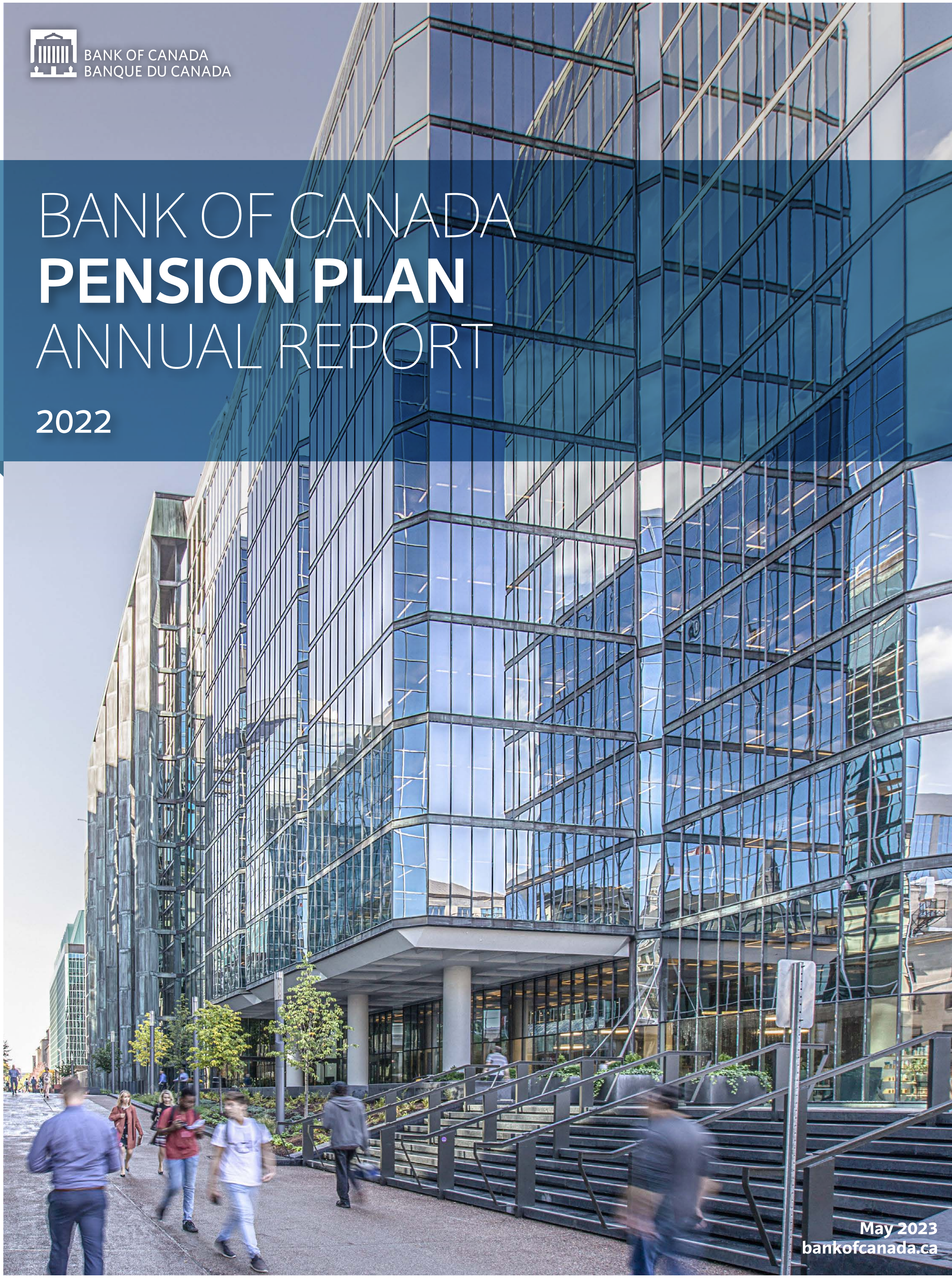
BANK OF CANADA
BANQUE DU CANADA

BANK OF CANADA **PENSION PLAN** ANNUAL REPORT

2022



May 2023
bankofcanada.ca

About the Plan

The Bank of Canada Pension Plan (the Plan) is registered with the Office of the Superintendent of Financial Institutions for the purposes of the *Pension Benefits Standards Act*, which regulates the Plan's design, funding, investment policy and operations. The Plan is also registered with the Canada Revenue Agency for the purposes of the *Income Tax Act*, which regulates the maximum contributions payable to, and the maximum permissible defined benefits payable from, a tax-sheltered pension arrangement. Assets are held in trust in the Pension Trust Fund (the Fund) and invested according to our investment strategy.

Under the *Pension Benefits Standards Act* and the terms of the Bank's Pension Plan (by-law 15), the Bank is the Plan administrator.

The *Pension Plan Annual Report* and the Plan's financial statements are available on the Bank of Canada's website at bankofcanada.ca.

For further information, contact:

Public Information
Communications Department
Bank of Canada
234 Wellington Street
Ottawa, Ontario K1A 0G9
Telephone: 613-782-8111; 1-800-303-1282 (toll-free in North America)
Email: info@bankofcanada.ca
Website: bankofcanada.ca

ISSN 1914-5691 (Print)
ISSN 1487-2466 (Online)

Contents

YOUR PLAN AT A GLANCE*
2022

Pension payments from the Fund: **$58M**

4,276 members

The value of the Fund's assets: **$2,047M**

-9.8%
1-year rate of return net of fees

$624M
Surplus on a going-concern basis

140%
Funding ratio on a going-concern basis

4.2%
5-year rate of return net of fees

$177M
Surplus on a solvency basis

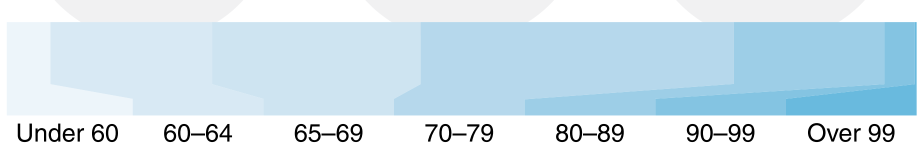
109%
Ratio on a solvency basis

1.06
Ratio of retirees to employees

72.4
Average age of retirees

1,937
Grand total of retirees

Age of those receiving a pension benefit:



* as at December 31, 2022

Message from the Chair

I'm pleased to share the Bank of Canada's 2022 *Pension Plan Annual Report*.

The Plan provides members with a predictable retirement income. Our internal and external experts work together to manage the Fund and to administer the Plan effectively to ensure it remains sustainable over the long term. I'm happy to report that, at the end of 2022, the Plan was in a solid financial position.

Like other Canadian pension plans, last year we experienced volatile financial markets, higher-than-normal inflation and a rapid increase in interest rates that combined to negatively impact returns on many asset classes. Despite these challenges, we remain well positioned to meet our financial obligations to members as they plan for a secure retirement.

Plan activities

In keeping with best practices, we conducted a new asset-liability modelling study in 2022; it identified an opportunity to restructure our public equity investments. The study also looked at how climate-related financial risks may affect the Fund's performance over time. We will use information from this analysis in our investment decisions to ensure the long-term health of the Plan.

As well, we began measuring the exposure of the Fund's public equities, Government of Canada securities and Canadian provincial and corporate bonds to climate risks. We shared this analysis as part of the Bank's first annual report on the disclosure of climate-related risks. Due to current limitations in data availability, private holdings were out of scope for the first report.

We focused our efforts on two additional Plan activities last year. We updated the demographic assumptions used to conduct our actuarial valuation to ensure they reflect our actual Plan experience as it evolves. As well, we reviewed our funding policies, as we do every three years, to ensure they remain current with industry best practices and changing expectations from regulators.

The outcome of each of these activities—together with our sound investment strategy—contributed to the Plan's financial health and long-term sustainability.

Fund performance

Slowing global growth, heightened inflation concerns and ongoing geopolitical risks weighed on almost all asset classes last year. As market sentiment remained negative and as yields increased, our realized return was -9.8%. This was below the benchmark of -7.6%, with the Fund's underperformance largely due to our real estate assets and partially offset by public equity returns.

While the return on our real estate assets was positive for the year, it was less than the benchmark we use for this asset class. This was largely because the timing of the valuation appraisals and performance reports for the Fund's real estate assets differs slightly from that of the benchmark indices. We expect this performance gap to narrow considerably in the future as the valuations for our real estate benchmarks begin to reflect the recent increase in interest rates and a corresponding decline in real estate prices. Real estate assets and their stable cash flows are a key part of the Fund, given our long-term outlook for building a portfolio that will meet our liabilities.

Public equities outperformed both the global and Canadian benchmarks in a declining market environment. This is mainly because some of our investment managers avoided expensive stocks that underperformed following a rapid increase in interest rates and in response to expectations for slower growth in global economies.

The negative asset returns were offset by an increase in discount rates used to calculate the present value of the Plan's future liabilities. At the end of 2022, the Plan had a $624 million surplus on a going-concern basis, which assumes that the Plan will continue to operate indefinitely. On a solvency basis—calculated on the hypothetical assumption that the Plan terminates on the date of the valuation—the Plan had a surplus of $177 million.

Pension contributions

Given the Plan's strong funding position on both a going-concern and a solvency basis, regulations under the *Income Tax Act* prohibit the Bank from making further contributions to the Plan, effective spring 2023. The strong position of the Plan is the result of an increase in interest rates and special contributions made by the Bank when the Plan had a solvency deficit. The resumption of contributions to the Plan will depend on the results of future actuarial valuations. Employee contributions are not changing.

I invite you to read more about our Plan's activities, investments, financial position and pension contributions in the report that follows.

A word of thanks

It has been a busy and, at times, challenging year. I would like to thank our Pension Plan staff and committee members for their hard work. I would also like to thank outgoing committee members Tim Lane, Jeremy Farr and Greg Stewart for their contributions to the Pension Committee. Finally, I would like to take this opportunity to welcome Deputy Governor Toni Gravelle, General Counsel and Corporate Secretary Steve Thomas and Bank Director Mariette Mulaire as the newest members of our Pension Committee.

Carolyn Rogers
Senior Deputy Governor
Chair, Pension Committee

Pension Plan governance

The Bank's Pension Plan has strong governance structures in place that promote effective decision making, prudent resource management and regular communication. Our oversight, management and administration frameworks, which include the division of responsibilities among stakeholders, ensure that we fund Plan benefits adequately and manage risks properly. The Plan's governance documents, including Terms of Reference for each of the three committees, are available on the Bank's website.

The Plan is overseen by three committees:

Pension Committee

Established by the Bank's Board of Directors to provide strategic direction for the activities and functions of the Plan administrator, the Pension Committee oversees the activities of the other two committees.

Pension Administration Committee

Provides expertise on the administration of the Plan, including communication with members, actuarial reviews, funding and accounting.

Pension Fund Investment Committee

Provides expert advice related to investment of the Fund's assets, including monitoring investment managers and their performance.

MEMBERS OF THE THREE COMMITTEES

Pension Committee

Carolyn Rogers,
Senior Deputy Governor (Chair)

Debora Bielecki,
Bank Director

Robert Campbell,
Bank Director

Raymond E. Ivany,
Bank Director

Greg Stewart,
Bank Director (replaced by Mariette Mulaire in March 2023)

Toni Gravelle,
Deputy Governor

Jeremy Farr,
General Counsel and Corporate Secretary
(replaced by Steve Thomas in March 2023)

Coralia Bulhoes,
Managing Director and Chief Financial Officer

Darcy Bowman,
Senior Legal Counsel (Secretary, non-voting)

Pension Administration Committee*

Steve Thomas (Chair)
(replaced by Matthew Meagher in April 2023)

Alexis Corbett

Darcy Bowman

Nicolas Lafontaine

Rebecca Spence

Darryl Tessier

Anne-Marie Lainesse (non-voting member)

Pension Fund Investment Committee*

Grahame Johnson (Chair)

Ian Christensen

Wendy Chan

Annick Demers

Kevin Dunn

Étienne Lessard

Patrick Roy

Anne-Marie Lainesse (non-voting member)

* Membership as at December 31, 2022, unless otherwise stated.

Policy review

In 2022, as part of our commitment to strong governance, we reviewed our funding and expense policies with our external pension partners. We do this every three years to ensure that we stay up to date with best practices and with applicable regulatory guidance and legislative changes. This review led to Board approval of updated funding and expense policies in September 2022. The updates align with recent guidelines by the Canadian Association of Pension Supervisory Authorities and strengthen the focus on risk measurement and management.

Pension Fund assets and investments

Assets

To achieve our long-term investment goals, we invest the Fund in a diversified portfolio that includes public equities, nominal bonds (including private debt), inflation-linked assets, real estate, infrastructure equity and cash (**Figure 1**). We carefully select asset classes to protect against various risks. For example, our assets include some protection against rising inflation since Plan benefits are indexed each year to keep pace with inflation.

External managers invest most of the Fund's assets. We select these managers for their expertise in specific asset classes and their investment strategies. Diversification across asset classes and investment styles is a prudent way to achieve our long-term investment goals while managing investment risks.

Asset allocation

We conduct an asset-liability modelling (ALM) study approximately every four years to reassess our asset allocation strategy and adjust it as needed. To reduce the impact of market volatility on the Plan, we have been diversifying our assets over the past decade. Based on recommendations from our 2018 ALM study, we completed the allocation of 15% of our assets to private infrastructure equity in 2022 to continue to diversify the Fund's portfolio.

What is an asset-liability modelling study?

Working with external pension experts, we conduct a comprehensive review of the Pension Fund's portfolio of assets in light of emerging economic, financial and investment trends. We also consider how the expected evolution of our Plan membership could affect our liquidity needs and our ability to take risks.

We consider any recommendations on the allocation of assets in the context of our broader investment objectives. These objectives are to:

- keep the risk-return profile of the Fund aligned with the Pension Committee's level of risk tolerance
- improve the efficiency of the Fund by reducing the overall risk of the portfolio
- maintain the current level of expected returns

In 2022, we once again completed this analysis. The results of the study showed that the Fund is well diversified, and the Plan is resilient. The study revealed little opportunity to either reduce risk for the same level of return or increase return for the same level of risk.

Since our asset mix is efficient, the study recommended that we maintain the current balance between assets that enhance the fund's returns (61%) and those that will match liabilities (39%). Our increased level of diversification, which now includes asset classes such as private infrastructure equities, requires more oversight and incurs higher investment management and advisory fees. Our external experts saw an opportunity to counterbalance these costs with a more streamlined allocation of public equities, which now represent a smaller share of our portfolio.

We presented the study's findings to the Pension Committee in September. The Pension Fund investment team, under the direction of the Pension Fund Investment Committee (PFIC), is reviewing these recommendations and will propose an implementation plan for Board approval.

Disclosing the impact of climate related risks on the Fund

As part of our 2022 ALM study, we assessed how climate-related investment risks and opportunities could impact our Plan.

Our scenario analysis showed that climate change could represent a financial risk to the Fund's portfolio. It indicated that an orderly transition to a low-carbon economy would be in the Plan's best financial interests. The orderly transition scenario assumed that the combination of policy and technology developments would lead to a reduction in emissions to limit warming below 1.5°C. These findings are consistent with the outcomes of the Bank's work on climate-related financial risks. To address these risks, we are engaging with our investment managers to understand and monitor their initiatives to measure and manage climate-related risks on their respective investment strategies.

FIGURES AND TABLE

Figure 1: Asset categories in the Fund's portfolio, 2022*

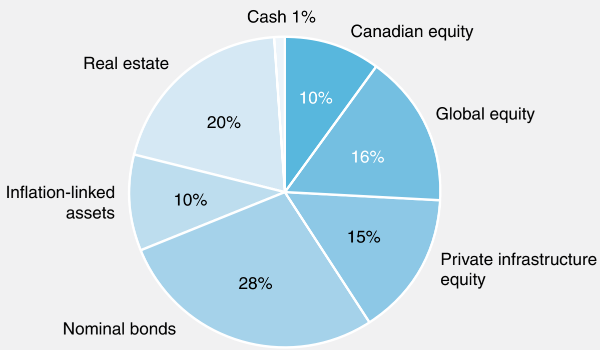


Figure 2: Total fund rate of return (net of fees)

(at December 31, 2022)

Figure 3: Going-concern basis

($ millions, as at December 31)

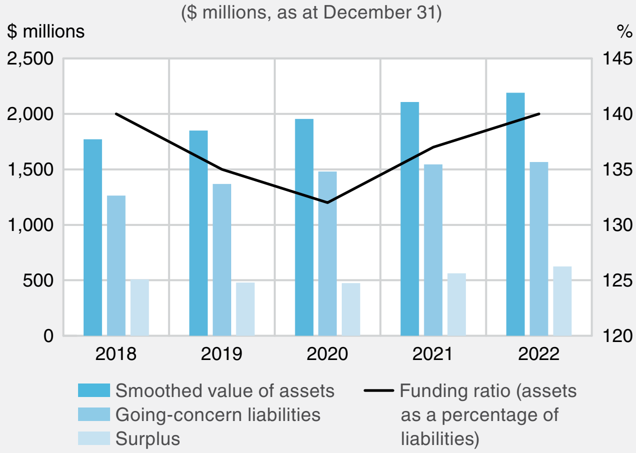


Figure 4: Solvency basis

($ millions, as at December 31)

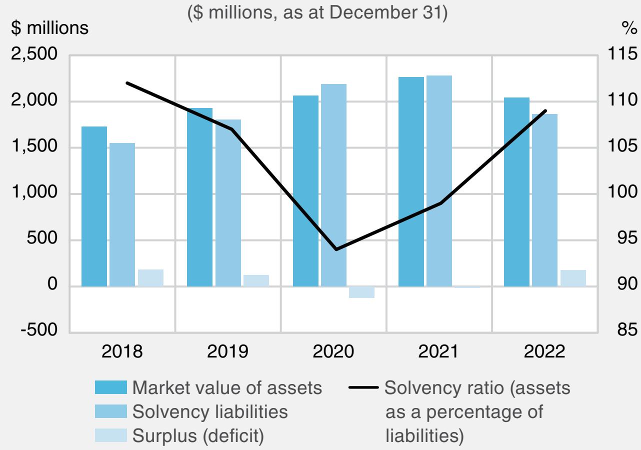


Table 1: Administrative expenses

($ thousands)

	2020	2021	2022
Asset-management fees	6,880	7,430	10,488
Pension administration fees	670	666	851
Other administrative expenses	1,497	1,570	1,709
Initiatives	201	289	245
Tax expense (recoveries)	640	439	(1,126)
Net expenses	9,888	10,394	12,167
Net assets as at December 31	2,069,713	2,270,888	2,047,242
Total expenses (as a percentage of net assets)	0.48%	0.46%	0.59%

* Policy allocation midpoints

† The benchmark composition has changed over time to reflect changes to our Internal Investment Guideline or Statement of Investment Policies and Procedures. In 2022, the major change involved adding a benchmark component for the private infrastructure portion of the Fund. The one-year benchmark return numbers reflect these changes, while previous years are unaffected.

We also started to measure the Fund's exposure to climate-related financial risks for a portion of our assets. This work was part of our commitment to begin disclosing how we assess and manage actual and potential financial risks and opportunities. We have shared our analysis in the first annual *Bank of Canada Disclosure of Climate-Related Risks report*, released in April 2023. The report describes how we're integrating climate change considerations into our investment decisions for the long-term health of the Plan.

Integrating environmental, social and governance considerations

In addition to our work on climate-related risks, we continue to engage with our investment managers on environmental, social and governance (ESG) issues and proactively seek ESG-related disclosures from our external managers. We expect external managers to engage with the companies they invest in and seek appropriate disclosures from them on relevant ESG issues.

Performance of the Fund

The Fund's overall benchmark is based on a mix of indexes, such as the S&P/TSX Composite Index and the MSCI World Index. These are weighted to reflect the Fund's asset-mix target.

The long-term investment objective in 2022 was to achieve a rate of return of 5.25%. This is equal to the Bank of Canada's 2% inflation target plus a real return of 3.25%, after investment expenses.

Actuarial valuation

The actuarial valuation estimates the total value of benefits expected to be paid to members at a given time compared with the assets available to meet this obligation. The valuation's purpose is to measure the funding status of the Plan and set the level of Bank contributions. It is done in two ways: on a going-concern (or funding) basis and on a solvency basis.

- The going-concern (or funding) valuation gives an indication of the long-term financial strength of the Plan. It assumes that the Plan will continue to operate indefinitely. It uses a long-term discount rate that reflects the Fund's investments and accounts for such factors as salary increases, inflation, when members will retire and how long they will live. To determine the funding ratio, we use a smoothed value of assets: this spreads the impact of investment losses or gains from any single year over a longer period to stabilize plan contributions.
- The solvency valuation is based on the hypothetical (and unlikely) event of Plan termination. It uses an interest rate based on fixed-income portfolio market rates as at the valuation date. While it factors in inflation and how long people will live (similar to the going-concern basis), it does not reflect future salary increases. It uses the market value of assets. To conduct our solvency valuation, we assume that we would continue administering the Plan and managing its assets

while honouring existing pension commitments to Plan members. In this case, we would invest these assets in an investment-grade fixed-income portfolio, following guidance from the Canadian Institute of Actuaries and the Office of the Superintendent of Financial Institutions.

Comparing the two valuations

The market interest rates used in the solvency valuation are currently well below the long-term discount rate used in the going-concern valuation. This largely explains why the solvency liabilities are greater than the going-concern liabilities. The difference between the solvency ratio and the going-concern (or funding) ratio reflects the different methods used to calculate each ratio's asset values and liabilities.

Reviewing our assumptions

Any difference between actuarial assumptions and future experience will create gains or losses in future valuations and discrepancy could affect the Plan's financial position and the Bank's required contributions. We review our economic assumptions annually and those related to demographics every three years, and we regularly compare our past assumptions with actual results to improve our assumptions for the future.

In 2022, we conducted a detailed review of both our economic and demographic assumptions and increased our discount rates. The detailed review of our assumptions helps us to better forecast how much, when and for how long, on average, pension benefits will be paid to members.

Using five years of Bank data, we looked at information about our members, such as:

- salary progression
- how many employees leave the Bank before retirement and after how many years
- at what age employees retire
- whether employees have a spouse or partner at retirement

We then compared this information with historical trends at the Bank and with other industry data to assess whether we need to change any of our assumptions. We also compare our members' longevity with that of members of other Canadian defined benefit pension plans. On average, Canadians are living longer now than ever before, and we expect this longevity to continue to increase. We reflect this increase in our valuation by assuming that our members will continue to have longer life expectancies, on average.

Financial status of the Plan in 2022

In accordance with pension rules, the Bank conducts annual actuarial valuations. The results of the latest valuation showed that the going-concern position of the Plan has remained strong, with a funding surplus of $624 million and a funding ratio of 140%. The Plan had a solvency surplus of $177 million, compared with a deficit of $14 million in 2021, and a solvency ratio of 109%, compared with 99% the previous year (**Figure 3** and **Figure 4**).

Bank contributions

The Bank made $35 million in regular contributions in 2022 to cover its share of the current costs to service the Plan. These contributions, along with those made by active employees, finance the accrued benefits for employees' work at the Bank in 2022. The Bank also made $2 million in special payments to finance the solvency deficit.

At the start of 2022 the going-concern ratio was 137% and the solvency ratio was 99%. Employer contributions are required whenever a plan's solvency ratio is less than 105%, regardless of its going-concern valuation. The Bank made contributions in 2022, as required by the Regulations under the *Pension Benefits Standards Act*. At the end of 2022, the Plan's going-concern ratio was 140% and the solvency ratio was 109%.

As a result of its going-concern and solvency positions, the Bank is required to stop contributing to the Plan in the spring 2023. The Regulations under the *Income Tax Act* prohibit employer contributions when the going-concern ratio is greater than 125%, unless they are required by the *Pension Benefits Standards Act*.

The strong position of the Plan is the result of an increase in interest rates and special contributions made by the Bank when the Plan had a solvency deficit. Bank contributions to the Plan will resume depending on the results of future actuarial valuations.

Supplementary Pension Arrangement valuation

At the end of 2019, the SPA had a funding deficit of $121 million and a funding ratio of 46%. From 2020 to 2022, the Bank made special payments to improve the funded status of the SPA. The Bank made $9.9 million in regular contributions to the SPA in 2022 and $16.5 million in special payments. At the end of 2022, the SPA had a funding deficit of $44 million and a funding ratio of 81%. Now that its funded status is nearing 80%—which is the target in the SPA funding policy—the Bank will contribute its share of the current-service costs and end special payments.

Supplementary Trust Fund

The Supplementary Pension Arrangement (SPA) supplements the pensions of employees whose salary level results in pension benefits that are above the maximum prescribed by the *Income Tax Act*.

The provisions of the SPA mirror the Plan, and a separate trust fund (the Supplementary Trust Fund (STF) has been established to support it. The Pension Committee and PFIC direct STF investments.

Pension Plan administration

Administrative expenses

The expenses charged to the Fund are reviewed carefully to ensure they are reasonable and meet the terms of the Plan and the Pension Fund Expense Policy. We look for opportunities to control these costs by reviewing our approach or practices.

Table 1 shows the Fund's administrative expenses. Total expenses increased by $1,785,000 in 2022. The rise in asset management fees is driven by our enhanced diversification, as some of the asset classes we now invest in carry higher fees. This is the case for our newest asset class, private infrastructure equities. In 2022, we also increased our investments in real estate to be closer to our target allocation. Real estate is another asset class that carries higher asset management fees.

The increase in pension administration fees result from the implementation of a new contract for pension administration services and a higher volume of transactions associated with a rise in the number of Plan members. These expenses were partially offset by tax recoveries. Together with an external party, we conducted a review of the Plan's tax obligations in 2022. The Fund recovered $1.3 million in previously paid taxes.

Total administrative costs as a percentage of net Fund assets were 0.59% in 2022.

Additional information

Communications

In addition to this *Annual Report*, we communicate with Plan members in various ways:

- ***www.bankofcanada.ca*** (*all members*): Find the Plan's governance documents, annual reports and audited financial statements.
- ***Banque Centrale*** *(active employees*): Learn about the Plan and find links to other important documents.
- ***Pension News*** (*all members*): Get an annual update on the Plan.
- ***Electronic newsletter*** (*pensioners and deferred members*): Get non-confidential Plan information in a subscription-based email newsletter. (A personalized, unique ID is required to subscribe. Nearly a quarter of our pensioners and deferred members have signed up. We will send out a reminder this year for those who haven't yet registered.)

Annual statements

Receive personalized annual pension statements by early July each year.

- *Active employees:* Find yours on Selection Centrale (see below).
- *Pensioners and deferred members*: Statements will be mailed to your home address. We are working on ways to give retirees an option to access statements electronically (as well as T4s and other information). We will continue to provide paper documents to those who wish to have them and where required by legislation.

Selection Centrale (selectioncentrale.ca)

Review information about your benefits and pension at this secure self-service website.

- *Active employees:* See your annual pension statement and use a projection tool to estimate the pension you will receive when you retire from the Bank.
- *Pensioners eligible for retiree benefits*:[1] Review your coverage levels (including life insurance), update your beneficiary designation and find your information booklets. The Bank is exploring ways to make personalized information about your pension available on this website.

Planning for retirement

- ***Seminars*** (*active employees*): Prepare for retirement through our one- and two-day seminars that cover all the related financial, estate planning, lifestyle and psychological aspects.
- ***One-on-one support*** (*active employees*): In a confidential meeting, an HR Centre representative will walk you through the retirement process, pointing you to tools and resources to help you decide on your retirement date and ensure a smooth transition. Use the My HR Services portal in ServiceNow to notify us of your retirement and request support.

Contact us

Let us know about any changes to your personal information to ensure you continue to receive your pension payments, tax documents and other communications without interruption.

Pensioners and members with deferred pensions: If you would like to send non-confidential questions by email, share your email address with the HR Centre. Once it has been authenticated, you will need to validate your email address with us every 12 months.

1 Members who retire with an immediate pension are eligible to purchase health and dental coverage under the Bank's Plan, while those who deferred their pensions are not.

Pension or benefits questions requests and changes

- *All members*: Contact LifeWorks for all pension or benefits questions or requests, including when and if you can change your beneficiary or marital status.

Payroll or client service issues

- *Active employees*: Use the My HR Services portal in ServiceNow. If your request is time sensitive, contact HR by phone. Have your personnel number ready.
- *Pensioners*: Contact the Bank's HR Centre.

Address changes

Active employees: Update your address directly in PASSePORT.

Pensioners and members with deferred pensions: Notify us of your new address by calling the Bank's HR Centre. We must be able to contact members with deferred pensions so you can begin receiving your pension once you've reached retirement age.

Bank of Canada Benefits and Pension Administration Centre
LifeWorks
1060 Robert-Bourassa Blvd.
Bureau RC-01
Montréal, Québec H3B 4V3
E-mail: bank-banque-canada@lifeworks.com

08:00 to 18:00 (Eastern Time)
Monday to Friday

1-888-903-3308 (for active employees)

1-888-588-6111 (for pensioners and members with deferred pensions)

HR Centre
Bank of Canada
10th Floor, East Tower
234 Wellington Street
Ottawa, Ontario K1A 0G9
E-mail: hrcentre@bankofcanada.ca

10:00 to 16:00 (Eastern Time)
Monday to Friday

7766 (internal), 613-782-7766 (Ottawa) or 1-866-404-7766 (toll-free)

Glossary

Actuarial valuation
Estimates the total value of benefits expected to be paid to members at a given point in time compared with the available assets to meet this obligation. The purpose of the valuation is to measure the funding status of the Plan. This can be done in two ways:

Going-concern, or **funding**, **basis** assumes that the Plan will continue to operate indefinitely. This is based on a long-term perspective that accounts for such factors as salary increases, interest rates, inflation, retirement rates and mortality.

Solvency basis assumes that the Plan was terminated at the date of the valuation. This means that there is no need to project future salary increases or changes in membership. The assumptions used to calculate the solvency position, such as the interest rate employed to estimate liabilities, must meet the requirements of the *Pension Benefits Standards Act* and the standards of the Canadian Institute of Actuaries.

Discount rate
The interest rate used to discount the future liabilities of a defined benefit pension plan when calculating the present value of the liabilities, often to compare them with the value of the Plan's assets.

Funding ratio
The smoothed value of assets divided by the going-concern actuarial liabilities, when applied in a going-concern valuation.

Scenario analysis
A tool for identifying potential climate-related transition risks in an environment of considerable uncertainty. It provides a flexible "what-if" framework to explore how the risks may play out in the future based on how policy, technology and socio-economic factors could evolve.

Smoothed value of assets
Used for the going-concern valuation to spread the impact of investment losses or gains from any single year over a longer period to stabilize plan contributions. The market value is used for the solvency valuation and in financial statements.

Solvency deficiency
The amount used to calculate whether annual special payments are required under pension legislation and, if so, in what amount. The deficiency in any specific year is based on the average solvency position of the past three years. The special payments spread the deficiency amount over five years.

Solvency deficit
The amount by which solvency liabilities exceed the market value of the Fund's assets at a point in time.

Solvency ratio
The market value of assets divided by the solvency liabilities.

Solvency surplus
The amount by which the market value of assets exceeds the solvency liabilities at a point in time.