



BANK OF CANADA
BANQUE DU CANADA

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The Promise of Potential

Introduction

Thank you. It is a great pleasure to be here.

I want to talk today about potential, a word that speaks optimistically to the future—to what can be.

It's a word that means different things to different people under different circumstances.

It's an abstraction: a concept that promises a road leading to success. That is the finish line—the promised destination. Getting there is another story. The way forward is seldom direct and reaching potential is a trajectory where the journey is as important as the destination, especially for the “dismal” science of economics.

We can think of Canada's economic potential as where we can be if we do our best and make all the right decisions. It is what we can hope to achieve over the longer run.

Since potential output growth is key to a country's standard of living, it should be of interest to all of us. Consider this: if potential output were to grow by an extra percentage point every year for the next ten years, the cumulative increase in income would be almost \$30,000 for every Canadian.

At the Bank of Canada, we care about potential output for two reasons. First, the growth rate of potential output sheds light on the prospects for our country's economic growth. Second, the difference between the level of actual and potential output—or the output gap—is a key measure of inflation pressures. And keeping inflation at the 2 per cent target rate is the best contribution that monetary policy can make to the financial well-being of Canadians.

The Bank's assessment of the current output gap and the projected growth of potential output have a direct bearing on the Bank's inflation outlook and

monetary policy decisions. Other things being equal, a larger degree of slack in the economy implies a greater need for monetary policy stimulus. As well, the higher the projected growth rate of potential output, the higher the economy can grow without stoking inflation.¹

Each year in October, the Bank reviews its estimates of potential output. I will share with you some of our findings and what we think they say about the journey Canada's economy is taking.

Although Canada came out of the recession earlier and recovered faster than other G-7 countries, our economic growth has been disappointing in the past year. I think we can agree that the finish line is proving elusive; we "are not there yet."

Looking ahead, the Bank sees the economy gaining momentum through next year and 2015, but there are uncertainty and risks around the outlook.

If my speech today achieves *its* potential, you will gain a deeper understanding of potential output in Canada, why it is hard to measure, why it has slowed, where we are today, and what the future may hold for our economy.

Deconstructing the Immeasurable

Measuring potential output and the output gap is difficult because potential is not directly observable. It is hard to measure what could be.

What we try to do is determine the level of output that can be achieved with available resources (labour, capital and materials) without creating inflationary pressures.

Potential output as a concept, and its link to inflation, make a lot of sense. Time is the most precious quantity, and as you know too well, balancing our professional and personal lives is no easy task. And as the former encroaches on the latter, history tells us that wage pressures begin to build, eventually leading to higher prices. Similarly, when a firm's production can't keep pace with demand, prices move up in an attempt to restore balance.

But while conceptually appealing, accurately measuring potential output is a formidable task. To do so, we must take a view not only on how many hours people are willing to work at a given wage, but also on how productive these people will be when their labour is combined with other inputs, such as machinery and equipment or on-the-job training.

At the aggregate level, the future trajectory of potential output will depend on a lot of variables: on how strong the demand is for our goods and services, on how much existing firms decide to invest in research and development and technology, on how many new firms are created, and other unknowns.² It will also depend on our workforce—who is working and until what age, and whether workers can move easily to where the best jobs are and where they are most needed.

In light of all these unknowns, the Bank of Canada has to use various models, indicators, as well as information gathered from businesses, and a good deal of judgment to come up with its estimates.³ Our analysis focuses on the two

variables that determine actual output and whose trends determine potential output, that is, labour input (or total hours worked) and labour productivity (or real output per hour worked).

The results of our most recent analyses tell us that the output gap is sizable and that the growth rate of potential is likely to remain fairly steady at around 2 per cent in coming years. But, before I go into further detail on the outlook, let me step back and describe how we got to where we are now.

A Tale of Troughs and Trends

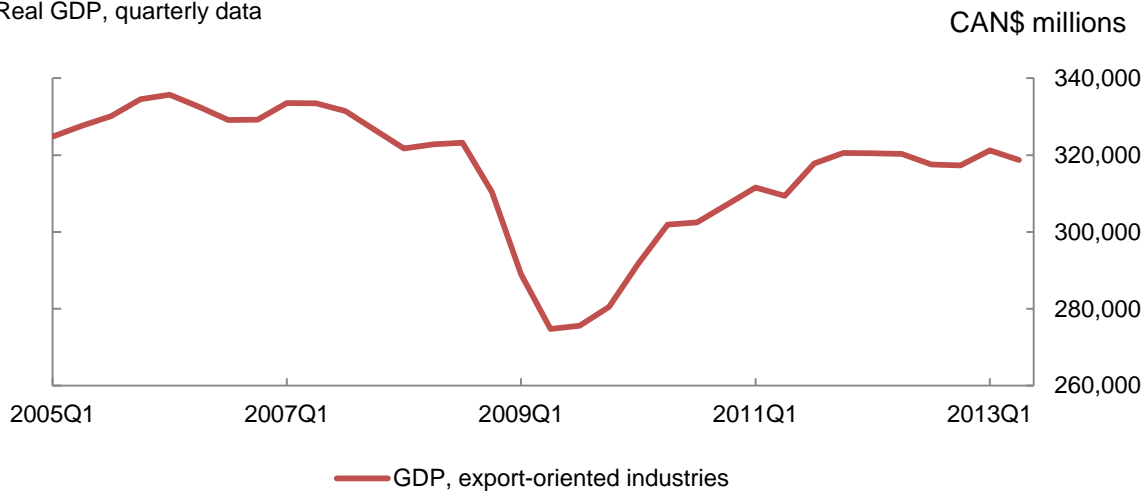
For that I have a short story and a long story.

I'll begin with the short story: the recession.

As I said, Canada weathered the global financial crisis relatively well, but we were severely affected nonetheless. In the space of three quarters in 2008 and 2009, the level of output fell by 4 per cent. The export-oriented sectors (including resources) were hardest hit, with GDP dropping by 15 per cent (**Chart 1**). Across Canada, almost 400,000 jobs were lost.

Chart 1: GDP in export-oriented sectors dropped by 15 per cent during the recession

Real GDP, quarterly data



Source: Statistics Canada

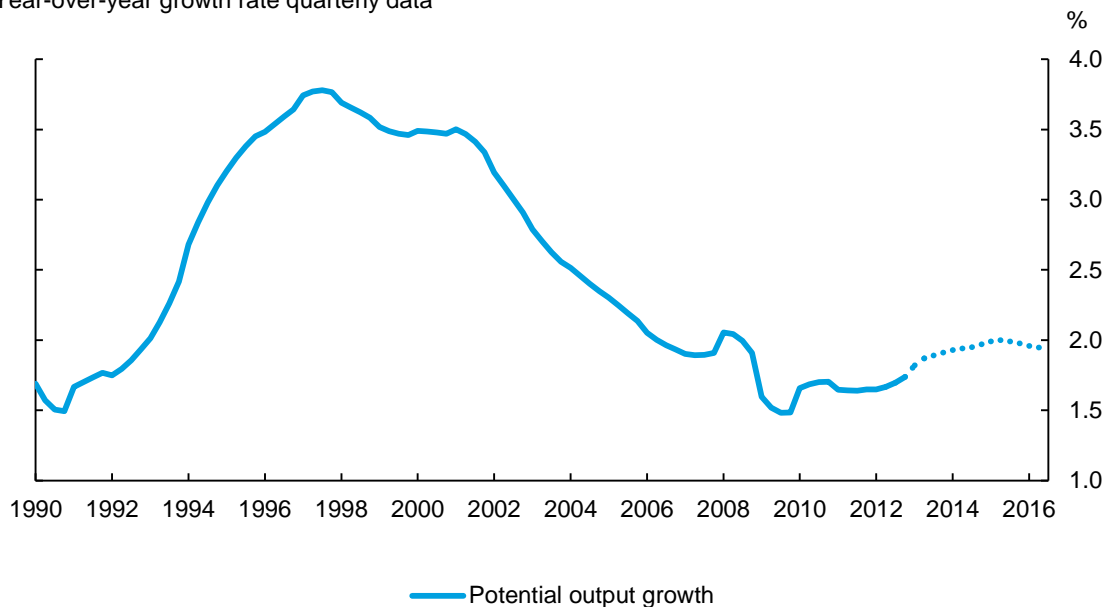
Last observation: 2013Q2

The recession also led to a drop in the growth rate of potential output (**Chart 2**). Some businesses shut their doors. Machinery and other capital were left idle or scrapped altogether. Rather than investing in new capital, other firms made do with old equipment. These factors combined to make workers less productive. Our best judgment is that trend labour productivity growth might have fallen to less than half a per cent during that period and that potential output troughed at about 1.5 per cent.

But as I said, there is also a long story. That story has two parts: trend labour productivity and trend labour input.

Chart 2: The growth rate of potential output has slowed since the late 1990s

Year-over-year growth rate quarterly data



Source: Bank of Canada calculations and projections

Trend labour productivity

I'll start with trend labour productivity. From the mid-1990s to about 2000, the boom in technology production was associated with a sharp increase in the growth rate of productivity and potential output in Canada. Since then, however, productivity growth has slowed to historically low rates and has languished well below U.S. rates. While U.S. companies started using information and communication technology (ICT) capital (specifically software) to boost their processes and business practices, it appears that Canadian companies did not follow suit.

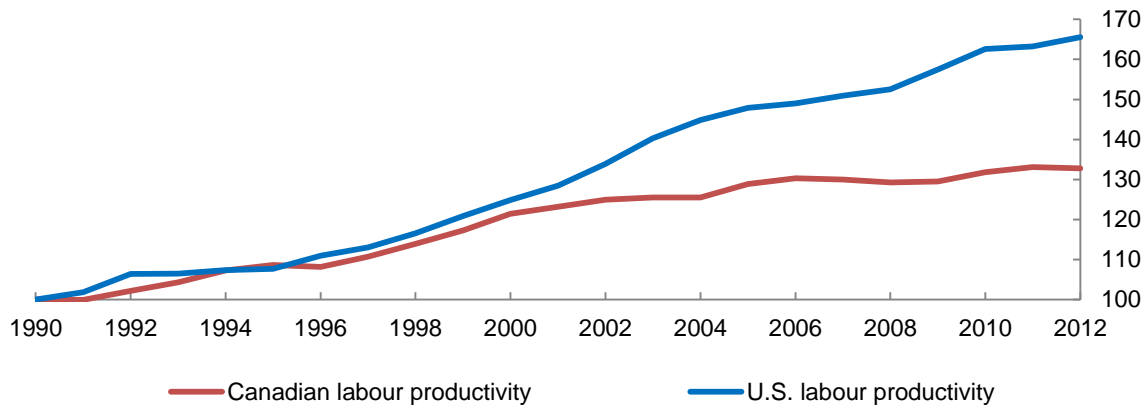
Many other factors likely contributed to the slowing of productivity growth in Canada and the widening gap with the United States (**Chart 3**). The explanations range from measurement issues, to economic restructuring in response to large commodity price shocks, to deeper structural determinants, including a poor innovation record, low competition in some sectors and a less-skilled workforce.⁴ The Canada-U.S. gap may also reflect greater offshoring and foreign affiliate sales by U.S. firms.

Since much of the decline in actual productivity growth in the first half of the 2000s coincided with strong overall economic growth, this suggests that a significant part was structural (and not only cyclical) and therefore affected trend labour productivity growth. Since 2008, however, part of the weak growth has been due to cyclical factors associated with the recession.

It is worth noting that in spite of low productivity, Canadians have enjoyed relatively high incomes in the past several years. Our standard of living depends not only on the volume of output but also on the trading value of that output. As commodity prices rose, our terms of trade—the price we get for our exports

Chart 3: Labour productivity growth: Canada and the United States

Business sector (1990 = 100), annual data



Sources: Statistics Canada, U.S. Bureau of Labor Statistics

Last observation: 2012

relative to the price we pay for our imports—improved, helping to boost Canadian income growth. But going forward, productivity may become more crucial to our financial well-being, since real commodity prices, while expected to remain elevated, may not rise as much as they did in the past decade.

Trend labour input

Let me turn now to the second part of the story: trend labour input.

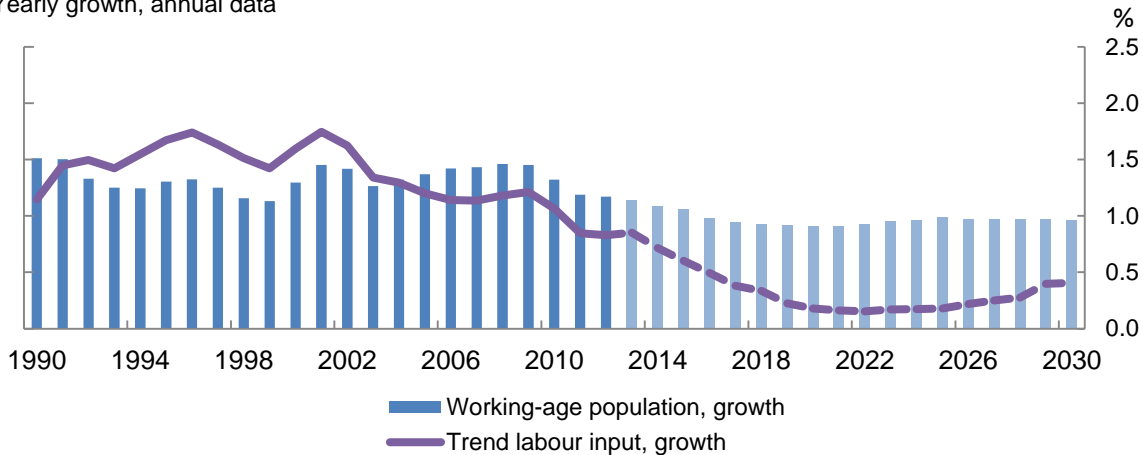
The total hours worked by the labour force is a function of the working-age population, the employment rate, and average hours worked. Demographic factors are key to all of these.

Until around 2008, the growth rate of the working-age population remained fairly steady (**Chart 4**) and the increased participation rate of women almost completely offset the declining participation rate of men. But, since then, the effects of an aging population have become more noticeable. We are getting older, living longer and having fewer children.⁵ Baby boomers are retiring or reducing the amount of hours they work and lower fertility rates over the past 20 years means that more people are leaving the workforce than entering it. While net immigration is important, and currently accounts for half of the population growth in Canada, it cannot stop the labour force deceleration.

Other factors, besides demographics, are evidently affecting labour input, but their impact on the trend is harder to discern. For instance, the recession affected both the demand and supply of labour. On the one hand, firms cut back on hiring and hours worked diminished. On the other hand, individuals looked to work more to make up for lost wealth and income. It is unclear to what degree these two factors offset each other in terms of the trend and how persistent they are. The Bank's estimates assume that, on balance, the recession had little impact on *trend* labour input growth.⁶

Chart 4: Aging population reduces the growth rate of trend labour input

Yearly growth, annual data



Source: Bank of Canada calculations

Last observation: 2012

Taking Stock

To sum up, productivity growth was on a downward trend going into the recession and the recession exacerbated this trend. Largely as a result, the growth rate of potential output is estimated to have declined from above 3.5 per cent in the late 1990s to about 1.5 per cent in 2009. With output well below potential during the recession, the amount of excess supply grew to as much as 3.5 to 4.5 per cent.

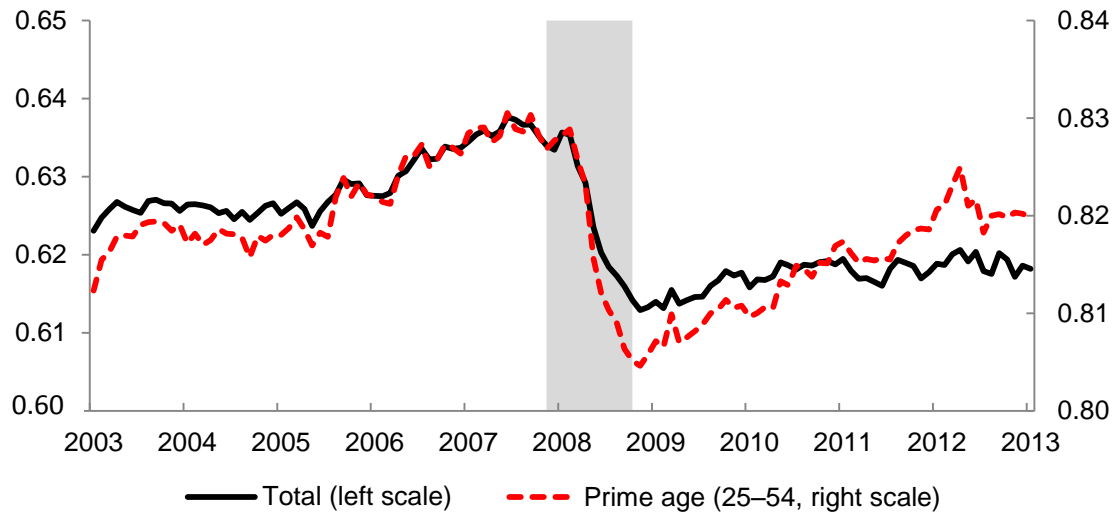
Thanks to strong domestic demand, Canada recovered fairly rapidly from the recession and registered solid growth in 2010 and 2011. As production increased and business investment accelerated, we estimate that trend labour productivity growth has slowly increased, leading to a pickup in potential output growth to about 2 per cent in the past year.

While our estimates suggest that the economy was getting close to potential in late 2011, slower growth since then has led to a significant buildup of excess capacity. Taking into account a range of indicators and models, the Bank judges that the amount of slack today is between 1 and 2 per cent.

Given the enormous complexity in estimating potential output, it is no surprise that the various indicators monitored by the Bank suggest a range, rather than a single point.

Furthermore, distinguishing between movements in indicators that reflect cyclical demand-driven factors from those that are more structural is very tricky. Let's take the employment-to-population ratio as one example. This ratio has been hovering at about 0.62 for more than two years, much lower than its pre-recession peak of 0.637 (**Chart 5**). Taken at face value, it points to a considerable degree of slack in the labour market. But, our discussion of demographics suggests that there are other forces at play not related to cyclical labour demand. With each passing year, older workers are making up a larger

Chart 5: Employment-to-population ratios



share of the workforce, and these workers understandably have a much lower participation rate. If we focus instead on the employment ratio of prime-age workers, we see that a much larger proportion of the losses suffered during the recession have been recovered.

Whether we should expect to get back to the pre-recession peak is also open to question, since this period marks the highest employment ratio going back several decades. The problem with using historic peaks in employment, or connecting historic peaks in GDP, is that by definition, the economy can never be in excess demand. But, of course, history suggests otherwise. Economies can and do produce above their long-run sustainable level.

Reaching our Destination

Looking forward, the Bank of Canada expects that excess supply will be absorbed slowly over time and that the Canadian economy will return to its full potential around the end of 2015.

This outlook depends on the various forces at play that will affect demand growth in Canada, and also on how potential output growth will evolve.

The Bank expects the underlying momentum in the economy to build over time. Growing foreign demand will benefit our export sector. Growth in the export sector, combined with continued moderate growth in household spending, should boost business confidence and investment—investment that will contribute to higher productivity growth. But this growth is expected to be offset by a further slowing in trend labour input, such that potential output growth remains fairly stable at about 2 per cent (with a range of ± 0.3 percentage points).

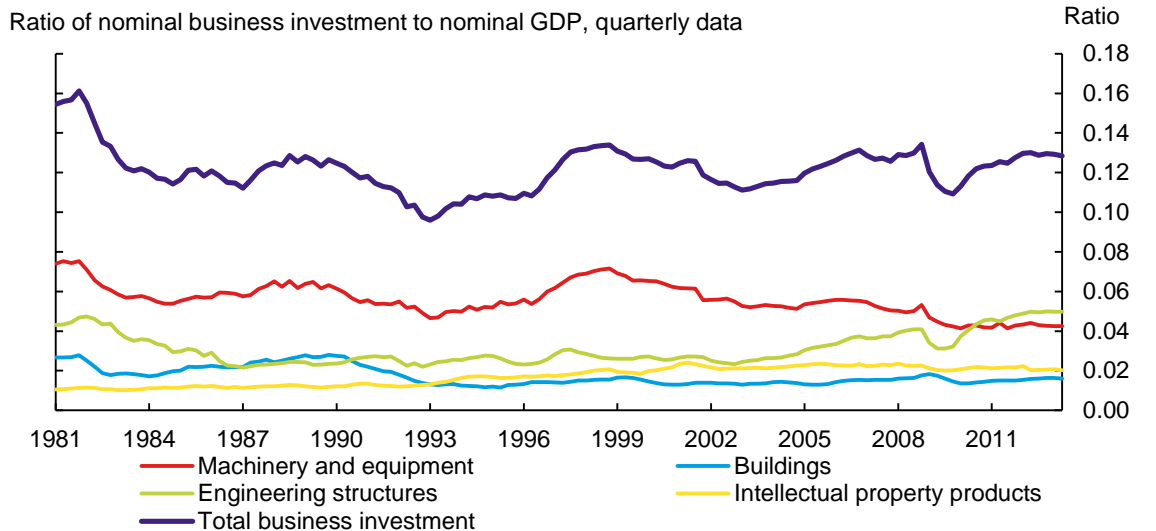
The projected slowdown in the growth rate of trend labour input (from 0.8 per cent in 2013 to 0.5 per cent in 2016) is the result of the continuing demographic trends I mentioned earlier. This could change a little if older people stay in the workforce longer or increase the average number of hours they work. Whether or not they do so will depend importantly on their financial situation and whether

they think they can afford to retire. For example, if 15,000 additional workers over 55 decide to stay in the labour force next year, we could expect the growth rate of trend labour input to remain stable.

The growth rate of trend labour productivity is expected to continue to increase in the next few years, reaching an above-average rate of 1.4 per cent in 2015.

Since the recession, we have seen strong investment in the mining, oil and gas sector (**Chart 6**). Given the time it takes for these investments to translate into stronger output, the continued expansion of infrastructure in this sector is expected to contribute to future productivity growth.

Chart 6: Total business investment is high relative to GDP, mainly reflecting strong gains in engineering activity in the mining, oil and gas sector



The Bank expects to see greater investment across most sectors of the economy. Investment in machinery and equipment (M&E) and in research and development (R&D), which have been slower to recover, are expected to gain strength as foreign activity, in particular U.S. demand, accelerates.

In addition to contributing directly to productivity through capital deepening (the amount of capital available per worker), investment in M&E and R&D are associated with the adoption and creation of new technologies and processes that have a further positive effect on productivity.

Other factors that are expected to contribute to the recovery in the growth of trend labour productivity include Canada's highly educated workforce, which will be able to adapt quickly to new technologies.⁷ As well, we expect firms to continue to adjust to the strong Canadian dollar as they adapt to highly competitive international markets.

Stronger investment also means more new jobs. Already we are seeing job creation in occupations that demand relatively high skill levels in industries with

above-average wages. Recent experience has shown how new technologies and industries can emerge from recessions and create new classes of jobs and a virtuous circle of improving confidence and expanding economic capacity.

There are also positive signs pointing to improved labour productivity. But there is still considerable uncertainty on the road ahead, and relatively weak performance in the recent past should temper our expectations. This said, productivity could also increase at a faster pace than we currently anticipate. This could occur if, for instance, net firm creation, which has been relatively weak since 2008 rebounds at a faster pace. Canadian firms' plans to expand exports to the fastest-growing emerging market economies and greater integration into global supply chains could also result in higher productivity growth over time.

Conclusion

As I said at the beginning, potential output growth is key to a country's standard of living.

In arriving at its forecast for Canadian economic growth and inflation, the Bank analyzes where economic activity could be and where it actually is. We assess how—and when—this gap is most likely to close. This analysis feeds directly into our monetary policy decisions.

Our analysis suggests that low inflation in recent months mainly reflects a significant amount of slack in the economy. We expect this slack to be absorbed gradually in the next two years, such that inflation also returns gradually to 2 per cent around the end of 2015. Weighing the downside risks to inflation against the risk of exacerbating already-elevated household imbalances has led the Bank to judge that the substantial monetary policy stimulus currently in place remains appropriate and therefore to maintain the target for the overnight rate at 1 per cent.

As I've made clear in my remarks, estimating the output gap and the speed at which potential output will grow in the future is subject to considerable uncertainty. As more data become available, the Bank will continuously review its assumptions, and the balance of risks.

The analysis also offers some key takeaways about what the future may hold for our economy. While Canada's potential output took a hit during the recession, longer-term trends have also been at work affecting both trend labour input and trend labour productivity.

An unrelenting demographic shift is under way. Strength in the growth rate of trend labour input can no longer be counted on to support potential output growth in the face of poor trend labour productivity. And, while Canada benefits from abundant natural resources, one cannot necessarily count on commodity prices to provide the same boost to income growth in the future as they have in the recent past.

Here in Winnipeg you have reasons for confidence, with a productive and skilled workforce, diverse industry, healthy investment in research and development, and an unemployment rate that is consistently among the lowest in Canada. Your province has the necessary tools to build productivity and prosperity.

As we journey forward, the Bank of Canada will continue its efforts to understand the trends affecting Canada's economy and sharing what we learn with business leaders like you.

We will also maintain our firm commitment to keeping inflation low, predictable, and stable.

While there are many variables at play, the 2 per cent inflation target is a constant at the Bank of Canada, and an essential part of our role to promote the financial and economic welfare of Canada.

Thank you very much.

¹ Over time, one can expect the economy to operate at its full capacity, with no output gap and with inflation steady at its target rate. At that point, the growth rate of potential determines the pace of economic activity. It is worth noting that reaching potential growth does not necessarily imply that the economy has returned to its natural or self-sustaining growth rate. Depending on the circumstances, monetary policy may still need to provide stimulus or restraint.

² See S. Poloz, "Returning to Natural Economic Growth" (speech to the Vancouver Board of Trade, 18 September 2013).

³ In practice, separating potential from actual output amounts to distinguishing between the underlying trend and cyclical movements in output. Different approaches can be used to extract these trends, ranging from very simple mechanical filters to structural models.

⁴ See M. Carney, "The Virtue of Productivity in a Wicked World" (speech to the Ottawa Economics Association, 24 March 2010); T. Macklem, "A Measure of Work" (speech to the Winnipeg Chamber of Commerce, 4 October 2012); and "Canada's Competitive Imperative: Investing in Productivity Gains" (speech to Productivity Alberta, 1 February 2011).

⁵ Canada is far from unique in this situation. All G-7 countries have seen a drop in the total fertility rate and an increase in life expectancy. However, the situation in Canada is more favourable when compared with that of Germany, Italy and Japan. See J. Boivin, "Aging Gracefully: Canada's Inevitable Demographic Shift" (speech to the Economic Club of Canada, 4 April 2012).

⁶ Prolonged unemployment can lead to a loss of human capital, as workers' skills deteriorate, making it difficult to re-enter the work force. These persistent effects could ultimately have a negative effect on potential output growth. However, it is not yet clear how large this effect will be.

⁷ Although Canada has a highly educated workforce (we have one of the highest levels of tertiary degree attainment in the Organisation for Economic Co-operation and Development), we are lacking in certain key areas for productivity growth including fewer managers with university degrees and fewer university degrees granted in science, technology and business than in the United States.