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BACKGROUND

MONETARY POLICY

Overnight Moves:

The Bank of Canada Should Start to
Raise Interest Rates Now

Michael Parkin



In this issue...

Higher rates now are the right medicine: if inflation breaks loose of its anchor and moves seriously above target, the situation can be addressed only with seriously above-normal interest rates.

THE STUDY IN BRIEF

THE AUTHOR OF THIS ISSUE

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When the Bank of Canada *will* begin raising interest rates is looking very different than when it *should* even though the risks of postponement are growing. If more “no-change” decisions are made by the Bank of Canada regarding its policy interest rate, inflation expectations might begin to slip loose of their 2 percent anchor. Further, with the Fed continuing to hold a near-zero rate, the US dollar is likely to continue its steady slide. If the Canadian dollar moves at least partially with the US dollar, because the Bank of Canada keeps its interest rate close to the federal funds rate, the higher inflation rates of energy and other commodity prices that are currently deemed temporary might start to look permanent.

Alongside these concerns is the limited direct effect that monetary policy has on the course of real GDP growth, the output gap, and the unemployment rate. As the Bank repeatedly states, the best contribution that monetary policy can make to these objectives is to achieve a low and predictable inflation rate. Too vigorous a direct pursuit of output and employment objectives in the short term might end up spilling over into inflation as the real economy remains stubbornly unresponsive.

The forgoing concerns are statements about risks, not central forecasts. But they are risks that, if they occur, bring an ugly set of policy choices. A return to seriously above-target inflation can be addressed only with seriously above-normal interest rates. That is a risk worth avoiding. And it can be avoided only by embarking sooner, rather than later, on the process of steadily increasing the overnight rate target.

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ESSENTIAL POLICY INTELLIGENCE

“**T**o the extent that the expansion continues and the current material excess supply in the economy is gradually absorbed, some of the considerable monetary policy stimulus currently in place will be eventually withdrawn, consistent with achieving the 2 percent inflation target. Such reduction would need to be carefully considered.”¹

So said the Bank of Canada in a press release announcing its May 31, 2011, interest rate decision. That decision leaves the outlook for the overnight rate target extremely uncertain, but it is likely to remain at its current 1 percent level for a further, unknown period. This uncertainty raises two questions. First, when will the Bank embark on a process of significant rate increases to restore a more neutral monetary policy setting, and what will trigger the start of this process? And second, is the Bank right to be cautious about raising the target overnight rate or is it leaning too far in the direction of monetary stimulus?

I will attempt to answer the first of these questions by looking in three places and asking for each what it implies about future interest rate changes: first, the Bank of Canada’s current assessment of the state of the economy; second, the Bank’s own description of its rate-setting strategy; and third, patterns in the Bank’s past behaviour.

It is the third source of answers that provides the only surprise, and it leaves in limbo the question of “when.” Despite the independence of Canadian monetary policy, the Bank of Canada is unlikely to embark on a significant rate hike path until the US Federal Reserve starts its own movement toward a more normal level of US interest rates. That event is unlikely to occur soon, but pinning down the likely starting date is impossible.

Notwithstanding my prediction that rates will remain low for a further period, delay is risky, so my prescription is to start raising them on July 19, 2011, with the expectation that they will be raised by 25 basis points every decision day until May 2012, to bring the level of the overnight rate to 3 percent.

Of course, if circumstances change, the prescription will change. But based on what we know today, that is the right medicine to take. The key reason this is the right medicine is that there is an important asymmetry in the cost of errors, and the risks need to be *unbalanced away from rising inflation*. If inflation breaks loose of its anchor and moves seriously above target, the situation can be addressed only with seriously above-normal interest rates. That is a risk to be avoided – and it can be, but it requires embarking sooner rather than later on the process of steadily increasing the overnight rate target.

Before developing the reasons for my prescription, I turn to the task of predicting the Bank’s next interest rate move.

The Bank’s Current Assessment of the State of the Economy

The Bank of Canada sees a Canadian economy with “material slack” and well-anchored inflation expectations. It believes that, by mid-2012, global and domestic expansion will restore full employment (or, equivalently, close the output gap – the gap between actual and potential gross domestic product, GDP) and that, while core inflation is low and headline consumer price index (CPI) inflation is high, both will converge on 2 percent.

The Bank sees the risks to its central forecast as balanced. A strong Canadian dollar and high household debt levels could slow the return of full employment, while rising commodity prices, global inflation, and stronger-than-expected household expenditures could speed the expansion.

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1 Bank of Canada, “Bank of Canada retains overnight rate target at 1 per cent,” *Press Release*, May 31, 2011; available online at <http://www.bankofcanada.ca/2011/05/press-releases/fad-press-release-2011-05-31/>.

It is in this context and with this assessment of balanced risks that the Bank is comfortable keeping the overnight rate target at its current 1 percent level and signalling that it expects it to remain there for an extended period. If the central forecast turns out to be correct, it will not be until late 2011 or early 2012 that significant interest rate increases begin.

Does this conclusion sit well with the Bank's deeper objective and overall interest-rate-setting strategy?

The Bank's Objectives and Strategy

Through the years since the first "Joint Statement"² on inflation targeting, the Bank of Canada has set out its monetary policy objective, rationale, and strategy both on its website and in the frontispiece to the *Monetary Policy Report*.

The Bank's web page explains that "Canada's monetary policy is built on a framework consisting of two key components: (1) a flexible exchange rate and (2) an inflation-control target."³ The Bank goes on to explain that, freed by the flexible exchange rate to pursue the needs of Canada's own economy, it uses monetary policy to contribute to achieving low, stable, and predictable inflation, sustained economic growth, and moderate fluctuations in output and employment. It sets the target overnight rate target to achieve its inflation target over a period extending over six to eight future quarters, and it uses core CPI inflation as the indicator of underlying inflation.

The Bank's monetary policy stance in June 2011 is firmly in line with its declared objective and strategy. It is holding the target overnight rate low and providing monetary stimulus because it sees an underemployed economy placing downward pressure on an already low core inflation rate, and looking six to eight quarters into the future it sees the risk of higher inflation balanced by the risk of slower expansion and lower inflation.

Based on the Bank's inflation-control target and strategy and on its current assessment of the economy, there is every reason to expect the Bank to hold the interest rate low for an extended period. Does this expectation align with the Bank's own past pattern of behaviour?

Influences on the Bank's Interest Rate Decisions

Thinking about the path followed by the overnight rate target, the first thing that stands out is that changes occur relatively infrequently, and when they do occur, the steps are usually small. All the rate *increases* in recent years have been 25 basis points, and the only rate cuts to exceed 25 basis points occurred during a period of financial crisis.⁴ The implication of these facts is that the current level of the overnight rate has a big influence on its level at the next decision date. Gradual adjustment of the overnight rate is rational in the face of uncertainty, and the consequential smoothing of the response of the overnight rate to current influences almost certainly improves monetary policy performance.

But the overnight rate does change, so what changes it?

Because the Bank's mandate is to keep the inflation rate as close as possible to 2 percent per year and inside a range between 1 and 3 percent, the main reason to change the rate is a state of the economy judged likely to miss the inflation target. A state of strong demand, high capacity utilization, and low unemployment creates a generally held expectation of rising inflation, so the Bank would most likely counter with a rise in the overnight rate target. A state of weak demand, low capacity utilization, and high unemployment creates an expectation of falling inflation, so the Bank would most likely counter with a fall in the overnight rate target.

2 For the most recent such statement, see Bank of Canada (2007).

3 See "Monetary Policy – Introduction," online at <http://www.bankofcanada.ca/monetary-policy-introduction/>.

4 Between May 2002 and May 2011, the overnight rate target was raised 17 times, each by 25 basis points, while the target was lowered 15 times, 9 of them by 25 basis points.

The Bank's measure of the output gap as the percentage gap between real GDP and its estimate of potential GDP provides a broad summary measure of slack and tightness. At full employment, that gap is zero. With excess demand, the gap is positive; with excess supply, the gap is negative. Although the Bank looks at a large number of variables as indicators of future inflation, many are correlated with the output gap, so if the Bank moves the overnight rate target in response to the output gap, it is responding to expected future inflation.⁵

It turns out that these two influences, the current overnight rate and the output gap, explain 88 percent of the variability in the overnight rate (as represented by the adjusted R², see equation 1, Table 1).⁶

What about the current inflation rate? Would it not also influence the Bank's interest rate decision? The answer appears to be "no." Adding either the core inflation rate, which the Bank uses as its "operational guide," or the headline CPI inflation rate, which the Bank must target, to the list of influences on the Bank's decision does not improve our ability to predict what the Bank will do (equations 2 and 3, Table 1).

It is not surprising that the current inflation rate has no impact on the Bank's decision. The inflation rate that the Bank can influence and that it targets is six to eight quarters in the future. The expected future inflation rate is related, in part, to the current state of demand, and that is why the output gap, rather than the current inflation rate, influences the Bank's decision.

Rather than rely only on the current state of demand as measured by the output gap, the Bank could react to direct measures of expected future inflation. We know from the detailed analysis

presented in each *Monetary Policy Report* that the Bank goes to great lengths to forecast inflation. However, the Bank's own forecasts are conflated with its own unknown expected future path for the overnight rate target, and they always converge on 2 percent at some point in the eight-quarter forecast horizon. For this reason, we cannot explore how the overnight rate responds to the Bank's own forecast of inflation.

But we can examine whether the overnight rate target responds to a *market expectation* of future inflation. One such measure of expected inflation is the yield spread on conventional government of Canada bonds and real-return bonds.⁷ Adding this measure of the expected inflation rate to the previous level of the interest rate and the output gap improves our ability to predict the Bank's decision, but not by much. These three variables account for 88.5 percent of the variability of the overnight rate (equation 4, Table 1).

What explains the other 11.5 percent of changes in the overnight rate target? Part of the answer is the very large number of Canadian and global variables that the Bank monitors and that change from month to month depending on what is happening in the global economy and what seems important or is prominent on the Bank's radar at the time. The variables change and the weight placed on them by the Governing Council change. So we would expect there to be significant changes in the overnight rate target that appear to be random and that defy systematic explanation.

But it is worth asking whether there are any other factors that have a stable and predictable influence on the Bank. And there is one other variable that the Bank cannot ignore: the Canadian-US exchange rate.

5 It might be argued that the Bank responds to its forecast of the future output gap, rather than the current actual gap. But the current gap is what predicts future inflation, and the Bank's forecast of the gap always converges towards zero by the end of the eight-quarter forecast horizon, so the current output gap is the preferred measure.

6 All the regression analysis I report here is based on quarterly data. Ideally, one would construct a dataset of variable frequency for each Bank of Canada decision date, and use explanatory variables that measure the latest information available to the Bank. Such a study is worth doing, and the economists inside the Bank are the best placed to undertake it.

7 This yield spread measures inflation expectations over the maturity of the bond, which is 10 years. Ideally, we would have two-year real-return bonds to provide an inflation expectation over the relevant horizon. Nonetheless, with autocorrelated inflation, the expectations over the shorter horizon will be correlated with those over the longer.

Table 1: Influences on the Bank of Canada's Interest Rate Decision

Equation		Constant	Previous Quarter Target Overnight Rate	Output Gap	Core CPI Inflation	CPI Inflation	Expected Inflation Rate	Federal Funds Rate	Exchange Rate	Adjusted R ²	
1	Coefficient	0.297	0.894	0.111						0.881	OLS
	t-statistic	2.12	19.13	2.70							
2	Coefficient	0.524	0.895	0.109	-0.127					0.881	OLS
	t-statistic	1.94	19.14	2.67	-0.98						
3	Coefficient	0.449	0.892	0.134		-0.075				0.882	OLS
	t-statistic	2.42	19.17	2.99		-1.25					
4	Coefficient	0.009	0.869	0.113			0.141			0.885	2SLS
	t-statistic	0.04	18.20	2.81			1.85				
5	Coefficient	-0.939	0.592	0.120			0.194	0.152	0.757	0.915	2SLS
	t-statistic	-2.25	8.57	3.00			2.85	4.26	2.35		

Notes:

- The table reports Bank of Canada overnight rate target equations estimated by Ordinary Least Squares (OLS) (equations 1, 2, and 3) or Two-Stage Least Squares (2SLS) (equations 4 and 5).
- The data run from 1993:Q4 through 2010:Q4.
- The dependent variable is the overnight rate target.
- The data are quarterly averages of monthly observations for all variables except the output gap, which is the Bank of Canada's quarterly measure as revised in 2010:Q4.
- The expected inflation rate is the yield spread between conventional long-term Government of Canada bonds and real-return bonds.
- The exchange rate is CAD/USD.
- For equations 4 and 5, which are estimated by 2SLS, the expected inflation rate and exchange rate are viewed as determined simultaneously with the overnight rate target. The instruments for the first-stage estimation were lagged values of the overnight rate, the exchange rate, and the expected inflation rate and federal funds rate. The following table shows some alternative versions of equation 5 and its robustness.
- A t-statistic greater than 1.96 means there is a 95 percent chance that the coefficient is different from zero.

Alternative Versions of Equation 5

	Coefficients				t-statistics			
Lags on Target Rate (TR)	0	1	2	3	0	1	2	3
Intercept	-1.961	-0.939	-0.874	-0.696	-3.33	-2.25	-2.16	-1.85
TR -one quarter prior		0.592	0.865	0.908		8.57	7.30	8.00
TR -two quarters prior			-0.276	-0.297			-2.71	-2.01
TR -three quarters prior				-0.007				-0.07
Output Gap	0.204	0.120	0.098	0.094	3.56	3.00	2.49	2.62
Expected Inflation	0.374	0.194	0.182	0.126	3.87	2.85	2.71	1.93
Federal Funds Rate	0.357	0.152	0.146	0.143	8.85	4.26	4.21	4.55
Exchange Rate	1.836	0.757	0.754	0.690	4.25	2.35	2.43	2.41
Adjusted R ²	0.813	0.915	0.922	0.936				

Note: Data and calculations are available from the author on request.

Source: Author's calculations from target overnight rate, output gap, Bank of Canada; yield spread on conventional Government of Canada bonds and real-return bonds, Statistics Canada, Table 176-0041 (long-term bonds); exchange rate, Pacific Exchange Rate service, <http://fx.sauder.ubc.ca>; federal funds rate, Board of Governors of the Federal Reserve System.

As noted earlier, the Bank recognizes that Canada's flexible exchange rate is a crucial precondition for the ability to pursue an independent monetary policy. But having a flexible exchange rate does not mean that the Bank ignores the exchange rate. Nor does it mean that monetary policy does not influence the exchange rate. The Canadian dollar exchange rate is flexible in the sense that it is determined by market demand and supply without Bank of Canada (or government of Canada) intervention in the foreign exchange market. But the Bank influences the (flexible) exchange rate indirectly by the influence of the interest rate on the supply of and demand for Canadian dollars.

The Bank recognizes this influence. It also recognizes that the exchange rate influences the state of demand in Canada and, through that influence, feeds into the inflation rate. A low dollar boosts the demand for Canadian-produced goods and services, which, in turn, brings a potential for higher inflation. And a strong dollar can give Canadian producers a hard time on world markets, which, in turn, brings a potential for lower inflation.⁸ Some of these influences of the exchange rate are reflected in the output gap itself, but other influences might act directly on the inflation rate through their effects on prices.

So the exchange rate matters for the Bank's interest rate setting. But the exchange rate does not depend only on the interest rate in Canada. It also depends on (among many other things) the interest differential with the United States. And that differential is driven by the interest rate decisions of the Federal Reserve – by the federal funds rate target. Because the federal funds rate influences the exchange rate and the exchange rate influences the inflation rate, we might expect the Bank of Canada to take account of both the

exchange rate and the federal funds rate when it sets its target for the overnight rate.

Adding these two variables to the three previously discussed gives us five: the previous overnight interest rate level, the output gap, the expected inflation rate, the federal funds rate, and the exchange rate. Together, these influences account for 91.5 percent of the variability in the Bank's overnight rate target, thus improving our ability to predict the Bank's interest rate decision. Equation 5 in Table 1 shows the details, and Figure 1 shows the actual, predicted, and unexplained 8.5 percent of fluctuations in the overnight rate target.⁹

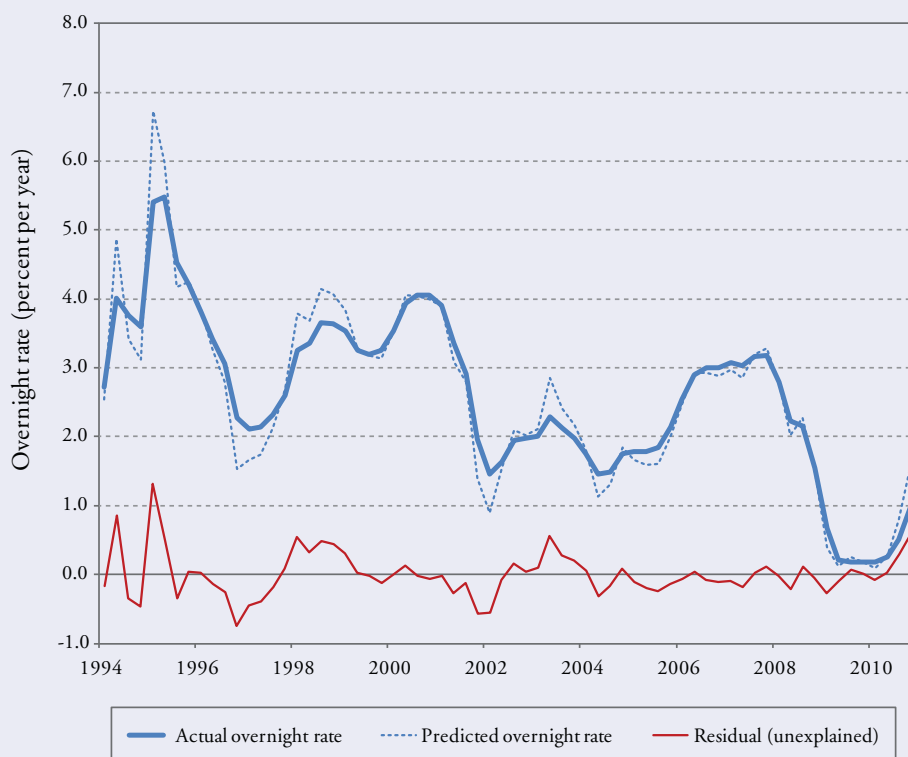
Equation 5 tells us the responsiveness of the target overnight rate to the five influences on it. But it does not tell us which of these variables has fluctuated most to contribute to the fluctuations in the overnight rate. Figure 2 fills in this detail. It shows, perhaps surprisingly, that, because of its high variability, the federal funds rate has been the biggest single influence on the Bank's decision. Fluctuations in the output gap come second. These two variables together account for most of the cycles in the overnight rate target. The exchange rate accounts for some very slight trends, upward from 1994 through 2003 and downward after 2003. The expected inflation rate also accounts for lower-frequency changes, downward through 1998 and flat since then.

Looking at the past influences on the overnight rate target reinforces the conclusion that the rate is not going to rise anytime soon. With a continued negative output gap, a near-zero federal funds rate, and a strong Canadian dollar, if the Bank behaves as it has done since 1994, it will hold the overnight rate at 1 percent until either the output gap shrinks significantly or the Fed starts to move up the federal funds rate. The Fed does not seem to be in a hurry to ease off its monetary stimulus. It

⁸ But sometimes, a strong dollar is the consequence of exporters' having had an unsustainably easy time.

⁹ A more thorough econometric investigation, in addition to taking more accurate measures of information available at each decision date, should also allow for a more general stochastic process than implied by equation 5, which assumes well-behaved residuals. In fact, it appears that the residuals in equation 5 have a modest amount of (negative) autocorrelation. I estimated the equation (by two-stage least squares) with zero, two, and three lagged values of the target overnight rate, and while the details differ, the broad story of equation 5 is robust and unchanged by these alternative specifications. In the two-lag version, the residuals are free from autocorrelation. See Table 1, note 7, for details.

Figure 1: Actual, Predicted, and Unexplained Overnight Rate Changes, 1994-2010



Source: Author's calculations from target overnight rate, output gap, Bank of Canada; yield spread on conventional Government of Canada bonds and real-return bonds, Statistics Canada, Table 176-0041 (long-term bonds); exchange rate, Pacific Exchange Rate service, <http://fx.sauder.ubc.ca>; federal funds rate, Board of Governors of the Federal Reserve System.

almost certainly will want to start unwinding its quantitative easing and reduce the size of its balance sheet before it starts to raise the federal funds rate, so that source of an eventual rate increase in Canada is some way in the future.

Concerns about Keeping the Rate Low for an Extended Period

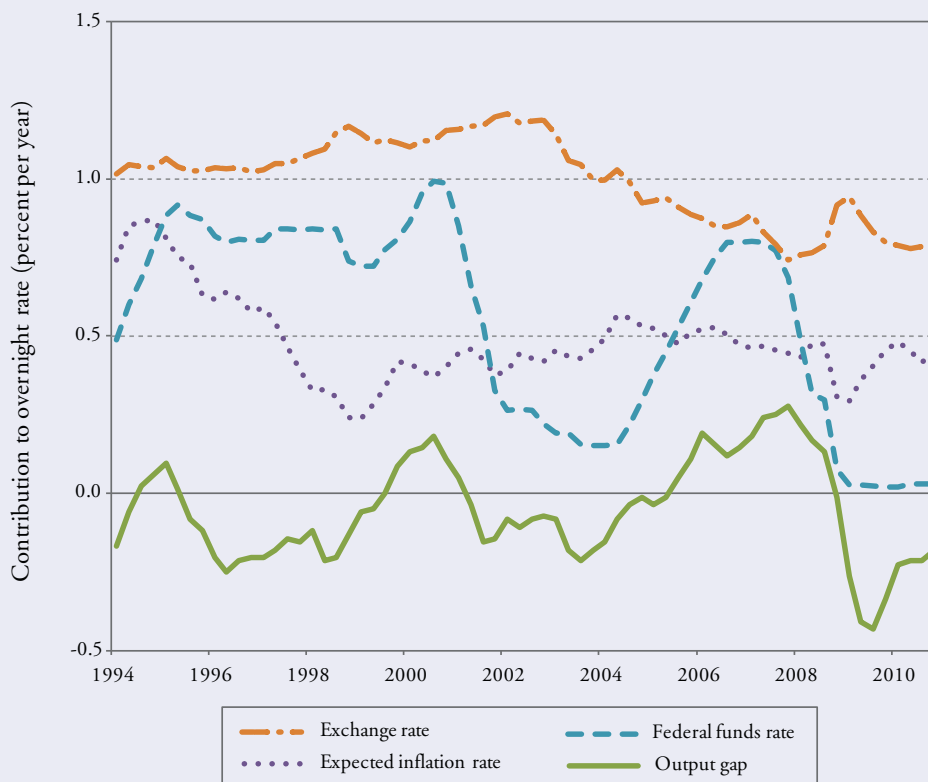
If the Bank of Canada is right in its assessment that, by mid-2012, inflation will be at 2 percent and the output gap will have closed, then monetary policy should have achieved a neutral stance before that time, and the Bank will have to

set an overnight rate consistent with that goal. “Neutral” is easy to define but hard to measure. The Bank does not reveal what it regards as a neutral rate and no definitive estimate of its level exists. The average overnight rate between 1994 and 2007 was 4.1 percent and the average between 2001 and 2007 was 3.5 percent.¹⁰ The OECD’s reading is that neutral lies between 3.5 percent and 4.5 percent (OECD 2010). My own view is that, in current circumstances, that range is on the high side but not by much, and I think it is reasonable to regard 3 percent as the overnight rate consistent with neutral monetary policy.¹¹

¹⁰ Starting in 1994 avoids the period of inflation reduction and recession of the early 1990s, and ending in 2007 avoids the financial crisis.

¹¹ Fiscal tightening and post-financial-crisis effects are two factors that might be pushing the neutral rate a bit below its historical average range.

Figure 2: Contributions to Fluctuations in the Overnight Rate Target, 1994-2010



Source: Author's calculations from target overnight rate, output gap, Bank of Canada; yield spread on conventional Government of Canada bonds and real-return bonds, Statistics Canada, Table 176-0041 (long-term bonds); exchange rate, Pacific Exchange Rate service, <http://fx.sauder.ubc.ca>; federal funds rate, Board of Governors of the Federal Reserve System.

If the overnight rate target is to get to 3 percent by mid-2012, it needs eight jumps of 25 basis points each. If the process were to begin on July 19, 2011 (the next decision date at the time of writing), it will need to rise by 25 basis points on every decision day through May 2012. It is true that the rate can go up in larger steps, but that has an air of panic that would be better avoided.

As more “no-change” decisions are made, inflation expectations might begin to slip loose of their anchor. Further, with the Fed continuing to hold a near-zero rate, the US dollar is likely to continue its steady slide.¹² If the Canadian dollar moves at least partially with the US dollar, because the Bank of Canada keeps its interest rate close to

the federal funds rate, the higher inflation rates of energy and other commodity prices that are currently deemed temporary might start to look permanent.

Alongside these concerns is the limited direct effect that monetary policy has on the course of real GDP growth, the output gap, and the unemployment rate. As the Bank repeatedly states, the best contribution that monetary policy can make to these objectives is to achieve a low and predictable inflation rate. Too vigorous a direct pursuit of output and employment objectives in the short term might end up spilling over into inflation as the real economy remains stubbornly unresponsive.

12 The slide has been quite general with changes in the year ended 29 June 2011 as follows: Japanese yen, -8.6; Mexican peso, -8.3; British pound, -6.1; European euro, -15.5; Swiss franc, -22.8; Brazilian real, -13.1; and Canadian dollar, -7.8.

The forgoing concerns are statements about risks, not central forecasts. But they are risks that, if they occur, bring an ugly set of policy choices. A return to seriously above-target inflation can be addressed only with seriously above-normal interest rates. That is a risk worth avoiding. And it can be avoided only by embarking sooner, rather than later, on the process of steadily increasing the overnight rate target.

The Bank sees the risks between rising inflation and a stalling recovery as balanced. If this view is correct, and the Bank is in as good a position as any other observer to make this call, it does not translate into a balanced policy response. Balanced upside and downside risks call for a policy response that moves the balance away from the upside.

There are two asymmetries that make an inflation risk worse than a deflation risk. The first is an asymmetry in how far off course the inflation rate might go. Natural real forces limit the fall in

inflation, while there is no natural upper limit. Unanchored inflation expectations can lead quickly to above-target, even to double-digit, inflation. The second asymmetry is in the cost of correcting a mistake. If a rise in the interest rate leads to inflation's falling below target, a swift reversal and cut in the interest rate can correct the problem. If holding the interest rate too low for too long unleashes a new inflation, the interest rate needs to be raised not to neutral but to well above that level, and the inflation rate can return to target only at the cost of a policy-induced recession.

I have predicted that the Bank will hold the overnight rate target at 1 percent for a further period, perhaps until the final quarter of 2011. I hope that this prediction proves wrong, and I urge the Governing Council to begin the process of reducing monetary stimulus when it announces the next interest rate decision on July 19, 2011.

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