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# The US Labour Market: How Much Slack Remains?



by Robert Fay and James Ketcheson

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## **The US Labour Market: How Much Slack Remains?**

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## Abstract

Despite the US unemployment rate being close to estimates of the non-accelerating-inflation rate of unemployment (NAIRU), measures of underemployment remain elevated, which could be an indication of remaining labour market slack. The shares of involuntary part-time workers and long-term unemployment are high relative to the current stage of the business cycle, suggesting available labour inputs are being underutilized. Improvement in these areas could meaningfully increase US labour utilization and support economic growth. Another large potential source of labour market slack exists outside the labour force caused by the relatively low participation rate, which has fallen by more than 3 percentage points since 2007. Most analysis, including that in this note, finds that the aging population is an important factor behind this decline, indicating that there is less slack than implied by the drop in the headline participation rate. However, there is considerable uncertainty about whether the decline in participation unrelated to aging is driven by structural or cyclical phenomena and is therefore representative of slack. Nevertheless, a review of the historical experience suggests that a sizable number of persons outside the labour force could be “activated” and drawn back into the market under much “hotter” labour market conditions. But further research is needed to assess whether the historical relationship is a relevant guide in the current context.

*JEL classification:* E, E2, E24, J, J2, J21, J23

*Bank classification:* International topics; Labour markets; Recent economic and financial developments

## Résumé

Bien que le taux de chômage aux États-Unis soit proche des estimations du taux de chômage non accélérationniste (TCNA), il subsiste encore une marge de ressources inutilisées dans ce pays, comme en témoigne le niveau élevé de diverses mesures du sous-emploi. En effet, la proportion de travailleurs occupant involontairement un poste à temps partiel et celle des chômeurs de longue durée demeurent importantes à ce stade-ci du cycle économique, ce qui donne à penser que le facteur travail disponible est sous-utilisé. Des améliorations dans ces proportions pourraient accroître sensiblement l'utilisation du travail et soutenir la croissance économique. De plus, cette marge de ressources inutilisées pourrait aussi, dans une large mesure, trouver son explication hors de la population active, dans le taux d'activité relativement faible, celui-ci ayant reculé de plus de 3 points de pourcentage depuis 2007. Dans la plupart des analyses, y compris celle-ci, le vieillissement de la population est présenté comme un important facteur pour expliquer le recul du taux d'activité, ce qui implique que la marge de ressources inutilisées serait moins grande que ne l'indique la baisse du taux d'activité officiel. Il existe cependant une incertitude considérable quant à la question de savoir si la baisse de l'activité qui n'est pas liée au vieillissement est attribuable à un phénomène cyclique ou bien structurel et si elle est donc bien indicatrice de ressources inutilisées. L'examen des

données historiques porte cependant à croire qu'un nombre non négligeable d'individus dans la population inactive pourraient redevenir « actifs » et réintégrer le marché du travail si celui-ci s'avérait plus tendu. Des recherches plus approfondies sont nécessaires pour déterminer si la relation qui se dégage de l'analyse des données historiques est toujours pertinente dans le contexte actuel.

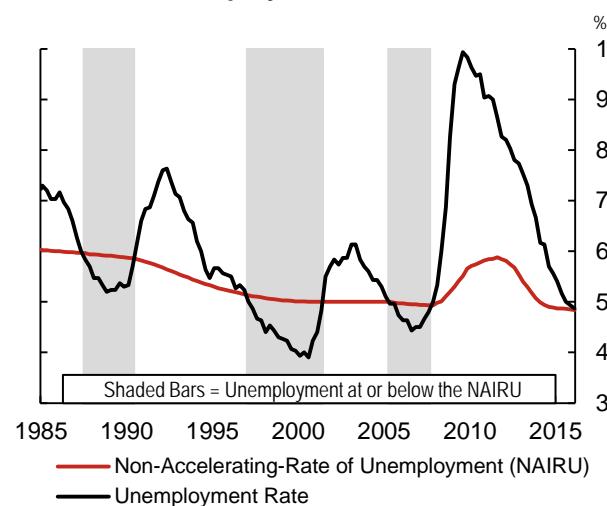
*Classification JEL : E, E2, E24, J, J2, J21, J23*

*Classification de la Banque : Questions internationales; Marchés du travail; Évolution économique et financière récente*

## Section 1 | Introduction

The US unemployment rate has declined markedly in recent years and currently sits around estimates of the non-accelerating-inflation rate of unemployment (NAIRU) (**Chart 1**). Despite this improvement, wage pressure remains moderate, which could be an indication of remaining labour market slack. The Bank of Canada's labour market indicator (LMI) for the United States—a broad measure of US labour market developments that summarizes the information of 10 different indicators—also suggests that slack may remain despite low unemployment.<sup>1</sup> This measure has not declined to the same extent as the unemployment rate in recent years and remains elevated compared with its level in the mid-2000s (**Chart 2**).<sup>2</sup>

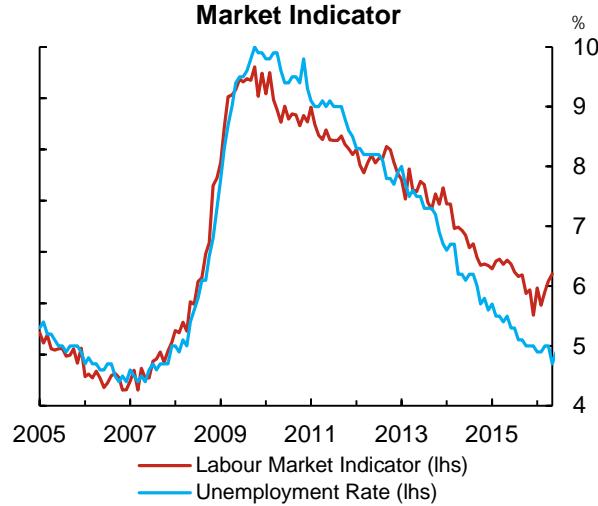
**Chart 1: Unemployment Rate vs. the NAIRU**



Sources: US Bureau of Labor Statistics;  
Congressional Budget Office; Haver Analytics

Last observation: 2016Q2

**Chart 2: Unemployment Rate vs. the Labour Market Indicator**



Sources: US Bureau of Labor Statistics;  
Haver Analytics; Bank of Canada calculations

Last observation: May 2016

After breaking down the LMI's performance, we find that three important factors that explain its higher level are (i) an elevated share of workers working part-time for economic reasons (involuntary part-time);<sup>3</sup> (ii) a high proportion of long-term unemployed workers in total

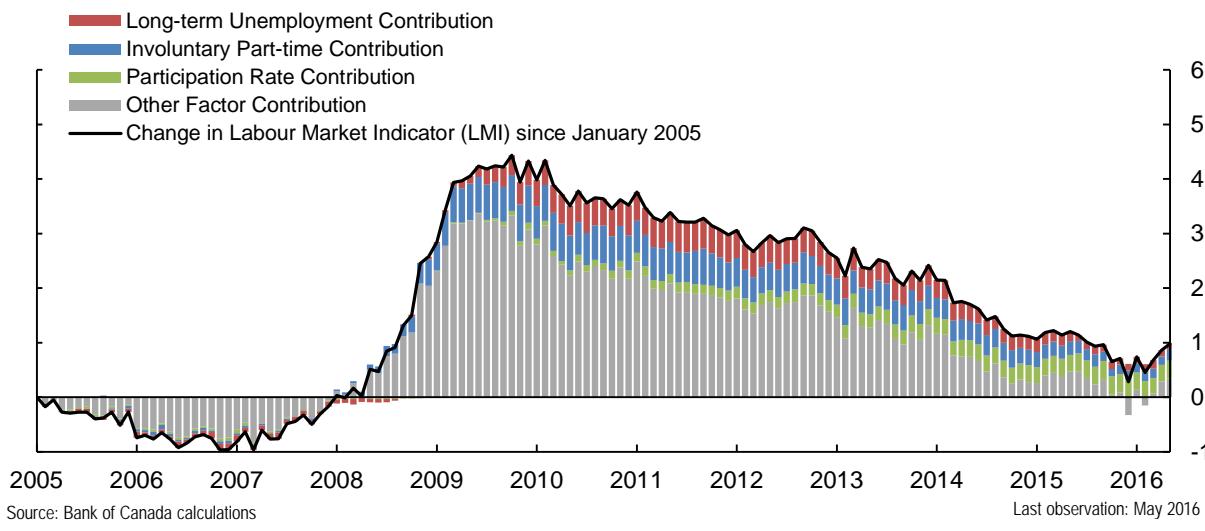
<sup>1</sup> See Khan and Zmitrowicz (2014) for background information on the LMI.

<sup>2</sup> A similar trend has been observed in the U6 measure of labour underutilization, which also suggests that slack remains. U6 is the broadest indicator of underutilization reported by the US Bureau of Labor Statistics because it measures the share of persons who are unemployed, working part-time for economic reasons and are marginally attached to the labour force (i.e., those who are currently neither working nor looking for work but indicate they want a job, are available to work and have looked for work in the past 12 months). The U6 stood at 9.6 per cent in June 2016, significantly above the rate before the 2007–09 financial crisis (e.g., 8.3 per cent in 2007).

<sup>3</sup> This measure includes individuals working 1 to 34 hours per week who indicate that they would prefer and are available to work full-time but are unable to due to an economic reason (e.g., slack work or unfavourable business conditions, inability to find full-time work or seasonal declines in demand).

unemployment;<sup>4</sup> and (iii) a low US participation rate (**Chart 3**). The following sections consider the magnitude of labour market slack that these factors could represent.

**Chart 3: Changes in LMI Since January 2005**



Source: Bank of Canada calculations

Last observation: May 2016

Note: Other factor contribution represents changes in the Labour Market Indicator resulting from the unemployment rate, average hourly earnings, change in nonfarm payrolls, average hours worked, initial unemployment claims, the hiring rate and the quits rate.

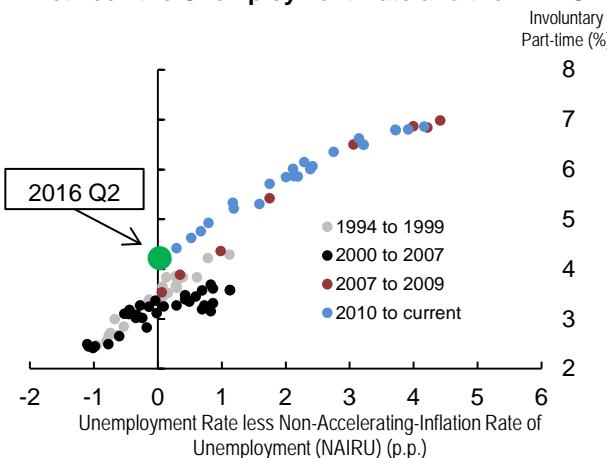
## Section 2 | Meaningful slack from involuntary part-time and long-term unemployment that could be activated with a tighter labour market remains

To assess whether the shares of involuntary part-time workers and long-term unemployment are elevated relative to the current unemployment rate, we plot these measures against the gap between the unemployment rate and the NAIRU in **Chart 4** and **Chart 5**. These measures are about 1 percentage point and 10 percentage points above levels historically observed at this stage of the business cycle, respectively. These elevated measures suggest that available labour inputs are being underutilized.

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<sup>4</sup> Long-term unemployed workers represent individuals who are jobless and have been looking for work for 27 weeks or longer.

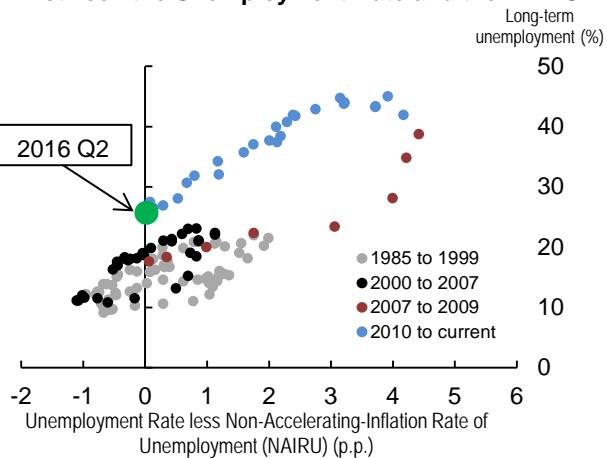
**Chart 4: Involuntary Part-Time vs. the Gap Between the Unemployment Rate and the NAIRU**



Sources: US Bureau of Labor Statistics; Congressional Budget Office; Haver Analytics; Bank of Canada calculation  
Last observation: 2016Q2

Note: Data begins in 1994 given that a break in the data occurs this year due to definitional changes.

**Chart 5: Long-Term Unemployment vs. the Gap Between the Unemployment Rate and the NAIRU**



Sources: US Bureau of Labor Statistics; Congressional Budget Office; Haver Analytics; Bank of Canada calculations  
Last observation: 2016Q2

The slack from these areas would likely be reduced if the US labour market were to tighten further. For example, **Chart 4** and **Chart 5** also show that the shares of involuntary part-time workers and long-term unemployment have historically declined when the unemployment rate drops below the NAIRU. If the labour market tightens and these measures were to decline back to their 2007 levels, we estimate that the active labour input in the United States would expand by the equivalent of 1.3 million persons (0.8 per cent of the US labour force), all else being equal. This is larger than the total annual growth in the US labour force in 2015 (1.2 million persons), suggesting that these areas represent meaningful slack:

- A reduction of 8 percentage points in the share of long-term unemployment (back to its 2007 level) would result in about 600,000 fewer unemployed persons (based on data from 2016Q2), representing 0.4 per cent of the US labour force.
- A decline of 1 percentage point in the share of involuntary part-time employment (back to its 2007 level) would reduce the number of persons in this category by 1.4 million. We estimate this would increase the active labour input by around half this amount, or about 700,000 persons, representing 0.5 per cent of the US labour force.<sup>5</sup>

<sup>5</sup> Based on the 2015 American Time Use Survey, we estimate that the average part-time worker worked 48 per cent of the total hours of a full-time employee and could thus only increase their labour input by around 50 per cent. This reflects the fact that (i) part-time employees work on average 53.1 per cent of the days of the year whereas the average full-time employee works 72.2 per cent of days; and (ii) part-time employees worked on average 5.31 hours per day, whereas the average full-time employee worked 8.06 hours per day.

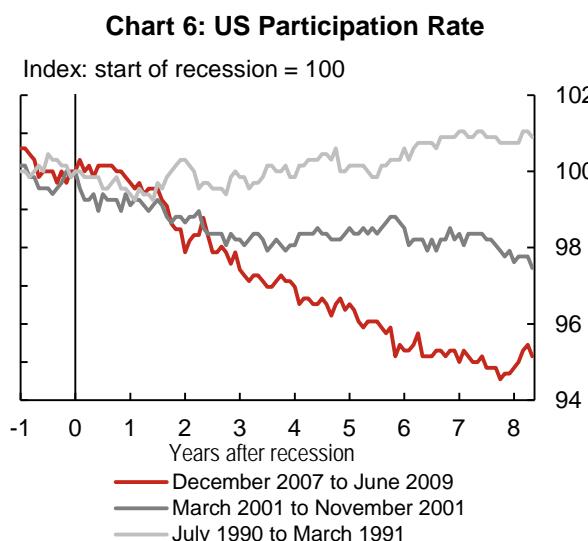
## Section 3 | The low US participation rate suggests potentially larger labour market slack, although population-aging has contributed to the decline

The relatively low US labour force participation rate represents a potentially much greater source of labour market slack. From 2007Q4 to 2016Q2, the participation rate has fallen 3.2 percentage points from 65.9 per cent to 62.7 per cent—a much larger drop relative to previous business cycles (**Chart 6**). This represents a decline of about 8.2 million persons or 5.2 per cent of the US labour force.<sup>6</sup>

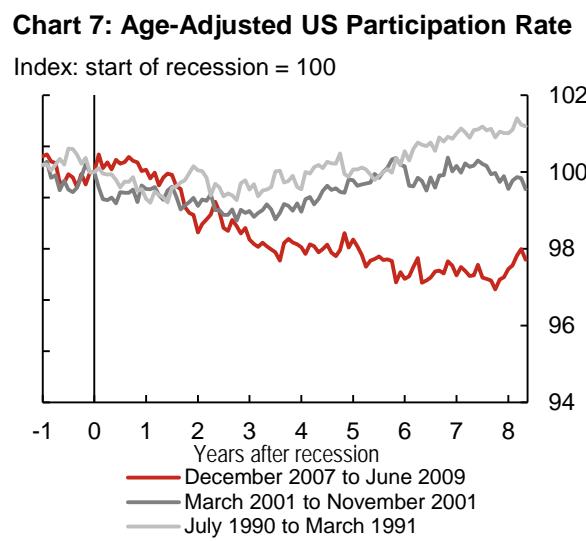
However, the literature suggests that about half of the decline in the participation rate can be attributed to structural population aging, which is unlikely to reverse.<sup>7</sup> We assess this finding using two methodologies, with our results confirming the recent studies. This suggests there is less labour market slack than implied by the total recent decline in the headline participation rate.

### *Estimating an age-adjusted participation rate*

We first assess the effect of US population aging by calculating an age-adjusted US participation rate, with the age distribution held fixed at 1990 levels (**Chart 7**). We find that the magnitude of the decline in the age-adjusted participation rate since 2007Q4 is about half the size of the actual decline in the participation rate. This suggests that close to half of the recent decline in participation can be attributed to structural population aging.



Sources: US Bureau of Labor Statistics; Haver Analytics; Bank of Canada calculations



Sources: US Bureau of Labor Statistics; Haver Analytics; Bank of Canada calculations

<sup>6</sup> Based on the current size of the US non-institutional population aged 16 and older (253 million, as at 2016Q2).

<sup>7</sup> For example, see Aaronson et al. (2014)

### *Assessing the reasons for non-participation*

Another way to assess the effect of aging is to break down the decline in the participation rate into five mutually exclusive categories based on individual responses to questions in the Current Population Survey on reasons for not participating in the labour force.<sup>8, 9</sup> We find that of the total decline in the participation rate from 2007Q4 to 2016Q1 of 3.2 percentage points, about half is due to a rise in the number of retirees (1.8 percentage points), which is in line with the estimates presented in **Table 1**.<sup>10</sup>

**Table 1: Change in US Participation Rate, by Category of Person**

	Total Change: Pre-Recession Period to Current (2007Q4 to 2016Q1) p.p. change	% of total change
<b>Participation Rate</b>	<b>-3.2</b>	<b>100</b>
<i>Contribution from Retirement</i>		
<b>Non-Retirement Factors</b>	<b>-1.8</b>	<b>57.1</b>
<i>Persons with Disabilities</i>	<b>-1.4</b>	<b>42.9</b>
<i>Persons in School</i>	<b>-0.7</b>	<b>22.6</b>
<i>Discouraged</i>	<b>-0.3</b>	<b>10.0</b>
<i>Other Reason</i>	<b>-0.3</b>	<b>8.5</b>
	<b>-0.1</b>	<b>1.8</b>

Source: Fujita (2014), with updated data available at <https://www.phil.frb.org/research-and-data/economists/fujita>

## Section 4 | Low participation due to non-aging factors could represent meaningful labour market slack

Two different ways of examining the decline in the participation rate suggest that about half of it is likely due to changing demographics and the aging population. But how much of the non-aging component reflects possible additional labour supply? In this area, there is a high degree of uncertainty. This section presents analysis that points to two different answers to this question.

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<sup>8</sup> The Current Population Survey is the monthly survey of US households used to generate key labour force data (e.g., employment, unemployment and participation rates).

<sup>9</sup> These classifications are based on the methodology and data developed by Fujita (2014), who classifies persons outside the labour force as those that either are retired, have disabilities, are in school, are discouraged (i.e., want a job but have not searched for work) or have another reason. As a result of data limitations, the “in school” category only applies to those aged 16 to 24, although Fujita finds that omitting older age groups only has a minor effect on the data.

<sup>10</sup> The total decline of 3.2 percentage points in the participation rate reported based on this methodology is slightly different than the actual decline of 3.1 percentage points in the official participation rate because this micro data relies on internal seasonal adjustments.

*One view suggests the non-aging decline in participation is mostly structural*

**Chart 7** shows that following the 1990–91 and 2001 US recessions, the age-adjusted participation rate generally recovered back to its pre-recession level within six years of the downturn, suggesting the non-aging declines were cyclical. However, a similar recovery has not occurred in the current cycle, raising the question of whether the non-aging decline in participation this time around is related to structural phenomena and not indicative of remaining slack.

This hypothesis appears to be supported when considering the non-retirement factors for the decline in the participation rate presented in **Table 2**. The large majority of the decline in this area is due to an increasing share of persons who (i) reported being unable to work as a result of a disability or (ii) who are in school. However, the share of these persons had been rising for more than a decade well, before the 2007–09 financial crisis (**Chart 8** and **Chart 9**). Accordingly, the recent literature suggests that the rise in these areas represent longer-term trends and that the decline in participation from these persons will likely not reverse.<sup>11</sup>

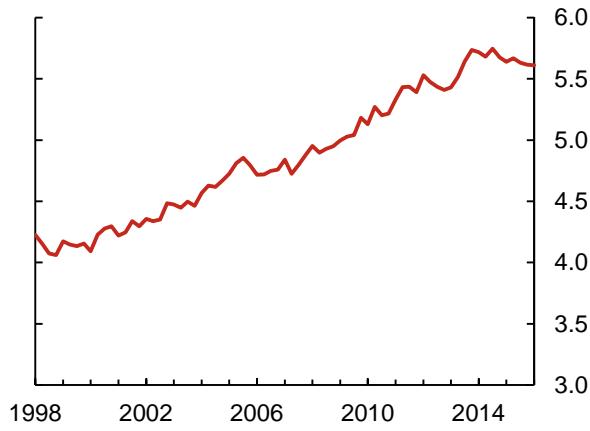
**Chart 8: Persons in School  
(% of Population 16+)**



Sources: Fujita (2014); US Bureau of Labor Statistics

Last observation: 2016Q1

**Chart 9: Persons with Disabilities  
(% of Population 16+)**



Sources: Fujita (2014); US Bureau of Labor Statistics

Last observation: 2016Q1

This suggests that, of the total decline in the participation rate related to non-retirement factors, only the decline of 0.3 percentage points related to discouraged workers may represent

<sup>11</sup> For example, see Aaronson et al. (2014) and Duggan and Imberman (2009). There has been a long-term rise in school enrolment rates, which is suggested to be linked to higher earnings premiums for college grads. Various structural factors have been linked to the rising share of persons with disabilities, including US population aging, increasing financial incentives to apply for disability insurance and the extension of disability insurance to individuals with mental health and musculoskeletal issues (e.g., back pain, arthritis).

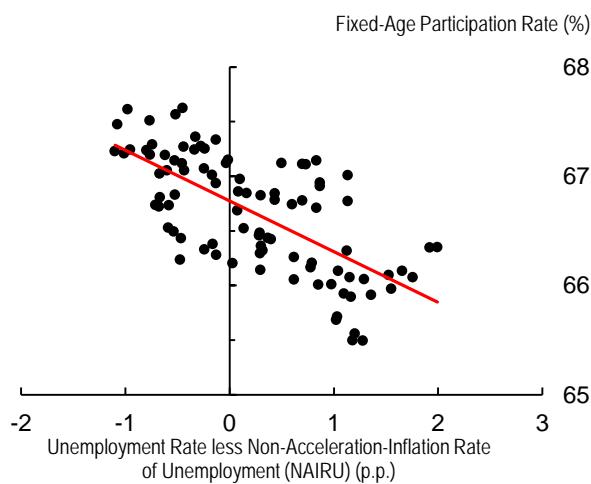
potential labour supply that could be brought online.<sup>12</sup> An increase in the participation rate of this magnitude would increase the US labour force by around 800,000 persons or 0.5 per cent.

*Participation rate upside could exist even in areas where the decline appears structural, although tighter labour market conditions are likely required*

There is reason to believe the depressed level of the age-adjusted participation rate could represent a larger source of labour market slack than the analysis above would suggest. As previously mentioned, while the age-adjusted participation rate recovered following the 1990–91 and 2001 US recessions, this has not been the case in the current cycle. However, the recovery in the current cycle is distinct in that it has occurred in the wake of a much larger downturn and has proceeded much more gradually.<sup>13</sup> As a result, the labour market has only recovered slowly and not tightened substantively enough such that the unemployment rate has dropped below the NAIRU—a development that occurred following both the 1990–91 and 2001 recessions.

The historical experience suggests that the unemployment rate dropping below the NAIRU may have been an important factor driving the recovery in the participation rate in previous cycles. For example, we find a strong correlation between the age-adjusted participation rate and the gap between the unemployment rate and the NAIRU. Specifically, **Chart 10** plots our age-adjusted participation rate presented in Section 3 against the unemployment rate–NAIRU gap from 1985 up to the 2007–09 financial crisis, with the red line depicting the linear relationship between these series. The chart shows that, excluding age-related effects, the participation rate has historically risen during periods of labour market tightness, with the slope of this relationship implying that the age-adjusted participation rate rises 0.5 percentage points for every 1.0 percentage point that the unemployment rate falls below the NAIRU.<sup>14</sup>

**Chart 10: Fixed-Age Participation Rate vs. the Gap Between the Unemployment Rate and NAIRU**



Sources: US Bureau of Labor Statistics; Congressional Budget Office; Bank of Canada calculations Last observation: 2007Q4

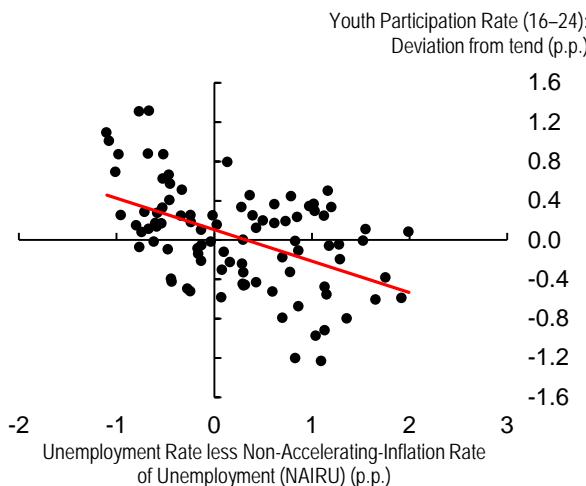
<sup>12</sup> We do not consider the decline of 0.1 percentage points in the participation rate from persons providing an “other reason” for non-participation as representative of slack because they only represent those specifying that they do not want a job.

<sup>13</sup> The weak recovery in the current cycle is consistent with international historical experience in the aftermath of severe financial crises. See Reinhart and Rogoff (2008).

<sup>14</sup> This is the linear relationship implied by regressing our age-adjusted participation on the unemployment rate–NAIRU gap over the sample period from 1985Q1 to 2007Q4.

Deeper analysis suggests that this correlation is most apparent when looking at how the participation rates of younger Americans (those aged 16 to 24) and prime-age female workers (those aged 25 to 54) have behaved during episodes of labour market tightness. For example, **Chart 11** and **Chart 12** plot the deviation in these participation rates from their trend levels<sup>15</sup> from 1985 up to the 2007–09 financial crisis against the unemployment rate-NAIRU gap. The correlations suggest that the participation rates of younger Americans and prime-age females are relatively more sensitive to business cycle developments.<sup>16</sup>

**Chart 11: Youth Participation vs. the Gap Between the Unemployment Rate and the NAIRU**



Sources: US Bureau of Labor Statistics; Congressional Budget Office; Bank of Canada calculations  
Last observation: 2007Q4

**Chart 12: Prime-Age Female Participation vs. the Gap Between the Unemployment Rate and the NAIRU**



Sources: US Bureau of Labor Statistics; Congressional Budget Office; Bank of Canada calculations  
Last observation: 2007Q4

Overall, this analysis provides some evidence that there could be additional slack due to the low participation rate, although it would appear to require the labour market to tighten much further than its current state for the slack to be activated. For example, if the unemployment rate were to fall 1 percentage point below the NAIRU (as was the case following the 1990s US recession) and the historical relationship between the age-adjusted participation rate and the unemployment rate-NAIRU gap (as depicted by the red line in **Chart 10**) reasserts itself, a “back-of-the-envelope” calculation suggests that the participation rate could rise by 0.5 percentage points, excluding aging-related effects. A rise of this magnitude would increase the US labour force by 1.3 million persons—close to double that implied by the earlier analysis presented in this section. However, further research is required to test the robustness of this relationship.

<sup>15</sup> Trend levels are calculated using the Hodrick-Prescott (HP) filter.

<sup>16</sup> Using the same methodology, we find weaker correlations between the participation rates of prime-age males and older Americans (55+) against the state of the labour market, as measured by gap between the unemployment rate and the NAIRU. This suggests the participation rates of these workers are not as sensitive to the business cycle.

## Conclusion

Despite the US unemployment rate being close to estimates of the non-accelerating inflation rate of unemployment (NAIRU), measures of underemployment remain elevated, suggesting labour market slack may remain.

The shares of involuntary part-time workers and the long-term unemployment are high relative to the current stage of the business cycle, suggesting available labour inputs are being underutilized. Improvement in these areas could meaningfully increase US labour utilization and support economic growth.

Another large potential source of labour market slack exists outside the labour force as a result of the low participation rate. Most analysis, including that in this note, finds that the aging population is an important factor behind this decline, indicating that there is less slack than implied by the headline participation rate. However, there is considerable uncertainty about whether the decline in participation unrelated to aging is driven by structural or cyclical phenomena and representative of slack. Nevertheless, a review of the historical experience suggests that a sizable number of persons outside the labour force could be “activated” and drawn back into the market under much “hotter” labour market conditions. Further research is, however, needed to assess whether the historical relationship is a relevant guide in the current context.

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