019	2018	Variance $	Variance %
Remeasurements of the net defined-benefit liability/asset	(133.4)	91.4	(224.8)	(246)
Change in fair value of BIS shares	5.0	29.7	(24.7)	(83)
Other comprehensive income (loss)	(128.4)	121.1	**(249.5)**	**(206)**

Other comprehensive income (loss) for the year was a $128.4 million loss. It consists of remeasurement losses of $133.4 million on the Bank's net defined-benefit plan asset and liabilities and an unrealized gain of $5.0 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' other financial assumptions. The remeasurement losses recorded in 2019 were mostly the result of decreases in the discount rates[8] used to value the Bank's defined-benefit plans. These remeasurement losses were partially offset by positive asset returns on the Bank's pension plans.

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, 2019, was 3.2 percent (4.0 percent as at December 31, 2018). The rates applicable to the net defined-benefit liabilities as at December 31, 2019, ranged from 2.9 to 3.2 percent (3.5 to 4.0 percent as at December 31, 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 because income is predictable and exceeds expenses. The net income of the Bank, less any allocation to reserves, is considered ascertained surplus (surplus); it was $1,168.3 million in 2019 ($1,216.2 million in 2018). 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 losses on the following: 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 ahead to 2020

The Bank's 2020 Plan

(in millions of Canadian dollars)

	2019 budget		2019 actuals		2020 budget	
For the year ended December 31	**$**	**%**	**$**	**%**	**$**	**%**
Core expenditures	372	59	360	62	379	55
Bank note production	54	9	56	10	47	7
New mandates	3	0	2	0	15	2
Sustaining resilience operations	38	6	36	6	57	8
Deferred employee benefits (net of allocations)	13	2	16	3	32	5
Strategic investment programs	154	24	113	19	153	22
Other provisions	1	0	1	0	3	1
Total expenditures*	**635**	**100**	**584**	**100**	**686**	**100**

* *Total expenditures* includes operational and capital expenditures, lease liabilities repayments and excludes depreciation.

The year 2020 represents the second year of the Bank's 2019–21 MTP, *Leading in the New Era*. The Bank's financial management framework is designed to enable decision making related to the allocation of resources to achieve the Bank's objectives and mitigate risks in a prudent fiscal manner. The framework balances the need to be fiscally responsible in the public sector environment and the need to invest in our people and tools.[9]

Core expenditures' financial planning assumptions are anchored on a commitment of 2 percent growth between the 2019 and 2020 budgets, or zero real growth, consistent with inflation averaging 2 percent, the Bank's inflation-control target. Core expenditures reflect the cost of ongoing operations for the Bank's core functions. The Bank's other financial investment requirements are identified separately and excluded from the MTP's commitment to the growth of core expenditures.

Bank note production includes the costs to develop and produce bank notes. Volumes are dependent on anticipated demand.

New mandates captures the increasing work to develop and implement new and potential 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. Once the costs have stabilized after the 2019–21 MTP, they will form part of the Bank's *Core expenditures*.

Strategic investment programs includes work from resilience programs that span multiple MTPs, which will continue to improve the Bank's resilience posture by reducing

9 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.

its exposure to cyber risks and other potential major business disruptions to its networks, facilities or employees and by supporting its timely recovery. We also see a continuation of the multi-year initiative led by Payments Canada to replace the current Large Value Transfer System and the Automated Clearing Settlement System. In addition, the Agency Operation Centre Modernization Program will improve cash handling systems and reduce the risk of equipment failure due to aging infrastructure.

In 2020, the Bank expects to incur $78 million in capital expenditures (included in strategic investment program expenditures), which predominantly reflect the Bank's continued investment in cyber security and resiliency initiatives.

See page 8 for more information on the Bank's 2019–21 MTP.

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. These bylaws 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 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, accompanied by the Bank's Annual Report, to the Minister of Finance 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, 2019, reflects the plan's performance in 2018. 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 percent (140 percent as at January 1, 2018). On a solvency basis (which assesses the plan on the assumption that it would be terminated on the date of the valuation), the plan had a solvency ratio of 112 percent (111 percent as at January 1, 2018).

Given the plan's 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 valuation scheduled for January 1, 2020. The Bank anticipates that, if the results of 2019 are in line with actuarial assumptions, its contributions will not resume in 2020.

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*.

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.

FINANCIAL STATEMENTS

December 31, 2019

Contents

Glossary of abbreviations

BIS	Bank for International Settlements
CPA Canada	Chartered Professional Accountants of Canada
ECL	expected credit loss
FVOCI	fair value through other comprehensive income
FVTPL	fair value through profit or loss
IAS	International Accounting Standard
IASB	International Accounting Standards Board
IFRIC	International Financial Reporting Interpretations Committee
IFRS	International Financial Reporting Standards
ITA	*Income Tax Act*
LVTS	Large Value Transfer System
OCI	other comprehensive income
PSAS	Public Sector Accounting Standards
Pension Plan	Bank of Canada Pension Plan
SDR	Special Drawing Rights
SIPP	Statement of Investment Policy and Procedures
SPA	Bank of Canada Supplementary Pension Arrangement
SPRAs	securities purchased under resale agreements
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 the 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 2019 financial statements have been audited by the Bank's independent auditors, PricewaterhouseCoopers LLP and KPMG 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 20, 2020

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, 2019, 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, 2019 and its financial performance and its cash flows for the year then ended in accordance with International Financial Reporting Standards (IFRS).

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 matter

The financial statements of the Bank for the year ended December 31, 2018 were audited by Ernst & Young LLP and PricewaterhouseCoopers LLP, who expressed an unmodified opinion on those financial statements on February 13, 2019.

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 2019 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 IFRS, 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	KPMG LLP
Chartered Professional Accountants Licensed Public Accountants	Chartered Professional Accountants Licensed Public Accountants

Ottawa, Canada
February 20, 2020

Statement of financial position

As at December 31 (in millions of Canadian dollars)

	Note	2019	2018
Assets			
Cash and foreign deposits	3, 4, 7	6.4	17.0
Loans and receivables	3, 5, 7		
Securities purchased under resale agreements		15,516.5	10,673.0
Other receivables		5.4	3.1
		15,521.9	**10,676.1**
Investments	3, 6, 7		
Government of Canada treasury bills		23,367.4	24,217.8
Canada Mortgage Bonds		510.7	251.3
Government of Canada bonds		79,030.5	79,625.4
Other investments		438.3	433.3
		103,346.9	**104,527.8**
Capital assets	2, 8, 9, 10		
Property and equipment		590.6	600.3
Intangible assets		59.4	44.0
Right-of-use leased assets		50.9	n.a.
		700.9	**644.3**
Other assets	11	66.7	189.7
Total assets		**119,642.8**	**116,054.9**
Liabilities and equity			
Bank notes in circulation	3, 7, 12	93,094.3	90,193.1
Deposits	3, 7, 13		
Government of Canada		21,765.6	21,725.6
Members of Payments Canada		249.5	250.5
Other deposits		3,228.2	2,830.1
		25,243.3	**24,806.2**
Other liabilities	2, 3, 7, 10, 14	774.9	530.3
Total liabilities		**119,112.5**	**115,529.6**
Commitments, contingencies and guarantees	16		
Equity	17	530.3	525.3
Total liabilities and equity		**119,642.8**	**116,054.9**

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	2019	2018
Income			
Interest revenue			
Investments		2,083.4	1,886.9
Securities purchased under resale agreements		191.4	122.6
Other		0.8	0.6
		2,275.6	**2,010.1**
Interest expense			
Deposits		(406.5)	(363.9)
Other		(0.1)	(0.5)
Net interest revenue		**1,869.0**	**1,645.7**
Dividend revenue		4.2	4.2
Other revenue		8.0	8.5
Total income		**1,881.2**	**1,658.4**
Expenses			
Staff costs		285.5	276.1
Bank note research, production and processing		60.9	53.4
Premises costs		32.0	29.6
Technology and telecommunications		72.3	53.9
Depreciation and amortization		54.9	47.1
Other operating expenses		73.9	73.5
Total expenses		**579.5**	**533.6**
Net income		**1,301.7**	**1,124.8**
Other comprehensive income (loss)			
Remeasurements of the net defined-benefit liability/asset	15	(133.4)	91.4
Change in fair value of BIS shares	2, 3	5.0	29.7
Other comprehensive income (loss)		**(128.4)**	**121.1**
Comprehensive income		**1,173.3**	**1,245.9**

(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, 2019		5.0	25.0	100.0	395.3	-	525.3
Comprehensive income for the year							
Net income		-	-	-	-	1,301.7	**1,301.7**
Remeasurements of the net defined-benefit liability/asset	15	-	-	-	-	(133.4)	**(133.4)**
Change in fair value of BIS shares	3	-	-	-	5.0	-	**5.0**
		-	-	-	5.0	1,168.3	**1,173.3**
Surplus for the Receiver General for Canada	14, 17	-	-	-	-	(1,168.3)	**(1,168.3)**
Balance as at December 31, 2019		5.0	25.0	100.0	400.3	-	530.3

	Note	Share capital	Statutory reserve	Special reserve	Available-for-sale reserve	Retained earnings	Total
Balance as at January 1, 2018		**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	15	-	-	-	-	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	14, 17	-	-	-	-	(1,216.2)	**(1,216.2)**
Balance as at December 31, 2018		**5.0**	**25.0**	**100.0**	**395.3**	**-**	**525.3**

(See accompanying notes to the financial statements.)

Statement of cash flows

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

	2019	2018
Cash flows from operating activities		
Interest received	2,259.3	1,905.1
Dividends received	4.2	4.2
Other revenue received	7.1	7.3
Interest paid	(406.7)	(365.4)
Payments to or on behalf of employees and to suppliers and to members of Payments Canada	(484.8)	(460.8)
Net increase in deposits	437.1	577.4
Acquisition of securities purchased under resale agreements—overnight repo	(7,399.9)	(24,333.2)
Proceeds from maturity of securities purchased under resale agreements—overnight repo	7,399.9	24,333.2
Proceeds from securities sold under repurchase agreements	1,500.0	11,150.2
Repayments of securities sold under repurchase agreements	(1,500.0)	(11,150.2)
Net cash provided by operating activities	**1,816.2**	**1,667.8**
Cash flows from investing activities		
Net maturities (purchases) of Government of Canada treasury bills	851.6	(5,753.3)
Purchases of Canada Mortgage Bonds	(262.8)	(251.1)
Purchases of Government of Canada bonds	(14,614.1)	(13,209.0)
Proceeds from maturity of Government of Canada bonds	15,221.0	15,685.0
Acquisition of securities purchased under resale agreements—term repo	(108,283.1)	(87,350.6)
Proceeds from maturity of securities purchased under resale agreements—term repo	103,446.1	86,161.9
Additions of property and equipment	(29.9)	(68.6)
Additions of intangible assets	(26.3)	(13.7)
Net cash used in investing activities	**(3,697.5)**	**(4,799.4)**
Cash flows from financing activities		
Net increase in bank notes in circulation	2,901.2	4,337.2
Remittance of surplus to the Receiver General for Canada	(1,025.9)	(1,204.2)
Payments on lease liabilities	(4.1)	n.a.
Net cash provided by financing activities	**1,871.2**	**3,133.0**
Effect of exchange rate changes on foreign currency	(0.5)	1.0
Increase (decrease) in cash and foreign deposits	**(10.6)**	**2.4**
Cash and foreign deposits, beginning of year	17.0	14.6
Cash and foreign deposits, end of year	**6.4**	**17.0**

(See accompanying notes to the financial statements.)

Notes to the financial statements of the Bank of Canada

For the year ended December 31, 2019

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 Minister of Finance on behalf of 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 20, 2020.

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 role as fiscal agent, 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*. As fiscal agent for the Government of Canada, the Bank does not bear the risks and rewards of the related financial assets and liabilities. These assets, liabilities and related revenues and expenses are not included in the financial statements of the Bank, except for the costs incurred by the Bank to fulfill its fiscal-agent role, as discussed in Note 18.

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 because 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.

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.

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, Intangible assets* and *Right-of-use leased 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 annually.

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 15).

Current changes to IFRS

Effective January 1, 2019, the Bank adopted IFRS 16 *Leases* and the related amendments in accordance with the transition provisions set out in IFRS 16, as described below. The adoption of IFRS 16 resulted in changes to the Bank's accounting policies for the recognition and measurement of leases for which the Bank is a lessee. The Bank's accounting policy for leases is discussed in Note 10. No other new or amended standards were adopted by the Bank in 2019 that had a significant impact on its financial statements.

Future changes to IFRS

There are currently no new or amended standards issued but not yet effective that are expected to have a significant impact on the Bank's financial statements.

Transition to IFRS 16

As permitted by the transitional provisions of IFRS 16, management elected to apply the modified retrospective approach and not restate comparative figures since the impact of the adoption is not significant to the Bank's financial statements. The Bank's approach and the related impact upon transition to IFRS 16 is disclosed below.

Transitional expedients

Upon transition, management elected to apply the following transitional expedients available under IFRS 16:

- Grandfather assessments of whether an agreement existing at the transition date and entered into before adoption contained a lease under the previous lease standard.
- Measure the right-of-use leased assets equal to the related lease liability, adjusted for any prepaid or accrued lease payments recognized at the date of initial application, January 1, 2019.
- Not apply the recognition and measurement requirements of IFRS 16 for leases of low-value assets as defined in the Bank's accounting policy for leases in Note 10.

Financial statement impact of transition

Upon initial application of IFRS 16, the Bank recognized right-of-use leased assets of $54.4 million and lease liabilities of $52.7 million as at January 1, 2019, with no impact on retained earnings. The $1.7 million difference between the carrying amount of right-of-use leased assets and lease liabilities recognized at the transition date relates to prepaid lease payments made as of December 31, 2018. The prepaid lease balance was reclassified from prepaid lease expenses to right-of-use leased assets on January 1, 2019.

As the discount rate implicit in each lease contract is not readily determinable, when measuring lease liabilities, future lease payments are discounted using yields of zero-coupon Government of Canada bonds with durations approximating the remaining lease term as at January 1, 2019. The weighted average discount rate applied as at January 1, 2019, is 2.0 percent.

Impact on opening financial statements as at date of initial application—January 1, 2019

Partial statement of financial position

	Ref.	December 31, 2018	Effect of transition to IFRS 16	January 1, 2019
Assets				
Capital assets				
Property and equipment		600.3	-	600.3
Intangible assets		44.0	-	44.0
Right-of-use leased assets	Note 10	n.a.	54.4	54.4
		644.3	**54.4**	**698.7**
Other assets	A	189.7	(1.7)	188.0
Total assets		**834.0**	**52.7**	**886.7**
Liabilities and equity				
Other liabilities	B	530.3	52.7	583.0
Total liabilities		**530.3**	**52.7**	**583.0**
Equity		525.3	-	525.3
Total liabilities and equity		**1,055.6**	**52.7**	**1,108.3**

(A) As noted above, the $1.7 million difference between the carrying amount of right-of-use leased assets and lease liabilities recognized at the transition date relates to prepaid lease payments made as of December 31, 2018. As a result, these prepaid lease payments were reclassified from *All other assets* to *Right-of-use leased assets* as at January 1, 2019.

Composition of other assets

	December 31, 2018	Effect of transition to IFRS 16	January 1, 2019
Bank note inventory	12.1	-	12.1
Net defined-benefit asset	149.5	-	149.5
All other assets	28.1	(1.7)	26.4
Total other assets	**189.7**	**(1.7)**	**188.0**

(B) As noted above, lease liabilities recognized on transition to IFRS 16 resulted in a $52.7 million increase to *Other liabilities*.

Composition of other liabilities

	December 31, 2018	Effect of transition to IFRS 16	January 1, 2019
Surplus payable to the Receiver General for Canada	225.9	-	225.9
Net defined-benefit liability			
Pension benefit plans	66.2	-	66.2
Other benefit plans	160.9	-	160.9
Lease liabilities	n.a.	52.7	52.7
All other liabilities and provisions	77.3	-	77.3
Total other liabilities	**530.3**	**52.7**	**583.0**

Reconciliation of lease commitments at transition

The following table reconciles the Bank's undiscounted operating lease commitments disclosed in the Bank's financial statements as at December 31, 2018, to the lease liabilities recognized on initial application of IFRS 16 as at January 1, 2019.

Reconciliation of lease commitments at transition	
Operating lease commitments as at December 31, 2018	25.6
Extension options reasonably certain to be exercised	33.6
Lease of low-value assets	(0.5)
Other	2.3
	61.0
Discounted using the yield curves for zero-coupon bonds as at January 1, 2019	(8.3)
Lease liabilities recognized as at January 1, 2019	**52.7**

3. Financial instruments

Accounting policy

Recognition and derecognition

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. Financial instruments are initially recognized at fair value plus transaction costs, if any.

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 and measurement

The Bank's financial instruments are classified and subsequently measured as follows:

Financial instrument	Classification	Subsequent measurement
Cash and foreign deposits	Amortized cost	Amortized cost
Securities purchased under resale agreements	Amortized cost	Amortized cost
Other receivables	Amortized cost	Amortized cost
Government of Canada treasury bills	Amortized cost	Amortized cost
Canada Mortgage Bonds	Amortized cost	Amortized cost
Government of Canada bonds	Amortized cost	Amortized cost
Other investments	FVOCI	FVOCI
Bank notes in circulation	Face value	Face value
Deposits	Amortized cost	Amortized cost
Certain other liabilities	Amortized cost	Amortized cost

Financial assets at amortized cost

The Bank's financial assets at amortized cost are primarily debt instruments with cash flows consisting solely of payments of principal and interest. 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 expected credit loss (ECL) provision.

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. They are principally held for cash flow management purposes and are managed by collecting contractual cash flows.

SPRAs, *Other receivables*, *Government of Canada treasury bills*, *Canada Mortgage Bonds and Government of Canada bonds* are debt instruments that are managed by collecting contractual cash flows. They are measured at amortized cost using the effective interest method[1] less any ECLs.

Financial assets at FVOCI

Other investments is composed of shares in the BIS. These shares are not held for trading but rather as part of the Bank's functions as a central bank. They are managed by collecting dividend payments. 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.

Financial liabilities at face value

Bank notes in circulation represents those bank notes that have been produced and issued for use in the economy. Bank notes in circulation are non-interest-bearing liabilities and are due on demand. They are recorded at face value. The fair value of bank notes in circulation approximates their carrying value.

Financial liabilities at amortized cost

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 are managed by paying contractual cash flows and are measured at amortized cost using the effective interest method.

Impairment and write-off

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 Large Value Transfer System (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.

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.

1 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.

Accounting estimates and judgments

Impairment

Judgment is required when determining 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; and
- choosing appropriate models and assumptions for the measurement of 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

Low credit risk
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.

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 but not limited to 1) an actual or expected significant deterioration in the financial asset's credit rating; 2) significant deterioration in external market indicators of credit risk for a financial asset; or 3) existing or forecast adverse changes in the business, financial, regulatory, technological or economic 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.

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 1) significant financial difficulty of the counterparty; 2) a breach of contract, such as a default or past-due event; or 3) the likelihood that the counterparty will enter bankruptcy or other financial reorganization.

Default

For internal credit risk management purposes, the Bank considers a financial asset in default to be 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. 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 could include but are not limited to 1) internal assessment of the counterparty indicating default or near-default; 2) the counterparty experiencing unusual liquidity constraints; or 3) the counterparty having other past-due liabilities.

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.

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. Given their high credit quality, when assessing ECLs on these instruments, the Bank has applied the low-risk practical expedient available under IFRS 9. 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, 2019 ($nil as at December 31, 2018) as the amount of the ECLs was deemed not to be significant. There are no significant past due or impaired amounts as at December 31, 2019.

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 paid out by the Bank if the holder of the loan commitment draws down the loan and the cash flows that the Bank expects to recover.

As at December 31, 2019, no ECL had been recorded as none of the Bank's financial guarantees and commitments had been drawn upon, nor does the Bank expect that any will be drawn upon within the next 12 months ($nil as at December 31, 2018).

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.

Below are 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.

Other investments (BIS shares)

Significant unobservable inputs (Level 3). Estimated as 70 percent 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.

Cash and foreign deposits, SPRAs, other receivables, bank notes in circulation, 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.

	2019	2018
Fair value of BIS shares at January 1	433.3	403.6
Change in fair value recorded through other comprehensive income	28.5	5.1
Change due to Special Drawing Rights exchange differences recorded through other comprehensive income	(23.5)	24.6
Fair value of BIS shares at December 31	**438.3**	**433.3**

Financial instruments carried at amortized cost

The following table shows the fair value and carrying 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 carried at amortized cost and whose fair value does not approximate their carrying value.

	Level 1	Level 2	Level 3	Fair value	Carrying value
As at December 31, 2019					
Government of Canada treasury bills	23,364.6	-	-	23,364.6	23,367.4
Canada Mortgage Bonds	516.3	-	-	516.3	510.7
Government of Canada bonds	82,450.0	170.2	-	82,620.2	79,030.5
Total	106,330.9	170.2	-	106,501.1	102,908.6
As at December 31, 2018					
Government of Canada treasury bills	24,225.7	-	-	24,225.7	24,217.8
Canada Mortgage Bonds	252.9	-	-	252.9	251.3
Government of Canada bonds	82,134.5	112.5	-	82,247.0	79,625.4
Total	**106,613.1**	**112.5**	**-**	**106,725.6**	**104,094.5**

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 $6.4 million ($17.0 million as at December 31, 2018) was $4.6 million of foreign deposits ($15.7 million as at December 31, 2018).

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, 2019, consist of agreements with original terms to maturity ranging from 28 to 84 days (from 25 to 84 days as at December 31, 2018). In September 2019, the Bank started recognizing *National Housing Act* Mortgage-Backed Securities as acceptable collateral for the term repo program.

Advances to members of Payments Canada are collateralized liquidity loans made under the Bank's Standing Liquidity Facility to facilitate overnight settlement in the 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, 2019, there were no advances to members of Payments Canada ($nil as at December 31, 2018).

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.

Other investments is composed solely of the Bank's holdings of 9,441 BIS shares (9,441 BIS shares as at December 31, 2018), 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, 2019, the Bank was not engaged in any securities-lending activities ($nil as at December 31, 2018).

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, market 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 86 percent of the carrying value of its total assets (90 percent in 2018). 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 13 percent of the carrying value of the Bank's total assets (9 percent as at December 31, 2018). The fair value of collateral pledged to the Bank against these financial instruments at the end of the reporting period is presented below.

As at December 31	2019 $	2019 %	2018 $	2018 %
Securities issued or guaranteed by the Government of Canada	2,993.2	18.7	469.1	4.2
Securities issued or guaranteed by a provincial government	12,552.0	78.4	10,695.5	95.8
Securities guaranteed by a Crown corporation of the Government of Canada*	460.3	2.9	-	-
Total fair value of collateral pledged to the Bank	**16,005.5**	**100.0**	**11,164.6**	**100.0**
Carrying value of collateralized securities	**15,516.5**	**100.0**	**10,673.0**	**100.0**
Collateral as a percentage of carrying value		**103.2**		**104.6**

* Canada Mortgage and Housing Corporation

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 flows of cash and foreign deposits held by the Bank and deposits held at the Bank by other institutions because 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	2019	2018
Interest expense on Government of Canada deposits	57.9 / (57.9)	57.3 / (57.3)

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, 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 percent. 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 become 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. 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 highly liquid 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 because the table presents all cash flows on an undiscounted basis.

As at December 31, 2019	No fixed maturity	Within 12 months	1 to 5 years	More than 5 years	Total
Financial assets					
Cash and foreign deposits	6.4	-	-	-	**6.4**
Loans and receivables	-	15,538.2	-	-	**15,538.2**
Investments					
Government of Canada treasury bills	-	23,500.0	-	-	**23,500.0**
Canada Mortgage Bonds	-	13.6	544.5	-	**558.1**
Government of Canada bonds	-	17,270.7	41,356.8	32,938.4	**91,565.9**
BIS shares	438.3	-	-	-	**438.3**
	444.7	56,322.5	41,901.3	32,938.4	131,606.9
Financial liabilities					
Bank notes in circulation	93,094.3	-	-	-	**93,094.3**
Deposits					
Government of Canada	21,765.6	-	-	-	**21,765.6**
Members of Payments Canada	-	249.5	-	-	**249.5**
Other deposits	3,228.2	-	-	-	**3,228.2**
Other financial liabilities	-	487.1	-	-	**487.1**
	118,088.1	736.6	-	-	118,824.7
Net maturity difference	(117,643.4)	55,585.9	41,901.3	32,938.4	12,782.2

As at December 31, 2018	No fixed maturity	Within 12 months	1 to 5 years	More than 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*	-	6.4	275.5	-	**281.9**
Government of Canada bonds	-	16,744.3	42,287.8	33,543.4	**92,575.5**
BIS shares	433.3	-	-	-	**433.3**
	450.3	**51,813.0**	**42,563.3**	**33,543.4**	**128,370.0**
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)**	**51,259.3**	**42,563.3**	**33,543.4**	**13,067.5**

* The 2018 figure for expected undiscounted future cash flows from Canada Mortgage Bonds was adjusted to reflect all future payments.

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);
- 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 amount of property and equipment

	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**
Additions	1.0	21.6	7.3	**29.9**
Disposals	-	-	(0.8)	**(0.8)**
Transfers to other asset categories	(1.4)	0.3	1.1	-
Balances as at December 31, 2019	**575.4**	**164.4**	**84.8**	**824.6**
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)**
Depreciation expense	(18.0)	(15.5)	(6.0)	**(39.5)**
Disposals	-	-	0.7	**0.7**
Transfers to other asset categories	-	-	-	-
Balances as at December 31, 2019	**(139.7)**	**(62.2)**	**(32.1)**	**(234.0)**
Carrying amounts				
Balances as at December 31, 2018	**454.1**	**95.8**	**50.4**	**600.3**
Balances as at December 31, 2019	**435.7**	**102.2**	**52.7**	**590.6**

	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**
Included in *Carrying amounts* at December 31, 2019	0.2	18.5	8.4	27.1
Commitments at December 31, 2019	2.4	5.4	2.8	10.6

The commitments at December 31, 2019, consist primarily of computer and mechanical equipment related to resiliency initiatives.

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 developed internally or acquired externally.

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 amount of intangible assets

	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 from other asset categories	-	-	-
Balances as at December 31, 2018	**62.7**	**81.3**	**144.0**
Additions	15.3	11.0	**26.3**
Disposals	-	-	-
Transfers to other asset categories	-	-	-
Balances as at December 31, 2019	**78.0**	**92.3**	**170.3**
Amortization			
Balances as at December 31, 2017	**(44.7)**	**(45.5)**	**(90.2)**
Amortization expense	(2.7)	(7.1)	**(9.8)**
Disposals	-	-	-
Transfers from other asset categories	-	-	-
Balances as at December 31, 2018	**(47.4)**	**(52.6)**	**(100.0)**
Amortization expense	(3.7)	(7.2)	**(10.9)**
Disposals	-	-	-
Transfers to other asset categories	-	-	-
Balances as at December 31, 2019	**(51.1)**	**(59.8)**	**(110.9)**
Carrying amounts			
Balances as at December 31, 2018	**15.3**	**28.7**	**44.0**
Balances as at December 31, 2019	**26.9**	**32.5**	**59.4**

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**
Included in *Carrying amounts* at December 31, 2019	14.8	18.3	33.1
Commitments at December 31, 2019	7.5	2.6	10.1

10. Right-of-use leased assets and lease liabilities

The Bank's leases primarily consist of leases for rental of data centre facilities in support of the Bank's business resilience posture and rental of office space for regional offices (Halifax, Montréal, Toronto, Calgary and Vancouver).

Accounting policy

At the inception of a contract, the Bank assesses whether a contract is, or contains, a lease based on whether the contract conveys the right to control the use of an identified asset for a period in time in exchange for consideration. The Bank recognizes a right-of-use leased asset and lease liability at the lease commencement date. The right-of-use leased asset is initially measured as the sum of:

- the value of the initial amount of the lease liability included with *Other liabilities* as discussed in Note 14;
- the value of initial direct costs incurred;
- an estimate of costs to dismantle and remove the underlying asset or to restore the underlying asset or the site on which it is located; and
- any lease payments made at or before the lease commencement date, less any lease incentives received.

Right-of-use leased assets are depreciated over the lesser of the end of the useful life of the right-of-use leased asset or the lease term on a straight-line basis. The lease term includes periods covered by an option to extend if the Bank is reasonably certain to exercise that option. The right-of-use leased asset may be remeasured from time to time to reflect certain remeasurements in the related lease liability and impairment losses, if any.

Management has elected to apply the practical expedient not to recognize right-of-use leased assets and lease liabilities for short-term leases that have a term of 12 months or less and leases of low-value assets. The payments associated with these leases are recognized as an expense on a straight-line basis over the lease term.

In 2018, before the adoption of IFRS 16, payments made for leases classified as operating leases were charged to net income on a straight-line basis over the term of the lease. The Bank was not party to any significant finance leases.

Accounting estimates and judgments

Judgment is required when determining:

- the appropriate term over which the right-of-use leased asset should be depreciated;
- the appropriate lease term, in consideration of early termination or renewal clauses, to be considered in measurement of the lease liability;
- the appropriate discount rate to be used in the measurement of the lease liability; and
- whether existing right-of-use leased assets are subject to impairment.

Supporting information

Carrying amount of right-of-use leased assets

2019	Data centres	Offices	Other	Total
Cost				
Balances as at January 1, 2019	**36.1**	**16.6**	**1.7**	**54.4**
Additions	-	-	1.0	**1.0**
Balances as at December 31, 2019	**36.1**	**16.6**	**2.7**	**55.4**
Depreciation				
Balances as at January 1, 2019	-	-	-	-
Depreciation expense	(3.1)	(1.1)	(0.3)	**(4.5)**
Balances as at December 31, 2019	**(3.1)**	**(1.1)**	**(0.3)**	**(4.5)**
Carrying amounts				
Balances as at January 1, 2019	**36.1**	**16.6**	**1.7**	**54.4**
Balances as at December 31, 2019	**33.0**	**15.5**	**2.4**	**50.9**

Carrying amount of lease liabilities

As at December 31, 2019	Data centres	Offices	Other	Total
Balances as at January 1, 2019	**36.1**	**16.6**	-	**52.7**
Finance charges	0.7	0.3	-	**1.0**
New lease liabilities	-	-	1.0	**1.0**
Lease payments	(3.0)	(0.9)	(0.2)	**(4.1)**
Total	**33.8**	**16.0**	**0.8**	**50.6**

During the year, the Bank has recognized $0.2 million in expenses related to leases of low-value assets for which the recognition exemption has been applied. The Bank does not have any short-term leases for which the recognition exemption has been applied.

Maturity analysis for lease liabilities (undiscounted)

As at December 31, 2019	Data centres	Offices	Other	Total
Less than 5 years	17.0	5.5	0.9	**23.4**
Between 5 and 10 years	15.2	5.3	-	**20.5**
Between 10 and 15 years	5.6	5.5	-	**11.1**
More than 15 years	-	3.0	-	**3.0**
Total	**37.8**	**19.3**	**0.9**	**58.0**

11. Other assets

Other assets is composed of bank note inventory (production materials, including the polymer substrate and ink), any 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. Prepaid expenses are recorded at cost and amortized over the period during which the services are received.

The accounting policy for the net defined-benefit asset related to the Bank of Canada Pension Plan is discussed in Note 15.

Supporting information

Composition of other assets

As at December 31	Note	2019	2018
Bank note inventory		8.5	12.1
Net defined-benefit asset	15	34.1	149.5
All other assets		24.1	28.1
Total other assets		**66.7**	**189.7**

12. 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	2019	2018
$5	1,469.6	1,428.7
$10	1,665.6	1,632.8
$20	18,770.5	19,570.2
$50	17,456.5	16,405.6
$100	52,730.8	50,111.6
Other bank notes	1,001.3	1,044.2
Total bank notes in circulation	**93,094.3**	**90,193.1**

13. 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 consist of $1,765.6 million for operational balances and $20,000.0 million held for the prudential liquidity-management plan ($1,725.6 million and $20,000.0 million, respectively, as at December 31, 2018).

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

14. Other liabilities

Other liabilities consists of surplus payable to the Receiver General for Canada, the net defined-benefit liability for both the pension benefit plans and the other employee benefit plans and all other liabilities, which consist of accounts payable, accrued liabilities, provisions and lease liabilities.

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 15. The Bank's accounting policy for the lease liabilities is discussed in Note 10.

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	2019	2018
Surplus payable to the Receiver General for Canada		368.3	225.9
Net defined-benefit liability	15		
Pension benefit plans		97.3	66.2
Other benefit plans		190.5	160.9
Lease liabilities	10	50.6	n.a.
All other liabilities		68.2	77.3
Total other liabilities		**774.9**	**530.3**

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	2019	2018
Opening balance at beginning of year	225.9	213.9
Surplus for the Receiver General for Canada	1,168.3	1,216.2
Remittance of surplus to the Receiver General for Canada	(1,025.9)	(1,204.2)
Closing balance at end of year	**368.3**	**225.9**

15. 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.
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, 2019, and the next required valuation will be as at January 1, 2020. 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	2019	2018	2019	2018
Defined-benefit obligation				
Discount rate*	3.20%	4.00%	3.15%	3.90%
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*	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
Assumed medical cost trend				
Initial medical cost trend rate	n.a.	n.a.	5.07%	5.12%
Ultimate medical cost trend rate	n.a.	n.a.	4.00%	4.00%
Year that the rate reaches the ultimate trend rate	n.a.	n.a.	2040	2040

* 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 18 to 20 years for the pension benefit plans (17 to 18 years in 2018) and 6 to 23 years for the other benefit plans (6 to 22 years in 2018).

† *Other benefit plans* does not include an inflation rate adjustment since the adjustment is a component of Assumed medical cost trend.

‡ In 2019, the assumption for life expectancy for the plan valuations assumes that a male member reaching 60 will live for approximately 28 years (28 years in 2018) and a female member approximately 30 years (30 years in 2018).

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	(37.1)	(3.3)
Impact of 0.10% decrease	38.3	3.3
Rate of compensation increase		
Impact of 0.10% increase	7.7	0.4
Impact of 0.10% decrease	(7.6)	(0.4)
Mortality rate		
Impact of 10.00% increase	(46.8)	(3.0)
Impact of 10.00% decrease	52.2	3.5
Inflation rate		
Impact of 0.10% increase	33.1	n.a.
Impact of 0.10% decrease	(32.3)	n.a.
Medical cost trend rates		
Impact of 1.00% increase	n.a.	34.5
Impact of 1.00% decrease	n.a.	(26.6)

* 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	
	2019	2018	2019	2018
Fair value of plan assets				
Fair value of plan assets as at January 1	1,826.1	1,868.3	-	-
Interest income	72.1	65.0	-	-
Remeasurement gains (losses)				
Return on plan assets*	175.5	(85.0)	-	-
Bank contributions	7.5	21.4	-	-
Employee contributions	20.9	16.0	-	-
Benefit payments and transfers	(60.5)	(57.3)	-	-
Administration costs	(3.0)	(2.3)	-	-
Fair value of plan assets as at December 31	**2,038.6**	**1,826.1**	**-**	**-**
Defined-benefit obligation				
Benefit obligation as at January 1	1,742.8	1,823.7	160.9	178.3
Current service cost	43.5	50.9	4.7	5.4
Interest cost	71.1	64.8	6.3	6.2
Past service cost	-	-	-	-
Employee contributions	20.9	16.0	-	-
Remeasurement (gains) losses				
Arising from changes in demographic assumptions	-	-	-	-
Arising from changes in experience	12.8	(1.4)	-	-
Arising from changes in financial assumptions	271.2	(153.9)	26.4	(21.6)
Benefit payments and transfers	(60.5)	(57.3)	(7.8)	(7.4)
Defined-benefit obligation as at December 31	**2,101.8**	**1,742.8**	**190.5**	**160.9**
Net defined-benefit asset (liability)	**(63.2)**	**83.3**	**(190.5)**	**(160.9)**
Net defined-benefit asset	34.1	149.5	-	-
Net defined-benefit liability	(97.3)	(66.2)	(190.5)	(160.9)
Net defined-benefit asset (liability)	**(63.2)**	**83.3**	**(190.5)**	**(160.9)**
Benefit plan expenses recognized in net income	45.5	53.0	12.6	11.1
Remeasurement losses (gains) recognized in other comprehensive income	108.6	(70.3)	24.8	(21.1)

* The return on plan assets excludes interest income and includes a $17.4 million unrealized loss ($19.7M unrealized gain in 2018) due to changes in foreign exchange rates.

The defined-benefit obligation, presented by membership category, is as follows:

	Pension benefit plans		Other benefit plans	
As at December 31	2019	2018	2019	2018
Membership category				
Active members	901.5	694.7	93.0	77.7
Pensioners	1,081.4	949.8	97.5	83.2
Deferred members	118.9	98.3	-	-
Total defined-benefit obligation	**2,101.8**	**1,742.8**	**190.5**	**160.9**

The cumulative remeasurement losses recognized in other comprehensive income are as follows:

As at December 31	Pension benefit plans 2019	2018	Other benefit plans 2019	2018
Cumulative remeasurement gains (losses) recognized, beginning of year	(178.5)	(248.8)	3.8	(17.3)
Remeasurement gains (losses) recognized in current year	(108.6)	70.3	(24.8)	21.1
Cumulative remeasurement gains (losses) recognized, end of year	(287.1)	(178.5)	(21.0)	3.8

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	Quoted	Unquoted	Total	2019 %	Quoted	Unquoted	Total	2018 %
Money market instruments	22.3	-	**22.3**	1.1	10.5	-	**10.5**	0.6
Equity instruments								
Canadian equity funds	349.4	-	**349.4**	17.1	298.3	-	**298.3**	16.3
Foreign equity funds	556.4	-	**556.4**	27.3	474.1	-	**474.1**	26.0
Debt instruments*								
Securities issued or guaranteed by the Government of Canada	145.8	-	**145.8**	7.2	134.5	-	**134.5**	7.4
Securities issued or guaranteed by a provincial government	147.5	-	**147.5**	7.2	130.2	-	**130.2**	7.1
Fixed-income funds	430.7	-	**430.7**	21.1	399.1	-	**399.1**	21.9
Other securities	5.2	-	**5.2**	0.3	6.4	-	**6.4**	0.3
Real estate funds	-	343.2	**343.2**	16.8	-	332.9	**332.9**	18.2
SPA statutory deposit	-	38.1	**38.1**	1.9	-	40.1	**40.1**	2.2
Total	**1,657.3**	**381.3**	**2,038.6**	**100.0**	**1,453.1**	**373.0**	**1,826.1**	**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, 2019, reflect the Pension Plan's performance in 2018.

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 112 percent (111 percent as at January 1, 2018). The valuation reported a solvency surplus of $179.2 million and a three-year average solvency surplus of $130.2 million ($169.4 million and $86.7 million, respectively, for the valuation completed at January 1, 2018).

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 percent (140 percent as at January 1, 2018). The valuation reported a going-concern surplus of $507.6 million ($478.1 million for the valuation completed at January 1, 2018).

The funding requirements of the Pension Plan are determined by the annual going-concern and solvency valuation results. Given the Pension Plan's 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, 2020. Contributions in 2020 will be based on the actuarial valuation as at January 1, 2020, and the Bank anticipates that, if the results of 2019 are in line with actuarial assumptions, its contributions will not resume in 2020 (no contributions to the Pension Plan were made by the Bank in 2019).

The SPA is funded through both employer and employee contributions. Employer contributions are based on the actuarial determination of the Bank's accounting expense for the Plan. Effective January 1, 2020, the SPA's employer contribution will be determined according to a going-concern valuation, which will be the sum of the employer's share of the going-concern current service cost and the special payments necessary to amortize any deficit on the going-concern basis. Employer contributions to the SPA in 2020 are expected to be at $12.0 million.

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 because 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 *Lease liabilities* are discussed in Note 8, Note 9 and Note 10, respectively.

The Bank has a long-term contract with an outside service provider for retail debt services. The Bank signed an amended agreement effective November 1, 2019, until December 31, 2023. As at December 31, 2019, payments totalling $75.5 million remained. The contract is modular, with a flexible pricing framework.

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, 2019, fixed payments totalling $34.3 million remained.

As at December 31, 2019, the total minimum payments for long-term contracts, other than right-of-use leased assets, property and equipment, and intangible assets, were as follows:

As at December 31	2019
Due within one year	35.1
Due within one to three years	58.2
Due within three to five years	16.7
Thereafter	1.3
Total minimum payments	**111.3**

Foreign currency swap facilities

The Bank is a counterparty to several foreign currency swap facilities as follows:

As at December 31, 2019	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, 2020	2,000.0
Banco de México	Canadian dollars	December 12, 2020	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 expire on December 12, 2020, but 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 generally have a duration of one business day. The BIS swap was accessed for operational purposes both in 2019 and 2018.

None of the other liquidity or other swaps was accessed, by either party, in 2019 or 2018. No related commitments existed as at December 31, 2019 ($nil as at December 31, 2018).

Contingencies

Contingent liabilities are possible obligations that could result from uncertain future events outside 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 SDR5,000 per share, of which 25 percent (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 $63.6 million as at December 31, 2019 ($67.2 million as at December 31, 2018) 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 could 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 because 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	2019	2018
Share capital	5.0	5.0
Statutory reserve	25.0	25.0
Special reserve	100.0	100.0
Investment revaluation reserve	400.3	395.3
Retained earnings	-	-
Total equity	**530.3**	**525.3**

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 represents the net unrealized fair value gains of the Bank's financial assets classified and measured at FVOCI, which consist solely of the Bank's investment in the BIS. The total reserve was $400.3 million as at December 31, 2019 ($395.3 million as at December 31, 2018).

Retained earnings

The net income of the Bank, less any allocation to reserves, is considered ascertained 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 ascertained surplus payable to the Receiver General for Canada are presented in Note 14.

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 2019, the Bank withheld $133.4 million from its remittances to the Receiver General for Canada (in 2018, remitted $91.4 million). As at December 31, 2019, $188.3 million in withheld remittances was outstanding ($54.9 million as at December 31, 2018).

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 ($1.0 million in 2018) were fully recovered from the Pension Plan in 2019. Disclosures related to the Bank's post-employment benefit plans are included in Note 15.

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, 2019, was 29 (28 in 2018).

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	2019	2018
Salary and short-term employee benefits	6.4	5.9
Post-employment benefits	2.0	2.0
Directors' fees	0.3	0.3
Total compensation	**8.7**	**8.2**

There were no other long-term employee benefit costs or termination benefits related to key management personnel in 2019 ($nil in 2018).

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Timely access to press releases, speeches, major publications and current financial data is available on the Bank's website.
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