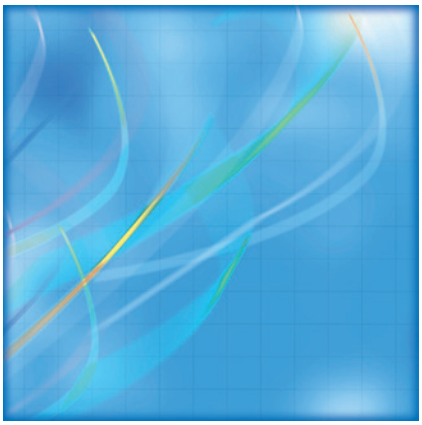
Catalogue no. 11-624-MIE — No. 006
ISSN: 1708-0169
ISBN: 0-662-36942-4

Analytical Paper

Insights on the Canadian economy

Do Canadians pay more than Americans for the same products?



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April 2004

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Published by authority of the Minister responsible for Statistics Canada

Aussi disponible en français

Abstract

The paper examines whether Canadians were paying more than the Americans for the goods and services they purchase. Based on more than 160 product price data for each of the five years under study (1985, 1990, 1993, 1996, 1999), the study finds that there were, on average, no significant price differences between the two countries for highly standardized products that flow relatively freely across borders. There were, however, subsets of products with significant differences. Over the period under study, Canadian consumers on average paid 4% more for highly differentiated tradable products, but 8% less for products that are not easily traded across borders, such as services. Given the size of the service sector, lower prices for services in Canada plays an important role in determining our standard of living compared with the United States. We also find that the shifts in the price differences (expressed in the same currency) generally reflected fluctuations in the exchange rate. Canadian prices adapt with a lag to U.S. price changes that are brought about by changes in the exchange rate.

Introduction

Successive rounds of trade negotiations that culminated with the Free Trade Agreement between Canada and the U.S. in 1989 have led to the increasing integration of the economies of the two countries. One indicator of the degree of integration is the extent to which Canadian prices are similar to those in the United States

In a perfectly integrated, competitive North American market, identical internationally traded products should sell for the same common-currency price in each country, thereby obeying the so-called 'Law of One Price'. Exceptions may occur to this rule, since differences in productivity, cost, and market power may result in price differences across countries. Moreover, some products, notably services, are not generally traded as much as goods are, so their prices are likely to disobey the 'Law of One Price'.

One may therefore expect that the purchasing power of a Canadian and an American dollar depends on the product being purchased and the degree of integration of the two economies. In this paper, we ask how the level of Canadian prices differs from their U.S. counterparts across different product groups and how the difference has evolved over time.

Data sources

The data used come from our Purchasing Power Parity program. It contains more than 160 bilateral commodity prices over five benchmark years (1985, 1990, 1993, 1996 and 1999). To make the data more comparable, we concentrate on products in the business sector and exclude government expenditures. This results in a set of 168 goods and services for the first four years and 165 for 1999 (the classification system is slightly different between the first four years and 1999).

Goods and services are classified into three groups: homogenous tradables, differentiated tradables and non-tradables. In general, products that are not easily shipped across borders (such as construction, services and utilities) are classified as non-tradables. Products that can flow relatively freely across borders are classified as tradables. Within tradables, those that are more standardized (such as food products like flour) are grouped together as homogenous tradables, and those that are relatively more heterogeneous in nature (such as machinery and equipment) are defined as differentiated tradables.[1]

Comparative price levels–what are they?

Price level differences are examined using the ratio of prices in the two countries, where prices are expressed in the same currency—in this case, the U.S. dollar. The comparative price level (CPL) measures the degree to which one country's price level is above or below the other's. For example, for a kilo of rice costing 2.49 ($U.S.) in the U.S. and 2.99 ($Can) in Canada and an exchange rate of 70 cents (U.S.) the CPL is 0.84 ((2.99 × 0.7)/2.49), implying a price level in Canada 16% lower than in the United States.

If the Canadian price was 3.52 ($Can), then the CPL would be 1.0 ((3.52 x 0.7)/2.49). In this case, there is no gain to be made from arbitrage. If trade removed price differences, an appreciation in the exchange rate (from 0.7 to 1.0) would be accompanied by a fall in the Canadian price from 3.52 to 2.49 and the CPL would remain at 1.0. If Canadian prices do not fully adjust downward to an upward movement in the exchange rate, the Canadian price (expressed in U.S. dollars) would rise relative to the United States price. If arbitrage equated the two prices quickly, a change in the exchange rate would be accompanied by no change in the relative price (CPL). In this case, the correlation between changes in the exchange rate and the CPL would be zero. When there is no reaction of the Canadian price to the exchange rate, the correlation between changes in the exchange rate and the CPL would be 1.0.

Comparative price levels by product group

The median comparative price levels for each of the three product groups over the five years are shown in Table 1 (all tables are presented with the U.S. as the reference country). For products that can flow relatively freely across borders, prices were on average 3% more expensive in Canada than in the U.S. For products that are not easily traded across borders, such as services, prices were on average 8% cheaper in Canada. The latter probably reflects the fact that services are labour intensive to produce, and Canadian wages are lower than American wages.

[1] The grouping scheme is based on professional judgement and discriminant analysis (that utilizes information such as the Grubel intra-industry trade index, the intensity of advertisement, and the number of commodities within each product group) to capture the extent to which products fall into the homogeneous or differentiated class.

Table 1: Median comparative price level by product group (U.S. = 1.0)

Group	Number of observations	Comparative price level	Price difference in %
Tradable	600	1.03	3
Homogeneous tradable	344	1.02	2
Differentiated tradable	256	1.04	4
Non-tradable	235	0.92	-8

The price differences for both tradables and non-tradables are statistically significant.[2] However, for highly standardized homogenous tradables, prices were only 2% more expensive in Canada than in the U.S., a statistically insignificant difference. This is consistent with the argument that competitive pressures tend to equalize prices for identical products.

Changes in comparative price levels over time

One of the factors that affect the comparative price levels is the exchange rate. In the short-run, prices in Canada may not respond to exchange rate movements for a number of reasons. For one thing, prices reflect both the cost of the manufactured good and the sellers' margin. This margin is not tradable to the same degree as manufacturing products. Therefore, Canadian prices may not respond immediately to fluctuations in the exchange rate. In these cases, movements in the CPL will be correlated with currency changes.

As noted, if prices in Canada do not respond immediately to an appreciation of the exchange rate by declining, the CPL (Canadian prices expressed in U.S. dollars divided by U.S. prices) will move up. If Canadian prices do not move up in proportion to a depreciation in the exchange rate, the comparative price level will move down. If Canadian prices adjust proportionately to exchange rate changes, there will be no change in the CPL.

The exchange rate between Canada and the U.S. has undergone several long-term movements during the last twenty years. Our dollar depreciated relative to the U.S. dollar from 1980 to 1986, followed by an appreciation from 1986 to 1991. Since 1991, the Canadian dollar declined steadily from 87 cents (U.S.) to only 64 cents in 2002.

Changes in the exchange rate are reflected in the movement of the comparative price level of the two countries. Table 2 and Figure 1 show that the median comparative price levels followed movements in the exchange rate. This means that as the Canadian dollar appreciated, our products became relatively more expensive than those in the U.S. (expressed in a common currency). For example, when the Canadian dollar appreciated in the late 1980s, the median price in Canada for all products used in this study increased from being 5% less expensive than in the U.S. in 1985 to 10% more expensive in 1990. Despite the depreciation of our dollar after 1991, the purchasing power of Canadian consumers nevertheless has improved. By 1999, the overall median price in Canada was 7% lower than the U.S. counterpart. This difference was 12% for homogenous tradables, 0.5% for differentiated tradables and 18% for non-tradables.

[2] At the 1% confidence level.

Table 2: Median comparative price level by commodity group over time (U.S. = 1.0)

	1985	1990	1993	1996	1999
Tradables					
Comparative price level	0.98	1.14	1.09	1.02	0.95
Price difference (%)	-2	14	9	2	-5
Homogeneous tradables					
Comparative price level	0.98	1.13	1.07	1.01	0.88
Price difference (%)	-2	13	7	1	-12
Differentiated tradables					
Comparative price level	0.98	1.15	1.11	1.03	1.005
Price difference (%)	-2	15	11	3	0.5
Non-tradables					
Comparative price level	0.83	1.01	0.98	0.89	0.82
Price difference (%)	-17	1	-2	-11	-18
All products					
Median	0.95	1.10	1.04	0.99	0.93
Price differences (%)	-5	10	4	-1	-7
Exchange Rate	0.73	0.86	0.78	0.73	0.67

Figure 1: Median comparative price level by group (U.S. = 1.0)

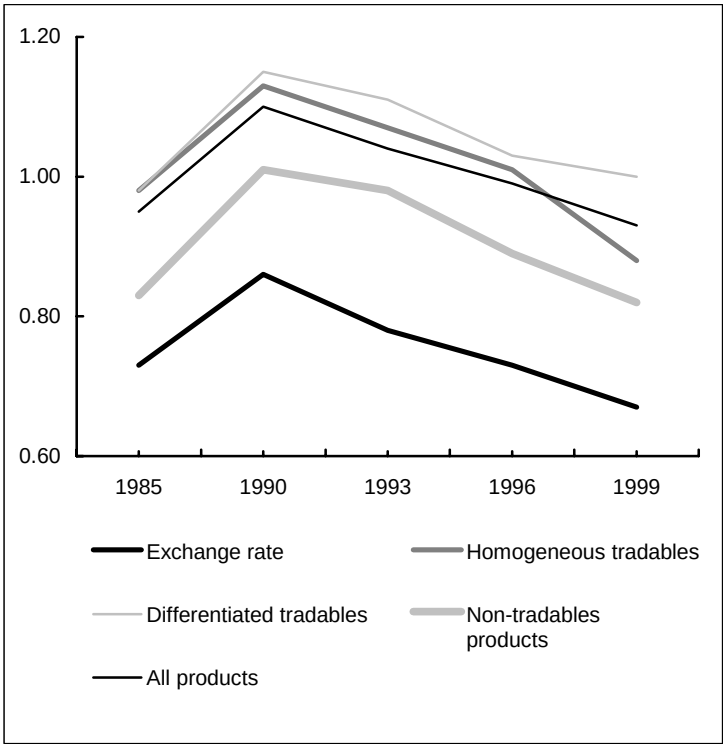
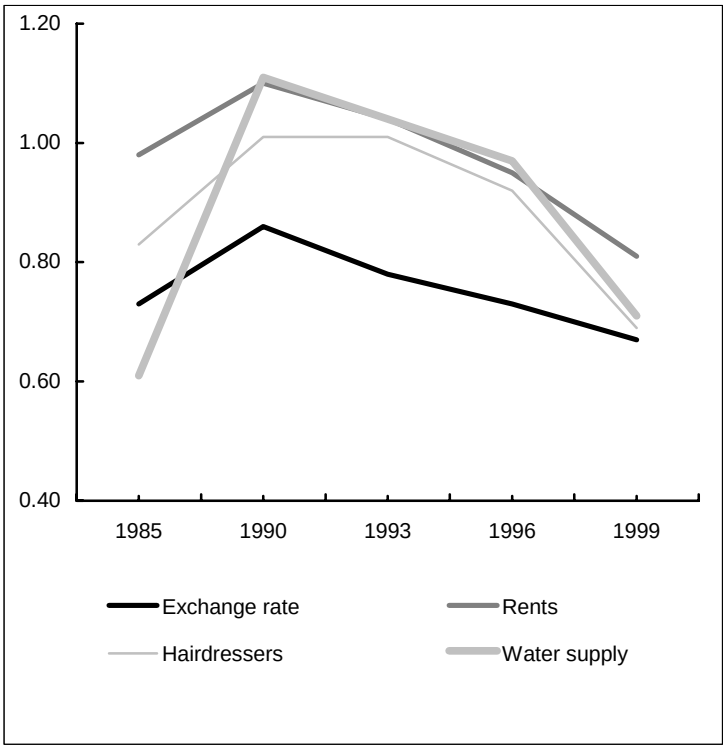


Figure 2: Comparative price level (U.S. = 1.0)

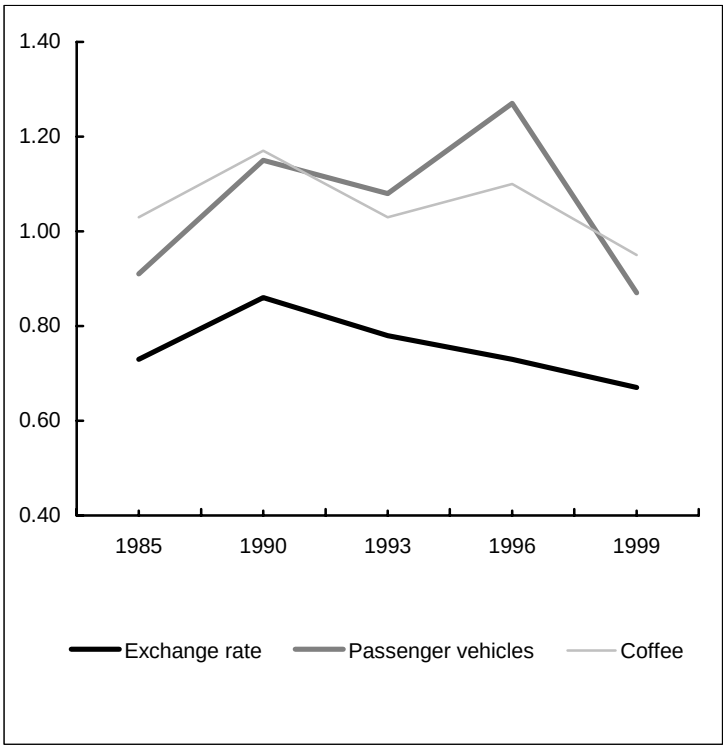


The correlation between changes in the comparative price level and exchange rate movements varies for individual items. For example, movements in the CPL for non-tradables like hairdressers, rents and the water supply largely reflect exchange rate movements, with a correlation of 0.81, 0.93 and 0.97, respectively (Figure 2). Canadian prices (expressed in Canadian dollars) do not respond to exchange rate movements and therefore the CPL (expressed in U.S. dollars) almost completely reflects movements in the exchange rate.

Changes in the CPL for items such as autos and coffee partly reflect exchange rate fluctuations (Figure 3). For example, in 1985 it cost 9% less to buy a vehicle in Canada than in the United States. By 1990, however, it had become 15% more expensive in Canada, following a period when the Canadian dollar appreciated. By 1999, after the steady depreciation in the Canadian dollar, it had become 14% less expensive. The correlation between exchange rate changes and changes in the CPL is 0.80 for coffee and 0.70 for autos. Although still high, they are less than the three non-tradable examples.

It should be noted that changes in the CPL for non-homogeneous tradables did not move by as much as the exchange rate. The size of the movement that occurs in the CPL as exchange rates fluctuate might be taken as a measure of the degree to which price discrimination developed in the two markets. The greater the movement in the CPL, the greater the differential that develops between U.S. and Canadian prices (expressed in the same currency). It is therefore noteworthy that the differential widened more in the homogeneous rather than the differentiated sectors by 1999.

Figure 3: Comparative price level (U.S. = 1.0)



Conclusion

It is important to be able to assess and evaluate how our economy compares with that of our major trading partner. We examined the purchasing power of Canadian consumers relative to their American counterparts in order to assess the degree of integration between the markets of the two countries.

Based on more than 160 product price data for the five years under study, we find that on average there were no significant price differences between the two countries for highly standardized products that flow relatively freely across borders.

There were, however, subsets with significant differences. Over the period under study, Canadian consumers on average paid 4% more on highly differentiated tradable products, but 8% less for products that are not easily traded across borders, such as services. Given the size of the service sector, their lower price in Canada plays an important role in determining our standard of living compared with the United States.

Shifts in comparative price levels between the two countries generally reflected fluctuations in the exchange rate. Canadian prices, especially for tradable goods, may reflect U.S. prices in the long run, but they react slowly to exchange rate movements. There is a lag in adaptation of Canadian prices to U.S. prices when expressed in similar currencies.