Capital Markets

RBC

2022 Public Sector Roundtable

DECEMBER 2022

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PUBLIC SECTOR KEY THEMES

1 **Strong Growth in 2022 Gives Way to Uncertain Outlook for 2023:** Canada emerged from the pandemic with strong economic growth. The positive momentum supported an improvement in Provincial revenues through the year, which allowed many Provinces to revise their fiscal deficit estimates significantly lower than originally forecasted, with many Provinces reporting surpluses. However, elevated inflation, geopolitical concerns and high interest rates represent headwinds to future growth and will be top of mind as the Provinces prepare their 2023 budgets and consider the need for additional fiscal cushioning in the event of an economic slowdown or recession scenario.

2 **Inflation:** The effects of higher inflation are being felt on the capital investment side by the Canadian provinces due to increases in materials costs and labour shortages. However, the prudent budgeting processes for many provinces allow for fiscal contingencies to help offset the financial blow of rising inflation.

3 **Interest Rates:** The focus of monetary policy in Canada is expected to shift from a question of 'how much higher will rates go?' to 'how much longer will central banks keep rates at higher levels?'

4 **Higher Cost of Debt Has Been Manageable:** Issuers noted that they are not yet concerned about the impact of rising debt servicing costs; with many noting that interest rates and debt servicing costs remain low from a historical perspective.

5 **Housing Affordability Challenges:** There are cyclical factors and structural factors that are currently working in different directions within the housing market and are expected to continue through 2023. Higher interest rates drove a significant increase in Canadian mortgage rates in 2022 resulting in a spike in home ownership costs. Affordability was also negatively affected by a significant housing supply shortage across the country. Cyclical economic factors are looking weaker, which poses the potential for downside risks to the housing market in 2023.

6 **Increase in ESG Issuance:** Canadian public sector ESG issuance volumes reached a record high in 2022, notably with the Government of Canada's inaugural C$5 billion Green bond providing a boost to the Canadian ESG market. While Ontario and Quebec continue to lead the provincial green bond issuance space, there has been a surge in ESG activity from pension asset managers this year. Provinces who have not yet issued an ESG bond emphasized that they would like to eventually embed ESG into all their programs, and are mindful of the impacts of labeled ESG issuance on the overall liquidity in their conventional financing activities.

7 **Overall Issuance Levels Expected to be Steady in 2023:** Bond issuance by the Canadian provinces returned to pre-pandemic pace in 2022. The domestic market absorbed much more of the total provincial new issue supply then in prior years and issuers commented that it was more difficult to find favourable issuance conditions in the latter half of the year. Pension / asset managers are increasingly active issuers in the Canadian market and are working towards a more provincial-like issuance pattern. The outlook for debt issuance by the Canadian public sector in 2023 is expected to be similar to the volume seen in 2022 as the provinces balance improving revenue growth against of the impacts of higher expense growth and the potential for an economic downturn.

8 **International Market Dependent on Relative Financing Opportunities:** There was a significant decrease in offshore market issuance for the Canadian public sector in 2022, as relative financing opportunities were not as robust as issuers had hoped. The Provinces noted that they are still committed to issuing in international markets to diversify their funding base, and will continue to actively monitor relative financing levels for offshore issuance opportunities in 2023.

ECONOMIC UPDATE & GROWTH PLANS

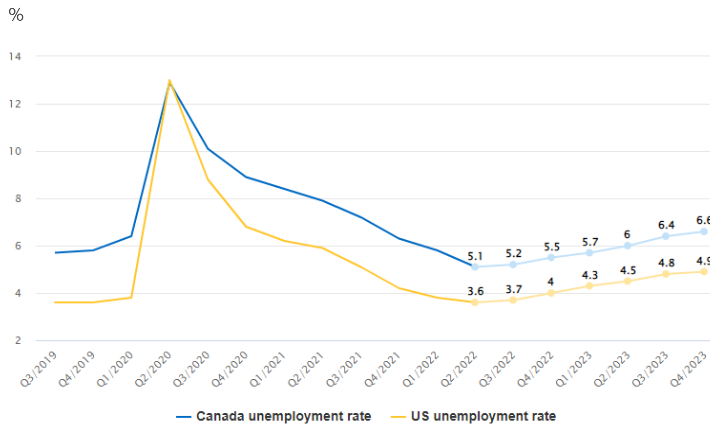
Alex Caridia (RBC): With this being the first in person meeting since 2019, thank you everybody for taking the time to meet with us. Today we'll be focusing on a number of themes topical to the issuance environment in Canadian Public sector markets, starting with a discussion on the macro backdrop and then moving on to some more specific funding related issues during the second half of the discussion. With that, let's get started. Jason, I'll pass it over to you for RBC's views on the macro backdrop.

Jason Daw (RBC): 2022 was obviously a very interesting year for the bond market. It was a one-sided risk scenario – how high would inflation and rates go. So while it was a very challenging year for everybody involved in the market, 2023 could prove to be as, or more, difficult to navigate. As we enter 2023, the key question revolves around the Bank of Canada and the path of monetary policy; will they stop hiking soon, cut rates later in the year, or pause and then be forced to tighten further. We expect to see some push and pull in the market in different directions until there is better clarity on which of the three scenarios will play out. The clearest outcome will be that economic growth is going to be weak, and at the very least, our base case is that there will be a recession in the first half of the year (a very mild recession versus historical standards - unemployment rate expected to increase a couple percentage points, putting us in the bottom quartile of what we've seen during historical recessions). We are below consensus on growth and the risks are to the downside. The housing market slowing, buckling under the pressure of the unprecedented speed of rate increases. Slowing housing demand will continue to filter through to the economy to broader consumption. Fiscal revenues have been generally good alongside high inflation, which is perhaps one positive development. But as we go into 2023, it will be interesting to hear everybody's outlook as far as what you are thinking with respect to the economy from a growth standpoint.

> As we enter 2023, they key question revolves around the Bank of Canada and the path of monetary policy; will they stop hiking soon, cut rates later in the year, or pause and then be forced to tighten further.
>
> *Jason Daw, RBC Capital Markets*

Stephen Thompson (Alberta): I completely agree with you. We don't have a house view on a recession next year. We are looking at about 4.85% GDP growth through 2022, and then we expect it to moderate pretty quickly down to 2.0%-3.5%. We obviously have high risk, in Alberta with respect to investment in the oil sector. We've seen good investment in non-energy through this cycle, which is interesting, but our house view is that a fairly significant risk of recession.

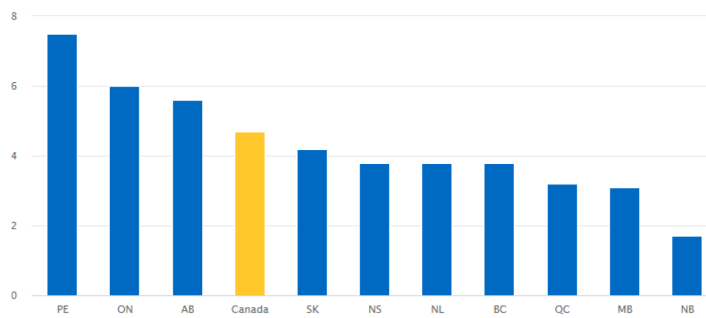
UNEMPLOYMENT RATES WILL DRIFT UP FROM HISTORIC LOWS



Source: Statistics Can, RBC Economics

DEMAND FOR LABOUR CONTINUES TO BE STRONG ACROSS THE COUNTRY

Employment, annual % change, first seven months of 2022



Source: Statistics Can, RBC Economics

Jason Daw (RBC): For everybody's benefit, does Alberta assume a certain oil price as far as your budgeting is concerned?

Stephen Thompson (Alberta): Yes, we do. We generally forecast below the private sector consensus. So for the current fiscal year, we're coming in pretty much right on forecast. With respect to WTI, we are looking at C$91.50 average for the 2022-2023 fiscal year, and then down to about C$78.5 for the next two fiscal years.

Jason Daw (RBC): Okay. Kind of where we are at the moment.

Stephen Thompson (Alberta): Yeah, we're never too far off the consensus.

Jim Hopkins (British Columbia): I'd like to add that in British Columbia, the outlook is sort of mixed. We've got an economy that's still quite resilient and still showing strong beats of growth. Employment growth is 3.5%, while unemployment has reached historical lows. Notwithstanding what you'd expect, our housing starts are quite sustained, and well above historical averages. But, I do think it's reasonable that the private sector forecasters have given a haircut to their growth prospects for BC. So where they were at about 1.5% for 2023 in August, they're at about 0.5% now for 2023 for British Columbia. I think they've downgraded the growth expectations for most provinces in the country. As is typical, we didn't provide an economic outlook in the Q2 report that we just released. Rather, the forecast will come in the February budget. It will take the consensus and apply a haircut as a measure of prudence. Again, the outlook will have to grapple with mixed signals. Our exports are running at 30% growth but the headwinds will be inflation and interest rates rising, and the impact that will have on the consumer, and an expectation that our trading partners' economies will slow. We don't believe export growth at 30% is sustainable. However, our story to date is about a diverse economy which attracts immigration and has proven to be resilient. We just have to watch and monitor a slowing outlook as the Fed and the Bank of Canada come to the end of hiking rates.

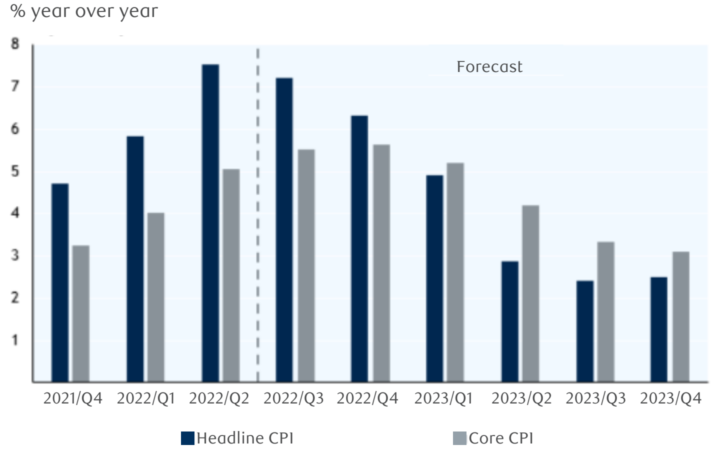
Nicolas Moreau (Department of Finance, Canada): Despite lower growth prospects since Budget 2022, the Canadian economy has seen a significant boost to national income from higher commodity prices following Russia's illegal invasion of Ukraine. Higher prices for a range of commodities that Canada exports pushed up our terms of trade (the ratio of export prices to import prices) to an all-time high in the second quarter of 2022. Higher export prices have, in turn, boosted the revenues of Canadian exporters, corporate profits, and GDP inflation. These trends have been widespread across sectors and regions of Canada, supporting revenues of all orders of government, including provinces and territories.

> Looking ahead, we're not ready to call a recession yet. Most private sector economists continued to expect that Canada would avoid a "hard landing"—that is, inflation will moderate without a recession. However, this growth outlook is subject to significant downside risks.
>
> *Nicolas Moreau, Department of Finance, Canada*

Looking ahead, we're not ready to call a recession yet. Most private sector economists continued to expect that Canada would avoid a "hard landing"—that is, inflation will moderate without a recession.

However, this growth outlook is subject to significant downside risks. Primarily, this relates to the path of inflation. How quickly inflation moderates will determine how high interest rates will rise and how long they remain elevated, and therefore how sharply global activity

STRENGTH IN CORE CPI TO OUTPACE HEADLINE IN 2023



Source: StatCan, RBC Economics

will cool. A more pronounced slowdown, both in Canada and globally, is possible if high inflation becomes more deeply entrenched.

Amy Gates (Saskatchewan): Saskatchewan is having a very strong year in 2022, following drought conditions that significantly impacted the agriculture sector and provincial GDP in 2021. Our 2022 real GDP forecast is now 4.7%, driven by high resource prices and a strong resource sector. While we are hopeful this resource cycle will last a while longer, our growth projections for next year soften slightly to 1.4%.

Mike Manning (Ontario): Ontario is starting from a very strong base like everyone else. We use a consensus forecasting process using private-sector economists and have a 2.6% real GDP growth forecast for this year, and we see a downshift next year to 0.5%.
Our economists are operating differently now by using scenario forecasts to adjust for the high uncertainty levels. So we have a planning forecast, then we have a slower growth scenario and a higher growth scenario. In the slower growth scenario we see -0.9% real GDP growth next year. Right now, the employment picture is still pretty strong, with an unemployment rate of 5.5%, which is historically pretty good. We're seeing that going up marginally to about 6.3% next year.

Jason Daw (RBC): One of the big themes for everybody next year is going to be revolving around the housing market. There's positive supports, for example, the unemployment rate might not go up that much, which would inherently put a floor on the housing market, as well as a number of different structural factors ranging from immigration and land supply. However, the cyclical factors are looking quite poor which argues for downside risks. Seeing as Ontario, British Columbia, and Alberta have the highest household debt across provinces and will likely be most sensitive to changes in interest rates, Dave, would you care to speak on the housing market? It's obviously a big topic, and I would love for you to share some of your insights on the cyclical and structural factors impacting this key sector of the Canadian economy.

Dave Ayre (CMHC): Housing definitely remains a big topic and affordability continues to be challenged by a significant supply shortage. If you look at some of the analysis we've done, the numbers kind of range in and around a current supply shortfall of about 2 million units, which is substantial and expected to grow to a nearly 3.5 million unit shortfall by 2030. Housing starts are tracking fairly strong compared to historical figures but will still not be enough to close the supply gaps. In addition, our unemployment levels are quite low right now and immigration is a huge potential positive factor in housing demand. This is not to say we don't see some headwinds coming down the line with a potential recession. There's a number of different initiatives going on, at all levels of government to try and address various hurdles which impede the creation of more housing supply, but it's going to take a long time. So looking at the quality of our mortgage loan insurance book, we continue to see it performing very well.

> Consumers can look at this and anticipate much easier policy in the future, suggesting a significant potential tailwind for housing.
>
> *Matthew Cassell, HOOPP*

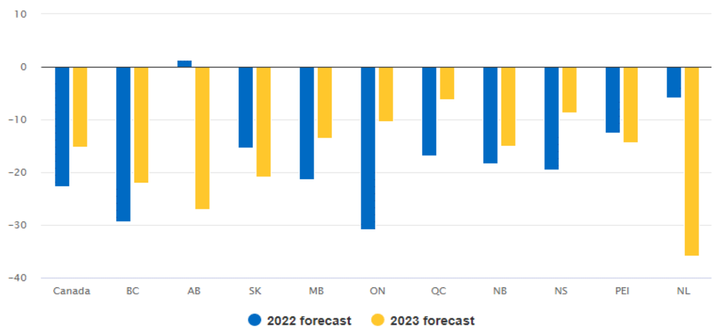
Our mortgage arrears rates sit at a record low of 0.25% and actual defaults remain very low. The implementation of the mortgage rate stress test in 2016 has been an important factor in keeping arrears and defaults low. The stress test was built for exactly what's happened over the last year. We wanted to shock people with much higher rates in an environment where previously people had the benefit of very low rates for many years. We are hoping that most will be able to withstand the higher rates environment we are now in and feel that the underwriting standards in Canada are continuing to work very well.

> Housing starts are tracking fairly strong compared to historical figures but will still not be enough to close the supply gaps.
>
> *Dave Ayre, CMHC*

Matthew Cassell (HOOPP): An interesting element of the yield curve right now is the inversion from the overnight rate relative to the 4-year swap rate. As we know, the 4-year swap rate is really the key driver for 5-year fixed mortgages in Canada. If we extrapolate from the implied forward rates from the swap curve, the market is pricing in mortgage rates sub 4.50% within the next year. This is not that

ANNUAL % CHANGE IN HOME RESALES

Housing markets to cool into 2023



Source: Canadian Real Estate Association, RBC Economics

restrictive for households. In allowing the strong inversion of the yield curve, the central banks are taking away a significant amount of effective tightening. Consumers can look at this and anticipate much easier policy in the future, suggesting a significant potential tailwind for housing.

Abid Dobani (RBC Corporate Treasury): It's clear the sophistication of the Canadian consumer has consistently been underpriced by the market. Clients are willing to move away from non-maturity deposits paying lower rates, and pivot into more structured deposit products like fixed-rate GICs. The same can be said for mortgage preferences which have moved down from 5-year terms to the shorter end of the curve. Consumers are forecasting rates will be lower in 2 years' time and are thinking about refinancing levels. These preference changes have significant impact to bank requirements for duration and liquid asset portfolios, and this will be a key driver of spreads in the sub-five-year part of the curve in 2023.

To touch on the broader mortgage comment, major Canadian banks have reported lower than expected provisions for credit losses, and this should come as no surprise. Stringent stress tests to qualify for a mortgage, shorter refinance periods than most of Europe and the US, and a conservative and resilient banking sector ensures systemic stability. The one area that will garner more and more attention as we come to the end of this hiking cycle is the three quarters of variable rate mortgages outstanding that have fixed payments which are only covering interest and not principal. When the trigger rate (the interest rate whereby interest is no longer covered in the fixed payment) is breached, then the fixed payments will need to be adjusted, and that may cause some duress to those who are financed on the margin. One last point to consider is the 2023 refinance pipeline - fixed 5-year rates are now ~250bps higher than they were five years ago and may put some pressure on the margin to liquidate and downsize or rent rather than refinance. Again, this is within the stress test conditions, however household financial situations in an inflationary environment have changed from when mortgages were originally taken out.

> It's clear the sophistication of the Canadian consumer has consistently been underpriced by the market.
>
> *Abid Dobani, RBC Corporate Treasury*

Jason Daw (RBC): Yeah, on that point, if we look back to the 90s when Ontario went through a pretty pronounced and extended housing market slump, we see delinquencies at the consumer mortgage level remained quite low. If there's any types of problems that have typically provided more stress to the financial system, it's more from lending to real estate developers, etc. Yes, there's going to be some stresses from people that purchased in February at the highs and had an adjustable rate mortgage, but from a broader perspective, it should be relatively contained.

Chad, with strong growth in 2022, how has that impacted your business model with respect to borrowing? Even though the CAD has been very well behaved this year compared to other asset classes, have customers been affected at all on the currency side?

Chad Buffel (EDC): We will have to keep an eye on that for sure. I think, business model wise, the only thing we've been looking at is how it affects our borrowing program. A lot of loans seem to be settling a little faster. We've seen a faster turnover of loans closing. Some of that might be due to rates and the pace of recent rate hikes. We believe that people may be trying to get ahead of further increases.

My personal speculation is that there is a potential concern over credit and what credit availability might look like in the next quarter and into next year. Oftentimes, what we experience at the end of the year, are more prepayments as businesses start preparing their balance sheets for year-end reporting. This activity is lighter as we finish off the fourth quarter. The impact of this, is that we're pretty much on track in terms of what we forecasted to borrow at the beginning of the year. Usually when we get to this point of the year, we can lighten up because more money is coming in than we expected. Typically, it's stable at this stage. When we look at syndicated loans and bilateral loans, we are currently seeing larger notional size and longer terms from the treasury side. As well, we've seen a bit more interest and uptake in local currency. Focusing on the currency side of it, we assume that our borrowers are trying to reduce their exposures to some of the risks associated with foreign exchange and interest rates. As we get into next year, I think we will begin to see some of the effects from this year beginning to gel even more. As troubles arise, consumer demand goes down, and commodities start lightening up, prices will drop. There will likely be more financing demands to come, but, it's hard to put a definitive pin on it yet.

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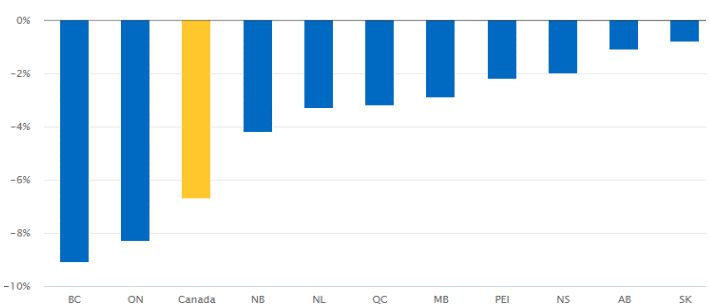
>
> *Chad Buffel, EDC*

DECLINE IN HOUSEHOLD NET WORTH ARISING FROM EXPECTED HOUSING PRICE DROP, IN %

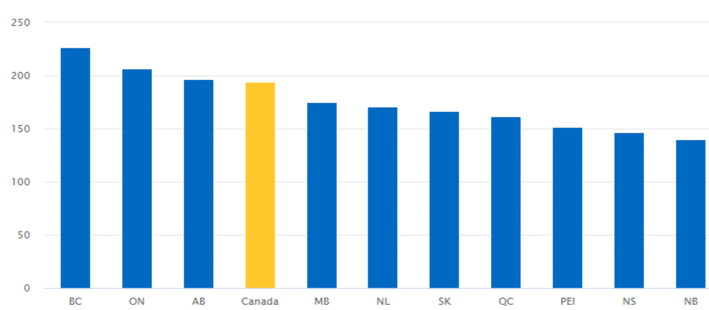
Hit to households' net worth larger in BC and Ontario



Source: Statistics Canada, RBC Economics

HOUSEHOLD DEBT TO DISPOSABLE INCOME RATIO Q1 2022

BC, Ontario and Alberta housholds are most sensitive to interest rates



Source: Statistics Canada, RBC Economics

INTEREST RATES

Jason Daw (RBC): Shifting gears from the growth side to the interest rate side, our expectation currently stands that the Bank of Canada will likely be on hold for all of 2023. We probably won't see any rate cuts. They need to be very cautious and wait to ease policy until they are absolutely sure they will meet their inflation objective. Yields have come off the highs and curves are now quite inverted. I would suspect that some of these yield curves can stay inverted for a decent portion of next year before we get to a point where there's the possibility of a rate cutting cycle happening. We have had higher rates now than we've been used to over the last while, and obviously the shape of the curve is very odd versus what we've been used to. You'd have to go back to the early 1980s to see a 2s5s or 2s10s yield curve that's as inverted as now. At this point are there any concerns or comments on interest on debt? And given where we are in interest rates and the shape of the yield curve, is there any impact on your borrowing strategies?

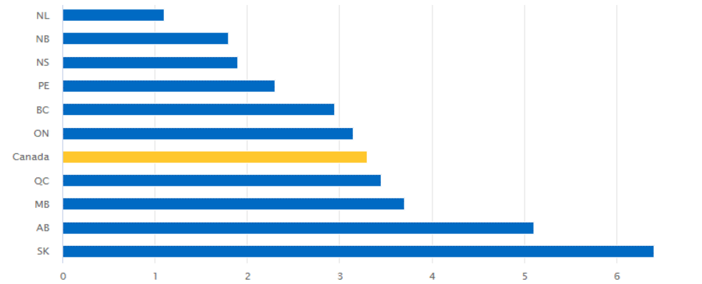
Sam Dorri (CPPIB): I can kick it off. We're not a fixed rate borrower. We examine our cost of funds on a swapped equivalent basis. The credit spread widening environment has had an impact on our cost of funds. Though it's important to remember that we're an asset manager – so the asset side of the balance sheet can deploy into these wider spreads offsetting the marginally higher cost of borrowing vs swaps. As for the shape of the curve and the impact on borrowing, we've done our best to be tactical on the curve and cross-market while maintaining the right presence in each of our core markets. That said, the market has also dictated its clear preference for the front-end, and we've been responsive to that demand. This has been particularly evident into the inverted yield curve in the USD market, but it's been a theme across a number of core markets, where you had that three-to-four-month period in EUR that saw predominantly 5-year issuance. This is a clear departure for that market, which has historically provided 10-year to the plus duration for borrowers. As a result, while we started the year with a weighted average maturity of funding of 7.9 years, this year our weighted average maturity was 5.25 years, reflecting the better demand for front-end product.

> We've done our best to be tactical on the curve and cross-market while maintaining the right presence in each of our core markets.
>
> *Sam Dorri, CPPIB*

Mike Manning (Ontario): Yes, I would say that we've had a fairly consistent approach over the last several years to extend the term of our borrowing program. This reflects the fact that we have had

REAL GDP GROWTH – 2022

% change



Source: Statistics Canada, RBC Economics

large annual borrowing programs, and the resulting refinancing risk is something that we have had to manage proactively. At the same time, interest rates have been low on a historical basis, although obviously we've had a change here in recent months with the backup in interest rates. Nevertheless, interest rates still haven't really got to the point where they're higher than the average over the last 20 years. If you go

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> *Mike Manning, Ontario*

to the period before the global financial crisis, they look even more attractive. So, we're pretty happy just to stick with our curve extension. I think we may re-evaluate that strategy if longer term rates go up a lot from here, but having said that, the inverted yield curve doesn't really pay you for going short, at least in the short term. In terms of Interest on Debt ("IOD"), we really have benefited from the fact that our fiscal situation has improved so much this year. It just means that we're borrowing a lot less money than we anticipated. You don't think about it, but the reality is, when you're borrowing a lot less money, you're not paying interest on the money that you're not borrowing. So we found that we've have about C$1.9 billion that we're saving over the next three years in interest costs, just by the fact that we're borrowing less. So that's all been beneficial. When we forecast IOD, we tend to be conservative and have a lot of provisions, so the impact has actually been much less than you would have thought. Our IOD forecast is only C$100 million more this fiscal year relative to our annual budget forecast in April of this year. It's C$13.6 billion versus C$13.5 billion this fiscal year, and it's C$14.5 billion versus C$14.3 billion for the next fiscal year. So the increases have been fairly manageable so far.

> Debt servicing cost is still significant, but when you look at the big picture, we're still in a better place than we were like 10 years ago, even with the impact the debt load we took on during the pandemic.
>
> *Guillaume Pichard, Quebec*

Guillaume Pichard (Quebec): For us we are seeing a bit of the same as Mike just mentioned here. If you look at it, debt service is actually going down. Next year we will see it at 6.4% down from 7.3%. Investors keep asking us about the impact on interest rates, and I'm happy to tell them that back in 2010, debt service was over 10%, so it's still an improvement. Therefore there is a sensibility in our debt service. Like if rates overshoot our projection by 1%, we will pay C$600 million more, while over five years, it's a C$2 billion impact. This is still significant, but when you look at the big picture, we're still in a better place than we were like 10 years ago, even with the impact from the debt load we took on during the pandemic. In terms of issuance, similar to Ontario, we're going to be there in 10-years and we're going to be issuing longs. This year has been very good in terms of the average maturity of the debt issued. This year its 18 years, which is good, and the average cost is 3.8 versus the average cost of our current debt at 3.06. So it is higher, but it's not significant, like 300-400 basis points higher. Still very manageable.

> In Alberta, we've been a bit fortunate this year, so we're paying all of our debt maturities off with cash.
>
> *Stephen Thompson, Alberta*

Stephen Thompson (Alberta): In Alberta, we've been a bit fortunate this year, so we're paying all of our debt maturities off with cash. We're going to take out about C$19 billion in debt stock on a hundred billion dollar portfolio, so we really aren't too worried about rising rates in terms of debt servicing costs. I mean, it does have an impact on revenue, so our sensitivity is a similar number to yours (Quebec). So, a 1% change on forecasts is about C$525 million in terms of the revenue side. We are remarkably unconcerned with rising rates at the moment.

Nicolas Moreau (Department of Finance, Canada): At the federal level, we want to continue to issue across the curve. During the pandemic, the government has been successful in maximizing long bond issuance to fund COVID-19-related debt, taking advantage of low rates and to lock in the Government of Canada COVID debt. Now that the COVID crisis is behind us, the Government has already started to adjust its bonds allocation more towards the belly of the curve. Moving forward, the government will closely monitor financial markets and may adjust issuance in response to shifts in market demand and/or changes to financial requirements. Having access to a well-functioning government securities market contributes to lower costs and less volatile pricing for the government, ensuring that funds can be raised efficiently over time to meet the government's financial requirements. Moreover, to support a liquid and well-functioning market for Government of Canada securities, the government strives to promote transparency and consistency.

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>
> *Nicolas Moreau, Department of Finance, Canada*

Andrew Bastien (PSP): Similar to CPP, our business model involves leveraging the balance sheet to buy private market assets. More specifically, we borrow to buy real estate, infrastructure, and natural resources projects. This means that even at interest rates of 3-4%, which is much higher than what we've seen in recent years, our business model doesn't change and still makes sense, since our expected return on the assets we are leveraging are much higher than 3-4%. My view of the move in rates is that we're kind of moving back to levels that are more normal from a historical perspective. At PSP, we look at both our assets and the debt programs from a long-term perspective, so we're looking at long-term returns and long-term costs for the debt programs. The rates volatility in the short-term doesn't change anything for us in terms of how we manage the business.

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>
> *Andrew Bastien, PSP*

Jim Hopkins (British Columbia): We don't think today's interest rate environment is unexpected nor frightening in a historical sense. Levels are actually relatively modest in any historical context. Our interest bite going into this period is very modest; only 2.3 cents of every dollar of revenue is going to pay debt service costs. Our debt metrics have improved materially like I believe they have for the other provinces. As we go into this period, while it may be volatile, there's no cause for knee jerk changes to borrowing strategy. Our view will be to continue to look at 10s and longer, and if interest rates remain relatively high, 5 and 7 year offerings may also have a fit. We lament the fact that the economics of the offshore market wasn't with us this year. We did not do any offshore financing, but we hope that it will come back and we'll be monitoring that very closely. BC derives a lot of value from a diverse and global investor base and we actively direct the province's investor relations to that end. This year big kudos are due the domestic market for absorbing as much provincial debt as it did and, uniquely, at terms right out to 30-years. We did not suffer shortage of offshore interest in the Province's name, for which we are grateful. The interest was often limited to shorter dated opportunities, at least in the public format, and not with attractive economics. We'll just hope that it turns soon, and the focus will be to try to make a bigger statement in the offshore markets as the borrowing economics show better results.

This year big kudos are due the domestic market for absorbing as much provincial debt as it did and, uniquely, at terms right out to 30-years.

Jim Hopkins, British Columbia

Jason Daw (RBC): I think the Bank of Canada is probably done raising interest rates. Maybe there's a residual hike in January if some of the upcoming data doesn't cooperate. From investors in the room, any views on what you think, as far as terminal, and what will happen to policy rates in 2023?

Ryan Goulding (Leith Wheeler): So the way we look at that is, I mean, you can't ask terminal without asking how long, but we're really talking the time value of money here. I think that central banks, given those two levers of time and value, are nearly done adjusting the value one. The real one we should be talking about now is the time and expectations of how long the rates are high for. I think they continue to be pushed out. So instead of terminal rates, we should really be asking ourselves how long will they be there? And then on a forward basis, what is the catalyst that gets them to start going down and what do they go down to? What that really comes down to is the reaction functions of both monetary and fiscal policy makers when we do hit some bumps down the road, and the sequencing of those reaction functions. Those to me are the really interesting questions. Whether it's another 25 or 50bps, I no longer care, and I'm looking at those down the road and because I think those are the ones that are really going to tell us if the curve's priced properly, they're going to give us those indications as to when that curve is going to go through and when it will begin its next cycle here.

So instead of terminal rates, we should really be asking ourselves how long will they be there? And then on a forward basis, what is the catalyst that gets them to start going down and what do they go down to?

Ryan Goulding, Leith Wheeler

Jason Daw (RBC): So would your base case be rates higher for longer?

Ryan Goulding (Leith Wheeler): I would say high for longer, not higher. I think we're going to pull on that time lever and be at high rates for a much longer amount of time than we consider, partly because of the fiscal response functions that are now going to happen. It could offset the necessity for central banks to cut in the future, and I think we're going to have a little bit of a different interaction.

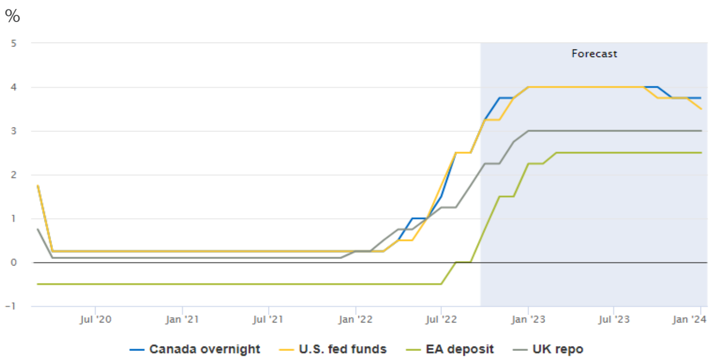
Jason Daw (RBC): We expect 2023 growth close to 0%. In 2023 we could see a scenario where the bank is holding rates at a high level for all of 2023. Yes, there could be some sectors that provide an offset, but 2024 could be a pretty poor growth backdrop also if rates aren't cut in 2023. It also won't be your traditional rate cutting cycle; maybe there are corrective cuts but not a large easing cycle, which could mean sluggish credit demand for a few years. Matt, what are you thinking?

Matthew Cassell (HOOPP): What has surprised me sitting at the table here is that all the provinces say that these rate hikes are having a very minimal impact on their bottom line, given term funding rates are not that restrictive yet and their long term maturity profile. Consumers have not really felt the pinch either from rate increases. I think central banks next year must convince the market that they're going to be higher for longer or they're going to have to continue to hike. I don't believe they've been able to achieve truly restrictive policy because the curve inversion has taken much of it away. The central banks have not been able to get the yield curve priced in a way which is going lead to enough restrictive policy to get inflation back to target.

I think central banks next year must convince the market that they're going to be higher for longer or they're going to have to continue to hike.

Matthew Cassell, HOOPP

CENTRAL BANKS HIKE INTEREST RATES TO FIGHT INFLATION



Source: Haver, RBC Economics

INTEREST RATES

%, end of quarter 2022

				Forecast									Forecast		
	22Q1	22Q2	22Q3	22Q4	23Q1	23Q2	23Q3	23Q4	24Q1	24Q2	24Q3	24Q4	2022F	2023F	2024F
Canada															
Overnight	0.50	1.50	3.25	4.25	4.25	4.25	4.25	4.25	3.75	3.50	3.25	3.00	4.25	4.25	3.00
Three-month	0.60	2.08	3.58	4.15	4.15	4.15	4.15	3.90	3.50	3.25	3.00	2.85	4.15	3.90	2.85
Two-year	2.29	3.09	3.80	3.90	3.75	3.65	3.60	3.30	3.00	2.90	2.80	2.70	3.90	3.30	2.70
Five-year	2.41	3.11	3.33	3.15	3.05	2.95	2.85	2.75	2.70	2.65	2.60	2.55	3.15	2.75	2.55
10-year	2.40	3.23	3.17	2.90	2.85	2.80	2.75	2.70	2.65	2.60	2.60	2.60	2.90	2.70	2.60
30-year	2.38	3.14	3.09	2.90	2.90	2.90	2.85	2.85	2.85	2.85	2.85	2.85	2.90	2.85	2.85
Yield curve (10s-2s)	11	14	-63	-100	-90	-85	-85	-60	-35	-30	-20	-10	-100	-60	-10.00
United States															
Fed funds*	0.38	1.63	3.13	4.38	4.88	4.88	4.63	4.38	4.13	3.88	3.63	3.38	4.38	4.38	3.38
Three-month	0.52	1.72	3.33	4.70	4.80	4.75	4.50	4.25	4.00	3.75	3.50	3.25	4.70	4.25	3.25
Two-year	2.28	2.92	4.22	4.50	4.25	4.10	3.85	3.65	3.35	3.05	2.80	2.55	4.50	3.65	2.55
Five-year	2.42	3.01	4.06	4.00	3.70	3.50	3.40	3.30	3.20	3.10	3.00	2.95	4.00	3.30	2.95
10-year	2.32	2.98	3.83	3.75	3.75	3.65	3.55	3.45	3.35	3.25	3.20	3.15	3.75	3.45	3.15
30-year	2.44	3.14	3.79	4.00	4.00	3.90	3.90	3.85	3.80	3.75	3.70	3.65	4.00	3.85	3.65
Yield curve (10s-2s)	4	6	-39	-75	-50	-45	-30	-20	0	20	40	60	-75	-20.00	60.00
Yield spreads															
Three-month T-bills	0.08	0.36	0.25	-0.55	-0.65	-0.60	-0.35	-0.35	-0.50	-0.50	-0.50	-0.40	-0.55	-0.35	-0.40
Two-year	0.01	0.17	-0.42	-0.60	-0.50	-0.45	-0.25	-0.35	-0.35	-0.15	0.00	0.15	-0.60	-0.35	0.15
Five-year	-0.01	0.10	-0.73	-0.85	-0.65	-0.55	-0.55	-0.55	-0.50	-0.45	-0.40	-0.40	-0.85	-0.55	-0.40
10-year	0.08	0.25	-0.66	-0.85	-0.90	-0.85	-0.80	-0.75	-0.70	-0.65	-0.60	-0.55	-0.85	-0.75	-0.55
30-year	-0.06	0.00	-0.70	-1.10	-1.10	-1.00	-1.05	-1.00	-0.95	-0.90	-0.85	-0.80	-1.10	-1.00	-0.80

Note: Interest Rates are end of period rates. * Midpoint of 25 basis point range

Pier-Andre Blanchet (Industrial Alliance): Our internal view is higher for longer. We are pricing another 25bps basis point hike for early next year in January, and yesterday's statement clearly signaled that we are off autopilot and are more data dependent. I think we're going to see a waning CPI momentum by the end of Q1/Q2 and next year.

Jason Daw (RBC): On the topic of how high policy rates need to go and how long they need to stay high for, revolves around the inflation outlook. The Bank of Canada might be very cautious and make sure they get to their inflation target before contemplating cutting rates. I think the difficulty with 2023 is there's going be a big cyclical impulse in inflation to the downside. All the supply driven inflation that we had in 2022 is going to disappear and might even turn to a deflationary impulse. Shipping costs are back at the levels they were before COVID. Energy prices have come down quite a bit versus where they were earlier in the year. Goods driven inflation should come down under the weight of higher rates. However, the big question is - is inflation going to be structurally higher than it has been in the past? While there are arguments in that direction, whether it's demographics, de-globalization, or labour market frictions these are definitely possibilities. One of the things the bank's going to have to keep an eye out for is what's happening on the labor cost side. The union wage settlements that we've had over the past couple of months are closer to 3.5-4%, while pre October they were all 2% or below. British Columbia had union wage settlements that were close to 3.5-4% and on the public side in Ontario, we've had 3.5%. So, there is that risk on the inflation side which we should have more information on in the incoming Business and Consumer Outlook Surveys. But, as far as the provinces go, revenues have been good, partly because inflation has helped. Have you seen that feed into your cost/expense base?

Amy Gates (Saskatchewan): We are also seeing the impact of inflation, in particular the impact on capital projects. Supply costs are up and labor costs are up. To keep government capital spending on budget, some projects have been scaled back. As well, Government is cognizant of competing with the private sector for the limited labour pool. There has been quite a lot of private capital investment in the province recently, for large scale agriculture sector projects in particular. Inflation is very real and is an important part of budget discussions, as government assesses how to maintain capital spending at an appropriate level without unduly impacting private capital projects.

Jim Hopkins (British Columbia): Yeah, I totally agree with that. We're also seeing pressure on the capital side of our spending programs, and we may have to recalibrate because I think it's actually systemic. I think the labor shortfalls and the overall capacity limitations are real. On the operating side, inflationary pressures are a reality and our answer to it in British Columbia is to budget with contingencies. For example, this year, we've got C$4.8 billion of contingencies for all matter of exogenous events over which we have no control or other things that we can control. The answer is just to make every effort to manage through downturns and not surprise to the downside. Contingencies are a big part of that equation, and play an important role in how we manage pressure on our operating budget. Except for the most recent year of COVID, we've been able to hit our targets and generally manage to the upside of our targets.

Guillaume Pichard (Quebec): Yeah, we have some of the same contingencies built into our fiscal framework which was just updated today. Jason, as you've mentioned, inflation affects both revenues and expenses, but it is a risk, and it's a risk we will be building in contingencies for the rest of this year. We have to build in for contingencies until March, not only for inflation, but also the possible downside. We also planned for C$2 billion of contingencies next year, and just like Jim said, it's planning in our fiscal framework, and not to be caught on the downside.

Dave Ayre (CMHC): On the housing side we're seeing inflation having a major impact on addressing the housing affordability problem and we're starting to see projects being sidelined, either due to labour shortages or supply chain issues, but it depends on the project. When we talk about that backlog of supply this is another hurdle to getting more supply built to address the gap. We simply don't have enough workers and the costs are increasing. We're not only seeing that in the construction space, but we're seeing housing affordability in the rental space get hit too with year-over-year rent increases up as much as 30% in some areas. Obviously when people cannot afford a home or condo the next logical step is rental but when rental is going up by those kind of numbers, it's a challenge.

Mike Manning (Ontario): We're seeing the same thing in Ontario with the capacity problem. I think there are two things that are going to happen: new builds are going to have to be delayed or we're going to have to pay more for projects. Ultimately that could come back and impact our borrowing program, so it's an evolving situation.

Stephen Thompson (Alberta): We've faced the same challenges as all of our provincial peers in terms of the inflation side. The revenue side is obviously dominated by distortion from natural resource revenues, but the thing on the expenditure side is that we've had a government in place now for almost 4 years, and we have been hyper focused on expenditure reduction, expenditure restraint and bringing Alberta's per capita spending in line with the larger provinces (the three provinces being, Ontario, Quebec and British Columbia). They've actually been quite successful in reducing expenses, so the impact of inflation has been somewhat lost in that process. That being said, thinking about that process is a challenge, but our expenditure side has actually fared well.

REAL RETURN BONDS (RRBS)

Jason Daw (RBC): Okay. Last topic before I turn it over to Alex for the second part of the roundtable. Nick, could you give us background on the recent decision to stop issuing Real Return Bonds? As a follow on question, directing to the provinces and the issuers, have you been thinking about, or would you consider, issuing a real return bond product?

Nicolas Moreau (Department of Finance, Canada): Yes, we recently announced that we terminated our Real Return Bond program.

The decision to cancel the Real-Return Bonds (RRB) program was taken because the demand for this sector is too low to justify maintaining it.

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>
> *Nicolas Moreau, Department of Finance, Canada*

The government and Bank of Canada, in its role as fiscal agent, undertook extensive consultations in 2019, which showed poor demand for RRBs. The summary of these consultations is available on the Bank of Canada website: Government of Canada Real Return Bond Consultations Summary (bankofcanada.ca). At the time, the decision was taken to reduce the size of annual RRB issuance and to continue to monitor the performance of RRBs in achieving the government's debt management objectives of stable, low-cost funding and well-functioning Government of Canada securities markets.

The government and Bank of Canada perform annual debt management strategy consultations, including in September and October of 2022, the summary of which is also posted on the Bank of Canada website. The RRBs are always discussed as part of these consultations and the low level of demand for RRBs was once again reinforced by market participants. This continued trend of low demand for RRBs was the main determinant for cancelling the program.

Jason Daw (RBC): What about on the Provincial side?

Mike Manning (Ontario): We issued our last real return bond in October of 2009. It was for a very specific purpose; we had an inflation linked liability on our books that we wanted to replace at a lower real interest rate and lock in savings, so it made a lot of sense. But we find with RRBs, they're difficult to hedge; if you change your mind, it'll be difficult in the swap market to manage the risk. So, we have no issuance plans. We certainly haven't had much investor demand for them as well.

Guillaume Pichard (Quebec): We get the demand now and then but it would not be large enough to sustain a bond program. Also, to Mike's comment, we were issuing a lot of RRBs in the past, but we stopped because of lack of being able to hedge out inflation. Now if we ask, Jason, can we take a place with the Bank of Canada and Finance? I don't think so. Especially without a benchmark market, and we're not going to do that.

Jim Hopkins (British Columbia): We have no plans in British Columbia to issue RRBs.

ESG & SUSTAINABLE FINANCE INITIATIVES

Alex Caridia (RBC): Okay. We'll go into the second part of the discussion, which is more focused on funding. I want to start with discussing ESG and green bonds because I think that topic is frequently spoken in any meeting with either an investor or an issuer these days. I think just over half the issuers around the table here have issued something in a sustainable format. To kick things off, Kevin, can you give us an overview of ESG issuance in the Canadian Public Sector Space?

Kevin Martin (RBC): Yeah, I would make a couple of observations. Looking at it globally, the amount of green, social, and sustainability & sustainability-linked bond issuance is actually down over the year. Canada's going against that trend. If you look at the Canadian public sector issuance of ESG product, it's C$17 billion so far this year. That represents about a 180% increase over 2021. What's driving that significant increase? Two things. The Government of Canada, certainly with their C$5 billion 7-year inaugural Green Bond, which made a splash in the domestic market. But the other aspect is that the Canadian pensions are coming back to issue in Canada. And so we've seen inaugural ESG issuance not just from Canada, but PSP Capital, CADEPO, and Ontario Teachers Finance Trust. CPPIB also returned to the Canadian market with a green bond in 2022. So that's really what's been driving the increase here in Canada. I'd be interested to hear from others around the table, in terms of their experience in the domestic ESG market so far this year.

> If you look at the Canadian public sector issuance of ESG product, it's C$17 billion so far this year. That represents about a 180% increase over 2021.
>
> *Kevin Martin, RBC Capital Markets*

Nicolas Moreau (Department of Finance, Canada): Yes, the government is committed to an annual green bond program. This means the government will conduct another green bond issuance before the end of fiscal year 2022 – 23. Further details will be announced closer to the date of issuance.

The updated debt management strategy for 2022 includes a place holder of $5 billion for an issuance in fiscal year 2022-2023. The actual issuance size will be guided by the availability of expenditures and market conditions. Fall Economic Statements 2022 also announces our intention to explore the development of a sustainable bond framework. This is consistent with consultations on the future of green bonds and the potential for social bonds which have been performed over the last two cycles of debt management strategy consultations. We will continue to consult market participants and observe international developments within the sustainable finance space to determine next steps. Further details will be made public once consultations have been completed; all details remain subject to further analysis at this time.

Alex Caridia (RBC): On the topic of sustainability versus green, Chad you recently updated your framework. Could you give us an update on that?

> Putting that framework together, adding new categories, enhancing it, bringing more clarity on the types of projects and working with partners like RBC to do that brought a lot of expertise into the development of the framework.
>
> *Chad Buffel, EDC*

Chad Buffel (EDC): Yeah, we started our initial framework with the green bond back in 2013, so it was really in need of an uplift in that context, and we wanted to expand on it as well because there's been a lot of recent efforts to drive a lot more behaviors within the social/environment side of things. If we're going to be involved, let's put a program and framework in place that'll try and drive a lot more of that behavior. We needed to bring things up to the current standard. There's a lot of work that's gone on certainly over the last 8 years on the standards front. We are obviously helping the export sector, but how do we encourage and help companies evolve so that they can become more sustainable or greener.

Driving some of the other aspects of our framework, whether it's on the social side or environmental side, we are trying to make sure that we've got that keen focus, as well as the measures, and reporting, and the kind of people/resources that understand today's standards. Putting that framework together, adding new categories, enhancing it, bringing more clarity on the types of projects and working with partners like RBC to do that brought a lot of expertise into the development of the framework. Now with the framework in place we've got a way to help businesses start and enhance their journey for sustainable projects. While we are not necessarily looking at doing a Transition, or Social Bond right now, there's a lot of internal work to do, to ensure that we've got the right tools, the metrics, reporting and management for each of these areas.

I think putting the new framework out there is really a way of having dialogue, getting feedback, and talking to investors to try to get a better sense of what they see as issues and what expectations they have. Especially transition: I think that's probably going to be the most interesting dialogue with investors. We want to get a lot of feedback so that when we are in position to do it, we want to make sure that we have full transparency on what's there so that investors can make informed decisions; they understand the details behind the projects.

Ideally, we'll be out with a green bond next year, we've got that framework in place, and we've done them before. That'll be our ambition for next year. We just want to make sure that we've got a lot of the legwork, especially in the reporting and the metrics, which are stronger drivers now than in the past. So that's our focus at this stage, which will help drive processes internally. I think probably the biggest struggle we have is trying to keep the people. There's a lot of turnover in this area, so keeping the people that have the expertise, who give us a consistent approach in the measuring and reporting processes, has been a challenge during 2022.

Alex Caridia (RBC): Talking about transition now. Steve, do you have anything to add?

Stephen Thompson (Alberta): It is a space you believe in, and I think the ESG space will mature to the point where it's not going to be seen as disingenuous for the Province of Alberta to put up some sort of sustainability framework. I would expect it to include transition, probably be focused on transition, but I would envision something that would allow us to issue green, social or transition bonds. We have spent a lot of time in the past few months meeting with investors, many of whom are at the table, many of our peers and investment dealers, introducing our ESG secretariat and our jurisdictional ESG framework. I think we've actually made a lot of progress in this space, and if and when we ever borrow money again, I have to imagine that we would include a sustainability program of some sort.

Alex Caridia (RBC): One of the things that always surprised me on green bonds is that, even though there are 10 provinces in Canada, only two of them have issued in Green format so far. They have been issuing since 2014, but to start I wanted to focus on some of the other provinces. Maybe starting with, Jim, in terms of your view and potentially looking at a Green Bond or an ESG bond, can you expand on what BC thinks on that?

> We feel that we get more dividend payback from getting that understanding with investors so that it's embedded in our borrowing program. So, when an investor buys a BC bond, they're going to accept it as actually a purchase of an ESG compliant security.
>
> *Jim Hopkins, British Columbia*

Jim Hopkins (British Columbia): Yes, a green bond is not on the agenda this year. Never say never, and the province of BC may want to issue one day but our focus is really on trying to get the story out there that BC is a jurisdiction that truly embraces ESG values and the outcomes, and that the government embeds ESG into its programs, policies and projects. In August 2022, our government released the first, comprehensive report to summarize the province's ESG profile and credentials (a copy of which is available on line). We feel that we get more dividend payback from investors when we can earn acceptance that the government embeds ESG in our borrowing program. So, when an investor buys a BC bond, they're going to accept it as actually a purchase of an ESG compliant security. I think a Green Bond can be overstated sometimes as to exactly what impact it's having on the quality of life. I think there's a greater bang to be realized from ESG by putting issuers up against an ESG metric rather than looking at whether or not a transit system is financed by a Green Bond or a traditional bond. That project happened however it was financed and the benefits for climate were realized in any case; it wasn't a function of the form of the finance. But, I get it that investors, have a place for these instruments in their portfolio and we listen and may well, one day, issue a green bond. I would add that relatively smaller issuers like British Columbia have cause for caution when considering issuance of green bonds. We have always been reminded by investors and investment dealers of the importance of liquidity. We're also mindful that we risk diluting liquidity in our mainstream program by launching a green bond program. Liquidity is precious and optimizing it will always remain top -of-mind to support BC's overall performance in the capital markets.

> Now we're seeing investors asking for issuer ratings more than looking at the instrument or framework.
>
> *Alex Caridia, RBC Capital Markets*

Alex Caridia (RBC): Yeah, I think that's an interesting point when you talk about the instrument versus the issue overall. It's interesting to see, over the last 15 years, how the market has evolved. A lot of issuers were actually making a similar point to what you're making now, which is, that everything we do is a social or green given their mandates as public sector issuers. They then put frameworks in place because in many cases there was political pressure to do so. Now, we're seeing investors asking for issuer ratings more than looking at the instrument or framework. Maybe a question for some of the investors around the table. Do you look at the issuer more than the actual bond? Given the liquidity or the constraints on a green bond, would that make more sense for you?

Ryan Goulding (Leith Wheeler): I like how you frame that. I like Jim's answer as well. We look at every green bond the same way we look at any other bond. We're portfolio constructors, not bond buyers. The way that it fits into the portfolio that I'm trying to create for my clients, given the mandates they've given me. We've bought green bonds in the past, but for the most part, I do think that the give on liquidity is not necessarily worth it. We do however look, and I like the approach that Jim said, and the same thing with BCMFA and First Nations Finance Authority in saying, "Look, we're trying to do the best we can overall, and we shouldn't be necessarily carving out, there's a lot of work going into carving out these specific bonds." I get a call for every single green bond issue from clients saying, "Did you buy that?", and most of the time, my answer is "No". They then say, "Why not?", and I respond with "There's never been a project today that hasn't, wasn't going to get financed anyway, and by us not buying this, it didn't change whether or not that project got done". We do look at the overall investment and we take a much bigger view in terms of what the overall issuer is doing instead of the specific issues coming up.

Jim Hopkins (British Columbia): To Ryan's point, I think investors should hold us as issuers accountable to tell the ESG story. So what's the evidence? What we did, as I mentioned earlier, was report in August on our ESG profile and provide a waterfront perspective on BC in the ESG world. The report has areas for improvement but we think it's really important to take the initiative. We are also following Alberta's lead in ESG governance. Alberta, as you know, has a Secretariat, and we're hoping in the spring time to roll out what we are planning to call an ESG Center for Excellence. This is intended to further substantiate the province as a jurisdiction which actively values ESG. Robust reporting is a multi-year journey and undertaking. As I said, I think that the shortcoming in our reporting, which we took back in terms of feedback from investors and bankers, is interest in more performance-based data. So we have to go back and work on that and do a better job. I think if issuers are listening then hopefully this approach will provide a large part of the answer for investors.

> We are working on a Sustainable Bond Framework to replace our Green Bond Framework.
>
> *Mike Manning, Ontario*

Stephen Thompson (Alberta): I think we're actually very likely to follow you in terms of reporting something for Alberta as a jurisdiction. We have the jurisdictional framework set up and we have some data, though we don't have enough data for a proper report to your point. I think that's just the way we're going to go, and if we don't own it now, it's going to be imposed on us by someone else.

Matthew Cassell (HOOPP): We find green bond liquidity to be asymmetric. It's very easy to sell a green bond and we generally find there is superior bid side liquidity relative to non-green bonds. This is because there remains some sticky green cash that doesn't often sell and a focused buyer base. On the opposite side, it is very hard to buy green bonds in secondary markets for the same reason. As with most investors, we always try to buy in primary because we just can't find it on the secondary market. Given this asymmetry, we view owning green bonds as a bid side liquidity upgrade.

Alex Caridia (RBC): Thank you Matt. Perhaps Mike, moving over to your plans on green bonds.

Mike Manning (Ontario): For the past several years we've been issuing two green bonds per year. We started off by issuing just once a year, and we've found the strategy of increasing issuance to work quite well. We're planning for our second green bond of the year, probably in January or February of 2023. Like some of the others here, we are working on a Sustainable Bond Framework to replace our Green Bond Framework, which is a little bit dated. It came out in 2014, and so we expect to have the new framework in place probably at the start of the next fiscal year, April of 2023. We will have the ability to issue social bonds, but I don't think that the market is there yet in terms of investor demand or cost savings. I think having the ability to potentially issue social bonds will be beneficial to have as a part of our overall borrowing program.

> We continue to work with industry partners on an ESG framework for CMHC's securitization programs.
>
> *Dave Ayre, CMHC*

Guillaume Pichard (Quebec): We've just updated our framework, and we'll keep the green label. We did look into it and one thing we found out was that the projects we actually fund that are infrastructure qualify more as green than social and sustainable. Not that we don't have these types of projects, but we fund them with taxes and other revenues. So we raised that for capital projects, and I think we made the right choice to keep the full focus on green when we look at our pool of projects that are upcoming. This year, to Kevin's point, we've been part of the higher issuance in Canada, and for the first time we've done two green bonds six months apart. The first one was a 10-year C$1 billion bond, which is also our biggest one ever on the board. Just a few weeks ago, we brought C$800 million green bond to the market, so all in that brings our total to C$5.1 billion of green projects funded over the last 5 years.

Alex Caridia (RBC): Thank you Guillaume. Dave, any comment?

Dave Ayre (CMHC): We continue to work with industry partners on an ESG framework for CMHC's securitization programs. We do not have a timeline at this stage. We did initiate a project in early 2021 to facilitate some funding of affordable multi-family mortgages in the 10-year space. Essentially what we did is we allowed priority access to CMB funding for mortgage originators that generated affordable multi-family housing mortgages that met certain criteria – and it's been pretty successful. We funded to date a little over C$11 billion for those originators since last year so even though that was not a labelled product, you could argue that it's provided an incentive to mortgage originators to actually go out and originate new multifamily mortgages, which should ultimately help support housing affordability for Canadians.

FUNDING PROGRAMS

Alex Caridia (RBC): I'll move on to the domestic funding now, and I think I'll start with Sam. Sam, you've just added another process to the way you fund domestically. Perhaps it's worth updating the group on what you've done, and why you've done it, and the success you've seen thus far.

> Our goal for next year will be similar, with a view to grow our CAD footprint in the years to come.
>
> *Sam Dorri, CPPIB*

Sam Dorri (CPPIB): Happy to. Last week we announced that in addition to the traditional two-day syndicated book build process, we're also going to be looking at retention style issuance in the CAD market. Earlier this year we had indicated that we would look to issue C$4 to C$5 billion of our C$15bn equivalent total funding in the CAD market. In the end we hit C$4.4 billion in CAD this year, which was the midpoint of that target. Our goal for next year will be similar, with a view to grow our CAD footprint in the years to come. Part of our desire to access retention transactions is to facilitate that growth profile. It's interesting, I had conversation with Matt Cassell who is at this table, and he made the point that as we hit steady state funding in CAD, we'll want our issues to be less of an event; it was something that resonated with me. And if you look back at this year, when we made our return to the CAD market those first couple trades were big events. As we move to steady state, becoming more regular and predictable, we think it's important to adopt the retention standard that is present and efficient for borrowers in this market. That was ultimately the logic behind the announcement; it wasn't a tactical shift based on this year's funding challenges in global markets, but rather a longer-term commitment to the Canadian market.

Alex Caridia (RBC): Yeah, I think from a liquidity perspective, it makes a lot of sense. I mean, we've spent the last few months traveling around, and it's amazing how Canada sets itself apart, particularly in the domestic Provincial market in terms of liquidity. In terms of turnover numbers compared to some of the SSA markets you've seen, spreads have moved less here in Canada, and we've seen issuers access the market more frequently with longer maturities than in other markets. Are there any plans to do similar on the PSP side?

Andrew Bastien (PSP): Well, I'm not sure we will immediately follow the same type of retention style issuance domestically since we don't have the same program size as CPP. I do think what Sam is doing in the domestic market is interesting because as far as the federal asset manager space is concerned, we kind of owned that space in Canada for a long time, while we were only issuing maybe a billion dollars a year. If you look 4 or 5 years down the road, I think the domestic issuance between the two of us is going to be huge, and it's going to be bigger than what you see from most of the provinces in this country. This will create a federal asset manager space that investors are going to want to look at, because to Sam's point, it's not going to be an event when somebody issues, it's going to be continuous issuance. Although we will also be focused on building out our program internationally, in USD and EUR, the Canadian market will always be very important to us. I think going forward, when I look at what CPP is doing, it's similar to what you should expect from PSP in 4 to 5 years from now.

> The story for PSP right now is that we are moving from a purely domestic program to being a global issuer.
>
> *Andrew Bastien, PSP*

The story for PSP right now is that we are moving from a purely domestic program to being a global issuer. We've been issuing domestically since 2008 but only established our Global MTN program in 2021 to access global markets. With a growing issuance program, we will eventually get to the point where we will need to think of new issuance formats. I think we're going to do interesting things in the future, both domestically and internationally.

Kevin Martin (RBC): It's an interesting theme. I do think it's one of the main themes for Canadian public sector funding in 2022. The return of the pension asset managers coming back to Canada to do their funding. This year, 8% of total domestic public sector funding has been pension asset managers, versus 2% last year. Based on what we're hearing around the table today, there may be considerably more issuance from this sector going forward over the next few years.

Alex Caridia (RBC): From the investor's point of view, Pier, do you have a view on the bookbuild versus a green banner type deal?

Pier-Andre Blanchet (Industrial Alliance): Well, as an insurance company with the biggest share of our portfolio tracking long-term liabilities, we're less involved in shorter term issuance. But I really like this process, so it encourages orders in advance and building the next deals.

> The provincial style type deal encourages orders in advance and building the next deals.
>
> *Pier-Andre Blanchet, Industrial Alliance*

Matthew Cassell (HOOPP): I was really happy and supportive to see CPP move to a more provie like issuance process. It's clear to me that over the next few years we are going to see a surge of issuance from pension funds and crown asset managers. But between here and there, there are a number of things the market is going to have to sort out. Can we make pension asset managers a true HQLA level one asset? How do we treat and price the stratification of CPP, PSP, CADEPO, ONTTFT? Can we develop a repo market for these assets? Will they be accepted as collateral under CSAs? I think these are critical issues that have to be dealt with ahead of the upcoming issuance surge. I feel like the coming issuance by pension fund and crown asset managers is not fully appreciated by the market. This is going to be such a significant part of our HQLA market in Canada, but there's still many things to solve on the way to getting there.

Alex Caridia (RBC): And Mike, from your perspective, any plans for the domestic market?

Mike Manning (Ontario): I think the domestic market has really served us well, and we have had fairly continuous issuance, supported by 24 domestic deals so far this year; and there's still a couple months to go. I think the thing that's really been very beneficial to our program is the liquidity that our bonds offer. I think that's one comparative advantage that we may have over some other issuers. So we're quite happy that we can take advantage of that.

Guillaume Pichard (Quebec): Well, we haven't talked about how it's been a lot more difficult this year than it was in the past years. Honestly, sometimes you really had to work your deal, meaning you had to call the dealers a lot and tell them that you need to get a few issues done, and find investors. Sometimes you had to be a little bit more vocal on your intentions to go to the market to get a deal done. Recently, things have been much better and in the last few weeks, we were able to do three deals in one week, which was a tremendous week for us. It was also a good week for everyone, it was definitely encouraging. Going forward, we are hoping that it stays this way. The Canadian market has been absorbing a lot of deals like Jim mentioned, but at the end of the day, it is not one of the big financial markets in the world. I am maybe getting off topic here, but, talking about the arbitrage on the international market, I do hope we get to see it soon. That would be helpful for the last quarter of the year.

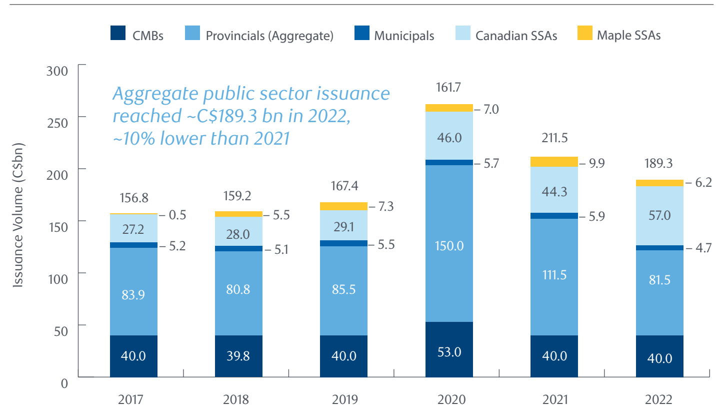
Alex Caridia (RBC): You make a good point and if I look at offshore funding this year, it's at a low, certainly since I came to Canada, with about 15% of total provincial funding. In 2017, that was at 35%. Interestingly, arbitrage for offshore SSA issuers is trying to access Canada, has also not been working that well. It worked in January or in February, but we've only seen eight maple deals this year, compared to last year which was 16. This means that it's 30-40% lower in terms of volume as well.

Guillaume Pichard (Quebec): So, we're only at 8% for this year, and we did a big GBP deal way back at the beginning of the year which was a positive deal. It's not that we haven't been looking. We've been looking every day, but when we look to the spreadsheet, the arbitrage is way off and the demand has also been lagging. It just hasn't been an opportunity that we could sit on, both in the US market and your own market.

Sam Dorri (CPPIB): One additional factor to consider has been the amount of covered bond issuance by Canadian banks. This has been particularly evident in a handful of offshore markets – markets like GBP and EUR – where the spreads they're borrowing at have had an impact on many of the borrowers in this room. We've heard some of this feedback directly from global investors and it has been a growing theme as they've increased their proportionate borrowing profile in the covered bond space by a non-trivial amount.

Alex Caridia (RBC): Think that's pretty good point. Amy, Saskatchewan did manage to get a USD transaction done, so perhaps do you want to comment on that and any plans for the future?

AGGREGATE PUBLIC SECTOR TOTAL ISSUANCE (ALL CURRENCIES)



Source: RBC Capital Markets

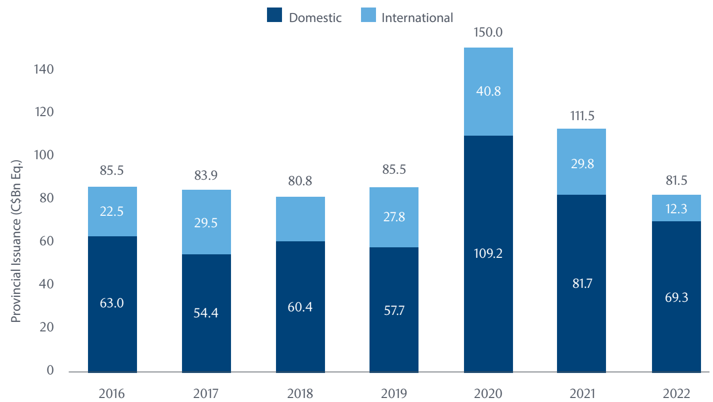
Amy Gates (Saskatchewan): Yes, Saskatchewan re-entered the USD market this year for the first time since 1994. The deal in 1994 was a 10-year deal. Our last 30-year issuance was in 1992 and had just matured this year. The recent deal went very well. It was oversubscribed, and we see one of the biggest benefits being that we introduced the Saskatchewan name to 50 new investors. In recent years, foreign issuance on a large scale - and maintaining SEC registration - hadn't made sense since the Province's borrowing program was not large enough. With increased borrowing in recent years, plus the desire to broaden our market access it made sense to reconsider re-entering the USD market. Going forward, we are committed to maintain about a third of our issuance in foreign markets. In the near term we expect this will primarily be USD, possibly in the next fiscal year.

Alex Caridia (RBC): Great. Thank you. Jigme, any comment generally on offshore and production?

> Going forward, we are committed to maintain about a third of our issuance in foreign markets.
>
> *Amy Gates, Saskatchewan*

Jigme Shingsar (RBC): Yeah, as you pointed out, the offshore issuance stats looked a little lean but I think that reflects a couple different things. One, obviously if you think about what the international markets are used for, most issues around the room use a combination of capacity management and diversification, and when your funding requirements are down then capacity management is less of an issue. Then, it's more about diversification, and then you have the luxury of becoming a little more price sensitive. I think it all makes sense, and if you actually put the numbers in the context of how the offshore markets have been, to the extent that the second half of the year has been particularly volatile and difficult for offshore issuers generally. So I would say if you got 15% with issuance only in the first half, I think we did quite well. I think that speaks to the quality of domestic market access that you guys have here and I think that's also reflected in moves like what Sam's doing, and the continued presence in the domestic market of PSP. If I was to put a positive spin on it, I think that there's a large portion of untapped capacity in the offshore markets. To the extent that you need it as an outlet for capacity management, I think there's a lot of access there. Obviously not always at levels that you guys like, but it's there, and it's undersupplied. I think investors remained receptive to the Canadian story. I mean, we just did this roadshow in Asia and I think none of us would've expected that the Canadian story would still stand out as much as it has this many years after the global financial crisis. I think 15% is a low number obviously in historical context, but it reflects a difficult market. Sam's alluding to some of the reasons why in terms of competing supply

PROVINCIAL ISSUANCE



Source: RBC Capital Markets

from covered bonds issuance and the reversal of some spread compression and all that sort of thing. But, despite that, got a 10-year benchmark done, which is rare enough anyway. In that context, I think this group of issuers has done quite well, so I'm quite optimistic in terms of a market going forward.

Mike Manning (Ontario): Yes, we're still very committed to the international markets. You have to diversify your borrowing program and expand your investor base in international markets because there's always a day that could arrive where the domestic market is not as cost-effective as you would like. It's still important for us to stick with the USD market. We've only done one USD issuance so far this fiscal year and normally we would have done two or three at this point in time, and this speaks to the poor arbitrage conditions. But I think as we move into January and February, we're still going to have to look at the US market.

> I think that there's a large portion of untapped capacity in the offshore markets.
>
> *Jigme Shingsar, RBC Capital Markets*

Pier-Andre Blanchet (Industrial Alliance): As an investor, I understand the need for large issuer to maintain a curve abroad and to diversify their funding sources. However, the consequence for smaller issuers is our inability to provide full support to lighter issuance streams. The allocation of government bonds in our portfolio needs to be really liquid, so the bigger the benchmark, the more we're supportive. Issuing a high percentage of funding abroad ultimately reduces domestic liquidity which has direct implications on our portfolios positioning and liquidity levels. Maybe that's just our perspective.

Alex Caridia (RBC): That makes a lot of sense, I have two questions for Chad. One is, will we see EDC back in the CAD market, because that's obviously not normally where you fund and secondly, what is your view and plans on offshore issuance?

Chad Buffel (EDC): When we look at CAD, we are really focused on the ESG side. Most of the regular lending business we have in terms of CAD, we support through our capital. This allows us to focus our borrowing program on the international side.

When it comes to CAD, we do issue on the ESG side. We recognized, when we first started our Green Bond Program that the CAD market would benefit from us providing more paper and giving more liquidity for green investors. So, we'll ideally be back, and we're hoping to be back in the coming year. It's been a while since we've issued.

Andrew Bastien (PSP): For offshore funding, I think the conversation goes beyond the fact that the cross-currency swaps don't really work right now for Euros and Dollars. To go back to what Jigme was saying before, when you get market volatility, it's normal for global investors to look towards their domestic issuers, the issuers they're comfortable with. We did some work roadshowing in Europe this fall, and we had a lot of great meetings. Investors liked the credit, they liked the name, and they liked Canada, but the market backdrop just wasn't there. There was so much volatility. The feedback that we got from investors was that they look forward to PSP issuing in EUR, but that the current timing for issuance was not great, which is fine with us because we've always been a patient issuer. It has been that kind of year, where conditions are tough and you need to work with the market, and I think everyone had to adjust their plans and timing for issuance. We expect that in the year ahead will be more of the same, where we will have to adjust our plans based on market conditions. We never try to force a transaction into the market, but we do look forward to doing that first EUR trade at some point, hopefully in the near future.

Going back to green bonds for a moment, it would be possible that our first EUR transaction could be green, since there's so much demand from investors in Europe. The current market backdrop doesn't allow you to set your plans 12 months in advance and just do everything you want to do. Instead, we will spend more time understanding investor demand across different markets and trying to feed that demand.

Jigme Shingsar (RBC): I mean that's the other thing that comes into play. There are two components here. It's not for lack of demand, but what the demand is for, and then obviously the price is the other consideration. There's many issuers around the room that, for example, don't like doing shorter than 5-year funding, and I would argue that, particularly the latter half of the year, the market has lent itself to do more of 5 years and shorter. This means there is once again a misalignment even before we talk about pricing. These are all factors, but I think they're all good reasons to make sure you're not locked out of the market because nobody wants you and that's not a problem this group of issuers has.

Alex Caridia (RBC): Yeah, I think that's a really good point actually. I mean, both points are really good. Both investors and issuers are focusing more on their domestic markets and even the Domestic European or US based issues haven't been able to churn out in their own markets, so that makes it even more difficult for some of the Canadian names to come to the market. So, it's been challenging for them for sure. Hopefully that changes. I guess we're nearing the end of the discussion. I'm just wondering if there's anything anyone else wants to throw in on any of the topics we've talked about?

> A borrowing program is a marriage not a date, and arbs is a date.
>
> *Ryan Goulding, Leith Wheeler*

Ryan Goulding (Leith Wheeler): I'll jump on international because from a spread perspective, it's something that we consider a lot. I monitored through the year on a weekly basis how much internationals had done, and what components were left domestically. There's going to be impacts left on domestic spreads and this year is obviously concerning that the amount has been there. But totally understand that the relative funding levels have been off side, but I think it would be important as an investor to shift the conversation away from the arbs not being there. To me that's shortsighted. A borrowing program is a marriage not a date, and arbs is a date. I would love to know, how many roadshows have you done non-deal? How are you keeping those markets open? So if you had a slide in your deck that just said "Hey, we went on two roadshows this year, we saw 50 investors, 40 of them were private and were previous buyers, 10 were potentially new. We're not doing an issue, but the door to Europe is open for us". I'd like a little more clarity on that, and I think that's something.

Guillaume Pichard (Quebec): It's not being shortsighted on the cost of arbitrage, it's also the depth of the market too. If we're going to pay 20-25 basis points, and I'm not even sure I'm going to reach C$1 billion, the message I'm sending the market would be awful. If I'm going to pay 20-25 basis points, and I'm really sure the market's really good. We can in five years, which we've done in the past, to reach C$2 billion, then we have no issues. We've paid it in the past. So, it's not just the arbitrage. It's really both, arb and demand and can you get the size that actually will matter completing your program. And yes, we have done non-deal related roadshows all the time except for recently with COVID and the election back in September.

Sam Dorri (CPPIB): Just to reinforce Guillaume's point, market access has been an increasingly important hurdle that all the borrowers in this room have needed to focus on. Unlike in prior year, it's increasingly difficult at the outset to know if a successful trade is available. We've seen a number of pulled transactions this year, which in the SSA space has historically been extremely rare. And so one major point of focus for us has been ensuring continued market access. This reframes the arbitrage discussion in my view.

> One major point of focus for us has been ensuring continued market access.
>
> *Sam Dorri, CPPIB*

Matthew Cassell (HOOPP): The current cheapness on a cross currency swapped basis of USD provincials I view as a testament to the current risk aversion of investors. I don't recall a time in recent memory where the arbitrage for USD issuance has been this expensive for borrowers for this long. This year we have seen 5-year Ontario in USD being 10- to 30bps cheap to domestics. In typical market climates, the domestic asset swap investors come in and they scoop it up. They drive the arb level to flat. This has been a very unusual climate where you haven't seen Canadian asset swap buyers coming in to just scoop all this paper up, absorb it and put it on book. I think it speaks to the demand for investors for liquidity in the form of domestic assets, and a huge risk aversion of the market. Because in most prior market cycles, the cheapness of USD provincials disappears very quickly, and it is very rare to be so sustained.

Jason Daw (RBC): It's been one of the worst total return years for bonds past 4-5 years. So, that made people cautious. I think 2023 could be better, but suspected that's probably what drove difficulties in 2022.

Chad Buffel (EDC): To pick up on what Andrew and Sam were saying, just in terms of nimbleness, and being quick to identify borrowing opportunities and seize it. We want to move in and try to do it as fast as we can. It is critical to manage it so that you've got the right size, the right spread and be flexible about term. I think that's how we've tried to approach it this year. Not every deal goes exactly the way you think, but, to the extent that you can do it and say, yeah, that's a reasonable outcome, that's what we expect. I think that's going to be the strategy going into next year. I think it's going to get more difficult, at least certainly the first half, until we get some resolve where markets are going to land, but that's the key, flexibility.

Stephen Thompson (Alberta): Transaction execution is different than program management if you're a Province with an ongoing funding source, and let's not forget that arbitrage often, particularly as a less frequent issuer is pretty theoretical. It's easy to call something off-side with nothing to actively compare to. It's often a question of funding versus not funding. So, there is a criticality to funding for provinces because the cost of not being able to raise funds is just too dire. That's not a theoretical trade, it's about meeting your cash obligations regardless of cost sometimes.

Alex Caridia (RBC): Okay. I think we're right on time so this feels like a good place to end the discussion. Thanks again to everyone for your time, insight and participation today, we really do appreciate it.

SELECT CANADIAN PUBLIC SECTOR BORROWING PROGRAMS – 2022

The need and appetite for borrowing varies greatly between each Province and organization. To help understand the various key Canadian public sector borrowing programs and their characteristics, below is a comparison breakdown.

	ONTARIO	QUEBEC	ALBERTA	MANITOBA	SASKATCHEWAN	BRITISH COLUMBIA	NFLD & LABRADOR
PREMIER/CEO	Hon. Doug Ford	Hon. François Legault	Hon. Danielle Smith	Hon. Heather Stefanson	Hon. Scott Moe	Hon. Katrine Conroy	Hon. Andrew Furey
FINANCE MINISTER/CFO	Hon. Peter Bethlenfalvy	Hon. Éric Girard	Hon. Travis Toews	Hon. Cameron Friesen	Hon. Donna Harpauer	Hon. Selina Robinson	Hon. Siobhan Coady
CAPITAL/HEADQUARTERS	Toronto	Quebec City	Edmonton	Winnipeg	Regina	Victoria	St. John's
POPULATION ('000S) (1)	15,263	8,751	4,601	1,420	1,205	5,368	529
LARGEST SECTOR CONTRIBUTIONS TO GDP	Real Estate, Manufacturing, Finance	Manufacturing, Real Estate, Health	Oil & Gas, Mining, Real Estate	Real Estate, Manufacturing, Health	Oil & Gas, Mining, Real Estate	Real Estate, Construction, Tech	Oil & Gas, Mining
2022 REAL GDP GROWTH (2)	3.2%	3.5%	5.1%	3.7%	6.4%	3.0%	1.1%
SHARE OF CANADA GDP (%) (3)	38.0%	19.3%	16.3%	3.1%	3.9%	13.3%	1.6%
BORROWING YEAR	Apr-Mar	Apr-Mar	Apr-Mar	Apr-Mar	Apr-Mar	Apr-Mar	Apr-Mar
RATINGS (DBRS/MOODY'S/S&P)	AA(L) / Aa3 / A+	AA(L) / Aa2 / AA-	AA(L) / Aa3 / A+	A(H) / Aa2 / A+	AA(L) / Aa1 / AA	AA(H) / Aaa / AA+	A(L) / A1 / A
% CAD ISSUANCE (4)	86%	93%	100%	88%	32%	97%	100%
RECENT INTERNATIONAL ISSUANCE (4)	USD, GBP	GBP, AUD	n/a	EUR	USD	EUR	n/a
2021/22 BORROWING (C$BN) (4)	41.1	23.8	4.9	4.5	3.5	9.8	1.9
2022/23 BORROWING REQUIREMENT (C$BN) (4)	32.2	25.9	1.3	3.9	1.9	7.1	1.8
REMAINING FUNDING FOR 2022/23 (C$BN) (4)	6.9	9.2	-	1.7	-	1.0	0.4
YOY INCREASE (C$BN)	(8.9)	2.1	(3.6)	(0.6)	(1.6)	(2.7)	(0.1)
ESTIMATED 2023/24 BORROWING (C$BN) (5)	38.4	27.6	0.5	n/a	n/a	16.4	n/a
DOMESTIC TARGET TERMS	5 / 7 / 10 / 30	5 / 7 / 10 / 30	5 / 7 / 10 / 30	5 / 10 / 30	5 / 10 / 30	5 / 7 / 10 / 30	7 / 10 / 30
PUBLIC DEBT O/S (C$BN) (6)	398.2	236.6	94.1	52.2	27.9	74.8	18.1
ACTIVE ULTRA-LONG ISSUERS (7)	n/a	n/a	C$725M	C$750M	$310M	n/a	n/a
MIN. CARVE-OUT SIZE (8)	$600M (5yr) / $500M (10yr) / $400M (30yr)	n/a	$200M	$150M	$100M	n/a	$100M
ACTIVE ESG ISSUANCE PROGRAM	Green Bond Issuer	Green Bond Issuer	n/a	n/a	n/a	n/a	n/a

(1) As of Q4 2022: https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1710000901 (2) RBC Economics: https://royal-bank-of-canada-2124.docs.contently.com/v/hot-provincial-momentum-to-lose-steam1 (3) As of Nov 2022: https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3610040202&pickMembers%5B0%5D=3.1&pickMembers%5B1%5D=2.2&cubeTimeFrame.startYear=2021&referencePeriods=20210101%2C20210101 (4) Source: RBC Capital Markets. Provincials & PSP based on Government Fiscal Year (April 1-March 31); CPP, Canada, CMHC and EDC based on Calendar year (5) Source: Provinces, RBC Capital Markets, figures based on most recent borrowing program (6) Source: Bloomberg (7) Issued within the last three GFY, term >35 years (8) Large order protocol, order placed to one investor * RBC Economics † Based on Jan – Dec Calendar Year

Select Canadian Public Sector Borrowing Programs – 2022 Continued

	NOVA SCOTIA	NEW BRUNSWICK	PEI	CANADA	CMHC	PSP	CPP	EDC
PREMIER/CEO	Hon. Tim Houston	Hon. Blaine Higgs	Hon. Dennis King	Hon. Justin Trudeau	Romy Bowers	Deborah K. Orida	John Graham	Mairead Lavery
FINANCE MINISTER/CFO	Hon. Allan MacMaster	Hon. Ernie Steeves	Hon. D. Mark V. McLane	Hon. Chrystia Freeland	Michel Tremblay	J-F. Bureau	Kristina Fanjoy	Ken Kember
CAPITAL/HEADQUARTERS	Halifax	Fredricton	Charlottetown	Ottawa	Ottawa	Montreal	Toronto	Ottawa
POPULATION ('000S) [1]	1,031	821	173	39,292	n/a	n/a	n/a	n/a
LARGEST SECTOR CONTRIBUTIONS TO GDP	Real Estate, Public Admin, Health	Real Estate, Public Admin, Manufacturing	Real Estate, Public Admin	Real Estate, Manufacturing, Oil & Gas, Mining	n/a	n/a	n/a	n/a
2022 REAL GDP GROWTH [2]	1.9%	1.8%	2.3%	3.3%	n/a	n/a	n/a	n/a
SHARE OF CANADA GDP (%) [3]	2.0%	1.6%	0.3%	n/a	n/a	n/a	n/a	n/a
BORROWING YEAR	Apr-Mar	Apr-Mar	Apr-Mar	Apr-Mar	Jan-Dec	Apr-Mar	Jan-Dec	Jan-Dec
RATINGS (DBRS/MOODY'S/S&P)	A(H) / Aa2 / AA-	A(H) / Aa2 / A+	A / Aa2 / A	AAA / Aaa / AAA	AAA / Aaa / AAA	AAA / Aaa / AAA	AAA / Aaa / AAA	AAA / Aaa / AAA
% CAD ISSUANCE [4]	100%	100%	100%	100%	100%	33%	29%	0%
RECENT INTERNATIONAL ISSUANCE [4]	n/a	n/a	n/a	n/a	n/a	AUD, USD	USD, AUD, EUR, GBP	USD, EUR, GBP, TRY, CNY etc.
2021/22 BORROWING (C$BN) [4]	1.1	1.2	0.2	254.9*	40.0†	5.8	14.5†	8.1†
2022/23 BORROWING REQUIREMENT (C$BN) [4]	1.7	1.3	0.3	190.7*	40.0†	5.0	15.0†	13.3†
REMAINING FUNDING FOR 2022/23 (C$BN) [4]	0.7	-	0.3	46.0*	-	2.8	-	-
YOY INCREASE (C$BN)	0.6	0.1	0.1	(64.2)	-	(0.8)	0.5	5.2
ESTIMATED 2023/24 BORROWING (C$BN) [5]	2.1	n/a	n/a	181.0*	40.0†	5.0-7.0	15.0†	10-12
DOMESTIC TARGET TERMS	5 / 10 / 30	5 / 10 / 30	10 / 30	-	5 / 10	3 / 5 / 7 / 10	3 / 5 / 7 / 10 / 15 / 30	2 / 3 / 5
PUBLIC DEBT O/S (C$BN) [6]	14.3	20.9	2.4	986.1	254.5	17.1	53.6	38.8
ACTIVE ULTRA-LONG ISSUERS [7]	n/a	n/a	n/a	n/a	n/a	n/a	~C$1.53B	n/a
MIN. CARVE-OUT SIZE [8]	n/a	$100M	n/a	n/a	n/a	n/a	n/a	n/a
ACTIVE ESG ISSUANCE PROGRAM	n/a	n/a	n/a	Green Bond Issuer	n/a	Green Bond Issuer	Green Bond Issuer	Green Bond Issuer

SELECT RBC-LED TRANSACTIONS IN 2022

Select Transactions for Canadian Government Issuers & Asset Managers

Issuer	Amount	Description	Ratings	Role	Date
Canada	C$500,000,000	3.245% Ukraine Sovereignty Bond due 2027	AAA/Aaa/AAA	Joint Bookrunner	November 2022
Ontario	C$1,250,000,000	3.60% Senior Notes due 2028	AA(L)/Aa3/A+	Lead	November 2022
Canada Housing Trust	C$4,750,000,000	Dual Tranche CORRA FRN due 2028 & 3.55% Senior Notes due 2032	AAA/Aaa/AAA	Lead	November 2022
Municipal Finance Authority of BC	C$360,000,000	3.30% Senior Notes due 2032	AAA/Aaa/AAA	Joint Bookrunner	September 2022
CPP Investments	A$1,000,000,000	4.45% Senior Notes due 2027	AAA//Aaa/AAA	Joint Bookrunner	August 2022
Saskatchewan	US$1,000,000,000	3.25% Senior Notes due 2027	AA(L)/Aa1/AA	Joint Bookrunner	June 2021
British Columbia	C$500,000,000	4.25% Senior Notes due 2053	AA(H)/Aaa/AA+	Lead	May 2022
EDC	US$2,750,000,000	3.00% Senior Notes due 2027	AAA/Aaa/AAA	Joint Bookrunner	May 2022
Ontario	US$2,250,000,000	3.10% Senior Notes due 2027	AA(L)/Aa3/A+	Joint Bookrunner	May 2022
Québec	GBP$750,000,000	2.25% Senior Notes due 2026	AA(L)/Aa2/AA-	Joint Bookrunner	April 2022
Canada	US$3,500,000,000	2.875% Senior Notes due 2025	AAA/Aaa/AAA	Joint Bookrunner	April 2022
Ontario Teachers' Pension Plan	£1,500,000,000	3.00% Senior Notes due 2027	AAA/Aa1/AA+	Joint Bookrunner	April 2022

SELECT RBC-LED TRANSACTIONS IN 2022

Green Bonds and Sustainable Finance

Toronto
C$300,000,000
4.40% Green Bond due 2042
AA/Aa1/AA
Joint Bookrunner
November 2022

CDPQ
C$1,250,000,000
3.80% Inaugural CAD Green Bond due 2027
AAA/Aaa/AAA
Joint Bookrunner
November 2022

Ontario Teachers' Pension Plan
C$1,000,000,000
4.450% Inaugural Green Bond due 2032
AAA/Aa1/AA+
Joint Bookrunner
November 2022

Ontario
C$1,000,000,000
1.55% Green Bond Due 2029
AA(L)/Aa3/A+
Joint Bookrunner
October 2022

CPP Investments
C$1,000,000,000
3.0% Green Bond Due 2028
AAA//Aaa/AAA
Joint Bookrunner
August 2022

Québec
C$1,000,000,000
3.65% Green Bond Due 2032
AA(L)/Aa2/AA-
Joint Bookrunner
May 2022

Canada
C$5,000,000,000
2.25% Inaugural Green Bond due 2029
AAA/Aaa/AAA-
Joint Bookrunner
March 2022

PSP
C$1,000,000,000
2.600% Inaugural Green Bond due 2032
AAA/Aaa/AAA
Joint Bookrunner
February 2022

Maple Offerings

KBN
C$500,000,000
3.80% Green Bond due 2027
- /Aaa/AAA
Joint Bookrunner
November 2022

ADB
C$700 million
3.80% Gender Bond due 2025
-/Aaa/AAA/AAA
Joint Bookrunner
August 2022

KFW
C$500,000,000
1.75% Senior Notes due 2025
AAA/Aaa/AAA
Joint Bookrunner
February 2022

BNG Bank
C$300,000,000
1.8% Sustainable Bond due 2025
- /Aaa/AAA
Joint Bookrunner
February 2022

The World Bank (IBRD • IDA | World Bank Group)
C$1,500,000,000
1.0% Sustainable Bond due 2027
AAA/Aaa/AAA
Joint Bookrunner
January 2022