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Abstract

The unit labour cost is often used as a broad measure of international price competitiveness. It deviates from the inflation rate when the real wage rate and labour productivity grow at different paces. Since the COVID-19 pandemic, Canada has experienced an acceleration of unit labour cost growth and a significant upward deviation from the inflation rate, while this has not happened in the United States. This article decomposes unit labour cost growth in the Canadian business sector into its sources and finds that Canada's negative labour productivity growth since the pandemic has been the key driver of the accelerated unit labour cost growth. Additionally, the large and widening gap in unit labour cost growth between Canada and the United States since the pandemic is entirely attributable to the labour productivity growth gap between the two countries.

Keywords: Unit Labour Cost, Labour Productivity, Consumer Price Index, Inflation

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Introduction

The unit labour cost (ULC) measures the average nominal labour costs per unit of real output produced.[1] In Canada, ULC growth has accelerated notably since the onset of the COVID-19 pandemic in early 2020 (Chart 1). The annual ULC growth rate increased from 2.4%[2] per year for the period between the first quarter of 1981 and the first quarter of 2020 to 5.3% per year between the first quarter of 2020 and the second quarter of 2024.

The rapid increase in the ULC, especially during a period of high inflation, has attracted considerable attention from policy makers and analysts. Economic theory suggests that rising labour costs can drive up inflation unless offset by higher productivity growth or reduced profit margins.

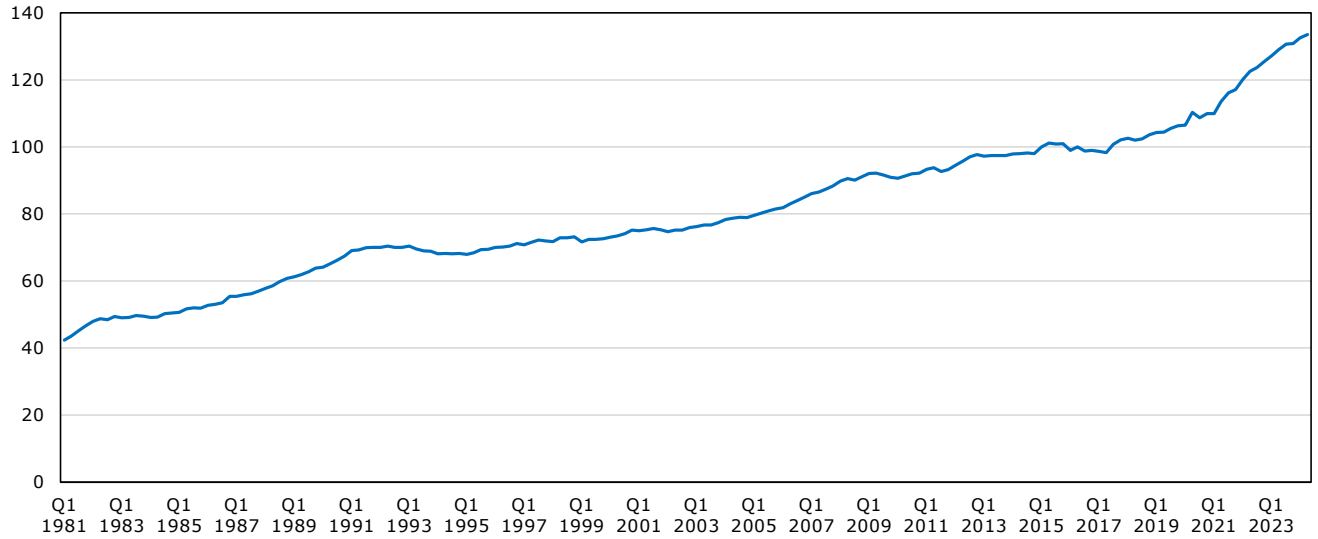
Research on the causal relationship between labour costs and price inflation is extensive yet inconclusive, as summarized by Bobeica, Ciccarelli and Vansteenkiste (2019). Studies such as those by Brauer (1997) and Rissman (1995) find evidence of a causal link from labour costs to inflation, while others such as those by Hu and Toussaint-Comeau (2010), Emery and Chang (1996), Mehra (1991), Huh and Trehan (1995), and Sbordone (2002) suggest the opposite. Some studies, such as those by Hess and Schweitzer (2000), Gordon (1988), and Darrat (1994), find no causal link at all, or report a bidirectional causality, as noted by Mehra (1993). Brauer (1997) highlights that these results vary depending on the sample period, the research question, and the specific labour cost and price metrics used.

Despite limited empirical support for cost-push inflation, labour cost trends remain closely monitored, particularly during inflationary periods. This article examines the sources of ULC growth in Canada and assesses the extent to which ULC growth diverges from inflation from the first quarter of 1981 to the second quarter of 2024. Significant deviations may indicate supply-side pressures on inflation, either upward or downward, though the actual impact also depends on demand factors.

The ULC is commonly used to compare price competitiveness across countries. For Canada, the comparison with the United States is particularly relevant, given the United States is Canada's primary trade partner and a major source of foreign investment. As Chart 2 shows, the ULC has grown faster in Canada than in the United States since 2020, suggesting that Canada has become less price-competitive relative to the Unite States. This article explores the sources of the Canada–U.S. ULC growth gap and the factors contributing to its widening.

1. Real output is typically measured in dollar values at a reference year price, rather than in physical units. As a result, the ULC becomes a ratio of dollar values at current prices to dollar values at reference year prices. Therefore, the ULC functions similarly to a price index and is unitless. This is likely why the ULC is often regarded as a broad measure of price competitiveness.
2. When not specified, log growth is used throughout the article.

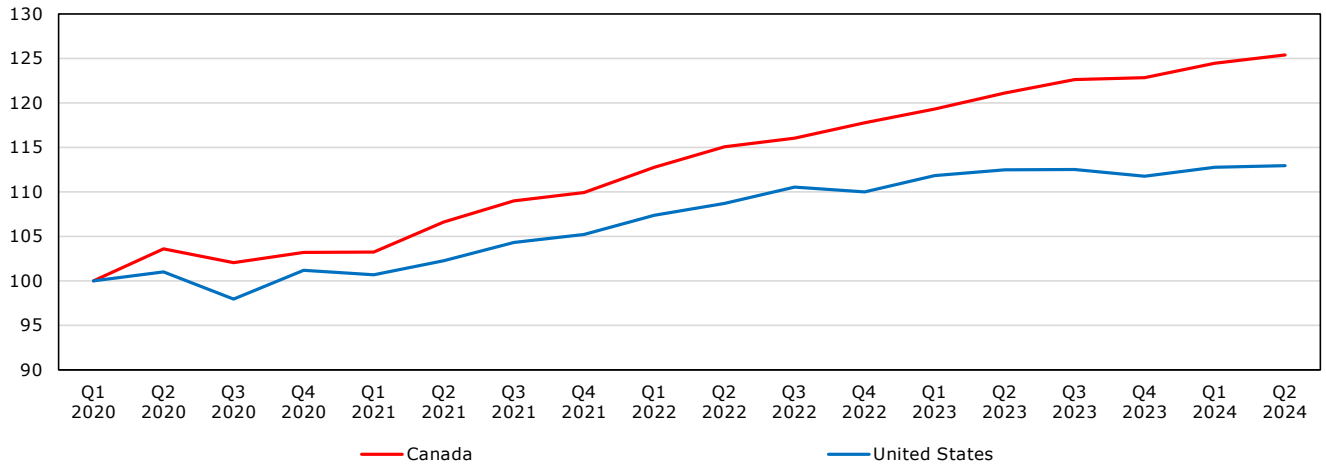
Chart 1
Unit labour cost, Canada, first quarter of 1981 to second quarter of 2024



Source: Statistics Canada, table 36-10-0206.

Chart 2
Unit labour cost movements, Canada and United States

(2020 Q1=100)



Sources: Author's compilation based on data from the U.S. Bureau of Labor Statistics on major sector productivity and costs; and Statistics Canada, table 36-10-0206.

Does growth in the unit labour cost lead to higher inflation in Canada?

To address the question, the article examines how the ULC connects to inflation. By definition, the ULC can be expressed as the ratio of nominal labour compensation to real output:

$$\begin{aligned} \text{ULC} &= \frac{\text{nominal labour compensation}}{\text{real gross domestic product}} = \frac{\text{nominal hourly compensation}}{\text{labour productivity}} \\ &= \frac{\text{real hourly compensation } (\text{w}^{\text{r}})}{\text{labour productivity}} \times \text{Consumer Price Index} \end{aligned} \tag{1}$$

where real hourly compensation (w^{r}) is calculated by deflating nominal labour compensation using the Consumer Price Index (CPI), thus reflecting the purchasing power of labour income. Formula (1) implies that when the purchasing power of labour income grows at the same pace as labour productivity (LP), the ULC and the CPI are essentially the same. The deviation between ULC growth and price inflation can therefore be expressed as follows:

$$\Delta \ln \text{ULC} - \Delta \ln \text{CPI} = \Delta \ln \left(\text{w}^{\text{r}} \right) - \Delta \ln \left(\text{LP} \right) \tag{2}$$

According to this growth accounting framework, a real wage growth rate exceeding labour productivity growth suggests that ULC growth would outpace price inflation, and vice versa. The right-hand side of framework (2) represents the potential impact on final demand from a production perspective. Faster growth in the real hourly wage rate compared with labour productivity means that the goods and services that can be purchased with the income earned from one hour of work are growing at a faster rate than those that can be produced by one hour of work. This creates excess demand for goods and services, which will put upward pressure on consumer price inflation until the excess demand is offset by reduced investment demand, lower exports or increased imports at lower prices. Therefore, a divergence between ULC growth and price inflation signals potential upward or downward pressure on inflation from the supply side.[3]

Panel A in Table 1 shows the annual growth rates for the ULC, the CPI, real hourly compensation and labour productivity in the Canadian business sector from the first quarter of 1981 to the second quarter of 2024, divided into a pre-pandemic period and period since the pandemic. Specifically, the entire sample is broken down into five subperiods: before 2000 (the first quarter of 1981 to the first quarter of 2000), the first decade after 2000 (the first quarter of 2000 to the first quarter of 2010), the second decade after 2000 (the first quarter of 2010 to the first quarter of 2020), the early pandemic period (the first quarter of 2020 to the first quarter of 2022) and the later pandemic period (the first quarter of 2022 to the second quarter of 2024).

3. The actual cost-push effect on price inflation also relies on factors from the demand side. Therefore, the causal relationship between the labour cost and price inflation needs to be tested carefully using a well-specified economic model.

Table 1

Annual growth in the unit labour cost and its components in the business sector, Canada and United States

	Before the pandemic			Since the pandemic	
	First quarter of 1981 to first quarter of 2000	First quarter of 2000 to first quarter of 2010	First quarter of 2010 to first quarter of 2020	First quarter of 2020 to first quarter of 2022	First quarter of 2022 to second quarter of 2024
			percent		
Panel A: Canada					
Log growth in ULC	2.9	2.2	1.6	6.0	4.7
Log growth in CPI	3.6	2.0	1.7	3.5	4.1
Log growth in real hourly compensation	0.8	1.1	1.3	0.9	-0.7
Log growth in labour productivity	1.5	0.9	1.4	-1.5	-1.3
Panel B: United States					
Log growth in ULC	2.6	0.5	1.7	3.6	2.3
Log growth in CPI	3.2	2.5	1.8	4.9	4.2
Log growth in real hourly compensation	1.3	0.8	1.0	0.8	-0.6
Log growth in labour productivity	1.9	2.8	1.1	2.1	1.4
			percentage points		
Panel C: Canada–U.S. growth gap					
Log growth in ULC	0.3	1.7	-0.1	2.5	2.5
Log growth in CPI	0.4	-0.4	-0.1	-1.4	-0.1
Log growth in real hourly compensation	-0.5	0.3	0.3	0.2	-0.1
Log growth in labour productivity	0.4	1.8	-0.3	3.7	2.7

Notes: ULC = unit labour cost; CPI = Consumer Price Index.

Sources: Authors' calculations based on information from Statistics Canada tables 36-10-0206 and 18-10-0004 and the labour productivity account of the U.S. Bureau of Labor Statistics.

As shown, the ULC in Canada grew at an annual rate of 2.9% from the first quarter of 1981 to the first quarter of 2000, which is significantly lower than the annual rate of price inflation (3.6%) during the same period. This was primarily because of Canada's solid growth in labour productivity (1.5% per year), which outpaced growth in real hourly compensation (0.8% per year). Over the two decades after the year 2000, ULC growth and price inflation were closely aligned, as real hourly compensation and labour productivity grew at a similar pace during the period. However, this trend changed dramatically after the onset of the COVID-19 pandemic. In the two years with pandemic lockdown policies (from the first quarter of 2020 to the first quarter of 2022), ULC growth accelerated to 6.0% per year, 2.5 percentage points higher than the annual rate of price inflation during the same period. This surge was entirely driven by a substantial decline in labour productivity. While real compensation grew near its long-term average, the drop in labour productivity (-1.5% per year) led to high ULC growth, thereby exerting supply-side pressure on inflation. In the later pandemic period, annual CPI inflation rose to 4.1% (up from 3.5% in the previous period), while ULC annual growth moderated to 4.7% (down from 6.0% in the previous period), narrowing the gap between ULC growth and CPI inflation from 2.5 percentage points to 0.6 percentage points because of a substantial slowdown in real compensation growth. The increased inflation in the later pandemic period likely reflects pent-up demand following the reopening of the economy in early 2022, along with ongoing supply-side pressures.[4]

Overall, the ULC in the Canadian business sector grew at a slower or similar pace compared with price inflation before the COVID-19 pandemic, suggesting that there was no upward pressure on inflation from the supply side during that period. However, during the pandemic, the sharp decline in labour productivity growth led to a significant acceleration in ULC growth, which may have contributed to the rise in inflation during the later pandemic period.

4. Wang (2024) found that more than 50% of the high inflation in 2022 was attributable to supply shocks.

Source of growth in the unit labour cost: Canada–U.S. comparison

As noted, ULC growth has been higher in Canada than in the United States since the onset of the COVID-19 pandemic. To understand this discrepancy, this article decomposes the Canada–U.S. ULC growth gap into its sources, based on formula (3) below:

$$\Delta \log(\frac{\text{ULC}_{\text{CA}}}{\text{ULC}_{\text{US}}}) = \Delta \log(\frac{\text{CPI}_{\text{CA}}}{\text{CPI}_{\text{US}}}) + \Delta \log(\frac{\text{w}^{\text{r}}_{\text{CA}}}{\text{w}^{\text{r}}_{\text{US}}}) - \Delta \log(\frac{\text{LP}_{\text{CA}}}{\text{LP}_{\text{US}}}) \quad (3)$$

There are three sources for the Canada–U.S. ULC growth gap in the business sector. It is positively related to the CPI inflation gap and the growth gap in real hourly compensation between the two countries, and it is negatively related to their labour productivity growth gap.

Panel B in Table 2 shows the annual growth rates for the ULC, the CPI, real hourly compensation and labour productivity in the U.S. business sector from the first quarter of 1981 to the second quarter of 2024. Unlike in Canada, ULC growth in the United States was lower than price inflation in all five subperiods, suggesting no cost-push pressure on inflation in the United States, even though the country experienced higher inflation than Canada starting in 2020.

Panel C in Table 2 shows the Canada–U.S. gap in ULC growth and its sources over five subperiods from the first quarter of 1981 to the second quarter of 2024. As shown, Canada experienced higher ULC growth than the United States over the entire sample period, except for the decade from 2010 to 2020. From the first quarter of 1981 to the first quarter of 2000, the ULC grew at a faster pace in Canada than in the United States, by 0.3 percentage points per year, mainly because Canada experienced higher inflation during the period. The effect of Canada's lower real hourly compensation growth and lower labour productivity growth was largely offset.

During the decade from 2000 to 2010, the Canada–U.S. ULC growth gap increased to 1.7 percentage points per year, despite Canada having a lower inflation rate. This ULC growth gap was entirely driven by labour productivity growth that was 1.8 percentage points higher per year in the United States compared with Canada during this period. The situation in the decade from 2010 to 2020 was quite different. Canada experienced slightly lower ULC growth and a slightly lower inflation rate than the United States. At the same time, Canada had higher labour productivity growth than the United States, but the advantage was offset by Canada's higher growth in real hourly compensation.

The COVID-19 pandemic has shifted the momentum of the Canada–U.S. gap in ULC growth. Since the onset of the pandemic in 2020, the ULC growth gap between the two countries has widened. Canada's ULC grew 2.5 percentage points faster per year than the United States' ULC, despite Canada having a lower inflation rate on average during the period. Similar to the decade from 2000 to 2010, the large ULC growth gap between the two countries since 2020 is entirely attributable to differences in labour productivity growth between the two countries. From the first quarter of 2020 to the first quarter of 2022, Canada's labour productivity declined by 1.5% per year, and by 1.3% per year from the first quarter of 2022 to the second quarter of 2024. Meanwhile, U.S. labour productivity increased by 2.1% per year and 1.7% per year, respectively.

Also, inflation dynamics in Canada and the United States since 2020 have differed significantly. During the early pandemic period (the first quarter of 2020 to the first quarter of 2022), the annual inflation rate was 4.9% in the United States and 3.5% in Canada, while the annual ULC growth was 3.6% in the United States and 6.0% in Canada. In the later pandemic period (the first quarter of 2022 to the second quarter of 2024), the annual inflation rate in the United States dropped by 0.7 percentage points to 4.2%, while in Canada, it increased by 0.6 percentage points to 4.1%. One possible explanation for the differing

dynamics is that the weak productivity growth in Canada led to much higher ULC growth than inflation, and this may have contributed to the acceleration of inflation in Canada during this period.

Conclusion

This article examines the relationship between the ULC and inflation in Canada and the United States from 1981 to 2024, with a focus on the impact of the COVID-19 pandemic. Before the pandemic, the ULC in Canada generally grew at a slower or similar pace compared with price inflation, suggesting no significant supply-side inflationary pressure. However, during the pandemic, Canada experienced a sharp acceleration in ULC growth because of a significant decline in labour productivity, which contributed to supply-side inflationary pressures.

In comparison, ULC growth in the United States was consistently lower than price inflation across all periods, indicating no cost-push pressure on inflation, even though inflation was higher in the United States than in Canada after 2020. The Canada–U.S. ULC growth gap was driven by differences in labour productivity growth, with Canada experiencing lower productivity growth, particularly after 2020. The article highlights that the rise in ULC growth in Canada during the pandemic was largely attributable to declining labour productivity, while the United States saw productivity gains.

In summary, this article shows that the pandemic has had a disproportionate effect on Canada's ULC growth relative to the United States', and that weak productivity growth in Canada, along with higher ULC growth, may have contributed to the inflationary pressures observed in the country since the pandemic.

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