Beyond the Unemployment Rate: Assessing Canadian and U.S. Labour Markets Since the Great Recession

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- Labour market conditions are important for assessing economic well-being and are crucial for informing the conduct of monetary policy. This article uses several measures of labour market activity to provide a broad perspective on the performance of the labour market in Canada and the United States since the Great Recession of 2007–09.
- The article highlights the importance of considering a broad range of information in assessing the state of the labour market and also presents a simple way to summarize much of this information in a single composite labour market indicator (LMI) for both countries.
- The LMI suggests that the unemployment rate in Canada has evolved largely in line with overall labour market conditions since the recession, but may have modestly overstated the extent of recent improvement. This contrasts with the United States, where the unemployment rate appears to have significantly overstated the improvement in broader labour market conditions.

The Great Recession of 2007–09[1] had severe consequences in both Canada and the United States, including significant net job losses, totalling 430,000 in Canada and 8.7 million in the United States. Fortunately, significant progress has been made since the crisis. The Canadian job market has proved to be particularly resilient, recovering the number of jobs it lost during the recession and adding about 600,000 more. As of December 2013, the United States had regained only about 85 per cent of its job losses. Although unemployment rates in both countries are down significantly from the sharp increases seen during the recession, the recovery in labour markets remains

1 The National Bureau of Economic Research dates the recession in the United States as having started in December 2007 and ended in June 2009, while the C.D. Howe Institute dates the recession in Canada as having started in November 2008 and ended in May 2009.

incomplete. For example, an unusually large share of the unemployed have been out of work for six months or more, and many workers who would like to work full time have been able to obtain only part-time employment.

This article attempts to sort through these various signals to create a more comprehensive picture of labour market conditions since the recession. Assessing the health of the labour market is important, since it provides a measure of economic well-being. It is also crucial for the conduct of monetary policy. In Canada, the Bank of Canada's monetary policy goal is defined by its inflation-control target, and inflationary pressures are in part determined by labour market conditions. In the United States, labour market outcomes are an explicit component of the Federal Reserve's dual mandate of achieving maximum employment and price stability. More recently, the Federal Reserve has also tied its unconventional monetary policy programs, such as quantitative easing and forward guidance, to labour market outcomes.

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The article first presents a broad set of labour market measures, focusing on their behaviour since the Great Recession.[2] It includes measures that capture various facets of the labour market to highlight the importance of considering a broad range of information when assessing its health. The article also presents a simple way to condense much of this information into a single composite labour market indicator (LMI) for both Canada and the United States. The LMI provides a simple benchmark against which to assess whether the unemployment rate—the most widely cited measure of the state of the labour market—is evolving in a manner consistent with broader labour market conditions. In Canada, the post-recession behaviour of the unemployment rate seems to have been largely representative of overall labour market conditions, although it may have modestly overstated the extent of recent improvement. The U.S. unemployment rate, in contrast, appears to have substantially overstated the post-recession improvement in labour market conditions, highlighting the need to consider a broad range of labour market variables.[3]

Measures of the Health of the Labour Market

The unemployment rate

The unemployment rate is the percentage of the labour force that does not have a job and is actively looking for work.[4] In both Canada and the United States, the unemployment rate increased sharply during the recession (**Chart 1**). In Canada, it rose from 5.9 per cent in February 2008 to a peak of 8.7 per cent in August 2009, while in the United States it rose from 4.4 per cent in May 2007 to a peak of 10 per cent in October 2009. Since 2010, unemployment rates have gradually fallen in both Canada and the United States, reaching 7.2 per cent and 6.7 per cent, respectively, in December 2013.

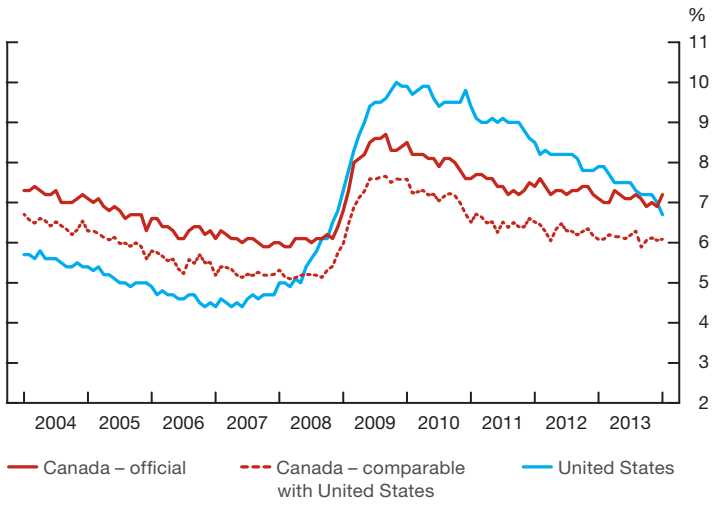
Definitional differences between the Canadian and U.S. unemployment rates make direct comparisons somewhat difficult. In Canada, the official unemployment rate is based on a working-age population that starts at age 15,

2 In cases where the available data are not seasonally adjusted, the authors use the U.S. Census Bureau's X-12-ARIMA approach to seasonally adjust the data.

3 Over time, labour market variables can be affected by country-specific structural and institutional factors. However, such factors are beyond the scope of this article.

4 The labour force is the total number of employed and unemployed. The employed are individuals who have a job or business, while the unemployed are those without work but who are available for work and are actively seeking work.

Chart 1: Unemployment rates



Sources: Statistics Canada and U.S. Bureau of Labor Statistics Last observation: December 2013

whereas in the United States the working age begins at age 16. There are also conceptual differences. For example, individuals who conduct their search for work by merely reading newspaper ads (passive job seekers) are considered unemployed in Canada but are not included in the labour force in the United States.[5] Looking only at the official measures in December 2013, it would appear that the unemployment rate was lower in the United States than in Canada (**Chart 1**). Once adjusted to the U.S. definition, however, the Canadian unemployment rate is in fact lower than in the United States. Note that the gap between the two has been narrowing, since the unemployment rate has fallen at a faster pace in the United States than in Canada.

The unemployment rate does not fully capture the extent of labour underutilization present in the economy...

Although the unemployment rate contains important information about the labour market, it may not be sufficient for gauging overall labour market conditions (Erceg and Levin 2013). The unemployment rate does not fully capture the extent of labour underutilization present in the economy, for example, if workers are discouraged from entering or remaining in the labour force, or if they are working less than they would like to.

...and is best seen within the context of a broad range of indicators

Thus, the unemployment rate is best seen within the context of a broad range of indicators. This article presents seven additional measures of the labour market to provide a broader perspective of underlying labour conditions since the recession, balancing the need to find variables that incorporate important aspects of the labour market with the need for data availability across Canada and United States.

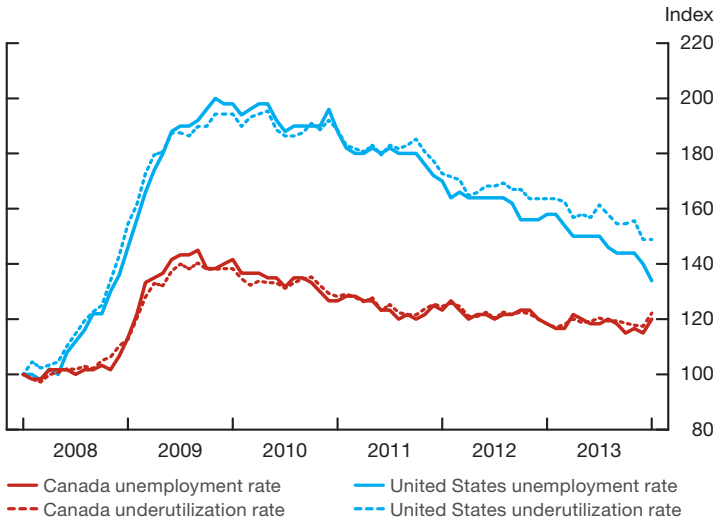
An alternative measure of labour underutilization

Alternative measures of labour underutilization supplement the unemployment rate with broader definitions of joblessness. The most comprehensive measure combines discouraged and marginally attached individuals, as well as involuntary part-time workers, with the unemployed.[6] Because of its construction, the underutilization rate tends to be higher than the official unemployment rate, but the two usually move in tandem. It is therefore instructive to see whether the two measures have followed different trajectories since the recession.

5 See Sorrentino (2000) for further details.

6 Statistics Canada labels this measure R8, and the U.S. Bureau of Labor Statistics labels it U-6.

Chart 2: Unemployment and underutilization rates
Index: December 2007 (start of the recession in the United States) = 100



Sources: Statistics Canada and U.S. Bureau of Labor Statistics Last observation: December 2013

By indexing the unemployment and underutilization rates to the same point in time, we can see more easily how the two have recently evolved (**Chart 2**). In Canada, the two measures are virtually indistinguishable over the recession and subsequent recovery. In contrast, the U.S. underutilization rate has not shown the same improvement as the official unemployment rate over the past few years. This divergence suggests that there has been less improvement in labour underutilization in the United States than would be inferred from looking only at the unemployment rate.

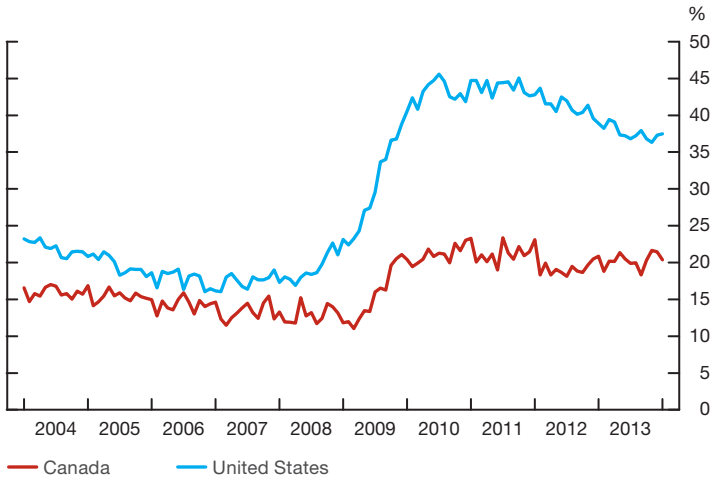
Long-term unemployment

A worrying feature of the Great Recession and its aftermath has been the large rise in long-term unemployment in both Canada and the United States. Long-term unemployment, defined as being out of work for at least 27 weeks, has many costs over and above regular spells of unemployment. Research shows that an individual's earnings can suffer permanent damage after a long stretch of unemployment (Jacobson, LaLonde and Sullivan 1993). Most alarming, long-term unemployment can be self-perpetuating, since workers who face extended periods of unemployment, in particular, may find new employment increasingly difficult to obtain. Lower wages and loss of employment opportunities could be the result of the loss of skills (Pissarides 1992) or the stigma employers attach to workers who have been unemployed for a long time (Kroft, Lange and Notowidigdo 2012).

The percentage of unemployed workers who are considered long-term unemployed rose in both countries during the recession and has remained elevated (**Chart 3**). In Canada, that percentage roughly doubled, peaking at just over 20 per cent in June 2011, and has not shown much improvement since. The rise in long-term unemployment has been even more striking in the United States. At its peak in June 2010, almost half of those unemployed had been out of work for 27 weeks or more. In contrast to Canada, however, the share of long-term unemployment in the United States has been on a gradual downward trend since 2011 (although the level of long-term unemployment, at 37 per cent in December 2013, is still much higher than its average of 20 per cent from December 2001 to November 2007). This

Chart 3: Long-term unemployment

Percentage of total unemployed



Sources: Statistics Canada and U.S. Bureau of Labor Statistics Last observation: December 2013

decline may reflect improving labour market conditions, but may also be an indication of the long-term unemployed leaving the labour force at a different rate than the unemployed as a whole (Farber and Valletta 2013).

Flows into and out of unemployment

Job-finding and separation rates provide a sense of how employment prospects in the economy are evolving. The job-finding rate measures the proportion of total unemployed workers who flow back into employment, while the separation rate measures the proportion of the total employed workers who enter unemployment. Since these data are not readily available for Canada, we construct them, as explained in **Box 1**.[7]

Box 1

Computing Job-Finding and Separation Rates

Although unemployment flows are published as part of the Job Openings and Labour Turnover Survey (JOLTS) in the United States, no such data exist for Canada. We therefore compute job-finding and separation rates in accordance with the methodology proposed by Shimer (2012). This is a simple method that uses readily available data, as follows:

$$\textit{Job-finding rate} = 1 - \left(\frac{\textit{unemployed}_{t+1} - \textit{short-term unemployed}_{t+1}}{\textit{unemployed}_{t}} \right)$$

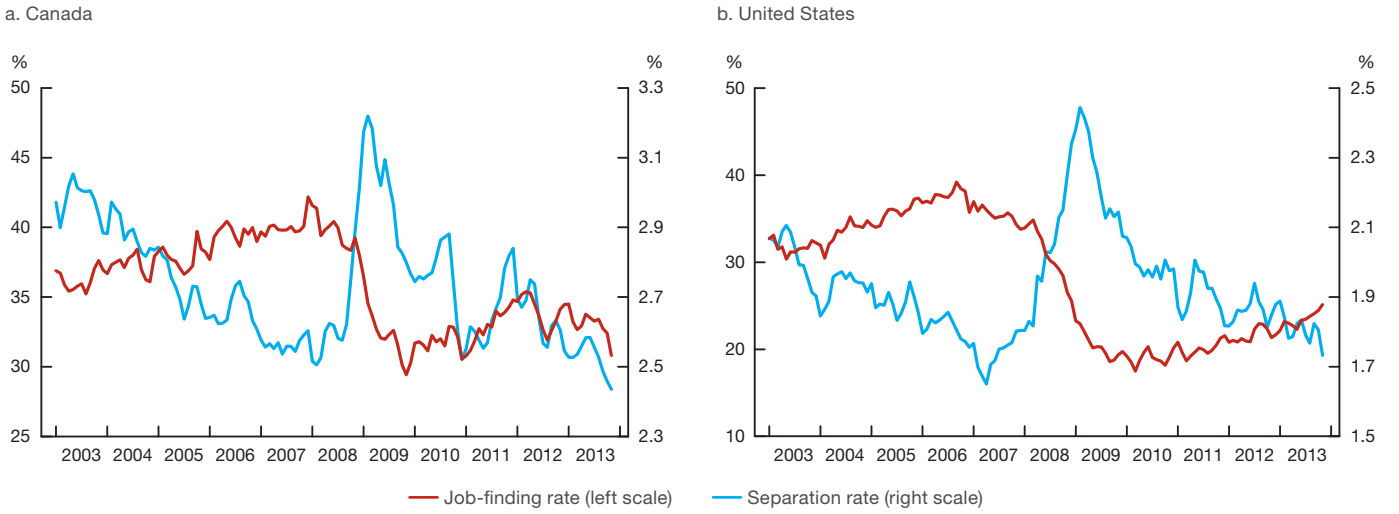
$$\textit{Separation rate} = \frac{\textit{short-term unemployed}_{t+1}}{\textit{unemployed}_{t}}$$

The time index t denotes months, and *short-term unemployed* refers to those who have been unemployed for one month or less. We find that the job-finding and separation rates in the United States are correlated with the JOLTS hiring and layoff rates at 0.92 and 0.75, respectively.

7 This method assumes that individuals do not enter or exit the labour force, but rather simply transition between employment and unemployment. Although this is unrealistic, it has been demonstrated that relaxing this assumption does not alter the dynamics of the job-finding and separation rates obtained. See Shimer (2012) for an application to U.S. data and Office of the Parliamentary Budget Officer (2012) for an application to Canadian data.

Chart 4: Unemployment flows

3-month moving average



Sources: Statistics Canada, U.S. Bureau of Labor Statistics and Bank of Canada calculations

Last observation: December 2013

In general, job-finding and separation rates have moved in opposite directions (**Chart 4a** and **Chart 4b**). This was particularly true during the recession, when, in both countries, the job-finding rate declined markedly and the separation rate rose sharply. Although the separation rates are back roughly to pre-recession levels, the recovery in job-finding rates has been much more subdued. In Canada, the job-finding rate increased at a relatively robust pace between 2010 and 2012, but has since fallen back to a level only slightly above the low point witnessed during the recession. In the United States, the job-finding rate has trended up since 2010, albeit at a gradual pace. In other words, post-recession employment gains in both Canada and the United States have been driven mainly by a decrease in the number of layoffs rather than by a significant pickup in the pace of hiring.

The labour force participation rate

The labour force participation rate (LFPR) measures the proportion of the working-age population that is either employed or actively looking for work. Slack economic conditions can cause the LFPR to fall, as either previously active job seekers become discouraged and stop searching for work or new job seekers delay their entry into the labour force.

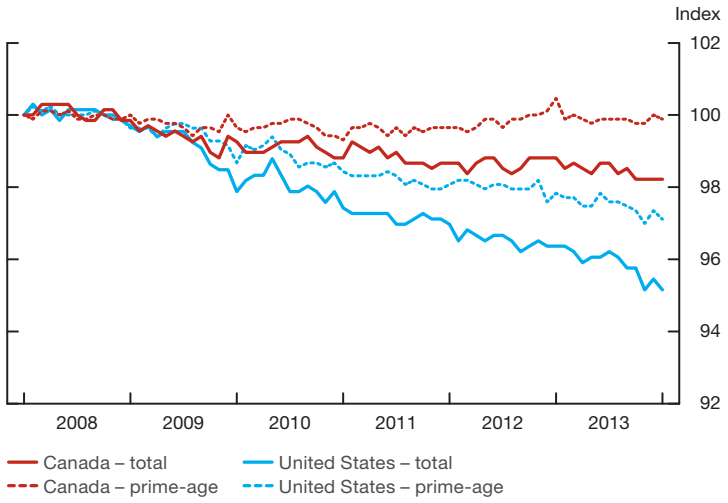
Of course, decisions to exit or enter the labour force are not determined solely by the health of the labour market. For example, labour force participation is also affected by individuals' decisions on how long to stay in school and when to retire. Interpreting movements in the LFPR can therefore be challenging. In fact, the post-recession period has coincided with important demographic shifts on both sides of the border (**Table 1**). Older individuals (defined here as age 55 and over) have represented an increasing share of the working-age population; however, the participation rate of this group is understandably much lower than that of prime-age (25 to 54) or youth (under 25) workers. Indeed, the relative importance of cyclical and demographic factors on the participation rate has been a topic of major debate in the United States since the recession (Bengali, Daly and Valletta 2013; Hotchkiss and Rios-Avila 2013; Erceg and Levin 2013).

Table 1: Share of working-age population
By age group (per cent)

	Canada		United States	
	2007	2013	2007	2013
Under 25 (youth)	16.6	15.5	16.1	15.8
25 to 54 (prime-age)	53.6	50.9	54.2	50.6
55 and over (older)	29.8	33.5	29.7	33.6

Sources: Statistics Canada, U.S. Bureau of Labor Statistics and Bank of Canada calculations

Chart 5: Labour force participation rates
Index: December 2007 (start of recession in the United States) = 100



Sources: Statistics Canada, U.S. Bureau of Labor Statistics and Bank of Canada calculations
Last observation: December 2013

The LFPR has trended down in both Canada and the United States since the onset of the recession, with the decline being particularly pronounced south of the border (**Chart 5**). Focusing on the LFPR for workers between the ages of 25 and 54 (prime-age workers) is a simple way to abstract from some of the potential impact of demographic change on the decline in overall LFPR. The prime-age LFPR in Canada fell marginally in the aftermath of the recession and has recently hovered around its pre-recession level, suggesting that much of the recent decline in the aggregate LFPR has been the result of demographic change. The picture is quite different for the United States, where the prime-age LFPR has fallen markedly since the onset of the recession, although not nearly as much as the aggregate LFPR. Thus, demographic factors appear to be only partly responsible for the declining labour force participation in the United States, suggesting worse labour market conditions than in Canada over this period.

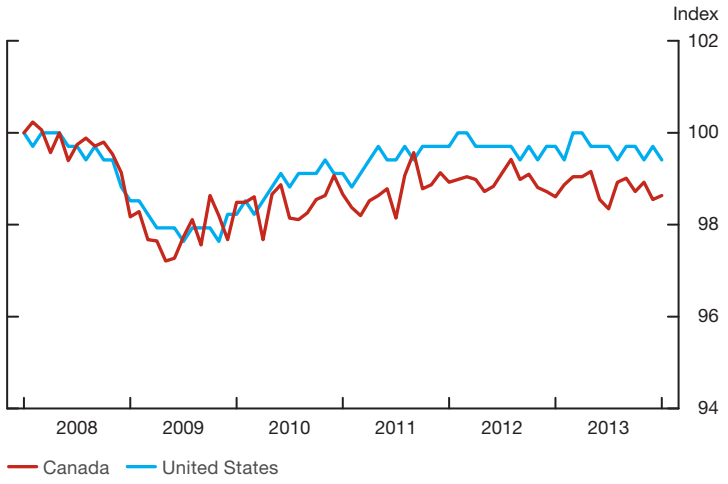
Average hours worked

During a recession, firms are likely to cut back on the number of hours that their employees work, since firing and then later rehiring employees can be costly.[8] For the same reason, firms are more likely to increase the hours of

8 Ohanian and Raffo (2012) document the importance of the average number of hours worked in the labour market adjustment process across countries.

Chart 6: Average weekly hours worked

Index: December 2007 (start of recession in the United States) = 100



Sources: Statistics Canada, U.S. Bureau of Labor Statistics and Bank of Canada calculations

Last observation: December 2013

their existing workforce rather than immediately hire new employees once a recovery begins. The length of the average workweek can therefore convey important information about momentum in the labour market.

In both Canada and the United States, average hours worked declined sharply during the recent recession and have recovered gradually since (**Chart 6**). In Canada, hours have stabilized at a level somewhat below the pre-recession value, while in the United States the recovery has been slightly more pronounced.

Overall, the recovery in average hours worked indicates an improvement in the intensity with which employed labour is being used. This development bodes well for both economies.

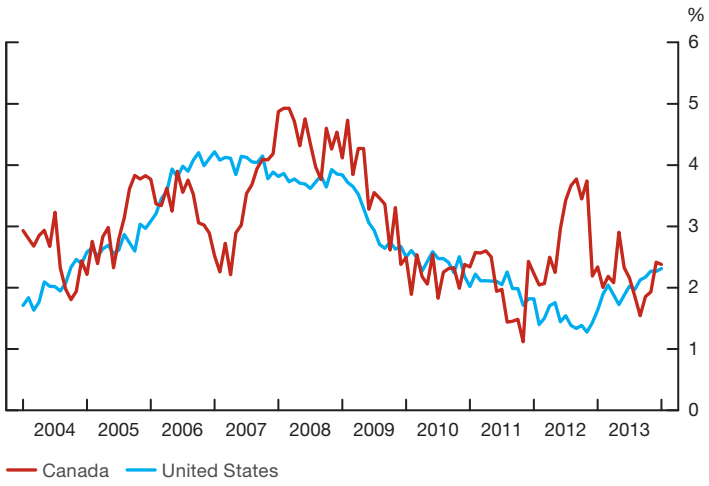
Wage growth

Definitional differences in the measures of wage growth in Canada and the United States make it difficult to compare wage growth across countries, especially since there are a wide variety of measures from which to choose.[9] Nevertheless, the measures of wage growth shown in **Chart 7** have displayed notable similarities over the past decade.

Over the four years before the recession, nominal wage growth trended up in both Canada and the United States. In 2007, it averaged 3.5 per cent in Canada and 4.0 per cent in the United States. Following the start of the U.S. recession in December 2007, wage growth in both countries held near 2007 levels for another year before slowing noticeably in 2009, and by December of that year it had reached 2.5 per cent in both Canada and the United States. These measures of wage growth have recently hovered around the 2 per cent level, averaging 2.1 per cent in Canada and 2.0 per cent in the United States in 2013. This modest wage growth in both countries is consistent with subdued demand for labour, although weak productivity growth could also be a factor.

9 Data on wage growth are from the Labour Force Survey (LFS) in Canada and the Establishment Survey in the United States. This choice is mainly because of the timeliness of the LFS, although the qualitative message does not change if we use Canada's Survey of Employment, Payrolls and Hours (SEPH). Data for Canada represent the total economy, while for the United States the data cover only the private non-farm sectors.

Chart 7: Average hourly wages
Year-over-year percentage change



Sources: Statistics Canada and U.S. Bureau of Labor Statistics

Last observation: December 2013

A Broader Measure of Labour Market Activity

The labour market indicator provides a simple benchmark against which to judge whether the unemployment rate is evolving in a manner consistent with broader labour market conditions

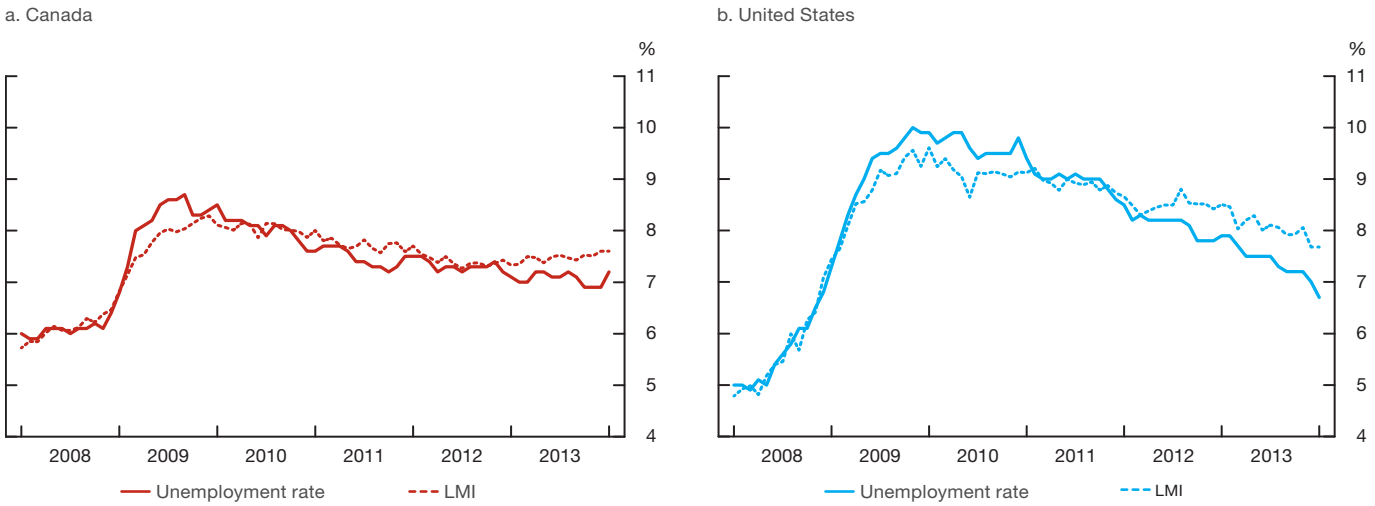
To consolidate the information contained in the various labour market measures shown in the preceding section, we construct a labour market indicator (LMI) for both countries using a statistical technique known as principal-component analysis. This technique extracts the common movement across the eight labour variables to create a simple summary measure of labour market activity. The LMI is scaled to be comparable with the unemployment rate,[10] and thus provides a simple benchmark against which to judge whether the unemployment rate is evolving in a manner consistent with broader labour market conditions. **Chart 8a** and **Chart 8b** show the results for Canada and the United States, respectively.

In both instances, the LMIs closely track the unemployment rate, rising rapidly at the onset of the recession and then falling slowly once the recession ends. Over the post-recession period (2010–13), the Canadian LMI declined 0.5 percentage points, while the unemployment rate fell 0.9 percentage points, suggesting that the latter may have modestly overstated the extent of improvement in the labour market. In contrast, there appears to have been a larger and more persistent disconnect between the LMI and the unemployment rate in the United States. From 2010 to 2013, the LMI and the unemployment rate declined 1.1 and 2.3 percentage points, respectively, suggesting that the unemployment rate may have substantially overstated the post-recession improvement in labour market conditions in the United States.[11]

10 Principal-component analysis identifies patterns in data by converting a set of possibly correlated variables into a set of linearly uncorrelated variables called principal components. The first principal component accounts for as much of the variability in the data as possible. The summary labour market indicators calculated for Canada and the United States are set equal to the first principal component, and are then scaled to the unemployment rate by regressing each country's unemployment rate on its LMI and a constant.

11 All variables are in level terms, except for average weekly hours, which are expressed as a year-over-year percentage change. Note that principal-component analysis requires stationary variables. While some of these series fail conventional unit root tests, this could be because of the short time span used or the weakness of these tests. To address these concerns, we remove the trend in our data using the Hodrick-Prescott filter, which is the approach used by Barnes et al. (2007), and find that it does not materially alter the results of our analysis.

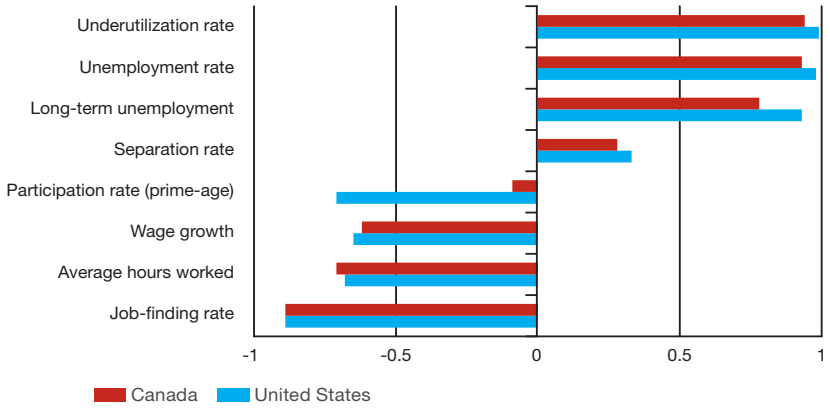
Chart 8: Unemployment rate and labour market indicator (LMI)



Source: Statistics Canada and Bank of Canada calculations

Last observation: December 2013

Chart 9: Correlations with the labour market indicator



Source: Bank of Canada calculations

The fact that the unemployment rate has fallen more rapidly than the LMI in both countries suggests that other labour market measures have not shown as much improvement as the unemployment rate. In Canada, the modest divergence can likely be attributed to the job-finding rate and the percentage of long-term unemployed. As shown in **Chart 9**,[12] these are among the measures that are most highly correlated with the Canadian LMI and, as indicated in the preceding section, have displayed limited improvement following the recession.

These variables also appear to be partly responsible for the divergence between the LMI and the unemployment rate in the United States, although other factors are also at play. In particular, the U.S. underutilization rate and the prime-age labour force participation rate have been on a less favourable trajectory than the unemployment rate, contributing to relatively less improvement in the LMI.[13]

◂ *The fact that the unemployment rate has fallen more rapidly than the labour market indicator suggests that other labour market measures have not shown as much improvement*

12 Chart 9 shows the correlation between each labour market measure and the LMI for both countries. If a labour measure and the LMI have a positive (negative) correlation, the LMI will generally increase (decrease) as the measure increases.

13 The prime-age participation rate is also much more correlated with the LMI in the United States than in Canada.

Conclusion

This article has discussed the development of labour market conditions since their rapid deterioration during the Great Recession of 2007–09 and has analyzed the recent co-movements in key labour market measures for both Canada and the United States. Given the importance of labour market outcomes to monetary policy decisions, monetary authorities in both Canada and the United States will continue to monitor these developments closely. This article highlights the need to consider a broad range of labour market variables in addition to the unemployment rate. Although the unemployment rate in Canada has evolved largely in line with overall labour market conditions since the recession, the article has shown that it may have modestly overstated the extent of recent improvement. This contrasts with the United States, where the unemployment rate appears to have significantly overstated the improvement in broader labour market conditions.

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