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Housing Bubbles and the Consumer Price Index: A Proposal for a Better Inflation Indicator

The dramatic rise in Canadian house prices has been a major concern for policymakers, including the Bank of Canada. But as housing prices have shot upwards, inflation as measured by the Consumer Price Index (CPI) has shown only moderate increases. The Bank needs a new inflation indicator that better reflects changes in housing prices.

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THE STUDY IN BRIEF

The dramatic rise in Canadian house prices has been a major concern for policymakers, including the Bank of Canada. As housing prices have shot upwards, however, the Bank's policy target – the rate of inflation, as determined by year-over-year growth in the Consumer Price Index (CPI) – has shown only moderate increases. There are many reasons why the growth in measured inflation has been relatively subdued in Canada, but one that has been mostly overlooked is the fact that the CPI is not very sensitive to housing prices.

To calculate the owner-occupied housing component in the CPI, Statistics Canada uses a so-called user-cost approach. This approach may be thought of as an index of a lessor's deductible costs: it imagines that a lessor (or landlord) is renting a home to himself, but can still deduct the normal cost deductions from income, for income tax purposes, as if he were renting to a third party. Assumed prices for dwellings rather than actual prices for houses, and the inclusion of a mortgage interest component, makes the CPI less sensitive than otherwise to housing price changes.

This approach is more consistent with the CPI being used as a cost-of-living indicator – for instance to adjust the value of government transfers. However, the CPI is also used by the Bank of Canada as its main inflation target. The CPI performs well as an inflation indicator in most instances, even though it was designed first and foremost as an indicator of changes in the purchasing power of Canadians. In the case of housing, however, the CPI is not well suited as an inflation indicator, precisely because of its relative insensitivity to housing market price changes.

The main concern is that the CPI's insensitivity to housing could potentially cause the central bank – reassured by its imperfect indicators that inflation is under control – to keep rates too low for too long. Of course, the Bank of Canada has access to a wide array of data that provide information on the housing market but it is much harder for a central bank to adopt a restrictive monetary policy, including from a communications perspective, if its actions cannot directly be linked to its inflation-targeting mandate, as reflected in its official inflation indicator and target.

This *Commentary* recommends that Statistics Canada construct and maintain, in addition to the current CPI, an inflation indicator based on a net-purchases approach for owner-occupied housing. This approach measures changes in market prices – actual transaction prices – for owned accommodation; it treats the purchase of a house exactly like any other purchase and doesn't consider how the purchase of the house is financed and therefore does not include an element relating to interest rates.

This *Commentary* further recommends that, should this inflation indicator be established, the Bank of Canada monitor it on an on-going basis and take it into account when setting policy rates. Over time, the Bank of Canada may even consider adopting this proposed inflation indicator as its official inflation indicator.

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The Bank of Canada, among others, has recently expressed concerns over high consumer debt and the dramatic rise in domestic housing prices. Fresh in mind is the bursting of the American housing bubble – one of the most disastrous economic events of the last half century.

From 2000 forward, American home prices rose swiftly and steadily, more than doubling by 2006, when they peaked. But when the bubble burst, house prices started falling dramatically, causing a wave of defaults that brought the global financial system to its knees and led to a worldwide recession.

In Canada, the recession was less severe, and the Canadian financial system has proven much more resilient. Observers have pointed to many factors in explaining this good showing: they include a more prudent and effective approach to the regulation of the financial system, a sounder mortgage legislative framework, and more conservative banking practices.

However, Canada is not immune to a failing that may have contributed to the US housing bubble: the relative insensitivity of the inflation indicator to housing prices, which is a problem in both countries. The US Federal Reserve Board's favored inflation indicator – the price index for personal consumption expenditures – is quite insensitive to changes in housing prices because of the way its housing component is calculated. Hence, it did not capture well the recent housing boom and bust. Similarly, the Bank of Canada's inflation measure, the Consumer Price Index (CPI), is relatively insensitive to housing price changes, and does not, for example, capture fully the recent run-up in housing prices.

What are the associated risks? Price indices' insensitivity to housing could potentially cause central banks – reassured by their imperfect indicators that inflation is under control – to keep rates too low for too long. Of course, central banks like the Bank of Canada have access to a wide array of data that provide information on the housing market. And central banks could steer policy according to other indicators, even when the official inflation indicator might suggest a different course. But it is much harder for a central bank to adopt a restrictive monetary policy, including from a communications perspective, if its actions cannot directly be linked to its inflation-targeting mandate.

Rates that are kept too low for too long could, arguably, encourage excessive lending, and notably mortgage lending, which can help sow the conditions for an unsustainable rise in housing prices, and an ensuing bust. For instance, low interest rates in the US in the early 2000s likely contributed to excessive credit growth and, in turn, to the spectacular rise in housing. Had the Fed's preferred inflation indicator been more reflective of the housing boom, other things being equal, it might have felt compelled to tighten monetary conditions sooner and more sharply.

The author would like to acknowledge Andrew Baldwin who put together the CPI series based on a net-purchases approach that is presented herein and whose knowledge greatly contributed to this paper. I would also like to thank Colin Busby, Ben Dachis, David Laidler, Angelo Melino, Chris Ragan, Nicholas Rowe, Daniel Schwanen, Pierre Siklos, and Avery Shenfeld for helpful comments on an earlier draft. The views presented in this paper, as well as any potential remaining errors, are entirely mine.

This *Commentary* reviews the current Canadian CPI, highlighting some of the potential drawbacks associated with the current treatment of owner-occupied housing, when the index is used as an inflation indicator. The paper then presents a Canadian inflation indicator based on an alternative approach – the net-purchases (NP) approach, which directly incorporates the purchase price of new owner-occupied housing. The net-purchases approach, which has been adopted by countries like New Zealand and Australia and has been gaining traction elsewhere, is more sensitive than is the current CPI to housing booms and busts. This analysis supports the conclusion that the NP approach leads to a better inflation indicator.

This *Commentary* recommends that Statistics Canada construct and maintain, in addition to the current CPI, an inflation indicator based on an NP approach for the owner-occupied housing component, such as the one presented below. After the indicator is established, the Bank of Canada should monitor it on a continuing basis and take it into account when setting policy rates. Over time, the Bank of Canada might consider adopting the proposed inflation indicator as its official measure, after carefully balancing this potential change with other imperatives such as the public's acceptance of a new target.

The Consumer Price Index and Housing Prices: A Primer

There are three main reasons to measure changes in prices.¹ The first is to transform nominal variables

into real variables – for example, to distinguish real changes in Gross Domestic Product (GDP) from those due to inflation. The second reason is to compensate individuals for price changes; for example, to adjust the value of government transfers to individuals. The third reason is to inform the conduct of monetary policy.

In Canada, there are a variety of indicators for deflating nominal variables, the first objective. For instance, when the press reports that the Canadian GDP has grown 2 percent in the last quarter, the figure has been adjusted by the GDP deflator to remove the effect of changing prices. As to compensating individuals for changes in the cost of living, the second objective, the CPI is widely used by governments in adjusting income-support programs, for example, and in private wage and other contracts. The CPI was, and still is, designed for that purpose and, according to most observers, including this author, does a good job.²

The CPI is, however, also used by the Bank of Canada as its inflation target. As argued in this *Commentary*, a new and better indicator of inflation for the purposes of monetary policy may be warranted, while keeping the current CPI for the purposes it is designed for.

What's a Good Inflation Indicator?

Central banks, like the Bank of Canada, aim to keep inflation low and stable: to do so they measure the growth rate of the aggregate level of all prices in the economy. In any period, prices for different goods and services in the economy may go up or

1 See for example, Bank for International Settlements 2009.

2 It is worth noting that Statistics Canada has recently devoted important resources towards improvements to the current CPI. These improvements are intended to address well-known biases due to problems inherent in the construction of the data, such as infrequent adjustments to the weights attached to specific products in the consumption basket. In its Integrated Business and Human Resources Plan 2010 to 2013, Statistics Canada states that “[t]o better reflect the increasing complexity of the Canadian economy, the 2010 fiscal framework is providing permanent new funding to improve Canada’s CPI by updating the weights in the CPI basket of goods every two years from every four years, introducing more representative products, increasing the CPI sample size and improving quality adjustments.”

down, often canceling each other out. Changes in the aggregate level of prices therefore represent changes in the common elements of all prices in the economy.

In economic theory, aggregate demand – the total demand for final goods and services in the economy – and aggregate supply drive aggregate price levels. Inflation is a sustained increase in aggregate price level – a situation sometimes described as “too much money chasing too few goods.” To adequately capture these phenomena, a price index should rely on market prices that result from actual transactions for goods and services and exclude other factors such as the cost of borrowing.

In theory, inflation indicators should be comprised of “all monetary transactions that occurred in the economy in the two periods being compared” (Diewert 2002). For practical reasons, however, central banks use inflation indicators that typically focus only on goods and services transacted in the household sector, leaving out the other sectors of the economy, like the government and business sectors.³

Inflation indicators used by central banks also typically exclude the purchases of assets.⁴

Fundamentally, assets are a claim on future consumption. When buying an asset, individuals forgo current consumption with the aim of producing future consumption; there is no inherent utility or satisfaction associated with buying, say, a government bond, other than the promise of higher future consumption.⁵

Financial assets such as bonds are therefore clearly out of bounds for inflation indicators, which are based on consumption goods and services. Many consumption goods, however, also possess asset-like characteristics, in the sense that they can be used to store value and potentially be sold for a gain in the future. Examples of such consumption goods include real estate, jewelry or antique cars.⁶

Consumption goods are typically included in inflation indicators. Housing is contentious, when treated as a consumption good, because it has asset-like characteristics. And housing is sometimes employed as an asset: some rental units are bought by investors in the expectation of future capital gains or future cash flows that are greater than the costs of ownership.

In the case of owner-occupied housing, however, purchases are primarily a consumption decision.

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- 3 For instance, it is very difficult to put a market price on most government current expenditures; the best one can usually do is calculate costs of production. This is also true for much gross fixed capital formation, whether by government or business. Even where this is not the case, as with investment in machinery and equipment, arguably there is double-counting involved since the cost of a retailer’s investment in machinery and equipment must be paid for in the prices of the goods they sell.
 - 4 This does not imply that central banks should not pay close attention to asset prices. Such prices provide very useful information about the future path of inflation – for example, through wealth effects on consumption spending. Also, large swings in asset prices might be early warning signals of instability in the financial system, which has important implications for future employment or inflation.
 - 5 More broadly, assets are sometimes understood as anything that possesses a certain level of value. For instance, the Oxford dictionary defines an asset as “an item of property owned by a person or company, regarded as having value and available to meet debts, commitments, or legacies.” The term asset is used here in the financial accounting sense, where it is understood as anything tangible or intangible that possesses economic value and which is acquired and controlled with the expectation that it will provide future benefit.
 - 6 Even tulips can have asset-like characteristics. During the Tulip Mania of the Dutch Golden Age, tulip bulb prices reached extraordinarily high levels, and then suddenly collapsed, having been the subject of speculative behavior, not unlike that sometimes found in housing markets.

The decision to buy owner-occupied housing is, for most individuals, the most significant consumption decision in their lifetimes – one that will provide utility or satisfaction typically over many years. There may be an expectation on the part of the buyer that the home will gain in value, but such considerations are secondary.⁷ As a consumption item, owner-occupied housing should therefore be part of an inflation indicator.

To sum up: most inflation indicators used by central banks are intended to reflect household consumption. Given this perspective, an inflation indicator should fully reflect changes in market prices of goods and services consumed by the household sector, which includes owner-occupier housing.

Overview of the Current Canadian Consumer Price Index

The current CPI is designed “to provide an adequate indicator of price-induced changes in the purchasing power of the consumer dollar.” (Statistics Canada, 1992, p. 84). The CPI serves many purposes, but is not designed explicitly to serve as an inflation indicator. The CPI is better suited as an “escalator of income” – i.e., the changes necessary to income to keep purchasing power constant.⁸

The current CPI took on its role as an inflation indicator in February 1991, when the Bank of Canada adopted a monetary policy based on

inflation targeting that is still in use more than two decades later. The CPI performs well as an inflation indicator in most instances, even though it was designed first and foremost as an indicator of changes in the purchasing power of Canadians. In the case of housing, however, the CPI is not well suited as an inflation indicator.

Overview of the Current CPI's Approach to Housing: the User-Cost Approach

There are three general ways statistical agencies deal with housing prices within price indices, other than completely removing them. The first is the user-cost approach, which is the method employed by Statistics Canada for the data measured in the CPI. The second is the rental equivalence approach, used for example in the US, which simply treats the price of renting as a proxy for housing prices. This *Commentary* does not favor this approach, because the prices of rentals and buying can differ significantly and persistently. The third, the net-purchases approach, is a better approach; and I explain why in the next section.

Statistics Canada (1992) describes the purpose of its user-cost approach as follows: “The primary concern for the Canadian CPI is to provide an adequate indicator of price-induced changes in the purchasing power of the consumer dollar. The treatment of owned accommodation in the CPI is designed to serve this purpose.”

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- 7 It is difficult to establish as a matter of fact what the expectations of buyers are in the aggregate. But in the current Canadian housing market, where most analysts are of the opinion that housing prices will level off or even decline, it is difficult to argue that the expectation of gains is a constant characteristic of home buyers' purchasing decisions. Excluding owner-occupied housing in an inflation indicator on the basis of the presence of expected gains on the part of buyers is neither practical nor desirable. In any event, the buying of an owner-occupied house is clearly mainly motivated by its consumption value.
- 8 The distinction between an inflation indicator and cost-of-living indicator is important. Notably, how a purchase is financed matters for a cost-of-living indicator. In the case of the housing market for instance, higher borrowing costs would (everything else constant) negatively affect the state of household finances. Such considerations would not be welcome in an inflation indicator; in fact, in this example, higher costs of borrowing work in the opposite direction: by making consumption and investment more expensive, higher borrowing costs tend to lower inflationary pressures.

However, the Statistics Canada approach to owner-occupied housing prices does not measure changes in actual house prices. It may be thought of as an index of a lessor's deductible costs: it imagines that a lessor (or landlord) is renting a home to himself, but can still deduct the normal cost deductions from income, for income tax purposes, as if he were renting to a third party.

Besides an "other expenditures" category, there are five expenditure categories identified in the official index:

1. mortgage interest costs;
2. replacement cost of depreciation;
3. property taxes and special charges;
4. cost of homeowner's insurance; and
5. cost of maintenance and repairs paid by homeowners.

The replacement cost of depreciation is not a paid expense, and is proxied in the CPI by an index of new dwelling prices based on contractors' estimates of the price for which they could sell their homes if the dwellings were sold without the lot. It is the only basic class index— i.e., an index at the lowest level of aggregation – in the Canadian CPI related to an imputed expenditure rather than a paid expenditure, and it is justified on the grounds that for a landlord, depreciation cost is a deductible expense. Further, no landlord could stay in business on a continuing basis unless he was replacing and upgrading his stock of dwellings as they aged.

Why Is the Current Approach to Housing Problematic for An Inflation Indicator?

The problem with a user-cost approach, for an inflation indicator, is that it ignores important price signals about inflation trends. For all other items in

the CPI, the actual market price is used to evaluate inflation changes. The use of assumed prices for dwellings rather than actual prices for houses, and the inclusion of a mortgage interest component, makes the CPI less sensitive than otherwise to market price changes.

The Bank of Canada's inflation indicator, accordingly, does not capture large movements in housing prices, using the Teranet-National Bank House Price Index as a comparator (Figure 1). Also, and more importantly, the owner-occupied housing component of the current CPI may differ greatly from actual housing prices. Particularly large is the divergence in the wake of the run-up in house prices since the summer of 2009, which followed the 2008/09 recession.

Better Inflation Indicator: The Net-Purchases Approach to Housing

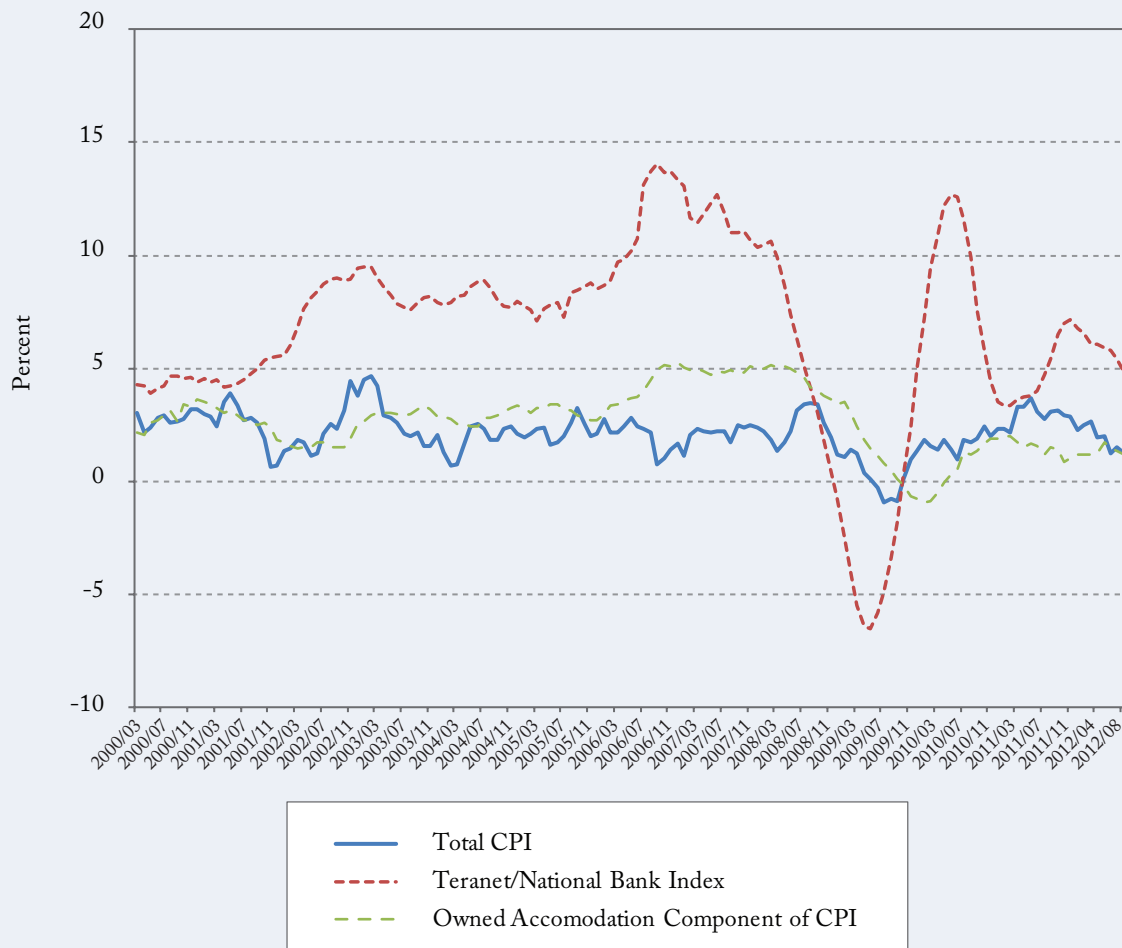
The net-purchases (NP) approach⁹ measures changes in market prices – actual transaction prices – for owned accommodation. The NP approach:

treats the purchase of a house exactly like any other purchase. It doesn't consider how the purchase of the house is financed and therefore does not include an element relating to interest rates. It is most appropriate for a CPI constructed as a general economic indicator, for example, for monetary policy. (United Nations 2009, p. 102.)

Because it uses actual transaction prices, the NP approach is therefore more sensitive to actual housing prices and reflects more adequately inflationary pressures in housing markets. Both Australia and New Zealand have adopted inflation indicators based on the NP approach. Also, most European countries currently are calculating new house price indexes. Those countries that are part

⁹ The net-purchases approach is also referred to as the net-acquisitions approach in some countries, the UK and Australia for instance.

Figure 1: Canadian CPI Insensitivity to Housing Prices (Twelve-Month Percent Changes)



Sources: Statistics Canada and the Teranet/National Bank Housing Price Index.

of the Eurozone will likely incorporate them in the Monetary Union Index of Consumer Prices, an inflation indicator used by the European Central Bank, when an owned accommodation component is added to the Harmonized Index of Consumer Prices (HICP) calculated for each country. These and other housing price indexes will also likely be incorporated in the broader European Index of Consumer Prices, covering the entire European Union.

The NP series presented here builds on previous attempts at calculating an NP series for owner-

occupied housing in Canada (Baldwin and DeVries 1985; Baldwin 1985). There is already a continuous NP series for Canada available from January 1982 to August 2000 (See Baldwin and Mansour 2003). The NP series presented in this study relies on the new housing price index (NHPI). This is a reliable price index for new homes, which provides data back to 1976, and for some population centers even further. Separate NHPIs are calculated for the house only and for house and land together, both of which have long been used in the CPI for owned accommodation.

The series shown here differ in two fundamental ways from the earlier series calculated by Statistics Canada :

1. for the owned accommodation index, property taxes are excluded; and
2. the net purchase treatment has been extended to owned secondary accommodation, including cottages, although relying entirely on proxy series.¹⁰

In order to increase comparability with the official CPI estimates, and to duplicate as much as possible how an NP index would be calculated if it were published on a monthly basis in tandem with the official series, a one-month lag for the NHPI has been incorporated in estimates presented in this paper.¹¹ This adjustment is necessary because the CPI for a given month is published in the following month, while the NHPI is published the month after that. The NP series presented in this paper accounts also for value added taxes, such as the Goods and Services Tax (GST), the Quebec Sales Tax (QST) and the Harmonized Sales Tax (HST), where applicable.¹²

There are important, material, differences between the proposed inflation indicator based on the NP approach for owner-occupied housing and

the current CPI; both indexes are depicted on a monthly year-over-year basis in Figure 2. The two indexes register differences in yearly growth rates of up to 90 basis points over the period from January 2006 to September 2011.

The differences are also persistent over time. The proposed inflation indicator's growth rate has been consistently higher than the growth rate of the current CPI since the end of the latest recession in summer 2009, reflecting the recent surge in housing prices. Similarly, the proposed indicator grew consistently below the current CPI during the latest recession, reflecting a temporary decrease in the level of housing prices in Canada during the period.

An Improved Inflation Indicator: Implications for Monetary Policy

Inflation indicators are paramount to the conduct of monetary policy and, in turn, for the economic well-being of Canadians. Since 1995, the Bank of Canada's main goal has been to keep the year-over-year growth of the CPI at 2 percent, within a 1 to 3 percent range. Because the CPI index is largely insensitive to movements in housing prices, the Bank's currently preferred inflation indicator does not compel it to react to important changes in

10 Additionally, the vehicle registration fees and drivers' licences are excluded, on both motor vehicles and recreational vehicles. The vehicle registration fees and the drivers' licences are excluded because they are indirect taxes that are not attached to a specific transaction to buy a good or service. Property taxes are excluded for the same reason. Adjustments to vehicle registration fees and drivers' licences are not an integral part of the NP approach, but makes for an overall better inflation indicator, although its effect is marginal and does not affect in any way the analysis presented herein.

11 At the same time, a CPI calculated as an inflation indicator could and probably should allow for a one-month revision policy, at least for its home purchase index. It would be a matter for negotiation with the Bank of Canada and other interested parties whether such a one-month revision policy would apply strictly to housing-related series, or to all components of the CPI.

12 This was, of course, not an issue for the first analytical series calculated by Baldwin and DeVries (1985) and Baldwin (1985), which predated the introduction of the GST and QST in 1991. Due to housing rebates, these value-added taxes (VATs), like the land transfer tax, have effective rates that are price sensitive. Unfortunately for the period covered, January 2005 to April 2011, there was never any change in the effective VAT rates that was reflected as a price change in adjusted new housing price indexes, so over the entire period they are somewhat downward-biased.

Box 1: Technical Description of the Net-Purchases Approach

The data shown in this *Commentary* relate to unlinked 2005=100 consumer price series at the Canada level of aggregation.^a The indexes calculated are direct Laspeyres price indexes; that is, each index has the formula:

$$P_{t/05}^L = \frac{\sum_j P_t^j q_{05}^j}{\sum_j P_{05}^j q_{05}^j} = \sum_j \left(\frac{P_{05}^j q_{05}^j}{\sum_j P_{05}^j q_{05}^j} \right) \frac{P_t^j}{P_{05}^j} = \sum_j w_j P_{t/05}^j ; t = \text{January 2005}, \dots, \text{April 2011}$$

Note: j refers to a particular good or service, t refers to time, p to price, q to quantity and w to weights.

The monthly movement of these series for the official concept will match the official CPI series based on the 2005 basket from May 2007 forward as April 2007 was the link month for the introduction of the 2005 basket. For the earlier part of the estimation period, from January 2005 to April 2007, the CPI was based on a 2001 basket.

The use of unlinked Laspeyres series has the advantage that in analyzing differences between different methods one can concentrate on the approaches themselves, ignoring the inevitable distortions and complications created by chain linking.

The NP series for Owner Accommodation (OA) was adapted from the official series for OA as follows:

1. The mortgage interest cost index was removed.
2. The replacement cost index was removed and replaced by a NP index of owned homes.
3. A NP index for owned vacation homes was added, proxied by the NP index for owned homes.
4. A new elemental index for land transfer taxes and registration fees was created, proxied by the NP index for owned homes.
5. The series for property taxes was removed.
6. The expenditure weight of other owned accommodation expenses was reduced by the exclusion of land transfer taxes and also of property taxes and special charges on owned vacation homes.

The NP series is based on the new housing price index, adjusted for value-added taxes:

- 1) Each analytical NHPI series on a 1986 time base was rebased to a 2005 time base.

$$P_{t/05}^{np} = \mathcal{F} \times P_{t-1/86}^{nhpi,r} ; t = \text{January 2005}, \dots, \text{April 2011}$$

$$\text{Where } \mathcal{F} = \frac{1200}{\sum_{t=\text{Dec } 2004}^{\text{Nov } 2005} P_{\text{Dec } 2004}^{nhpi,r}}$$

- 2) A weighted average of the regional indexes was calculated using the NHPI weights for the year 2005, price updated to 2005. These weights were published at 1997 prices and are based on dwelling

^a This discussion draws heavily from Baldwin (2011).

Box 1 Continued

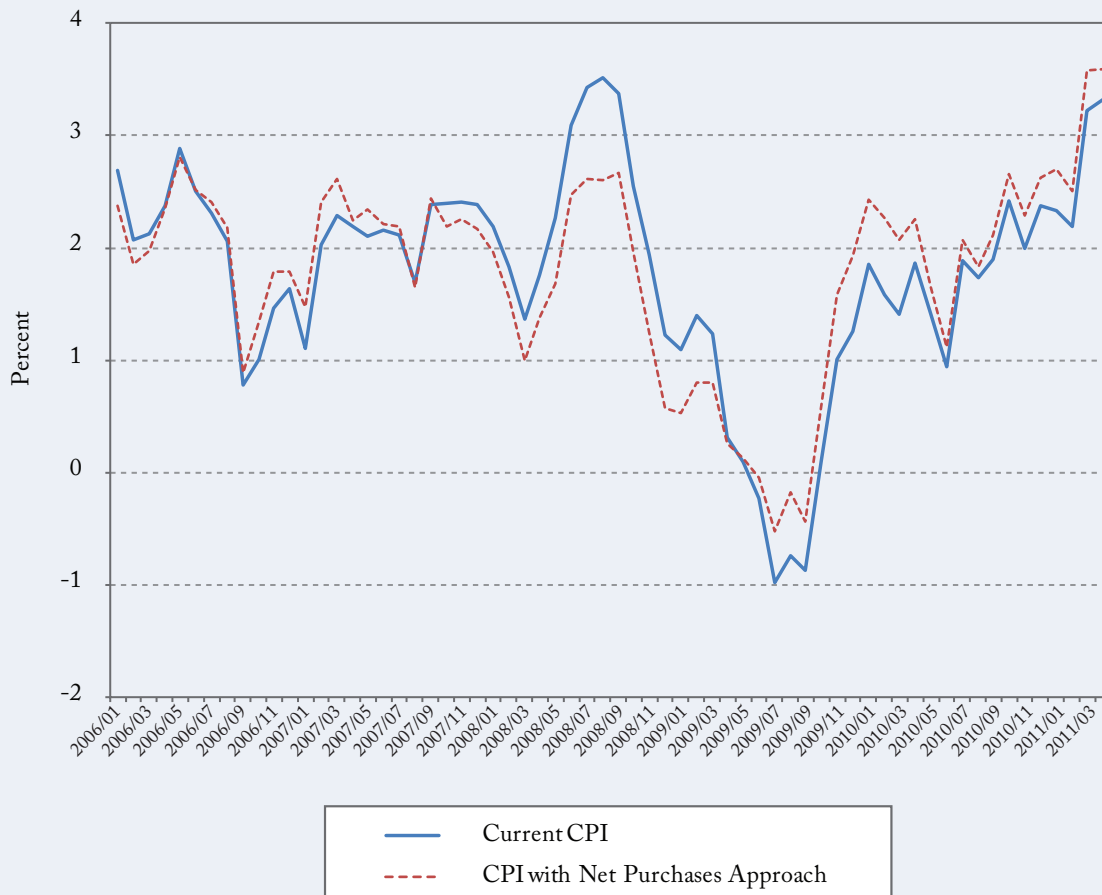
completions for the years 2002 to 2004. Therefore, it would be appropriate to think of the NP index as being a Lowe price index with the following formula:

$$P_{t/05}^{np} = \sum_r \left(\frac{P_{05}^r Q_{02-04}^r}{\sum_j P_{05}^j Q_{02-04}^j} \right) P_{t/05}^{np,r}; t = \text{January 2005}, \dots, \text{April 2011}$$

Note: np refers to net purchases, r to regions and nhpi to the new housing price index.

The new housing price index covers every province of Canada but excludes the territories. Because the CPI target population includes the territorial population centers of Whitehorse, Yellowknife and Iqaluit, these centers were proxied by the average home purchase index for all provinces.

Figure 2: Current CPI versus CPI Based on the Net-purchases Approach for Owner-Occupied Housing, Year-over-Year Growth



Sources: Statistics Canada and author's calculations.

housing market prices by tightening or loosening monetary conditions.¹³

Drawing on the US experience,¹⁴ many observers have argued in hindsight that the Federal Reserve's policy of keeping rates of interest low for a prolonged period contributed to an environment of easy access to credit, which helped to establish the conditions necessary to support the housing bubble of the 2000s and the ensuing housing bust. A number of economists have pointed fingers at the Fed's policy stance prior to the housing bust that contributed to the recent global recession. It is clear that the Fed's preferred inflation measure – whose owner occupied housing component is based on rental equivalence – was not reflective of the extent of the housing boom:

Over the course of the recent house price bubble in the United States, the price of homes rose rapidly from 1999 Q4 to 2005 Q4 (11.3% annually as measured by the Case-Shiller index, and 8.4% annually as measured by the Federal Housing Financing Agency) but slowly as measured by owner equivalent rents (3.4%). One consequence was that measured core inflation remained relatively docile during this period since only rents are used to measure inflation for housing services in the United States. (Diewert, Nakamura, and Nakamura 2009.)

Others (Taylor 2009) have also argued that the

Federal Reserve's maintenance of a low rate of interest contributed to a housing bubble. Had the US inflation rate been measured using a CPI with a homeownership component based on the NP approach, the Fed might have followed a higher interest rate path.

Other countries that have recently experienced significant housing booms and busts have central banks whose inflation targets suffer from similar shortcomings. The Bank of England's preferred inflation measure:

takes no account at all of the costs associated with the owner occupancy of housing. This extraordinary omission makes it a dubious tool for measuring inflation in an economy such as that of the United Kingdom, with an owner-occupancy rate of about 70 percent, and in which house prices – and, therefore, that component of the cost of living associated with the provision of shelter – have until recently been rising at double digit rates in many areas. (Laidler and Banerjee 2008, p 8.)¹⁵

In short, loose monetary policy may foster the conditions for housing prices to rise sharply. This militates in favour of inflation indicators that include house prices over those that do not, and in favour of those that are most responsive to changes in market prices. The inflation indicator proposed in this paper would achieve these objectives.

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- 13 I acknowledge that the first line of defence against boom and bust cycles in the housing market is regulatory in nature. For instance, appropriate standards for mandatory mortgage insurance can help reduce the likelihood of a sharp reduction in housing prices. Nonetheless, monetary policy has an important role to play, in particular when there are broad-based imbalances developing in the housing market. Such imbalances should be captured by an inflation indicator through changes in housing market prices. Our proposed inflation indicator would better reflect these broad-based imbalances than the current CPI. And from a public relations standpoint, surely it is far easier for a central bank to sell a restrictive monetary policy if it can be linked to its essential mandate of fighting inflation.
- 14 The US Federal Reserve, unlike the Bank of Canada, has a dual mandate of pursuing full employment and stable prices.
- 15 Prior to its adoption of the CPI as its inflation indicator in 2003, the Bank of England had used RPIX as its inflation indicator, a series very similar to Statistics Canada's All-items CPI excluding mortgage interest cost series. On balance, RPIX was probably a better inflation indicator than the Bank of England's current CPI series, and was certainly more sensitive to changes in current house prices. The All-items CPI excluding mortgage interest cost would also, beyond any doubt, be a better inflation indicator for Canada than the All-items CPI as it more closely approximates a CPI with an OA component based on the NP approach.

But what impacts, if any, would the proposed indicator, if adopted as an inflation target, have on the conduct of monetary policy? Figure 3 below present the differences in yearly growth rates of the proposed indicator compared to the current CPI. These differences are important and persistent over time. Keeping everything else constant, the results suggest that monetary policy would have been tighter prior to the recession, more accommodative during the recession¹⁶ and tighter since, had the Bank of Canada used the proposed indicator in preference to the current CPI.

It is, of course, difficult to know with certainty how the Bank of Canada would have adjusted its policy rate had it operated with the proposed inflation indicator as its target. These policy decisions are the result of complex, dynamic processes, to which the general public is not privy. But it is well established that the central bank's decisions can be closely approximated by the so-called Taylor rule.¹⁷

The principle underlying the Taylor rule states that when the inflation rate falls the overnight rate must fall by more than the decline in the inflation rate. Conversely, when the inflation rate rises, the overnight rate must rise by more than the rise in the inflation rate. According to that principle, differences between actual policy rates of the Bank of Canada and the rates adopted had it targeted the proposed inflation indicator would have been at least as great as the differences portrayed in Figure 3. These are material differences, as much as 90 basis points. They are particularly relevant when taking

into account the fact that policy rates typically affect all other rates at which individuals and businesses borrow, and that great debates surround Bank of Canada policy rate changes, which are usually limited to 25 basis points.

Different levels of interest rates, which would have resulted from the use of the proposed inflation indicator as the official inflation target, also imply different macroeconomic outcomes. For instance, the more restrictive monetary policy that probably would have occurred prior to the recession that started in 2008 would have dampened economic growth and potentially the growth of the housing market as well. The proposed indicator would have called for a more accommodative monetary policy during the recession – probably prompting the Bank to use unconventional monetary tools such as quantitative and credit easing, helping to put the economy on a sounder footing.

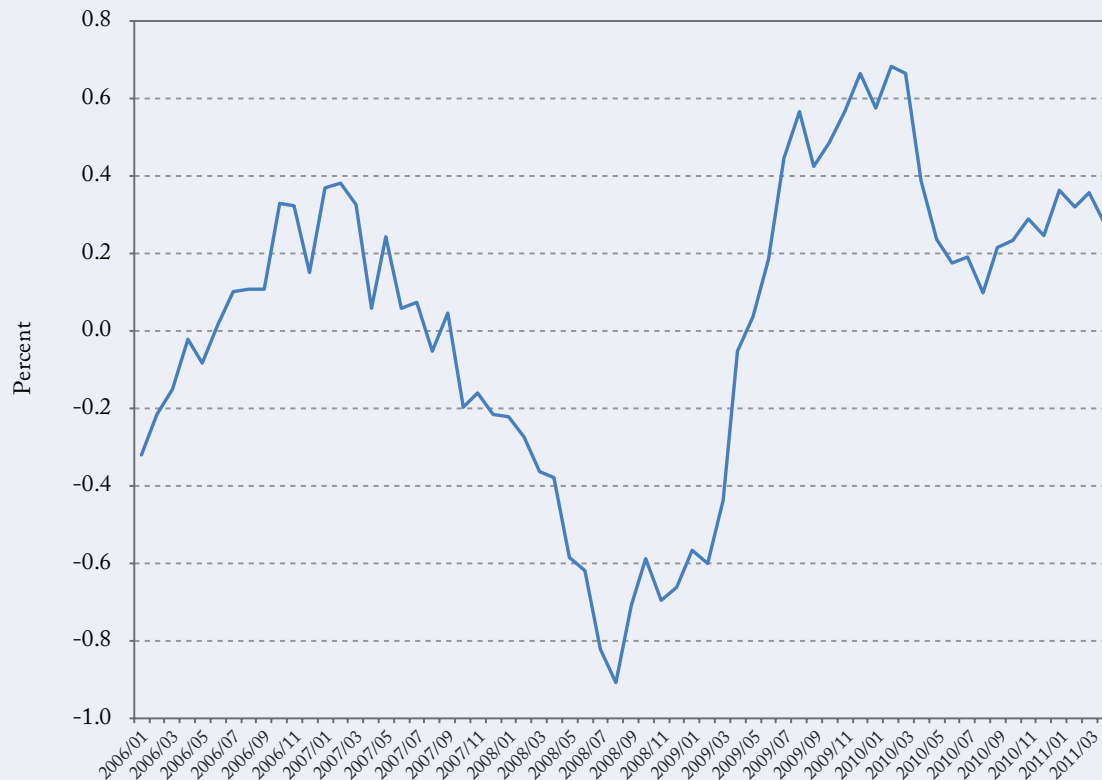
Finally, keeping everything else constant, the use of the proposed indicator as the official inflation target would have made the loose monetary stance of the Bank of Canada over the past year or so a little more difficult to defend. During this period, the CPI hovered around 3 percent and the proposed indicator would have indicated even higher inflation. It is debatable if a tighter monetary policy stance would have better suited the volatile world economic outlook.

Going forward, however, given that the Bank of Canada sets its policy rate on a forward-looking basis, and that housing prices are expected by many to decline or at least level off in the medium to

16 The Bank of Canada policy was already operating at its effective lower bound – i.e., 25 basis points – during the latest recession. A more accommodative monetary policy stance would imply the use of so-called unconventional monetary policy tools, such as quantitative and credit easing – essentially the buying of assets with the creation of central bank reserves.

17 Some might argue that we already have several indicators of housing prices that are closely monitored by the Bank of Canada. But the will to act would be much greater were housing prices better reflected in its main inflation indicators, as would be the case were the Bank to adopt our proposed inflation indicator as its preferred measure.

Figure 3: Differences in Yearly Growth Rate between the Proposed CPI Based on Net-Purchases Approach and the Current CPI



Sources: Statistics Canada and author's calculations.

long term, the use of the proposed indicator would actually support the case for continuing to keep rates at historically low levels.¹⁸

Beyond the debate about the impacts on recent and upcoming monetary policy of adopting an inflation indicator based on an NP approach, one thing is clear: “Low, stable and predictable inflation

is the best contribution that monetary policy can make to a productive, well-functioning economy,” as the Bank argues.¹⁹ Striving for the best possible indicator of inflation should therefore be of paramount importance to the Bank of Canada, and by implication, for a productive and well-functioning economy.

18 For instance, TD Economics predicts Canadian average existing home prices will decline by 3.6 percent in 2013. See TD Economics. 2012. “Supportive Factors in Place for the Canadian Housing Market in 2012,” Special Report, March 22.

19 <http://www.bankofcanada.ca/about/what-we-do/what-is-monetary-policy/>.

CONCLUSION: SOMETHING'S MISSING

The US Federal Reserve's preferred measure of inflation was ineffective in warning that a housing bubble was forming, and it did not provide any indication that it had burst. As the analysis herein shows, the Canadian CPI, when used as an inflation indicator, shares some of the same shortcomings in the sense that it proves relatively insensitive to changes in the value of residential housing in Canada.

The inflation indicator proposed in this *Commentary*, which is based on a net-purchases approach for owned accommodation, addresses these shortcomings. Because it is based on actual housing prices, the proposed indicator is reflective of housing booms and busts, which, as this paper argues, makes it a more suitable indicator of inflation than the current CPI.

This *Commentary* recommends that Statistics Canada construct and maintain, in addition to the current CPI, an inflation indicator similar to the one we present. Should this inflation indicator be established, the Bank of Canada should monitor it on an on-going basis and take it into account when

setting policy rates. Over time, the Bank of Canada may even consider adopting this proposed inflation indicator as its official inflation indicator.

The Bank of Canada would have to balance other imperatives when it considers whether to change its official inflation indicator. For instance, the Bank initially adopted the current CPI as its inflation indicator because it was "the most commonly used indicator of inflation in the Canadian economy" (Bank of Canada 1991, p. 11). One important consideration therefore is to ensure the acceptability of any new indicator among market participants and the general public. The excellent track record of the Bank in effective communication seems to suggest, however, that these challenges could be overcome and that the potential benefits from such a change would outweigh its costs.

Constructing an inflation indicator based on a net-purchases approach for owned-accommodation, and making it an official inflation indicator, would help ensure monetary policy is appropriately responsive to housing prices, which could help improve Canada's overall economic prospects.

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