The implications of an evolving Labour Force Survey on key economic variables

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Introduction

Previous literature (e.g. Brochu (2013)) has revealed significant changes in the Canadian Labour Force Survey. In particular, survey non-response rates have increased since the mid-1990s, requiring Statistics Canada to modify their approach in dealing with this problem. Additionally, key labour market variables, such as wages, are collected in the first month of the six-month survey window, only being updated if an individual's labour market status changes. These matters can in large part be accounted for in the confidential-use LFS files, but not in the public-use LFS files. Thus, the aforementioned issues introduce important implications in examining labour market outcomes using the public-use files of the Labour Force Survey. This project will examine rising non-response rates in the LFS and also attempt to reveal structural breaks in public-use data that may be attributed to changes in the Labour Force Survey. The findings of this project, accompanied by further research, will provide insight into whether the public-use files are appropriate for use in empirical research.

Principal modifications to the LFS

In 1976, the survey experienced a considerable redesign as a result of increased demand for new information and more reliable data. The revision included the introduction of a structurally contemporary LFS questionnaire, new survey content particularly focused on hours worked and job searchers, a sample redesign through restratification, telephone interviewing, rotation groups, and an increase in the sample size of by 20,000 households. (Statistics Canada, n.d; Platek and Singh, 1977). Prior to 2002, household non-response was dealt with using carry-forward imputation. Consecutive months of non-response resulted in the termination of household data and an adjustment of household weights. From 2002 to 2004, households eligible for carry-forward imputation were automatically treated as reoccurring non-respondents. In 2005, a longitudinal hot deck method was introduced which carries forward socio-demographic data but imputes the remaining variables using a hot deck approach (David et al.,2005).

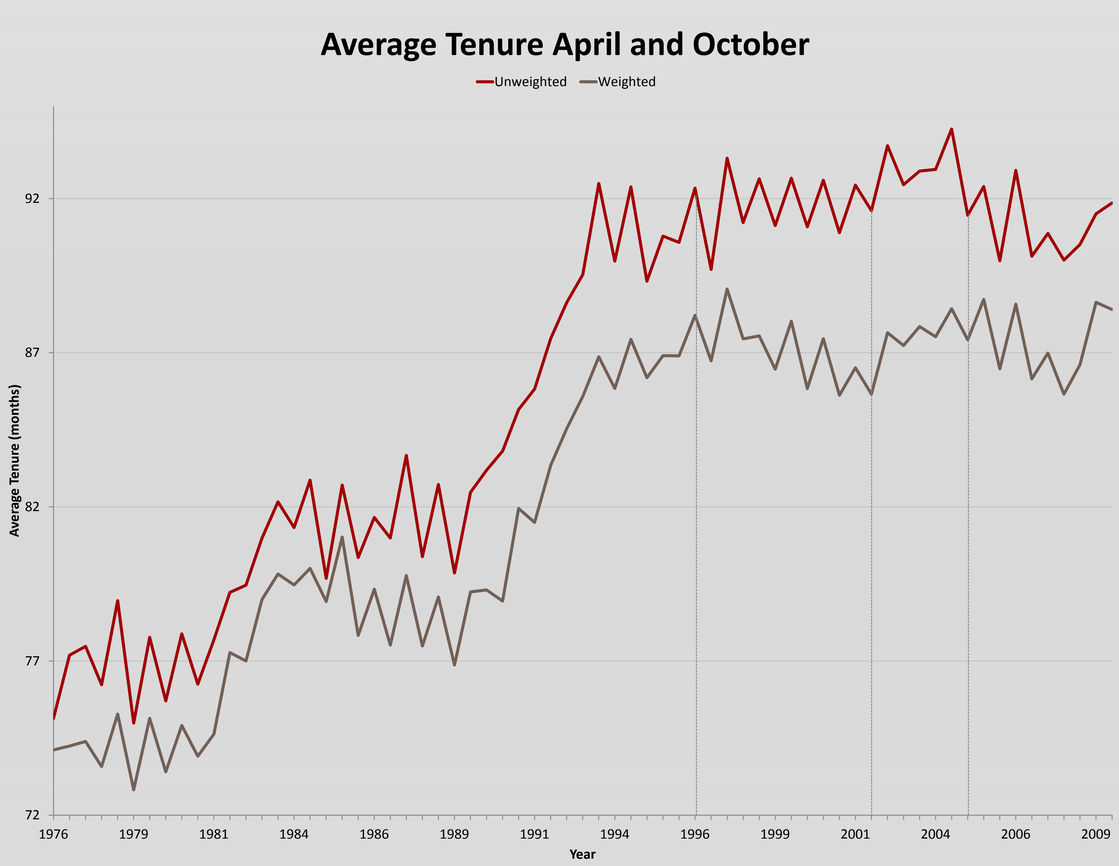
Non-response in the LFS

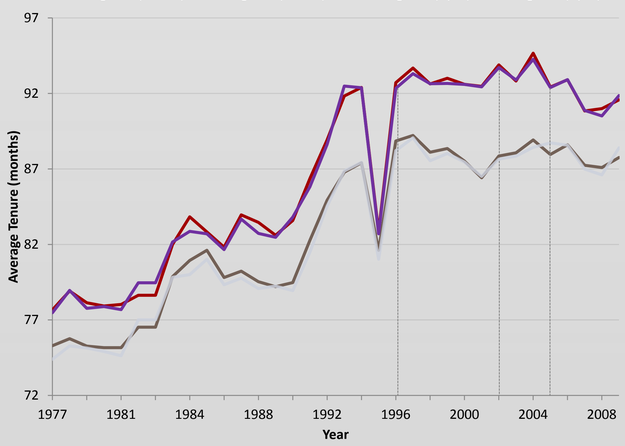
Non-response rates can be used as one measure of quality for the LFS. As explained by Gower (1979), higher non-response rates leads to relatively higher sampling variability of labour market indicators. The variability is inversely proportional to LFS response rates. For example, estimates produced with a 25% non-response rate will have (90/75)—or 1.2 times—the sampling variability of estimates produced with a 10% non-response rate. Furthermore, if the features on non-respondents differ from respondents, a higher non-response rate will introduce bias into estimates. Historically, non-response rates have averaged around 5-8%. More recently, however, non-response rates have averaged approximately 10% (Statistics Canada, 2014). This rise in non-response rates should be considered when evaluating labour market outcomes.

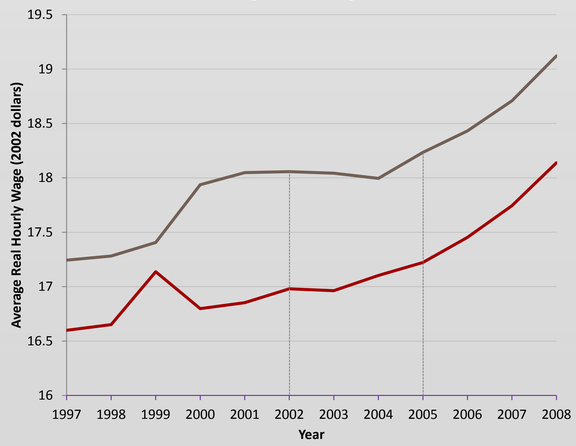
Methodology

Summary statistics of the data contained in the public-use files were produced in order to identify potential structural breaks in the historical series of key labour market outcomes. A time-series graph plotting the weighted and unweighted average of tenure and real hourly wage was then assembled, which includes dotted vertical lines representing noteworthy LFS modifications.

Due to the seasonality of non-response rates, time-series plots were created using annual and semi-annual data. The chosen months for semi-annual outcomes were the pairings April, October and March, September. Furthermore, a plot of tenure using both March and April data was created in order to evaluate potential differences attributed to higher non-response rates in March.







Conclusion

The spread between average unweighted and weighted tenure has grown since the mid-1990s. This period also coincides with the beginning of rising non-response rates. The difference between average unweighted and weighted tenure appears to be largest in the early 2000s and began to contract post-2004. It should be noted that Statistics Canada implemented hot deck imputation in 2005.

It does not appear as though there are breaks in the average real hourly wage associated with periods of LFS modification. Furthermore, rising non-response rates in March do not appear to cause significant changes in average unweighted and weighted tenure.

Acknowledgements

A sincere thank you to Professor Pierre Brochu for offering his time, passion, and expertise in support of this research project, and to Statistics Canada for providing the necessary resources. This project was made possible by the UROP grant. Thank you for this opportunity.

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