The Duration of Unemployment: A User Guide

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ABSTRACT

The objective of this paper is to introduce in a new measure of the average duration of unemployment spells using Canadian data. The paper summarizes the work of Corak (1993) and Corak and Heisz (1994) on the average complete duration of unemployment in a non-technical way by focusing on the distinction between it and the average incomplete duration of unemployment, which is regularly released by Statistics Canada. It is pointed out that the latter is a lagging cyclical indicator. The average complete duration of unemployment is a more accurate indicator of prevailing labour market conditions, but some assumptions required in its derivation also imply that it lags actual developments.

Key words: Unemployment, Duration, Dynamics, Canada.

1. Introduction

The unemployment rate, while certainly being one of the most closely watched economic indicators, offers on its own a rather incomplete picture of the labour market. An unemployment rate of say 10 per cent may reflect a situation in which 10 per cent of the labour force becomes unemployed each month and spends only a few weeks looking for a job, or a case in which the same 10 per cent of the labour force is unemployed for the entire year. In the first case the labour market is characterized by a great deal of flux with a spell of unemployment not having serious consequences, while in the latter it is a stagnant market with unemployment implying severe hardship. The implications of these two scenarios for the well-being of the unemployed are very different. To accurately understand the situation requires a reliable indicator of the average duration of a spell of unemployment.

The design of the Labour Force Survey (LFS) recognizes the inherently dynamic nature of the labour market. Among other things unemployed individuals are asked to report the number of weeks they have been actively looking for work. The responses to this question have been used to calculate the average duration of unemployment, a statistic that has been regularly released since 1977. This statistic, however, could more accurately be called the average *incomplete* duration of unemployment because it is based upon the length of unemployment spells up to the time of the reference week.

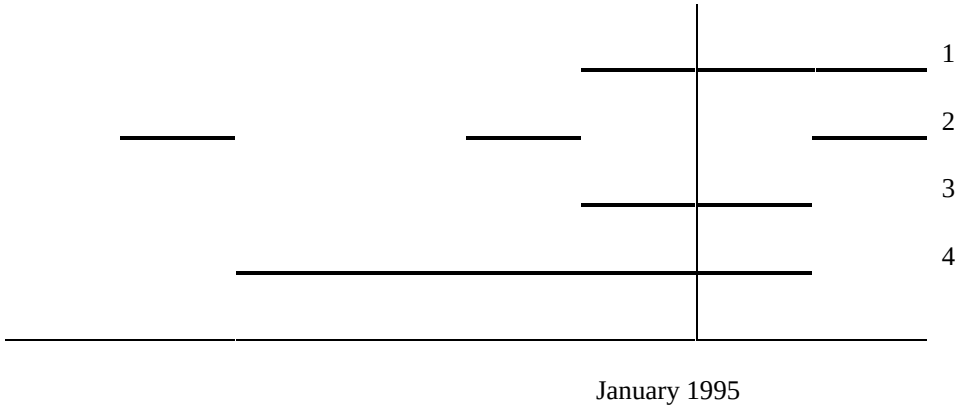
This statistic is certainly valuable, but it does not address all the concerns that users of the LFS may have. In particular, it should not be interpreted as an indicator of current labour market conditions: it does not represent the average length of time that individuals becoming unemployed can expect to spend looking for a job. The objective of this note is to introduce a new statistic, the average *complete* duration of unemployment, to discuss the differences between it and the average incomplete duration, and to outline the appropriate uses and limitations of each.

2. The Average Incomplete Duration of Unemployment

The LFS is a "point in time" survey: it provides a snapshot of the labour market activity of a representative sample of individuals during the reference week for each month that it is conducted. Such a methodology faces certain challenges when it comes to measuring the duration of time spent in a particular labour force state such as unemployment. These are illustrated in Figure 1. In this figure the length of time that four different individuals spend unemployed is represented by a series of horizontal lines. If a survey of these individuals were conducted at a particular point in time, say January 1995, it would capture three of them while they were experiencing a spell of unemployment, individuals 1, 3 and 4. These individuals would report the length of their spells up to the point in time the survey

took place, that is, the lengths of the lines labeled 1, 3, and 4 truncated at January 1995.

Figure 1: Measuring the Duration of Unemployment from a Point-In-Time Survey



This makes clear that the statistic released by the LFS is a biased measure of the complete length of an unemployment spell. This bias, referred to as a *length* bias arises from the fact that the length of unemployment spells are captured only up to the time of the reference week. Quite clearly then the statistic that has been released by the LFS should be interpreted as the average *incomplete* duration of unemployment. If a length bias were the only bias in surveys of this type it would imply that the average incomplete duration of unemployment is an understatement of the average complete duration.

There is, however, another bias that works in the opposite direction. This is known as a *sampling* bias, and relates to the fact that the probability an unemployed individual will be sampled is proportional to the length of his or her unemployment spell: the longer the spell the greater the chances that the individual will be included in the survey. As a result those with short spells of unemployment will be underrepresented. For example, individual 2 in Figure 1 (who experiences repeated short spells of unemployment) is not included in the survey. The sampling bias implies that the information used by the LFS to calculate the average duration of unemployment is over weighted with individuals who experience long spells of unemployment. If this were the only bias the average incomplete duration of unemployment would tend to overstate the average complete duration. Both biases are in fact at play, and it is not immediately apparent whether the average incomplete duration of unemployment overstates or understates the average complete duration.

3. The Average Complete Duration of Unemployment

The new statistic introduced in this publication is the average complete duration of unemployment for a cohort of individuals that begin their spell of unemployment at the same time. It is a measure of the complete length of an unemployment spell, and is based upon the assumption that the economic conditions prevailing at the time a cohort becomes unemployed will continue throughout the entire spell. In what follows, it is referred to simply as the average complete duration of unemployment.

Under ideal circumstances a cohort of individuals could be followed from the month they become unemployed through their entire unemployment experience, and the length of time spent unemployed noted for each individual. A longitudinal survey of this sort would offer an accurate estimate of the average complete duration of unemployment but be prohibitively expensive to conduct on a regular basis. However, it is possible to examine the unemployment experience of a "synthetic" cohort of individuals: that is to examine different individuals through time, but individuals who as a group are representative of a single cohort. A schematic representation of this procedure is offered in Figure 2. The path of solid arrows leading through the darkly shaded boxes represents the unemployment experience of the cohort that became unemployed in January. In each month a different group of individuals is captured by the LFS, but those reporting to be unemployed for more than one month but less than two, during for example February, are representative of those who began their unemployment spells in January and are still unemployed the next month.[1] Similarly those reporting unemployment of more than two months but less than three in the March survey accurately represent the individuals in the January cohort who go on to experience unemployment at least that long. An estimate of the average complete duration of unemployment can be calculated by noting the number of individuals in each of the darkly shaded boxes and continuing this "forward tracking" of the synthetic cohort until there is no one left.

Unfortunately this approach would not produce very timely statistics since some individuals actually experience unemployment spells that are up to two years long. If this method were adopted the average complete duration of unemployment could only be produced after approximately a two year lag. For example, it would be determined sometime during 1993 what the complete duration of unemployment was for those individuals becoming unemployed during January 1991. Timeliness dictates that a simplifying assumption be used, namely that

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[1] In fact individuals remain in the LFS sample for six months, with one sixth of the entire group being replaced each month. The synthetic cohort approach makes no use of this rotational sample design to track individuals through time for the period that they are in the sample.

current economic conditions remain constant for the duration of the cohort's unemployment spell. This is done by comparing the number unemployed across all reported durations between adjacent surveys, and is illustrated by the lightly shaded boxes in Figure 2 (a "backward tracking"). The changes in the number of unemployed along the dashed lines between the current and previous months are used to approximate the experience of the cohort currently becoming unemployed. This information is used to compute the average complete duration of unemployment.[2]

Figure 2: Measuring the Duration of Unemployment from a Synthetic Cohort Approach

4. A Comparison of the Two Statistics

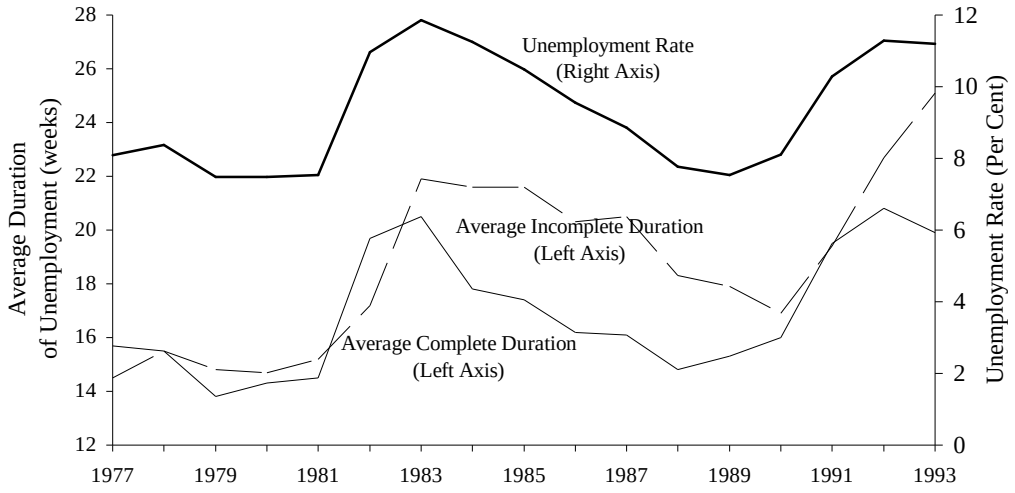
The average complete duration of unemployment measures the length of time that individuals becoming unemployed can expect to look for a job, while the average incomplete duration measures the length of time that currently unemployed individual have been looking for a job. Each of this statistics has its uses, but it should be stressed that the former is a more accurate indicator of prevailing labour market conditions.

This point can be illustrated by comparing the cyclical variations in the two statistics. In Figure 3 the relationship between each statistic and the Canada wide unemployment rate is illustrated using annual data from 1977 to 1993. The average incomplete duration of unemployment is slow to respond to changes in economic conditions (represented in this figure by the unemployment rate) with the result that the average incomplete duration measure is a *lagging* cyclical indicator. This

[2] In actual fact the previous month is used only for reported durations of one, two, and three months in length. Sample size considerations require that the cohort be examined through increasingly wider windows of 4 to 6 months, 6 months to one year, and one year to about two years. This requires using information from as far as one year in the past. See Corak and Heisz (1994) for a more detailed explanation of the procedure.

is in large part due to the fact that this duration measure is affected by the composition of the unemployed, which changes over the business cycle. At the onset of a recession large inflows into unemployment result in the stock of unemployed becoming more heavily weighted with individuals just beginning a spell of unemployment. While these individuals may ultimately experience long spells of unemployment, only the length of unemployment up to the time of the survey is used in calculating the average spell length. For example, between 1981 and 1982 as the economy entered into recession the unemployment rate increased by 3.5 percentage points, but the average duration increased by about only one week. Similarly, as the economy moved from expansion to recession between 1989 and 1990 the unemployment rate increased, but the average incomplete duration actually fell.[3]

Figure 3: Average Incomplete and Complete Duration of Unemployment



The pattern is just the opposite during recovery and expansion: flows into unemployment fall, and the stock of unemployed becomes more heavily weighted with individuals who are in the midst of rather long spells that began during the recession and reflect the state of the economy during that period. Thus, as recovery took hold in 1983, the unemployment rate rose by less than one percentage point, but the average duration increased by about five weeks. Between 1983 and 1985 expansion was well under way and the unemployment rate fell 1.5 percentage points, but there was virtually no change in the average incomplete duration of unemployment. Similarly between 1992 and 1993 the unemployment

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[3] The 1981-82 recession began in July 1981 and ended in November 1982. The Statistics Canada turning points for the recession of the 1990s have not been established, but the recession most probably began in April 1990 and ended in mid 1992.

rate fell slightly, but the average duration of unemployment increased by almost 2.5 weeks.

If the nature of this statistic is not appreciated there is a risk of misinterpreting the information it provides. Observers not aware of the fact that the average incomplete duration refers to the experience that the currently unemployed have faced (not the experience that the newly unemployed will face), and also not aware that changes in the average incomplete duration can be influenced by the composition of past and current inflows face the risk of misinterpreting cyclical variations in this statistic. They will not recognize that it is a lagging cyclical indicator and may argue that the labour market situation is deteriorating just when it is improving, as in 1993, or improving just as it is deteriorating, as in 1990.

In contrast the cyclical variation in the average complete duration of unemployment for those just becoming unemployed more closely resembles that of the unemployment rate, which reflects the fact that this statistic is much closer to being a *coincident* cyclical indicator - it varies with economic changes rather than lagging behind. Furthermore, the turning points in the movement of the statistic correspond to peaks and troughs in labour market conditions. The average complete duration peaks at the same time as the unemployment rate, declines during recovery and expansion, and increases immediately with the onset of recession. The change in this statistic during the recession of the 1990s appears to follow roughly the same path as during the 1981-82 recession. The situation faced by those becoming unemployed during the early 1990s is not much different on average than that faced by those becoming unemployed a decade earlier. During 1983 the average complete duration of unemployment was 20.5 weeks, during 1992 it was 20.8 weeks.[4]

In addition to differences in cyclical variation the information in Figure 3 also illustrates that the two statistics display different levels, with the average incomplete duration being longer than the average complete duration for most years. Over the entire 1977-93 period the average incomplete duration is 18.7 weeks, while the average complete duration is 16.6 weeks. This suggests that the sampling bias outweighs the length bias.

It is in fact possible to obtain a complete spell measure from the average incomplete duration, but like the cyclical variation of this statistic it also requires careful interpretation. Under steady state conditions (when the rates of both inflow to and out of unemployment are not changing) the LFS will on average capture unemployment spells at their mid-point. Therefore the complete spell length for the currently unemployed can be approximated by doubling the average incomplete

[4] Corak (1993) points out that in spite of this unemployment has been more "polarized" during the recent recession: the short term unemployed faring relatively better, but the long-term unemployed faring worse.

duration. For example, during the 1979-81 period the unemployment rate was steady at about 7.5 per cent. This may be taken as an indication that the labour market was in a steady state. The average incomplete duration of unemployment for each of those years was 14.8, 14.7, and 14.9 weeks implying that the average length of an unemployment spell for those unemployed when the survey was taken of almost 30 weeks. This is a very long time to be unemployed, and underscores the fact that most of the total time spent unemployed economy wide is accounted for by the long-term unemployed. Unfortunately it is a rare occasion when the labour market is in a steady state for any extended length of time. Cyclical fluctuations, for example, occur regularly. Using this simple doubling rule will lead to an overestimate of complete duration as a recession turns into a recovery, and an underestimate when an expansion turns into a recession.

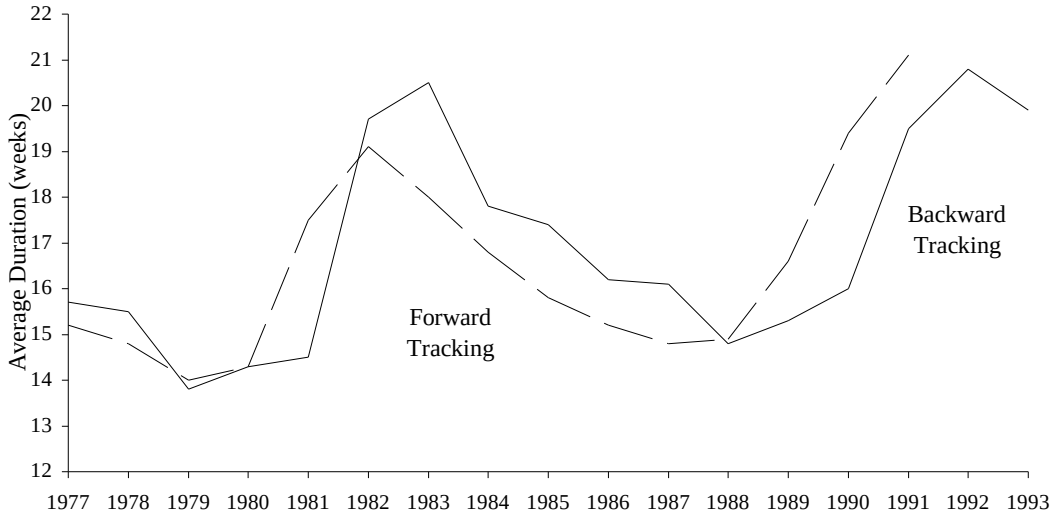
5. Limitations of the Average Complete Duration of Unemployment

While the average complete duration of unemployment is a more accurate indicator of future labour market conditions than the average incomplete duration it may not be entirely accurate because it is based upon an assumption that the current situation will prevail. As mentioned this assumption is required because of the lags in producing the statistic associated the forward tracking of a synthetic cohort. Forward tracking is nonetheless of interest as a check on the extent of error in the backward tracking approach.

Figure 4 displays the annual averages of each of these statistics from 1977 onward. Since the forward tracking method requires two years of future data it is only available up to 1991. The statistic derived from the backward tracking method lags that derived by the forward tracking method. This is particularly so at business cycle turning points. During 1981 (when the 1981-82 recession began) the former is three weeks shorter than the latter, but during 1983 (once the expansion was under way) it was 2.5 weeks longer. A gap of a similar magnitude, 3.4 weeks, also appears during 1990, the onset of another recession. Thus, even though the average complete duration is a more accurate indicator of current labour market conditions than the average incomplete duration it also is a slightly lagging indicator.

Corak and Heisz (1994) note that this caution also applies to seasonal variations. The forward tracking method produces a statistic that on average falls by 3.3 weeks each March from its level in February. This improvement in labour market conditions is signaled a month later by the backward tracking method: the average complete duration falls between April and March by 4.6 weeks on average. Similarly in the autumn the forward tracking statistic begins to lengthen between August and September (increasing from 14.8 to 15.4 weeks). In contrast the backward tracking statistic falls between August and September (from 15.5 weeks to 12.4 weeks) and only begins to increase during the next month.

Figure 4: Average Complete Duration of Unemployment: Backward Tracking and Forward Tracking Methods



6. Conclusion

No single statistic can summarize the nature of unemployment in the Canadian labour market. The unemployment rate is the most watched indicator released by Statistics Canada but it needs to be supplemented with measures of the duration of unemployment. This note has introduced a new measure of the average duration of unemployment the average complete duration of unemployment for a cohort of individuals that begin their spell of unemployment at the same time. This statistic is a valuable complement to the average incomplete duration of unemployment for the currently unemployed that has been released regularly since 1977. A comparison of the cyclical properties of each statistic reveals that the average incomplete duration is a lagging cyclical indicator, while the average complete duration is much closer to being a coincident indicator. Even so the derivation of the latter is based upon an assumption that causes it to lag actual developments slightly. Users of LFS data may find both statistics to be of value depending upon their needs, but should in all cases be aware of the limitations of each.

Appendix: Annual Figures for the Average Complete Duration of Unemployment

Table A-1: Average Expected Completed Duration of Unemployment, By Canada and Region: 1977-93 (weeks)

Year	Canada	Ontario	Rest of Canada
1977	15.7	15.6	15.8
1978	15.5	15.3	15.7
1979	13.8	13.4	14.0
1980	14.3	14.2	14.5
1981	14.5	13.5	15.1
1982	19.7	19.3	20.1
1983	20.5	19.3	21.3
1984	17.8	16.2	18.6
1985	17.4	15.2	18.6
1986	16.2	14.2	17.2
1987	16.1	13.5	17.3
1988	14.8	11.8	16.2
1989	15.3	12.8	16.5
1990	16.0	15.0	16.5
1991	19.5	21.0	19.0
1992	20.8	23.0	19.7
1993	19.9	21.3	19.2

Table A-2: Average Expected Completed Duration of Unemployment, By Reason for Unemployment: 1977-93 (weeks)

Year	Job Leavers	Labour Force Entrants	Job Losers	Permanent Layoffs
1977	19.2	13.3	16.7	21.1
1978	18.9	13.7	15.8	19.4
1979	15.9	12.4	14.2	16.9
1980	16.6	12.7	14.9	18.7
1981	16.8	12.7	15.3	18.7
1982	25.6	17.6	20.4	26.5
1983	27.4	17.9	20.9	26.3
1984	23.8	15.2	18.2	21.3
1985	22.8	14.8	17.6	20.3
1986	20.8	13.0	17.0	19.4
1987	20.3	14.3	16.0	18.6
1988	20.1	12.5	14.9	17.5
1989	18.5	13.4	15.5	18.1
1990	19.1	13.8	16.4	19.8
1991	25.5	15.5	20.2	25.1
1992	26.1	18.5	21.3	25.6
1993	25.9	17.9	20.2	24.4

Table A-3 : Average Expected Completed Duration of Unemployment, By Gender and Age: 1977-93 (weeks)

Year	Males	Females	15 to 24 Years	25 to 44 Years	45 + Years
1977	16.3	15.0	14.8	16.0	19.2
1978	15.8	15.1	14.0	16.4	18.9
1979	14.2	13.4	12.6	14.5	16.7
1980	15.1	13.5	13.0	15.0	18.1
1981	15.9	13.2	13.1	15.5	18.3
1982	21.7	17.5	18.0	20.7	23.5
1983	22.0	18.7	18.3	22.0	24.5
1984	18.8	16.4	14.7	19.7	22.5
1985	18.9	15.8	14.3	18.7	23.5
1986	17.3	15.0	13.3	17.5	22.2
1987	16.5	15.7	12.8	17.9	20.7
1988	15.5	14.1	11.8	16.2	19.3
1989	15.9	14.7	11.3	17.3	20.7
1990	17.0	14.8	12.6	17.4	19.7
1991	21.3	17.8	15.8	20.8	25.2
1992	22.1	19.3	15.2	22.5	28.7
1993	20.9	18.8	15.7	21.6	24.3

Table A-4: Average Expected Completed Duration of Unemployment, By Educational Attainment: 1977-93 (weeks)

Year	Primary Only	Some Secondary or Secondary Graduation	Some Post-Secondary or Post-Secondary Graduation
1977	18.3	15.6	14.4
1978	17.2	15.1	15.5
1979	15.8	13.5	13.3
1980	16.8	13.9	14.1
1981	17.3	14.1	14.0
1982	20.4	19.4	20.4
1983	21.7	20.7	19.6
1984	19.4	17.4	18.2
1985	19.8	17.4	16.6
1986	18.0	16.3	15.4
1987	20.6	15.8	15.3
1988	17.8	14.4	14.8
1989	19.8	15.0	15.0
1990	18.1	14.9	17.9
1991	23.1	19.0	19.4
1992	21.9	20.2	21.5
1993	19.7	19.9	20.4

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