

DEVELOPING

a municipal price index



BY PATRICK WALTERS AND JOHN DUNFIELD

Governments are under considerable pressure to relate their spending and taxation levels to cost inflation, yet each local government's experience with inflation can differ greatly from a national average. The City of Calgary, Alberta, has responded by developing a municipal price index (MPI) to improve the accuracy by which its local government costs can be projected. Calgary's work has emphasized the need for governments to revisit their selected inflation measures for accuracy and to communicate broadly about how inflation measures correspond to local government needs.

The most widely applied measure of inflation is the Consumer Price Index (CPI). Given its pervasive use in setting cost-of-living adjustments, it can be the appropriate metric when calculating the rate of consumer inflation at the national level. Major components within the CPI include housing, food, and transportation. It is often used in inflation calculations such as Social Security payments, labor agreements, service contracts, and retirement benefits. The CPI is a useful proxy for cost inflation in general because it is well-known statistic, it is produced monthly by an independent source, and it is available free of charge.

Extending the use of the CPI into discussions about the appropriate level of tax and fee rate increases becomes problematic, however, because a government's actual experience with inflation can differ greatly from the CPI. This is because the largest expenditures for governments are typically labor, materials, and contractual services — different factors than those found in the CPI.

Local governments would benefit from having a well-constructed index reflecting the changing costs of providing municipal services, but few cities have attempted to build and effectively use such a measure. The City of Calgary is now doing so. This article reviews some of the options available for constructing indexes of municipal costs, and then focuses on the Calgary experience, with some practical tips for creating an MPI and for dealing with some of the criticisms inherent in developing a cost index from scratch.

MEASURES OF COST INFLATION

Governments budget for expenditures on a variety of goods and services, and as the average price of that basket of

purchases changes, so too does the purchasing power of local governments. Price indexes are the most commonly used tool for measuring changes in price levels, and thus purchasing power. A price index measures the change in the costs of purchasing a fixed basket of goods and services in the current period, compared to a base period, typically month-over-month or year-over-year.

The key issue in calculating price changes has always been defining the contents of the basket of purchases. The nature of the price index is determined by the composition of the specific basket — how spending is distributed among the components of the basket. Some of the more common price indexes are:

- The Consumer Price Index (CPI), which measures the price changes for common household purchases. It focuses on expenditures for food, shelter, clothing and footwear, household operations, and furnishings.
- The Producer's Price Index (PPI), which measures the price changes of commodities at different stages of processing;

- The Gross Domestic Product (GDP) deflator, mostly used in national accounts. It is designed to reflect current expenditure patterns in an economy and therefore focuses on new domestically produced final goods and services.

Other price indexes measure changes in specific sectors of the economy.

The Construction Price Index, used by the U.S. Department of Commerce, reflects the changes in the cost of construction materials and skilled and unskilled labor. It is a composite derived from separate indexes for construction of commercial facilities, residential housing, utilities, highways and general construction, as well as other construction contract indexes. Statistics Canada, a federal government agency, compiles the Canada CPI and has developed a similar index for non-residential building construction. Statistics Canada has also developed the Education Price Index (EPI) for elementary and secondary school spending. It compares current salary grids for teachers with a base year and uses selected sub-indexes from the CPI and the Industry Product Price Index as proxies for price increases for non-salary items purchased by school boards.

Municipal governments have their own spending patterns that are different than those of other economic sectors.



MEASURING MUNICIPAL GOVERNMENT COST INFLATION

Similar to education institutions, municipal governments have their own spending patterns that are different than those of other economic sectors. A price index that does not reflect the municipal purchasing structure does not truly reflect changes in the cost experience, and thus the purchasing power, of local governments. For instance, the CPI reflects household spending patterns that focus on shelter (27.7 percent of the Statistics Canada CPI basket), transportation (19.5 percent), food (15.5 percent), and recreation (12.9 percent) — none of which registers as leading purchase categories for local governments.

Since 1978, *American City and County* has been publishing a Municipal Cost Index (MCI) that estimates the rate of inflation for purchases by American municipalities. (The MCI archive is available at <http://americancityandcounty.com/mci-archive/>.) The MCI is a composite index, a weighted average of more detailed price indexes measuring consumer price cost fluctuations (using the CPI), industrial commodity wholesale prices (using the PPI), and construction contract costs (using the Construction Price Index). The weighting factors used reflect the composition of local government purchases in the base year of 1967, and the MCI shows price changes over specific periods of time at the national level. Municipalities

in Canada, including Calgary, have begun building on the concept of the MCI, with indexes reflecting the changes in specific costs within a local area.

DEVELOPING CALGARY'S INDEX

Work on Calgary's MPI began in 2003 as part of a new direction that included considering the longer-term impacts of current financial decisions. The impetus to create an index for the costs of the goods and services Calgary's municipal government purchases came not only from the recognition that the CPI did not fairly represent the municipal purchasing experience, but also from the need for a tool that would project cost scenarios into the future, rather than reflecting past experience (which is the focus of the CPI).

There are two main parts to the MPI calculation: the weightings of the expenditure categories (showing the relative importance of items in the index), and the inflation factor used for each component. The weightings are based on the approved City of Calgary operating budget, using tax-supported operations only (thereby excluding the utility operations that are funded purely from utility rates.) Exhibit 1 shows the expenditure account categories and their relative weightings:

Exhibit 1: MPI Expenditure Account Categories with Relative Weightings

Salaries and Wages	46.1%
Employee Benefits	9.6%
Contractual and General Services (excluding Transportation Department contracting)	16.1%
Contracted Services (Transportation Department only)	2.1%
Materials and Commodities	6.5%
Fuel and Oil	2.1%
Vehicle and Equipment Charges	3.3%
Natural Gas/Propane	0.5%
Electricity	1.4%
Water and Sewer	0.3%
Transfer Payments	5.8%
Interest Expense	2.6%
Gross Debt Charges	3.6%
TOTAL	100%

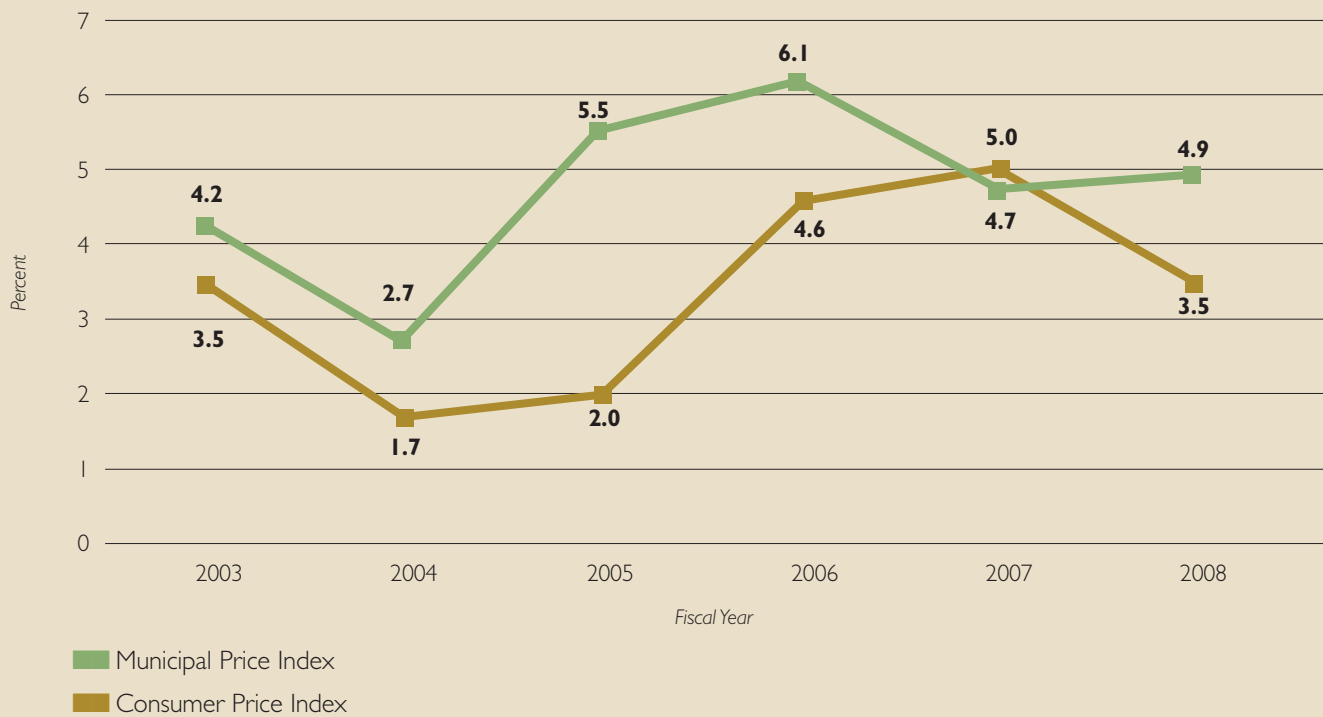
The inflation factors for expected price changes are based on economic data from two main sources, the Conference Board of Canada (CBOC) and Statistics Canada. The key issue is to match an appropriate inflator from these external sources to the types of expenditures in each budget category. In some cases, there is a very good match: for instance, the Conference Board of Canada issues quarterly projections for natural gas prices, and “Natural Gas/Propane” is one of the city’s expenditure categories. For other accounts, a proxy is

needed because there is no direct match between an indicator and an expenditure category. For instance, in the category of “Contractual and General Services,” since most white-collar consulting services are labor-intensive, the Conference Board forecast for wage rates within the province of Alberta is used. However, for contractual services within the Transportation Department, for functions such as street sweeping and snow clearing, projections based on the non-residential building construction price time series from

Exhibit 2: Sample Municipal Price Index for the City of Calgary

Component	Weight	Inflators for Each Component				Source
		2008	2009	2010	2011	
Wages and Salaries (Excluding Benefits)	46.1%	3%	3%	3%	3%	Illustration Only
Benefits	9.6%	12.6%	6.4%	14.4%	5.6%	City of Calgary Finance, Sept. 2009
Contract and General Services	16.1%	5.9%	3.2%	2.5%	3.9%	Wage Inflation Forecast for Alberta, October 2009 (Excluding Transportation Contracting)
Contracted Service Providers (Transportation Department Only)	2.1%	8%	-4.3%	-2%	7.6%	Non-residential Building Construction Price Index, September 2009, Projected by City of Calgary Corporate Economics
Materials and Commodities	4.1%	4.3%	-3.3%	1.2%	2.5%	CBOC Manufacturing Product Price Index, December 2009
Fuel and Oil	2.1%	34.2%	-35.8%	17.7%	7.8%	CBOC Crude Oil forecast, December 2009
Vehicle and Equipment Charges	3.3%	0.5%	5.9%	-3.7%	2.2%	CBOC Autos and Parts Forecast, December 2009
Maintenance/Rental Equipment	2.3%	4.3%	-3.3%	1.2%	2.5%	CBOC Manufacturing Product Price Index, December 2009
Waste Management	0.1%	4.3%	-3.3%	1.2%	2.5%	CBOC Manufacturing Product Price Index, December 2009
Natural Gas/Propane	0.5%	6.9%	-17.4%	35.1%	25.6%	CBOC Natural Gas Forecast, December 2009
Electricity	1.4%	6%	3.8%	5.1%	4.5%	City of Calgary Energy Management Office, Reflecting Current Agreement, June 2009
Water and Sewer	0.3%	6%	5.8%	5.8%	5.8%	2009-2011 Approved City of Calgary Budget Rates
Transfer Payments	5.8%	5%	4%	3.3%	3.1%	2009-2011 Approved City of Calgary Budget Rates
Interest Expense	2.6%	-7.3%	-10.5%	-6.4%	7.3%	Rates on Existing Debt from City of Calgary Finance Plus Future Borrowing, September 2009
Gross Debt Charges	3.6%	0%	0%	0%	0%	Set at 0% Because this Account Group Reflects Principal Repayment Amounts
	100%					
Municipal Price Index		4.9%	1.6%	3.7%	3.7%	

Exhibit 3: Calgary CPI and Calgary MPI Inflation Estimates, 2003-2008



Statistics Canada (which includes both wage rates and materials costs) was judged to provide a better fit for the expenditures involved.

The largest expenditure category involves employee salaries, wages and benefits, which consume nearly 56 percent of Calgary's tax-supported operating budget. To make sure Calgary's MPI will reflect local costs, the city uses internal information for the inflation forecasts, based on a combination of actual labor settlements that extend into the future and a forecast provided by city labor relations staff for projected results of collective bargaining. The latter is confidential and therefore cannot be disclosed. Some of the other specific issues regarding expenditure types, and how Calgary has calculated inflation projections, are employee benefits, utility costs, interest expense, and gross debt charges.

Employee Benefits. This forecast comes from city staff specializing in benefit costs. These inflation figures will also include the salary increases. For example, a 3 percent increase in salaries and a further 2 percent increase in benefits would result a total increase in benefits expenditures of 5 percent.

Utility Costs. Since the City of Calgary has long-term (20-year) contracts for electricity supply, the price increases are

known for years in advance. Where Calgary pays market rates for other utility commodities, such as natural gas, the Conference Board of Canada provides a three-year projection.

Interest Expense. A calculation is done to generate the average interest rate for future years, based on a blend of all borrowing agreements currently in place and a forecast of future borrowings and future interest rates. The yearly change in this interest calculation represents the inflation for interest expense.

Gross Debt Charges. Gross debt charges, which represents the repayment of debt principal, has no inflationary dimension, so that factor is always 0 percent.

The MPI calculation is the average of the expected price changes for all components, weighted by the portion of the city tax-supported operating budget spent on each factor. With the Conference Board projections for some of the components being published quarterly, the Calgary MPI is updated each quarter. Exhibit 2 provides a mock-up of the City of Calgary MPI calculation based on information available up to the end of 2009. Note that the figures for 2008 and 2009 show the historical rates of cost change, while the 2010 and 2011 figures are projected rates of change using the information

sources identified. The inflation factors shown for salaries and wages are only illustrative and do not represent the actual labor settlement projections being used in the Calgary MPI calculation, so the total index figure shown is not the actual MPI calculation for Calgary.

The work to date on Calgary's MPI has shown that it is possible to construct a price index for local government purchases. Further, the results show a different pattern of cost changes for municipal purchases than the CPI shows for household expenditures. Exhibit 3 shows the differences in inflation estimates for the Calgary CPI versus the Calgary MPI over a six-year period.

ISSUES REGARDING THE MPI

As Calgary's process for developing the MPI has become more refined, and its use as a tool in the budget process has become more widespread, its critics have become more vocal. Some of the major points raised in opposition to the MPI focus on whether the city should base tax increases on its own index, whether the basis of the MPI is sound, and the potential problem of ignoring the substitution effect, whereby buyers will substitute cheaper alternatives when prices get too high (and therefore price indexes will overstate real inflation).

Critics think that calculating an MPI to justify tax increases is self-serving, and that the product would be more credible if it were calculated by an independent body that has experience in creating cost indexes. As a result of this concern, Calgary is working through the Federation of Canadian Municipalities to encourage Statistics Canada to develop a set of regional municipal price indexes.

Another criticism is that with labor being the major cost component, the MPI calculation is somewhat circular. The local council (which oversees the day-to-day operation of the municipality) approves collective bargaining settlements, which strongly influence overall costs, and those figures are then used to rationalize budget requests. However, this process also reinforces the need for the council to be cognizant of the budgetary effect of approved labor settlements.

Finally, price indexes ignore the substitution effect. Any index that uses a fixed basket of goods for its calculations — as most do, in the name of consistency — faces this problem. For municipal governments, the substitution effect is minimized because the largest cost category, labor, has no ready

and available substitute in the short term (contracting service provision out is a longer-term option). However, the benefit of having the MPI calculation is that it might prompt further investigation into less expensive substitutes for city inputs.

TIPS FOR USING THE MPI

Understanding the need for an index of costs associated with providing municipal services is building in Calgary. The city has found several ways to increase the credibility and therefore the uses of the MPI.

Continue to Refine the Calculation. Calgary found the most credible sources for inflation projections. Then, it revisited the areas where proxies are needed to estimate inflation for city-purchased goods and services that have no direct link to an economic factor where inflation is projected.

Educate Council Members. The city informed council members about the value of an index that measures the costs of purchases made by the local government, as opposed to the CPI, which measures the inflation on household purchases and therefore does not correspond closely to what cities actually buy. Briefing sessions with the council in advance of any budget discussions typically include a section on the MPI: how it is calculated, and how it differs from the CPI.

Publish the MPI Figures Regularly. The City of Calgary includes the MPI figure in every published quarterly economic update provided to the council and the public.

Keep a Longer-Term View of City Finances. Calgary develops three-year operating and capital budgets, along with a five-year capital plan, and it regularly publishes a long-range financial plan that provides a 10-year projection of where cur-



rent trends are leading. Discussion about the MPI and how it is used in these longer-term calculations is included in each document.

NEXT STEPS

One of the attractive features of the CPI as a measure of inflation is that the index is created and maintained by an experienced and credible supplier of economic data. Statistics Canada already produces a separate index for costs associated with public school boards and would thus would be one logical candidate to produce an index for municipal government costs. The Conference Board of Canada, an independent, not-for-profit applied research organization, is another potential source. In March 2009, the Federation of Canadian Municipalities (FCM) adopted a resolution sponsored by the City of Calgary that “encourage Statistics Canada to produce a monthly data series of national and regional price indices, which would measure the inflation of a fixed basket of goods and services purchased by Canadian municipal governments.”

This idea is being jointly explored by the FCM, Statistics Canada, and the Canadian Council on Social Development.

At the same time, the Government Finance Officers Association is developing a best practice related to price indexes, in order to encourage the development of a municipal indicator that depicts the inflation rates for products and services purchased by local governments.

CONCLUSIONS

The development of municipal price indexes is important in creating an understanding that the patterns of local government spending are quite different than those of the average household. The usefulness of the MPI as a tool for decision-making will improve once council members and citizens accept that budget requirements should relate to the costs of purchasing goods and services used to serve local needs. ■

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