Labour market gross flows data from the Labour Force Survey

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Introduction

The Labour Force Survey (LFS) has the largest coverage of any household survey in the UK and provides information about people’s employment status and conditions, as well as many other characteristics. The data are published in a wide range of outputs and are used by government to develop and monitor labour market practices.

Although the LFS is a cross-sectional survey, a longitudinal dataset can be created over a limited time interval. Respondents are interviewed for five consecutive quarters over a 12-month period, with 20 per cent of the sample being replaced at each quarter.

ONS currently produces longitudinal datasets where respondents have been linked over two and five quarters. These datasets can be used to analyse movements between employment, unemployment and inactivity.

Most people do not change status between quarters: 72.7 per cent of working-age adults were employed in both autumn and winter quarters in 2004, 19.1 per cent were inactive in both and 1.9 per cent were unemployed in both quarters.

A small proportion does experience transitions: around 6 per cent changed status. The largest groups are those moving from being inactive to employed or from employed to inactive (1.3 per cent between autumn and winter 2004).

Longitudinal datasets are known to be subject to a number of biases. The most accurate way of presenting longitudinal LFS data is to present the flows using a four-quarter moving average.

Key points

- Labour Force Survey (LFS) respondents are interviewed for five consecutive quarters and longitudinal datasets can be produced which link respondents over two and five quarters.
- These datasets can be used to analyse movements between employment, unemployment and inactivity.
- Most people do not change status between quarters: 72.7 per cent of working-age adults were employed in both autumn and winter quarters in 2004, 19.1 per cent were inactive in both and 1.9 per cent were unemployed in both quarters.
- A small proportion does experience transitions: around 6 per cent changed status. The largest groups are those moving from being inactive to employed or from employed to inactive (1.3 per cent between autumn and winter 2004).
- Longitudinal datasets are known to be subject to a number of biases. The most accurate way of presenting longitudinal LFS data is to present the flows using a four-quarter moving average.

One of the main uses of these datasets is to analyse the numbers moving between employment, unemployment and inactivity. Previous articles published in Labour Market Trends describe the two-quarter longitudinal datasets and have discussed the flows characteristics of men and women (Young, August 2001), those leaving employment (Young, November 2001) and those leaving economic inactivity (McIntyre, 2002).

Although the number of people within these categories (the stocks) may vary only marginally between quarters, the underlying gross flows are much larger than the resultant stock changes. This means that looking at longitudinal data to analyse the movements between these groups enables a more detailed understanding of micro-level changes, resulting in the headline stock figures obtained from the cross-sectional datasets.
Time series of two-quarter flows

As shown in Table 1, for a two-quarter longitudinal dataset the flow variable has 11 categories. These include all combinations of the three economic categories of employed, unemployed and inactive at each quarter. Two additional categories identify respondents who are either entering or leaving working age. The LFS datasets are currently limited to working-age adults. The flow in a particular category is defined as a percentage of all working-age adults, excluding those who are entering or leaving working age, so that the flows for the nine remaining categories sum to 100 per cent.

Table 1 shows that for autumn and winter 2004, 72.7 per cent of working-age adults were employed in both quarters (EE), 19.1 per cent were inactive in both (NN) and 1.9 per cent were unemployed in both quarters (UU). About 6 per cent experienced a transition, with the largest groups being those moving from being inactive to employed (NE) or from employed to inactive (EN), both at 1.3 per cent.

It should be noted that the stocks of the employed, unemployed and inactive at each quarter need to be obtained by summing the three corresponding flow categories. Hence, for the second quarter the stocks of those who are employed are given by summing EE, UE and NE; the unemployed by summing EU, UU and NU; and the inactive by summing EN, UN and NN. The stocks derived from the longitudinal datasets differ slightly from those obtained from a quarterly cross-sectional dataset due to attrition in the two-quarter datasets and also because those who are entering or leaving working age are excluded.

The unemployment rate derived from the flow variable (which is expressed as a percentage of working age) will also be lower and is not consistent with the unemployment rate given in the ONS Labour Market Statistics First Release. The rates published there are calculated according to ILO definitions in terms of all adults aged 16 and over as a percentage of the economically inactive (employed and unemployed).

Over 90 per cent of respondents report that their economic activity status is unchanged between two quarters and the number who report that they have made a transition has only varied between about 6 and 9 per cent for the period 1993 to 2004.

As shown in Table 1, there are six possible categories which involve a transition. In percentage terms these are relatively small compared with those who do not experience a change of category (EE, UU and NN).

It is known that economic activity is subject to seasonal variations and, as expected, the flows (and particularly the transitions) are

### Table 1

<table>
<thead>
<tr>
<th>Status in first quarter</th>
<th>Status in second quarter</th>
<th>Sample size</th>
<th>Weighted level</th>
<th>Flow (per cent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aged 15</td>
<td>Working age</td>
<td>269</td>
<td>180,327</td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>Employed</td>
<td>34,549</td>
<td>26,324,784</td>
<td>72.7</td>
</tr>
<tr>
<td>Employed</td>
<td>Unemployed</td>
<td>411</td>
<td>357,047</td>
<td>1.0</td>
</tr>
<tr>
<td>Employed</td>
<td>Inactive</td>
<td>554</td>
<td>478,703</td>
<td>1.3</td>
</tr>
<tr>
<td>Unemployed</td>
<td>Employed</td>
<td>471</td>
<td>391,109</td>
<td>1.1</td>
</tr>
<tr>
<td>Unemployed</td>
<td>Unemployed</td>
<td>784</td>
<td>681,758</td>
<td>1.9</td>
</tr>
<tr>
<td>Unemployed</td>
<td>Inactive</td>
<td>336</td>
<td>305,351</td>
<td>0.8</td>
</tr>
<tr>
<td>Inactive</td>
<td>Employed</td>
<td>620</td>
<td>459,783</td>
<td>1.3</td>
</tr>
<tr>
<td>Inactive</td>
<td>Unemployed</td>
<td>404</td>
<td>313,667</td>
<td>0.9</td>
</tr>
<tr>
<td>Inactive</td>
<td>Inactive</td>
<td>8,944</td>
<td>6,905,055</td>
<td>19.1</td>
</tr>
<tr>
<td>Working age</td>
<td>Above working age</td>
<td>210</td>
<td>140,777</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>47,552</td>
<td>36,538,361</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Labour Force Survey longitudinal dataset
highly seasonal. Young (August 2001) presented the flows using a four-quarter moving average rather than using seasonal adjustment. This increases precision due to the small levels of many of the flows (particularly for the transitions) and removes the seasonality.

Figure 1 shows the unadjusted and four-quarter moving average time series between 1993 and 2004 for those who were unemployed in both quarters (UU) and those who experienced a transition from being unemployed to employed (UE). It can be seen that there is much more irregularity in the time series of the transition UE than for those who do not have a change of state. A time series of each of the nine flows are shown in Figures 2 to 4.

**Response bias**

Previous research (Brook and Barnham, 2005) shows longitudinal data in general have been found to be subject to two sources of possible error: non-response bias and response error bias or mis-classification. This is also thought to be the case with the longitudinal LFS data.

Non-response bias arises because different groups of people have different probabilities of dropping out of the survey between interviews. Flows are currently adjusted for non-response bias through calibration weights which are included in the longitudinal datasets and are also used to weight estimates to UK population totals.

Response error bias arises because, for reasons such as misunderstanding or lack of knowledge, respondents may give incorrect answers to questions. The feasibility of quantifying response error bias in the flow variable of the
In the absence of a UK re-interview survey, the reliability of the flows can be improved, as shown in Figure 1, by using a four-quarter moving average, although these will still be subject to response error bias. Although the bias may be high for some of the transitional terms, these generally have flows of only about 1 per cent, so that a bias as high as 80 per cent will only result in a small absolute change in the flow. Users need to take note of these uncertainties when using estimates from the longitudinal datasets. It should be noted, however, that changes in estimates of gross flows over time should be largely free from bias. This is because the response bias effects on point-in-time estimates of gross flows should vary relatively little from time period to time period.

Conclusion

The longitudinal datasets produced by the LFS provide a resource to look at movement between different states of economic activity. Understanding the flows between employment, unemployment and inactivity provides a more detailed picture of micro-level change in the labour market, and the background behind changes in employment, unemployment and inactivity rates. Flows data are subject to response error. Response error bias is difficult to quantify without a costly re-interview survey, but has been found...
to be significant using data from other countries. Users need to take note of this when using estimates from the longitudinal datasets based on the size of the flow. It should be noted, however, that estimated changes over time in the LFS gross flows should be largely free from bias.

Figure 4

Flows of those moving between different economic statuses; United Kingdom; 1993 to 2004

Source: Labour Force Survey

Note: The data relate to the average of the four-quarter flows ending at the date shown.

Further information

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References