

## **John Murray: Is there a commodity curse? Lessons from the past**

Remarks by Mr John Murray, Deputy Governor of the Bank of Canada, at the University of Alberta Institute for Public Economics and C.D. Howe Institute, Edmonton, Alberta, 6 May 2010.

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Good evening. Thank you for inviting me to this significant and topical event. It's fitting that this conference is dedicated to Bradford Reid. He will be missed by so many former students and colleagues: as a friend, a dedicated teacher, and an insightful researcher. His particular research interests included fiscal policy and public-debt management, and their implications for the macroeconomy. These would certainly fit well with our discussions here today and tomorrow.

As the title of the conference suggests, we have seen many boom-and-bust cycles in the commodity sector. This raises one obvious and central question: How can we avoid them in the future? More specifically, how can Canada and Alberta get out of this seemingly endless cycle of feast or famine? The answer, regrettably, is that it isn't possible to eliminate the cycle entirely. The best that we can hope to do is to dampen its effects by learning from past experience. History, it has been said, is a good teacher, but policy-makers are not always good students. Tonight, I'll present a few thoughts on how we might make better use of these sometimes painful lessons.

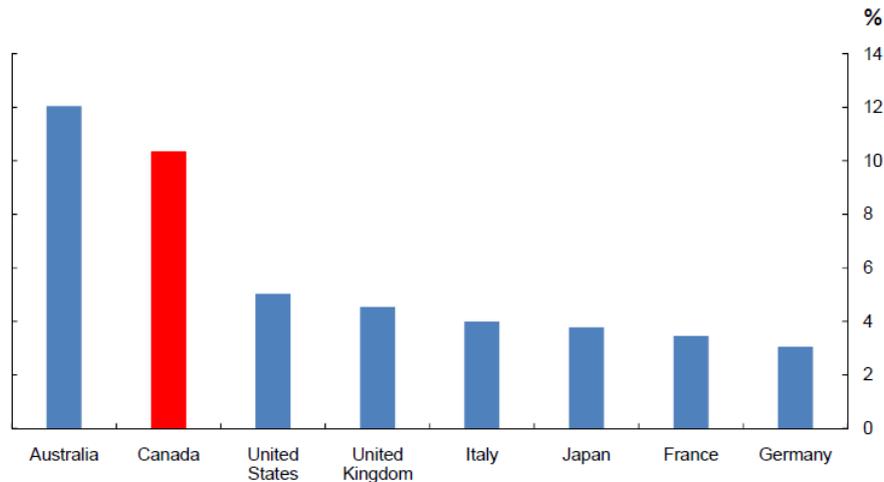
### **Alberta and Canada are different from the rest**

Canada's economy is different from most other advanced economies. Primary commodities – resources – account for a much larger share of our national GDP. The estimated size of the sector varies according to how it is defined, but using a reasonably conservative approach, one finds that resource production represents about 10 per cent of Canada's GDP, 5 per cent of total employment, and 45 per cent of export sales.<sup>1</sup> The share of resource production in U.S. GDP, by comparison, is only 5 per cent. Canada is a large net exporter of raw materials, unlike the United States, which is a large net importer. In this respect, the United States is similar to most other advanced economies. Countries such as Canada, Australia, and Norway, on the other hand, are the exceptions.

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<sup>1</sup> Statistics Canada.

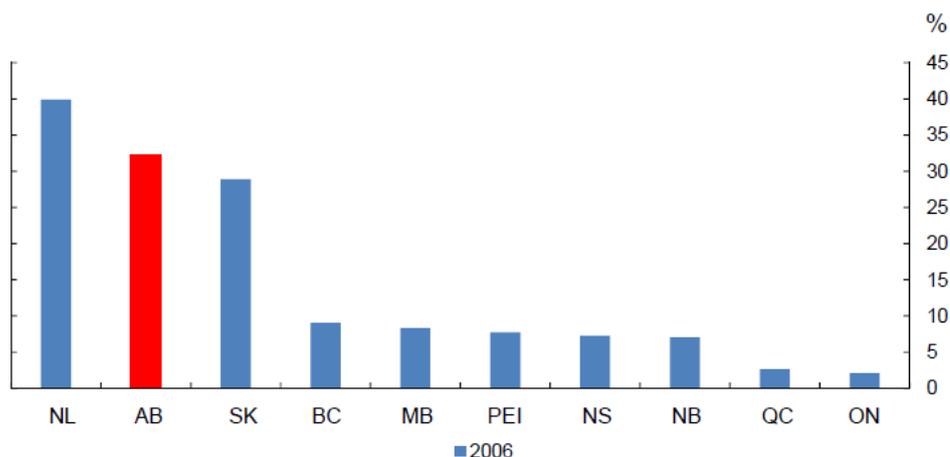
## Chart 1: Natural Resources as a per cent of GDP



Source: World Bank World Development Indicators

Alberta is also different when compared with most – but not all – of the nine other provinces in Canada. In 2006, the last year for which Statistics Canada has comparable figures, resources accounted for roughly 32 per cent of Alberta’s GDP. This was lower than the figure for Newfoundland and Labrador (at 40 per cent) and only slightly higher than that for Saskatchewan (at 29 per cent.) But it was far above that of the other provinces. In British Columbia, for example, natural resources accounted for less than 10 per cent of GDP, while in Ontario – not surprisingly – it was barely 2 per cent. The bottom line, simply stated, is that Canada is different, and Alberta is more different still, from many of its counterparts.

## Chart 2: Natural Resources as a per cent of Provincial GDP



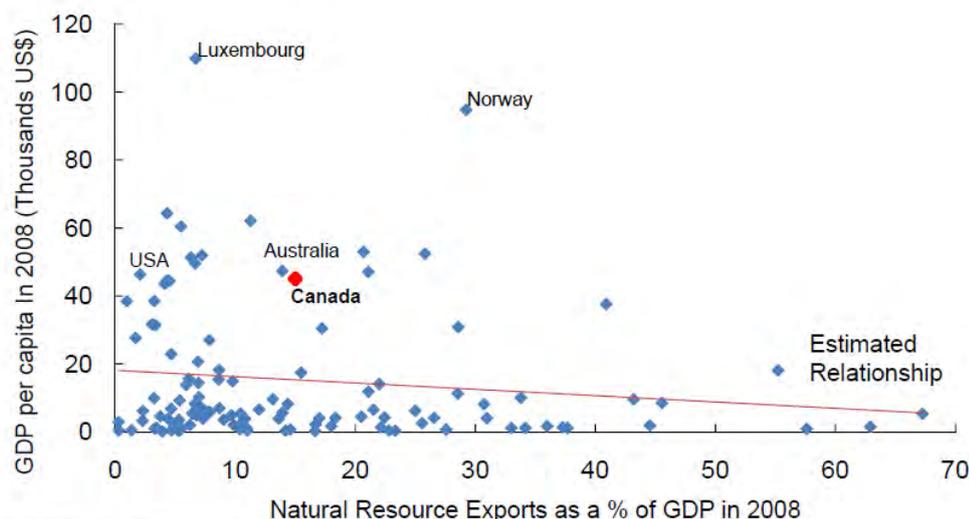
Source: Statistics Canada

### Special challenges of a commodity-based economy

Canada's natural resources are a tremendous gift. They have brought us enormous material benefits – higher incomes and greater economic security than in many other countries. Most other countries would gladly trade places with us, should we ever grow tired of our rich resource endowment. Indeed, there are probably several provinces that would gladly trade places with Alberta.

This isn't to say that being a commodity-based economy is problem free. In fact, this conference is largely about the problems or, more positively, the challenges that our dependence on commodities sometimes creates. Some economists have gone so far as to say that there is a "commodity curse."<sup>2</sup> They suggest that rich resource endowments are actually inimical to economic development. Comparing the experiences of a large set of countries, they observe that commodity-based economies tend, on average, to have slightly lower growth rates, as well as lower income levels, than their resource-poor counterparts.

### Chart 3: Is There a Commodity Curse?



Source: World Bank

Before you become overly concerned or take strong objection to this claim, I should add that the statistical relationship that I have just shown you is rather weak, and is dominated by the results for a large number of developing countries for which the conservatorship of their resources has proven to be more of a challenge. The evidence for advanced resource-producing countries, such as Canada, is typically much more positive. Once again, we are the exception.

The reasons that have been put forward by way of explaining the so-called commodity curse have both a political and an economic dimension. Researchers have found that many countries with rich resource endowments suffer from weak governance and a democratic deficit. The governments are often despotic, and the countries prone to armed conflict and civil unrest. Property rights aren't respected, and institutional arrangements are weak.

<sup>2</sup> For a detailed survey, please see Jeffrey A. Frankel, "The Natural Resource Curse: A Survey." Faculty Research Working Paper Series, Harvard Kennedy School, February 2010.

This, obviously, is not an accurate characterization of countries like Canada, Australia, New Zealand, and Norway. Nevertheless, Canada and all other commodity-based countries are subject to serious *economic* challenges, linked primarily to the extreme volatility of commodity prices.

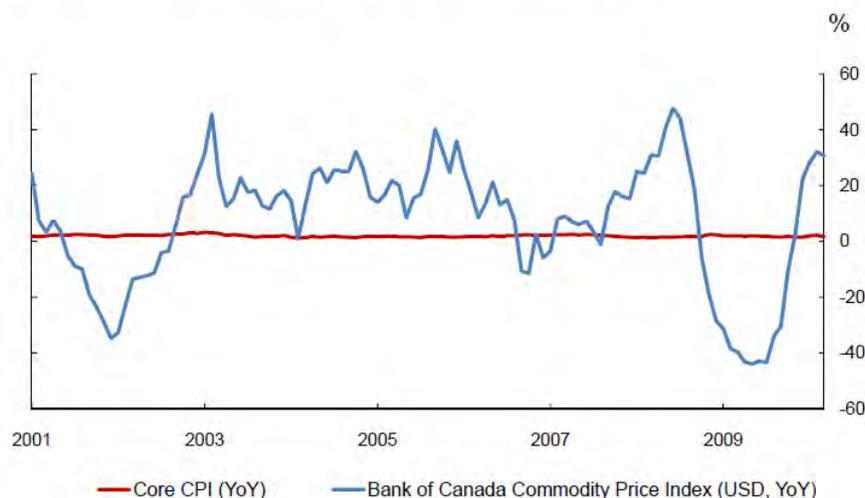
### The long and short of price volatility

Some countries are large enough commodity producers (or consumers) that their actions can materially influence global commodity prices. Saudi Arabia might be an example. But these are certainly the exception. For the most part, commodity producers are price-takers. They sell a fairly homogeneous product in a highly competitive market, and their actions have little effect on the price that they receive.

Unfortunately, for countries like Canada and provinces like Alberta, these prices are typically volatile, and highly uncertain. This volatility is caused, in large part, by the unusual nature of the short-run demand and supply curves associated with most commodity markets. The products that commodity-based economies sell typically have extremely low short-run demand elasticities (i.e., demand is not very responsive to price changes.) Supply is similarly inelastic, since it often takes time to bring new production online if prices suddenly rise, or to reduce production if prices suddenly drop.<sup>3</sup> Any move in either of these curves, therefore, is likely to lead to outsized changes in global prices.

This erratic behaviour is evident in the movement of most commodity prices through time. Commodity prices are typically much more volatile than those of other goods or services – and one of the most volatile commodity prices of all is that of oil. This is bad news for energy producers, and clearly complicates the task of planning and investment. Oil and natural gas now account for the majority of Canada’s commodity production.

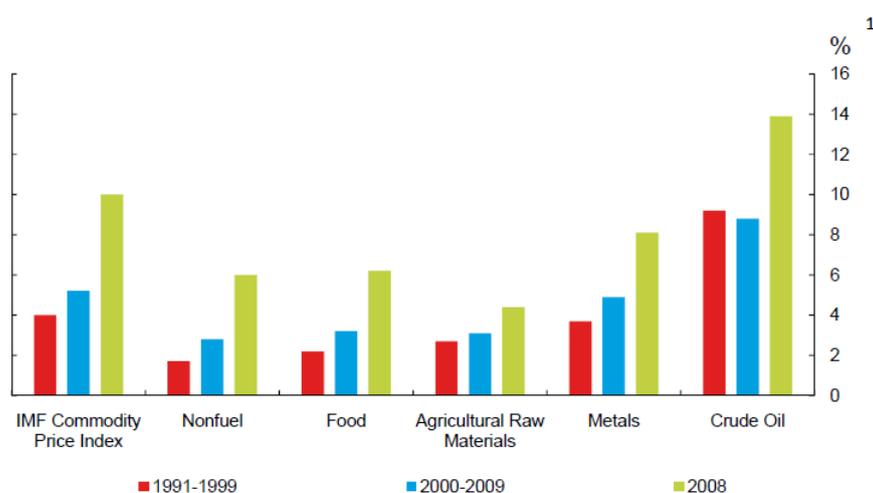
## Chart 4: Commodity Price Volatility



Source: Bank of Canada, Statistics Canada

<sup>3</sup> Some commodities are also subject to frequent supply disruptions that accentuate price volatility.

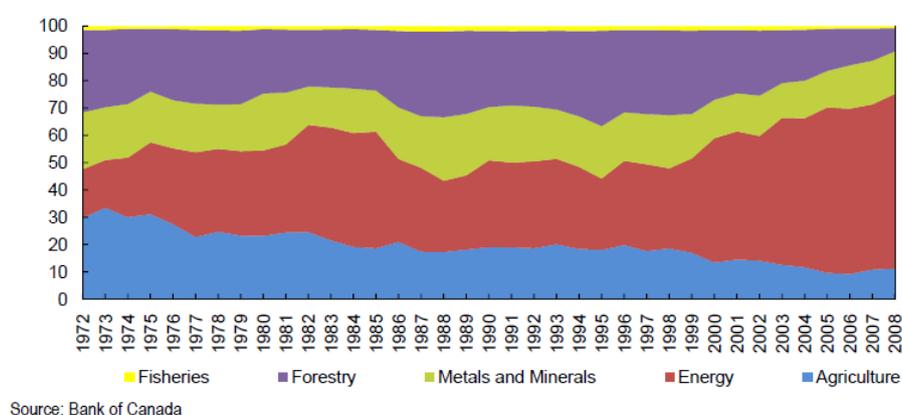
## Chart 5: Commodity Real Price Volatility



1. Volatility is calculated using the standard deviation of monthly changes in real commodity price indices (deflated by the U.S. consumer price index).

Source: IMF

## Chart 6: The Changing Composition of Canadian Commodity Production



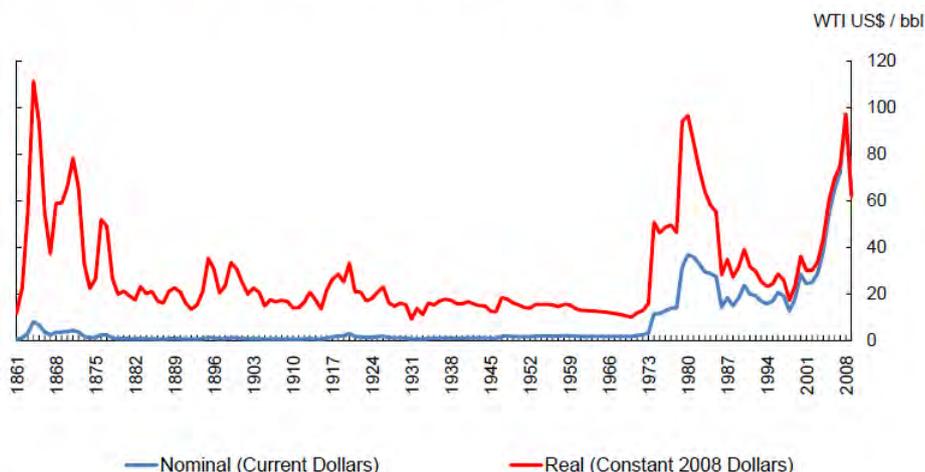
Source: Bank of Canada

Another important feature worth noting is that the long-run demand and supply elasticities for most commodities are typically much higher. If commodity prices remain high, consumers find ways to economize on their use, or find substitute products. New supplies also gradually come online. All of these factors work to push prices lower. In this sense, there is a self-correcting mechanism at play. Indeed, over the very long run – and here, I am referring to decades – the average real price of most commodities has been surprisingly stable.<sup>4</sup> Economists refer to this as “mean reversion.” If we knew that this sawtooth pattern would

<sup>4</sup> Don Coletti, “The long-run behaviour of key Canadian non-energy commodity prices: 1900 to 1991.” *Bank of Canada Review* (Winter 1992–1993): 47–56.

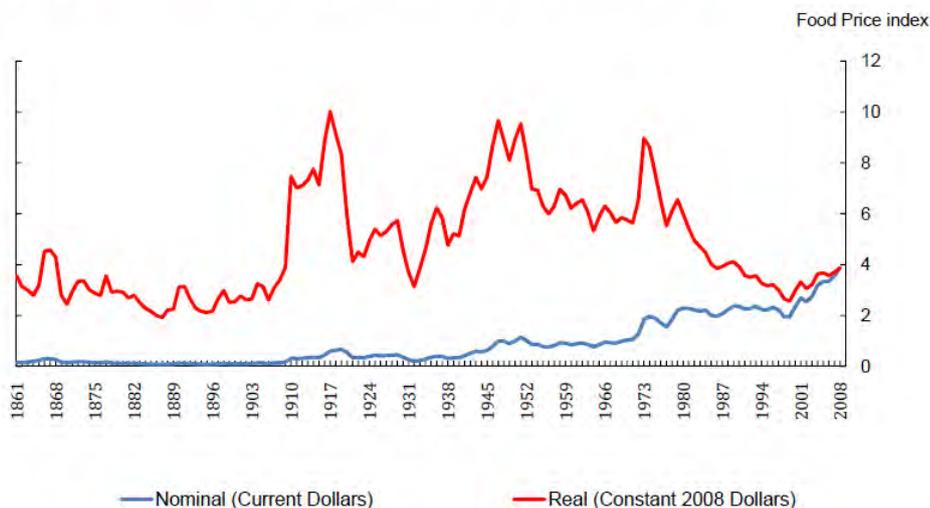
always be repeated – short-run spikes followed by an overshoot on the down side and an eventual return to the long-run mean – it would save a lot of unnecessary cost and disappointment.

## Chart 7: Nominal and Real Oil Prices



Source: British Petroleum

## Chart 8: Nominal and Real Food Prices



Source: Bank of Canada

But hope springs eternal, and many of the price movements last just long enough to convince investors and governments that “this time it is different.” And there is always a chance that some day it *will* be different. In the intervening period, long-range investments may have been set in train, new facilities built, and workers relocated – all initiatives that have to be reversed once prices correct. This is not always a problem, however. If prices stay high (or low) for a sufficiently long time, these reallocations of capital and labour could well be warranted and yield valuable returns, even if prices eventually revert to trend.

The trouble is that businesses, households, and policy-makers often get caught out. They overreact and have difficulty engineering a smooth course correction once conditions change. The inherent difficulty associated with predicting how long a boom (or bust) might last, and how high (or low) prices might go, makes the process extremely risky. Critics worry that a commodity-based economy will constantly find itself in motion, never quite settling down. When this constant churning is combined with volatile price changes, the ongoing costs and probability of a significant miscalculation can be high.

### **The policy-maker's Hippocratic Oath: first, do no harm**

One of the most important things that policy-makers can do is to avoid making the situation worse. Helpful lessons can be learned in this regard, by looking at Canada's experience during the 1970s. Although every boom and bust is in some way unique, there is sufficient commonality across commodity cycles that this period is still instructive.

Fiscal authorities in the 1970s assumed that the commodity boom would last forever, or at least for a very long time. They believed that the elevated revenues that they were suddenly receiving in the form of higher royalties and tax receipts would continue to grow. New, ambitious government programs were launched, which exacerbated the dramatic economic upturn that was already in progress, and nothing was saved for a rainy day.

Monetary authorities at the time didn't have the benefit of a policy framework anchored on an explicit inflation target. They also underestimated the effect that the run-up in commodity prices would have on demand conditions, and compounded the errors by overestimating the supply potential of the economy. More specifically, they failed to appreciate the serious negative effects that higher commodity prices – principally, energy prices – would have on the economy's production capacity. The generalized price increases that were subsequently observed across the economy were at first dismissed as one-off effects that would soon pass out of the inflation numbers.

The exchange rate appreciation that was triggered by the improvement in Canada's terms of trade over this period, and that would have helped contain inflationary pressures, was actively resisted for fear of what it might do to other sectors of the economy and employment. The result, when commodity prices subsequently collapsed, was a continuing spiral of rising government deficits and double-digit inflation, both of which took many years to resolve. The ultimate cost in terms of lost output and employment was enormous.

### **What can policy-makers do to improve the situation?**

Now, let me turn from Canada's experiences in the 1970s to some of the broader policy lessons that can be drawn. Policy-makers can learn from past mistakes and help to ensure better outcomes in three important ways. First, fiscal authorities should avoid behaving in a procyclical manner, exaggerating the boom with aggressive increases in spending and stimulative tax reductions. Additional infrastructure may be needed to support private investment in certain areas, but by strengthening their fiscal positions in good times, governments can help to relieve inflationary pressures and smooth consumption. This is the motivation for Alberta's Sustainability Fund and the Heritage Savings Trust Fund. Fiscal strengthening can also help to relieve upward pressure on the exchange rate.

The second way in which authorities can help is by maintaining a disciplined monetary policy. Monetary authorities must stay focused on their primary mission of preserving price stability, helping businesses and households to see through the cycle and promoting better decision making by keeping inflation low, stable, and predictable. This is what Canada's monetary policy framework now provides: greater focus, greater accountability, and greater discipline. The two key elements of our current framework are (i) an explicit monetary policy goal – the 2 per cent target for inflation – and (ii) a flexible exchange rate.

Canada's flexible exchange rate gives the Bank of Canada the monetary policy independence that is required to successfully pursue and attain its inflation objective. The flexible exchange rate also serves as an automatic buffer, helping to cushion the economy and dissipate the effects of the commodity shock. Trying to resist these exchange rate movements typically imposes even greater costs on the economy, since the underlying pressures don't disappear, they simply manifest themselves in other ways. These take the form of much higher wages and domestic prices in the case of a commodity price boom and, ultimately, lower employment and output. Necessary adjustment is delayed, and leads to a more exaggerated cycle in the overall economy.

Another important lesson that has been learned relates to the production capacity of the economy. The Bank of Canada is now more sensitive to the negative supply effects that are associated with large relative price movements and the economic restructuring that follows, adjusting its estimates of potential output appropriately to avoid inadvertently overstimulating the economy.

The third and final way that governments can help the economy to cope with commodity cycles is through structural reform. In normal times, the Canadian economy generally performs quite well, but it is still subject to unhelpful frictions and barriers. These affect the resilience of the economy and its ability to weather shocks, making it difficult to reallocate resources in a flexible, efficient manner. Canada has made good progress over the past three decades in allowing goods and services to move more easily. Further efforts to reduce interprovincial trade barriers would be welcome, for instance, extending the excellent Trade, Investment and Labour Mobility Agreement (TILMA) and the New West Partnership initiatives.

Governments, of course, are not the only ones responsible for ensuring a well-functioning economy. They are not even the most important players. That role rests with the private sector, which must take responsibility for its actions, looking through the boom-bust cycles and curbing any excessive exuberance or pessimism.

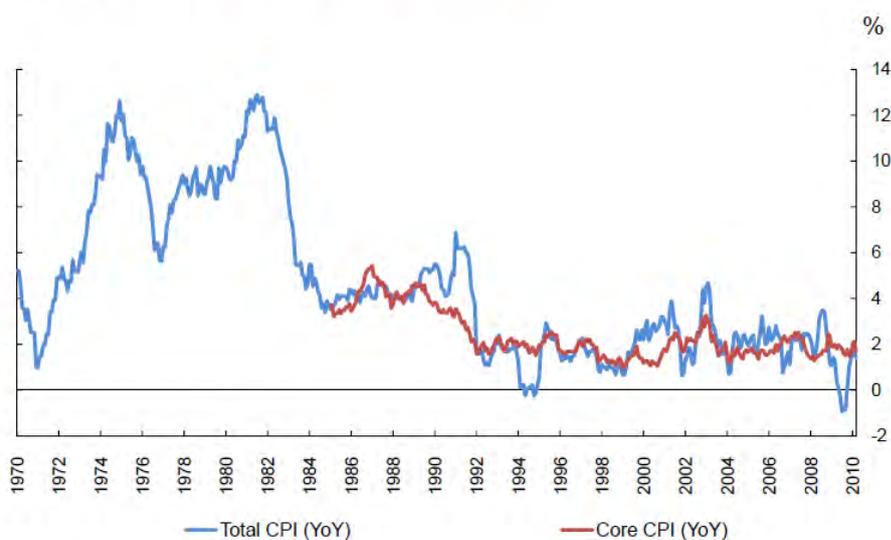
### **How have we been doing lately?**

The past few years have been extraordinary in many ways and, if nothing else, have provided a useful check on whether the prescriptions that I have just described are being applied. A super-cycle in commodity prices, followed by the biggest financial crisis of the postwar period, represents a significant stress test. Fortunately, the preliminary results are encouraging.

The 1970s and the 2000s differ in significant ways. The boom-bust experience in the 1970s was triggered by an unprecedented supply shock and exacerbated by overly stimulative fiscal and monetary policies. Interest rates had to be boosted to over 20 per cent in the early 1980s and combined with aggressive budget tightening in the early 1990s to bring the macroeconomy under control. In contrast, the boom portion of the commodity cycle from roughly 2006–2008 was the result of increased demand for commodities – much of it coming from Asia. It was also fuelled by excessive leverage and elevated asset prices in financial markets. Commodity prices collapsed when the asset bubble burst, and policy-makers had to move with unprecedented speed and co-operation to deal with the fallout.

Unlike the situation in the 1970s, CPI inflation through the past five years has remained relatively stable, despite the size of the shocks that hit the economy during the recent global economic crisis. Inflation expectations also remained well anchored during the crisis and, as a result, the Bank of Canada was able to ease monetary policy aggressively without losing the confidence of private agents. The ultimate costs of the crisis in terms of unemployment and lost output, although serious and painful, were nevertheless smaller than many had feared.

## Chart 9: Core and Total Inflation



Source: Statistics Canada

The Bank's measure of core inflation, CPIX, proved to be an invaluable tool in this regard. CPIX strips away eight of the most volatile components – including several commodity prices – in the total consumer price index (CPI), giving the Bank, as well as businesses and households, a more reliable measure of how strong or weak underlying inflation pressures might be.

The flexible exchange rate has also been allowed to do its job over this period. Although some of the short-term movements in the exchange rate may have been excessive, such as the run-up to US\$1.10 in November 2007, on balance Canada's flexible exchange rate has helped to cushion the economy on the way up and on the way down – an appreciation followed by a depreciation. Fiscal authorities at the federal and provincial levels also acted responsibly in the years preceding the “bust” of late 2008 and early 2009, taking some of the edge off the boom and leaving adequate fiscal headroom when extra stimulus was required. Encouraging steps, as noted earlier, have also been made with regard to structural reforms, although much more still needs to be done in this area.

### Where are commodity prices headed now?

So, where might things be going now, as we look ahead? I'd like to end my presentation by saying a few words about the near-term behaviour of commodity prices and the projection that the Bank released two weeks ago as part of its *April Monetary Policy Report*.

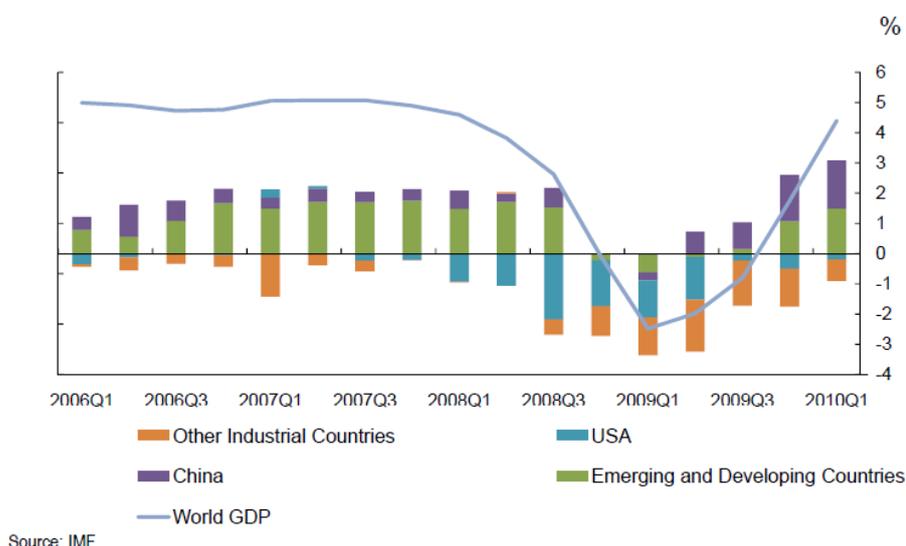
Before discussing our commodity price projections, I must admit that we regularly make use of some simplifying assumptions. Absent a more reliable guide, we typically base our projections for many commodities on the prices embedded in futures curves.<sup>5</sup> This is particularly true for oil and natural gas. We realize that these curves are not a very reliable forecasting tool. But we, and other forecasters, have yet to find a better alternative. The curves do provide a measure of what knowledgeable agents are expecting and are willing to

<sup>5</sup> R. Alquist, and I. Kilian. “What Do We Learn from the Price of Crude Oil Futures?” *Journal of Applied Econometrics* 25 (4). Forthcoming, June 2010.

put their money on. Every institution and investor that tries to anticipate commodity price developments experiences similar challenges. Commodity prices, as noted earlier, are inherently volatile and difficult to predict.

You might ask, then, what are the futures curves and the Bank projecting now? The Bank left its base-case projections for commodity prices in the *April Report* largely unchanged from what it had projected in the *January Report*. Oil and natural gas prices, as judged by the profiles of the futures curves for these commodities, are projected to rise quite modestly over the next three years, while non-energy prices are projected to increase by a cumulative 30 per cent. These increases are driven by the strengthening global recovery, most notably in China and other Asian emerging-market economies (EMEs.) Indeed, most of the upward pressure on commodity prices over the past 10 years has come from the EMEs. These economies are expected to keep growing, barring any unforeseen shock. Does this mean another commodity super-cycle?

Chart 10: Growth in World GDP and Contribution to Global Growth of Oil Demand



It is tempting to look at recent developments and extrapolate into the future. China and India alone account for more than 40 per cent of the world's population. If these two economies continue to grow at annual rates of 8 to 10 per cent, as we have seen recently, they will soon overtake even the largest advanced economies, and their prospective demand for commodities could be enormous. Couple this with the fact that many of the world's resources are non-renewable or are in limited supply, and you have a recipe for something that's surely breathtaking. It's enough to make us all Malthusians.

Before we race to this conclusion, however, we need to remember the problems that have arisen in the past when we assumed that commodity prices would rise continuously, or at least would stabilize at a much higher level. It's always tempting to think that the next commodity cycle will be different. Where have we heard that before? The scenario that I have just outlined is not implausible. That is what makes it so seductive. I can't say definitely that commodity prices won't rise to unprecedented levels, but if history is any guide, continuous rapid upward movement in real (inflation-adjusted) prices – oil or otherwise – is unlikely, as is a large permanent increase in the real price level. History suggests, therefore, that we should proceed with caution and, to use a rather corny commodity cliché, not count our chickens before they hatch.

In closing, let me mention that tomorrow, we will be releasing a new Bank of Canada commodity price index (BCPI.) This is noteworthy because, as we've just discussed, the price of commodities in Canada has important implications for the economy, and the interpretation of developments in commodity markets is important to the conduct of monetary policy. Clearly, we need the most accurate measure of movements in overall commodity prices possible. This new BCPI, which incorporates a new methodology, will be more accurate, representative and flexible.