NATIONAL BANK OF CANADA
FINANCIAL MARKETS

Monthly Fixed Income Monitor
Economics and Strategy

October 2017

Highlights

- In the 1990s, central banks opportunistically kept their policy rate slightly more restrictive than was justified in order to drive inflation lower and anchor inflation expectations close to 2%. In the current environment, where globalization and population aging blow headwinds against achievement of inflation targets, we would expect central banks to adopt the reverse tactic. Normalization will proceed gradually, but decent economic growth and a shrinking Fed balance sheet will support a rise of long rates out to the forecast horizon.
- Given our view of the economy, we see the Bank of Canada taking its overnight rate to 2% by year end 2018. With the Fed and the BoC raising their target rates roughly in step next year, we expect the Canada-U.S. 10-year yield spread to narrow only slightly, from minus 21 bps currently to minus 15 bps by Q4 2018. We see 10-year Canadas trading at 2.86% at year end 2018. Year to date, corporate bonds have outperformed comparable Canadas. Monetary policy will become less accommodative in coming quarters but the adjustment will be gradual. In the context of a strong economy, this will not be a bad environment for corporate profits.

Paul-André Pinsonnault

Forecast dated September 27, 2017

United States

Quarters	Fed Fund	3 Mth Bill	2YR	5YR	10YR	30YR
09/27/17	1.25	1.06	1.48	1.90	2.30	2.86
Q4	1.50	1.36	1.76	2.10	2.50	3.03
Q1/18	1.75	1.58	1.95	2.27	2.70	3.19
Q2	1.75	1.74	2.03	2.45	2.80	3.27
Q3	2.00	1.83	2.23	2.58	2.95	3.38
Q4	2.00	1.83	2.32	2.64	3.01	3.42
Q1/19	2.25	2.20	2.64	2.85	3.08	3.47

Canada

Quarters	Overnight	3 Mth Bill	2YR	5YR	10YR	30YR
09/27/17	1.00	0.99	1.58	1.81	2.13	2.50
Q4	1.25	1.21	1.65	1.99	2.39	2.75
Q1/18	1.25	1.42	1.78	2.12	2.52	2.85
Q2	1.50	1.68	1.91	2.37	2.69	3.00
Q3	1.75	1.90	2.11	2.42	2.81	3.09
Q4	2.00	1.96	2.26	2.48	2.86	3.13
Q1/19	2.00	1.96	2.36	2.58	2.94	3.20

Monthly Fixed Income Monitor

Janet Yellen: The shortfall of inflation from target is a "mystery"

Central bankers have been quite vocal in the past few weeks, shedding light on their thinking about inflation dynamics and the implications for monetary policy. On September 18, Bank of England governor Mark Carney spoke about globalization and inflation. On September 27, Bank of Canada governor Stephen Poloz talked about important unknowns around the Canadian inflation outlook, concluding that "monetary policy [would] be particularly data dependent in these circumstances and […] we could still be surprised in either direction."

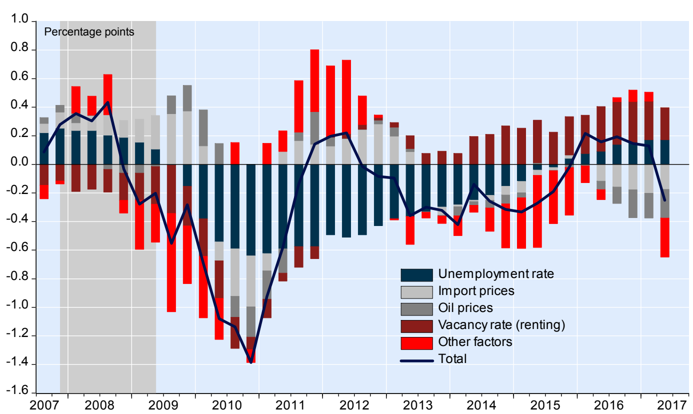
And Fed chair Janet Yellen surprised many by her candour at her press conference following the September 20 FOMC meeting. She acknowledged that the shortfall of inflation from the 2% target has this year become "more of a mystery," and has repeated the word "mystery" on other occasions since.

Many FOMC participants have been expressing their views on various podiums since the last FOMC meeting and Ms. Yellen has joined her voice to the public discussion. In a September 26 speech on "Inflation, Uncertainty and Monetary Policy" she went into theoretical aspects of inflation dynamics, wondering whether forces more persistent than the identifiable temporary factors might be responsible for the current below-target inflation.

Our own analysis of core inflation, using the traditional model, also leaves unexplained a significant portion of the spread between current inflation and the long-term average.

U.S.: Core inflation is low given the fundamentals

Contribution to the spread between core CPI and its historical average (percentage points)



NBF Economics and Strategy (data via Datastream)

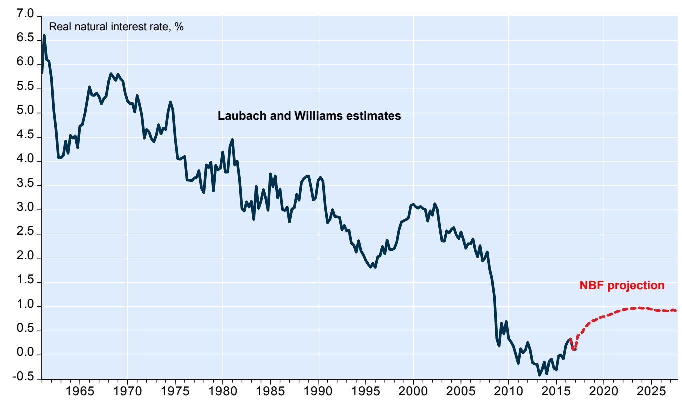
But since the model does explain the major part of the path of U.S. inflation in recent years, we are inclined to share Ms. Yellen's view that inflation could stabilize at about 2% over the "next two or three years in an environment of roughly full employment, absent any future shocks."

Ms. Yellen concluded that in this view "and given that policy affects economic activity with a substantial lag, it would be imprudent to keep monetary policy on hold." So a rate hike at the December FOMC meeting appears very much on the table. The market for fed funds futures contracts is putting the odds at 70%.

If the short-term path of normalization seems clear, what about the medium to longer term? At what pace and to what level should the FOMC raise the fed funds rate? The answer depends not only on the inflation forecast but also on the evolution of the "natural" real interest rate (R*).

U.S.: Estimated inflation-adjusted natural rate of interest

Projections based on CBO estimate of U.S. potential GDP



NBF Economics and Strategy (data via http://www.frbsf.org/economic-research/economists/LW_replication.zip , CBO, NBF calculations)

With R* currently close to zero by our estimate (range of zero to 0.35%), it seems the FOMC can proceed gradually. Twelve-month core PCE inflation was 1.3% in August and the effective fed funds rate averaged 1.16%. However, our projection shows that for the target fed funds rate to remain neutral, it will have to drift up even in an environment of stable inflation. This projection is consistent with the FOMC Summary of Economic Projections showing the nominal fed funds rate at 2.9% by December 2020.

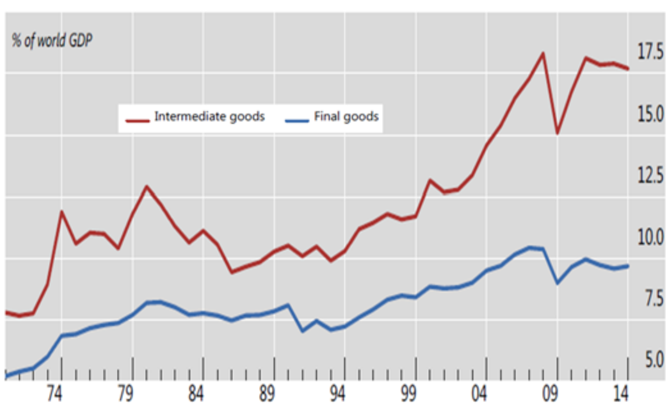
That said, it remains pertinent to ask, as Ms. Yellen did, whether the traditional framework for explaining inflation dynamics is mis-specified given the persistence with which models have been overestimating inflation in the last few years. After all, the appropriate nominal policy rate is a function of both inflation and R* over time.

In this regard the 87th Annual Report of the Bank for International Settlements (June 25, 2017) provides interesting avenues of investigation.

In a closed economy, inflationary pressures depend on the balance of domestic demand and supply. But globalization has drastically increased the importance of global value chains, according to the BIS. Imported intermediate goods are now a key component of domestic manufacturing output. Trade in intermediate goods is estimated to account for 80% of the increase in total trade over the past 20 years. With producers increasingly able to choose where in a global value chain they will locate their production, the global economy has tended to synchronize producer price inflation across countries.

Claudio Borio, head of the BIS Monetary and Economic Department, suggests that economists may underestimate the influence of globalization on inflation. With workers from China, the former Soviet bloc and other emerging economies joining the global effective labour force since the 1990s, 1.6 billion workers have been added to the equation. Mr. Borio estimates that as a result, the labour force of the developed economies now accounts for only 18% of the global effective labour force, compared to 41% in 1990. Further, industrial automation and artificial intelligence threaten not only the manufacturing labour pool but also service jobs. As a result, Mr. Borio hypothesizes, a secular decline of labour's "pricing power" has flattened domestic Phillips curves.

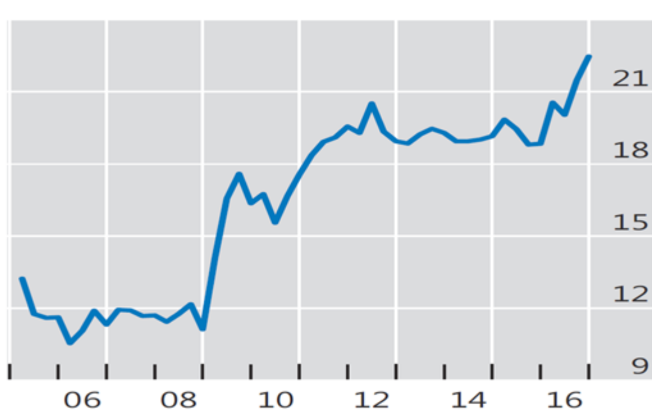
Global value chains are growing faster than final trade
A sign of greater economic integration



NBF Economics and Strategy (Claudio Borio, "How much do we really know about inflation?" BIS 87th Annual General Meeting)

In addition, the BIS presents evidence that globalization is also a factor in increasing the correlation of the growths of domestic and global unit labour costs.

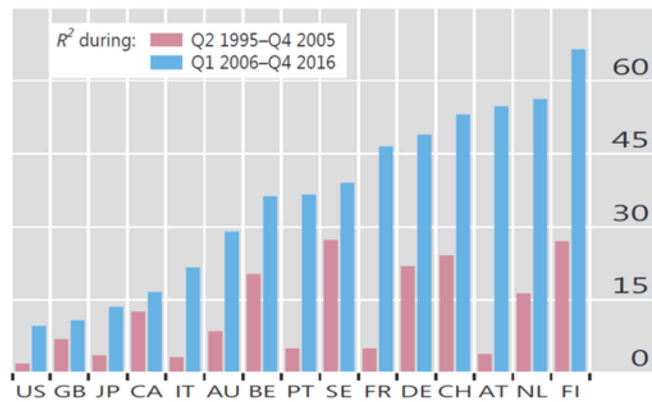
Greater share of domestic unit labour costs explained by global factors
Increasing R^2 (explanatory power of global unit labour costs) due to greater economic integration



NBF Economics and Strategy (Claudio Borio, "How much do we really know about inflation?" BIS 87th Annual General Meeting)

The effect of these developments varies among countries. In smaller, more open economies, a larger share of domestic unit labour cost can be explained by global factors. The U.S., unsurprisingly, is at the other end of the spectrum, but its labour costs have not been totally immune to the influence of globalization.

Country-specific R^2
Increasing R^2 (explanatory power of global unit labour costs) due to greater economic integration



NBF Economics and Strategy (Claudio Borio, "How much do we really know about inflation?" BIS 87th Annual General Meeting)

Claudio Borio raised another interesting possibility. If the effects of globalization are not yet fully absorbed, it might be that "its secular disinflationary effects could dominate increased cyclical inflationary pressures from a smaller global output gap as the economic recovery progresses." In other words, inflation may well continue to surprise central bankers by the softness of its response to the 3.6% global GDP growth that is forecast for 2018.

Our projection for the U.S. neutral real policy rate presented above was based on the CBO projection of potential GDP. However, we are reminded by Bank of England governor Mark Carney that BoE research estimates that 75% of the variation in the R* of the U.K. has been driven by global factors. So one may want to take a cautious view of our estimate of the U.S. R*. As Mr. Carney put it, "the presence of borrowers and lenders operating in multiple currencies and multiple countries creates multiple channels through which developments in financial conditions can be transmitted across countries."

Thus central bankers are left with large uncertainties about variables (inflation and R*) that are key inputs in their decision process. As Stephen Poloz has said, "models provide us with a coherent starting point, but we need to apply real-world judgment before reaching a policy decision."

At the last FOMC meeting, policymakers kept the target fed funds range unchanged but announced they would start normalizing the Fed's balance sheet. By our calculation, the announced slimming could have the cumulative effect of pushing the 10-year Treasury yield up 17 to 27 basis points by January 2019. The number varies with scenario for GDP growth, borrowing requirements and how they are financed. Just for a reference, the New York Fed's July Survey of Primary Dealers reported 28 bps as the median response to that question. For the 30-year MBS option-adjusted spread the median response was 15 bps.

Bottom line:

Central bankers appear to be navigating in a pretty foggy environment. So far they have been better at reducing inflation than pushing it up in orderly fashion. Japan has been working on this for years. Given this experience, we expect the Fed to proceed cautiously. No G7 central bankers want to push their economy close to recession. Inflation has been low for a long time. They could live with overshooting for a while.

All in all, we see one more rate hike in 2017 and two in 2018.

That said, the U.S. political process is not without influence on the bond market. Earlier this year, market expectations of significant tax cuts by the Trump administration and the prospect of substantial infrastructure spending helped push the 10-year yield to 2.63%. Since then, the political process has failed to deliver and hopes have faded that policies will be put in place to offset disinflationary pressure from the secular stagnation trend. The 10-year Treasury yield closed August at 2.12%

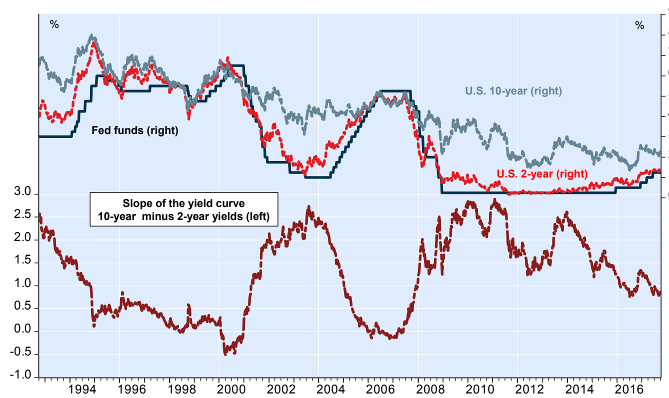
Now the ball seems to be rolling again. The administration released tax reform plans in late September and the market is again pricing in a chance that at least some of them will be implemented. After all, the Republicans have strong incentive to get it done — many will otherwise lose their credibility. A combination of Ms. Yellen's saying that the Fed is on track for one more rate hike this year and renewed hope of some fiscal stimulus helped drive the 10-year yield to 2.33% on September 29, leaving the slope of the yield curve, as measured by the 10–year-to-2-year yield spread, at 85 bps. In early September it had touched 76 bps.

We see Q4/Q4 U.S. GDP growth of 2.4% in 2017 and 2.1% in 2018. This is in line with the median projections of FOMC participants at their September meeting. In our view, decent economic growth and a shrinking Fed balance sheet will support a rise of long rates over that horizon.

On the basis of our traditional inflation model, headline CPI inflation would be running at 2.2% in Q4 2018. In our view that would be consistent with a PCE deflator between 1.7% and 1.9%. In the 1990s, central banks opportunistically kept their policy rate slightly more restrictive than was justified in order to drive inflation lower and anchor inflation expectations close to 2%. In the current environment, where globalization and population aging are blowing headwinds against achievement of inflation targets, we would expect central banks to adopt the reverse tactic. So while it could be argued that a target fed funds effective rate of 2.5% would be justified going into 2019 (R* of 0.7% + PCE deflator of 1.8%), we see the FOMC bias resulting in a target range of 2.0% to 2.25%.

In the near term, the slope of the yield curve will reflect market confidence in the economic outlook. In the longer term we expect a much flatter curve. Back in 1996 the slope was 50 bps.

Yield curve: Will it flatten or steepen?
In 1996, at the start of Great Moderation, the 2- to 10-year slope was 50 bps. Today it is 85 bps.

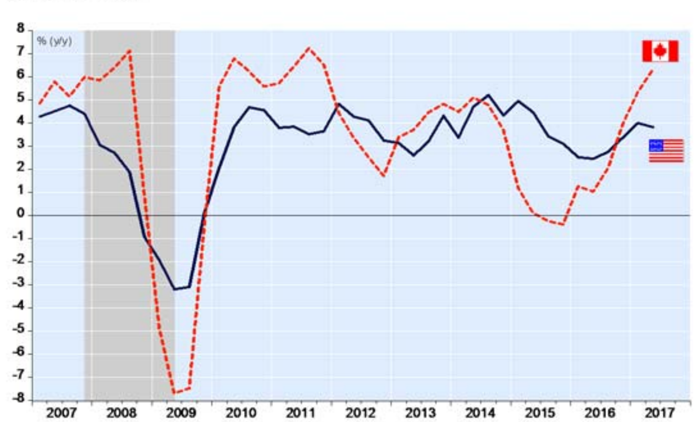


NBF Economics and Strategy (data via Bloomberg)

...and in Canada

BoC governor Poloz, in a September 27 speech titled "The Meaning of 'Data Dependence': An Economic Progress Report," chose to note that the Bank was facing many unknowns that could influence the inflation outlook and the pace of policy normalization in Canada. In his view, business investment could expand the economy's potential output by increasing productivity and employment, giving the economy more room to grow in a non-inflationary way. Other unknowns clouding the inflation outlook, in his view, included the effect of the digital economy, which could be exerting downward pressure on prices; ongoing weak wage growth; and the sensitivity of the economy to higher interest rates given high household debt. He also noted external risks and uncertainties, such as the rise of protectionist sentiment in some parts of the world. The exchange rate was also on the governor's watch list for its possible bearing on inflation.

Canada: Economy has done very well in recent quarters
Nominal GDP growth



NBF Economics and Strategy (data via Statcan and Datastream)

Although Mr. Poloz recognized the “significant progress” of the Canadian economy since the oil shock, his choice to emphasize the unknowns gave a dovish spin to his message, a bias he reinforced by saying the central bank would move “cautiously” toward policy normalization.

On September 25, two days before that speech, financial markets were putting the odds of an October rate hike at 47%. Within a week the market had lowered the odds to 23%.

Policy normalization is obviously not on a predetermined path. The Bank will adjust its game to incoming data.

Our economic forecast sees Canadian real economic growth of 2.5% in 2018 after what is shaping up as a pretty strong year for job creation in 2017. Over the 12 months ending in August the unemployment rate fell from 7.0% to 6.2%. Against this backdrop, Ontario’s minimum wage increase slated for 2018 creates an environment where the Bank will not want to be perceived as being too far behind the curve. Thus we see the Bank’s October update of its economic projections (MPR) as an opportunity for Mr. Poloz to show a tightening bias and clearly leave open his options for further policy normalization at any of the scheduled rate-announcement dates.

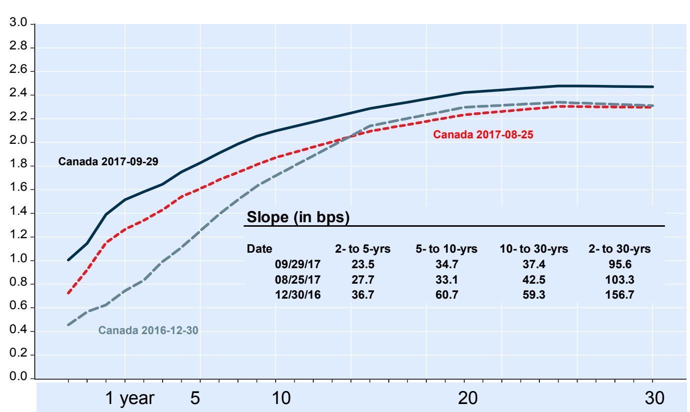
Given our view of the economy, we see the Bank moving on December 6. By then it will know how strong the labour market was in October and November, information that will shape its view of the risk to its inflation outlook.

We see the BoC overnight rate reaching 2% by year end 2018 with 12-month inflation of 1.9%.

With the Fed and the BoC raising their target rates roughly in step next year, we expect the Canada-U.S. 10-year yield spread to narrow only slightly, from minus 21 bps currently to minus 15 bps by Q4 2018.

We see 10-year Canadas trading at 2.86% at year end 2018.

Canada: Yield curves
Yield to maturity

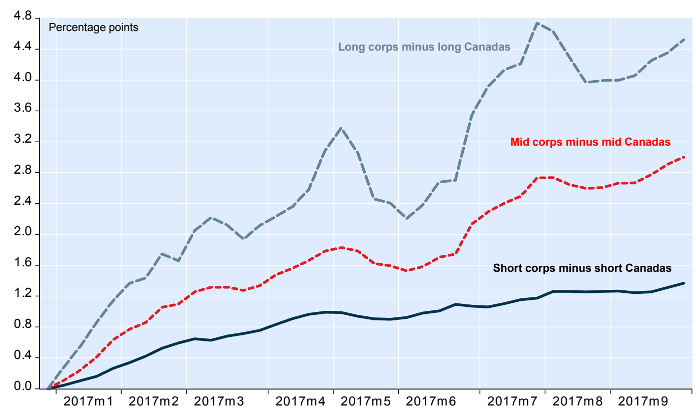


NBF Economics and Strategy (data via Bloomberg) 2017-09-25

So far this year the yield curve has been in flattening mode, with its midsection underperforming — a negative total return of 1.72% on Canadas maturing in 5 to 10 years while 10- to 30-year Canadas returned a negative 0.85% and 1- to 5-years a negative 0.83%.

If our yield forecast for year end 2017 is on the mark, an underweighting of 10-year bonds in favour of 2-years and 30-years would beat a bullet position by 18 bps over the fourth quarter.

Canada: Corporate bonds have outperformed Canadas year to date
Return of corporates minus return of comparable Canadas



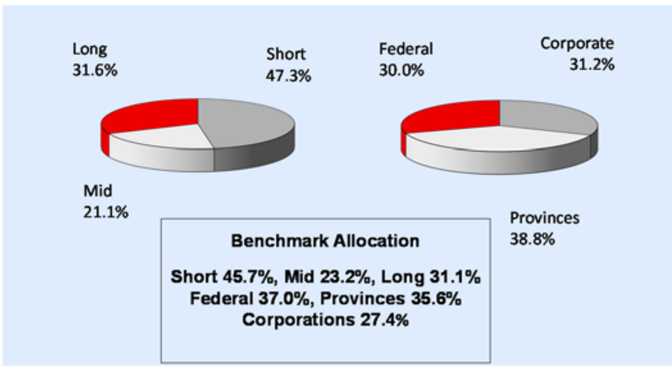
NBF Economics and Strategy (data via Datastream)

Year to date, corporate bonds have outperformed comparable Canadas by 4.52 percentage points at the long end, 3.0 points for 5- to 10-years and 1.37 points for shorter maturities. With the Canadian economy growing fairly briskly and earnings revisions having turned positive lately, we plan to maintain our overweighting of spread products. Monetary policy will become less accommodative in the coming quarters but the adjustment will be gradual. All in all, not a bad environment for corporate profits.

Monthly Fixed Income Monitor

Recommended bond allocation

Recommended duration 7.22 vs the benchmark 7.32
Maintain overweight in provincial and corporate bonds



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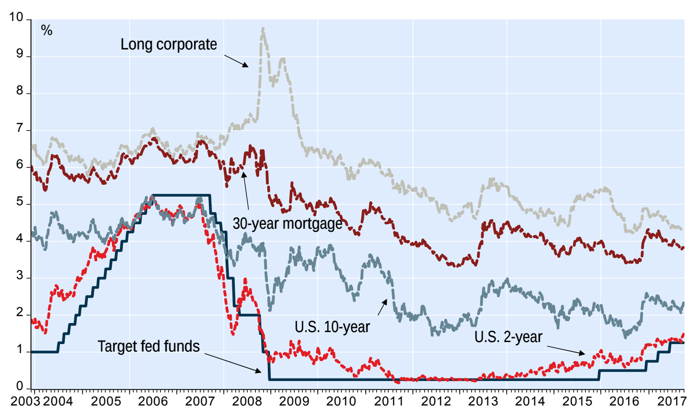
Canadian bond market – total returns

Total Returns	09/29/2017			
	Since 09/01/2017	*Since 06/30/2017*	*Since 03/31/2017*	*Since 09/30/2016*
Cash	0.03	0.13	0.23	0.47
Canada				
Short	-0.33	-0.57	-1.10	-1.44
Mid	-1.07	-1.81	-2.29	-5.11
Long	-2.42	-4.59	-1.75	-10.06
Universe	-0.87	-1.57	-1.37	-3.98
Provincial	-1.30	-2.52	-0.45	-3.97
Municipal	-1.06	-1.93	-0.11	-2.29
Corporate				
AA	-0.36	-0.55	-0.81	-0.55
A	-0.93	-1.74	0.07	-0.85
BBB	-0.80	-1.22	-0.26	0.31
Universe	-0.78	-1.34	-0.33	-0.36
Total	-1.00	-1.84	-0.75	-2.97
S&P/TSX	3.20	3.68	1.99	9.18

NBF Economics and Strategy (data via Datastream)

U.S. interest rates

Last observation September 29, 2017



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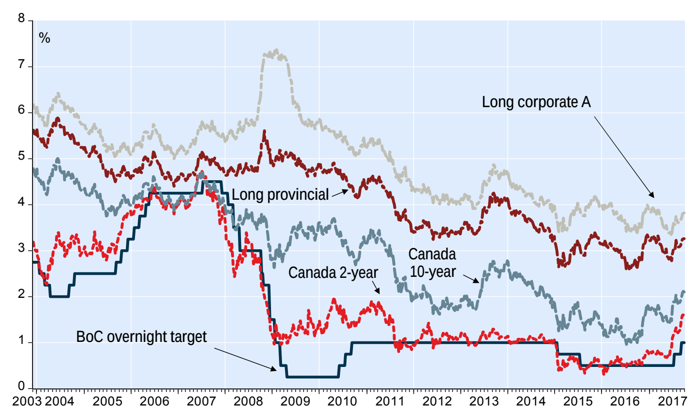
Canadian interest rates

Weekly, last observation September 29, 2017



NBF Economics and Strategy (data via Bloomberg)

Bond Market - Canada

	Close-on 9/29/17	*9/01/17*	*6/30/17*	*3/31/17*	*9/30/16*
Interest Rates					
90-day (B/A's)	1.42	1.34	1.07	0.94	0.90
2 years	1.52	1.34	1.10	0.75	0.59
5 years	1.75	1.59	1.39	1.12	0.62
10 years	2.10	1.91	1.76	1.63	1.00
30 years	2.47	2.30	2.15	2.30	1.66
Spreads					
90 d - 2 years	10	0	3	-19	-31
2 - 5 years	24	25	29	37	3
2 - 10 years	58	57	66	88	40
10 - 30 years	37	39	39	68	67
Currencies					
CAD / USD	1.2471	1.2395	1.2961	1.3314	1.3127
EUR / CAD	0.6788	0.6799	0.6753	0.7048	0.6777

Source: NBF Economics and Strategy (data via Bloomberg)

Monthly Fixed Income Monitor

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Montreal Office
514-879-2529

Stéfane Marion
Chief Economist and Strategist
stefane.marion@nbc.ca

Marc Pinsonneault
Senior Economist
marc.pinsonneault@nbc.ca

Kyle Dahms
Economist
kyle.dahms@nbc.ca

Paul-André Pinsonnault
Senior Fixed Income Economist
paulandre.pinsonnault@nbc.ca

Matthieu Arseneau
Senior Economist
matthieu.arseneau@nbc.ca

Jocelyn Paquet
Economist
jocelyn.paquet@nbc.ca

Krishen Rangasamy
Senior Economist
krishen.rangasamy@nbc.ca

Angelo Katsoras
Geopolitical Analyst
angelo.katsoras@nbc.ca

Toronto Office
416-869-8598

Warren Lovely
MD, Public Sector Research and Strategy
warren.lovely@nbc.ca