

Labor-market transitions and the measurement of labor-market capacity

John Schmitt  
(jschmitt@cais.com)

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## **I. Introduction**

The unemployment rate suffers from two important limitations that reduce its usefulness as a measure of labor-market capacity. First, in a world where work is organized in an increasingly fluid and diverse manner, the unemployment rate remains a discrete, binary, concept. An individual is either unemployed or not, and knowing an individual's unemployment status does not tell us anything about the number of hours of work that the individual is willing to supply at the going wage. Three or four decades ago, when the vast majority of the unemployed in the advanced capitalist countries were men seeking regular, full-time, work, this kind of vision of unemployment was not much of a liability. In the current context, however, where part-time and temporary work is far more common and where women, who typically have considerable non-market responsibilities, make up a much larger share of the potential labor force, a binary notion of unemployment has significant drawbacks.

A second important limitation of the unemployment rate is that it is static. The unemployment rate measures the stock of unemployed workers at a particular point in time. Since at least the end of the 1960s, however, an important strand of labor-market research has emphasized that flows across labor-market states (unemployment, employment, not-in-the-labor-force) are central to understanding the workings of contemporary labor markets.<sup>1</sup> As a static variable, the unemployment rate on its own cannot capture the dynamics of labor supply and therefore may fail, independently of its binary nature, as a comprehensive measure of labor-market capacity.

This paper examines the implications of attempting to address the second limitation of the unemployment rate –its static nature– by introducing labor-market flows,

transitions, and dynamics into the measurement of labor-market capacity.<sup>2</sup> The paper proceeds as follows. The next section reviews the basics of labor-market flows and transitions. The third section then uses data from the OECD countries to illustrate a series of implications of flow or transitions analysis for the understanding of labor-market capacity. The final section concludes with a brief discussion of the benefits and limitations of flows analysis.

## **II. Basic review of labor-market flows and transitions.**

Economists have emphasized the importance of gross labor-market flows and transitions between labor-market states since at least the 1960s (see, for example, Mincer, 1966; Marston, 1976; Clark and Summers, 1979; Abowd and Zellner, 1985; Blanchard and Diamond, 1990, 1992). The standard approach has been to divide the population into three mutually exclusive labor-market states, employed, unemployed, and not-in-the-labor-force (usually defined according to the ILO's criteria) and then to compare changes in individuals' status between two discrete periods (usually a month, a quarter, or a year). Researchers typically then use this information on transitions across labor-market states to construct matrices along the lines of Table 1, where the rows show the individual's labor-market status in an initial period (here, November 1993) and the columns show the status of the same individual in a later period (here, December 1993). The cell entries in the matrix in Table 1 are the number of individuals in each pair of labor-market states across the two periods, based on data in the United States Current Population Survey (CPS). Of those in the December 1993 sample, for example, 61.9 million (the weighted sample) were not-in-the-labor-force in both months; 1.4 million

were not in the labor force in November and unemployed in December; and 2.4 million were not in the labor force in November and employed in December.

Labor-market transition matrices such as Table 1 can provide a wealth of information useful to assessing labor-market capacity. At the simplest level, the matrix, demonstrates, for example, that in late 1993 at least, the portion of the population that was not-in-the-labor-force was a more important source of workers than was the pool of the unemployed: 2.4 million of the workers employed in December 1993 entered employment from out of the labor force, compared to just 1.6 million workers in that month who had entered from unemployment. The matrix also shows that, at least for the time-period covered here, the unemployed were almost as likely to leave the labor force (1.5 million) as they were to find work (1.6 million); and many workers who left jobs (a total of about 4.2 million in the table), left the labor force (2.7 million) without entering the ranks of the unemployed.

Even this simple review of the flows approach and these basic numbers for the United States in the early 1990s help to illustrate the basic usefulness of paying attention to labor-market dynamics. The next section of the paper highlights some of the main implications of the flow and transition analysis for measuring labor-market capacity.

### **III. Implications for measuring labor-market capacity**

Labor-market flows or transitions have important implications for measuring labor-market capacity. This section presents five of the most important, illustrating them with data from the OECD countries in the 1980s and 1990s.

**(1) In OECD countries in the 1990s, flows out of unemployment represented half or less of all flows into employment.**

If we are interested in measuring labor-market capacity, we certainly would like to know where today's workers were before they started working. The available evidence for the OECD economies in the 1990s suggests that, in most countries, much less than half of the flows into employment come from the pool of the unemployed. Table 2 summarizes International Labor Office data for 13 OECD countries for various periods of time in the 1990s. The third through fifth columns report flows into employment from unemployment as a share of all flows into employment, separately, for all, male, and female workers. For the workforce as a whole, in every country but Spain, less than half of the volume of flows into employment came from unemployment. In 10 of the 13 countries, flows out of unemployment accounted for less than 40% of the total inflow into employment. In the OECD, then, *the large majority of workers enter employment from outside the labor force.*

The ILO's *Key Indicators of the Labor Market* (KILM) data, which are the source of the underlying data analyzed in Table 2, do not provide data for the United States for this indicator. Nevertheless, we know from Table 1 (and from more comprehensive data in Table 5 below) that unemployment outflows make up less than half of employment inflows in the United States, as well.

**(2) In most countries in the OECD, women are even less likely than men to enter employment from unemployment.**

According to the data in Table 2, in nine of the 13 countries (or 10 of 14 countries if we include separate data for the United States, see Table 5), women were even less likely than men were to enter employment from unemployment. In many cases, the

gender differences were relatively small, but the gap was particularly large in Austria (19% for men, 8% for women); Canada (28% for men, 22% for women), Ireland (46% for men, 21% for women); the United Kingdom (24% for men, 16% for women); and the United States (44% for men, 29% for women, calculations based on Table 5 below).

These gender differences have potentially important long-term implications for the usefulness of the unemployment rate as a measure of labor-market capacity. Since women are less likely than men to enter work from a spell of unemployment, and since, over the last 40 years, women represent a steadily rising share of the actual and potential labor force, the unemployment rate may be becoming, for this reason alone, an increasingly less accurate proxy for labor-market capacity.

Note also, in the last three columns of the table, that, with the exception of France, Ireland, and Spain, fewer than half of those workers who left their jobs (for whatever reason) in the 1990s entered unemployment. In general, women were also less likely than men were to enter unemployment, frequently much less likely.

**(3) Throughout the OECD economies, as the unemployment rate falls, unemployment becomes a less-and-less important source of supply of new workers.**

As economies undergo economic expansions –precisely the period in which we are most interested in an accurate assessment of the available unused labor supply– the share of new workers that come from pool of the unemployed actually declines. This means that in economic booms, such as those in most OECD countries at the end of the 1990s and into the early 2000s, the unemployment rate may become an increasingly less useful gauge of labor-market capacity. Table 3 shows the results of a simple analysis of

the same ILO labor-market flows data used in Table 2. The table displays results from the following ordinary least squares regression:

$$f_{it} = a + \beta u_{it} + \sum_i d_i c_i + e_{it} \quad (1)$$

where  $f_{it}$  is the share of workers (in percent) that flows from unemployment to employment in country  $i$  in year  $t$ ;  $u_{it}$  is the corresponding standardized unemployment rate (in percent);  $c_i$  are twelve country-effect dummy variables;  $a$ ,  $\beta$ , and  $d_i$  are parameters to be estimated; and  $e_{it}$  is a well-behaved disturbance term. The inclusion of variables to capture country effects controls for cross-country differences in the *levels* of unemployment, but allows us to examine changes over each country's business cycle in the relative importance of unemployment-to-employment flows. Note that the regression equation is not attempting to describe a causal relationship; the regression only seeks to summarize a statistical relationship over the business cycles of the 13 countries included in the analysis.

If the estimated coefficient on the unemployment term in (1) is positive, this implies that the lower the unemployment rate, the smaller the share of the unemployed among total flows into employment. In other words, the lower the unemployment rate, the more likely employers will be to hire from outside the labor force, or, in other words, the less relevant the unemployment rate is for measuring labor-market capacity. Indeed, the regression results suggest that for all, male, and female workers, separately (see columns one, two, and three of Table 3), the relative importance of unemployment-to-employment flows falls as the economy expands over the business cycle (measured by movements in the unemployment rate). The relationship is both economically meaningful and statistically significant at the 1% level. A three-percentage point decline in the

overall standardized unemployment rate, for example, would lower the share of the unemployed in total inflows into employment by about four percentage points, or 12% at the sample mean share of 33%.

**(4) Flow analysis can illustrate that the same level of unemployment can occur in circumstances where available unused labor-market capacity differs significantly. As such, flow analysis can be useful in evaluating the effectiveness of economic policy.**

In the United Kingdom, between 1990 and 2000, the standardized unemployment rate fell from 6.9% to 5.3%. The employment-to-population rate in the same two years, however, was virtually identical (72.5% in 1990, 72.4% in 2000). (See Schmitt and Wadsworth, 2002, Table 1.) Table 4 compares the labor-market dynamics in the two years. Panel (a) shows that, of those unemployed in 1989, 38.4% were in work in 1990, while 26.1% had left the labor force. By the end of the decade, however—despite the lower national unemployment rate—the unemployed were less likely to exit unemployment for work than they had been at the beginning of the decade. Of those unemployed in 1999, only 35.6% were in work in 2000, while 31.0% had decided to leave the labor force (see panel (b)).

Over the 1990s, then, the unemployment rate fell in Britain not because the unemployed found jobs, but rather because the unemployed left the labor force in greater numbers. The economic policy reforms in Britain during the 1980s and 1990s, which were designed to foster employment by making the labor market more "flexible," appear to have succeeded in lowering unemployment primarily because these policies encouraged unemployed workers to leave the labor force, rather than to enter work. As a result, the lower unemployment rate at the end of the 1990s may have corresponded to a situation where the unused labor supply was actually higher than it had been at the end of



the 1980s. That the British inflation rate was 9.5% in 1990, when the unemployment rate was 6.3%, and only 2.9% in 2000, when the unemployment rate was 5.3%, suggests that the unemployment rate was not a reliable gauge of labor-market capacity in 2000 (or, alternatively, that inflation in the earlier period was not related to tightness in the labor market).

**(5) Flow analysis can complement an hours analysis by demonstrating the importance of transitions between part-time and full-time work.**

Analysis of labor-market transitions can complement an hours analysis that seeks to address the binary nature of the unemployment rate, mentioned at the beginning of this paper. Table 5 presents a slightly modified version of the transition matrix we've now seen several times. Here, the employment category is divided into two distinct states: part-time and full-time employment. The addition of two new labor-market states allows us to examine several potentially interesting transitions: from part-time to full-time work, for example, as the economy expands; from full-time to part-time work, as the economy slows or contracts; and, from not-in-the-labor-force to part-time versus full-time work (which might be particularly important for women), among others.

The data in Table 5, which are average monthly transition rates in the United States for almost the full decade of the 1980s, show several interesting features of labor-market dynamics that would complement an hours-based analysis. If we take as the focus the supply of full-time workers, the expanded transition matrix, which shows the share of the workforce in the second period by its "source" in the first period, reveals the relatively small role played by the pool of the unemployed. On average over the business cycle, for both men and women, the most important source of full-time workers is the pool of part-time workers. Among men, 3.6% of full-time workers were part-time in the

preceding month, compared to only 1.0% who were unemployed or 0.9% who were out of the labor force. For women, part-time work was an even more important source of full-time workers: 7.3% of full-time workers in any month were part-time a month earlier, compared to just 0.9% who were unemployed or 1.5% who were out of the labor force. Of course, in any given month, many workers also moved from part-time to full-time jobs, suggesting considerable flexibility in hours.<sup>3</sup>

A second feature of the data is that the part of the population that is not in the labor force is a far more important supply of part-time workers than is the pool of the unemployed. Of those who were part-time in any particular month, about 9.2% of men and 7.9% of women were not-in-the-labor-force in the preceding month, compared to 5.0% of men and 2.5% of women who were unemployed a month earlier.

#### **IV. Some concluding remarks**

Flow or transition analysis can provide a picture of otherwise-invisible workings of the labor market. Even a simple transition matrix, for example, can demonstrate: the relative *unimportance* of the pool of the unemployed as a source of current workers, especially among women; the declining importance of the unemployed as a source of new workers as the economy expands over the business cycle; and, the importance of part-time workers as a subsequent source of full-time workers. The main strength of the flows approach, in this regard, is that it focuses attention on the importance as a source of available labor of those out of the conventionally defined labor force, particularly many women. Transition analysis, therefore, can complement the standard unemployment rate

and analyses of hours, contributing to a more complete and accurate picture of labor-market capacity.

Nevertheless, flow or transition analysis is not a panacea that will resolve all of the many problems associated with using the unemployment rate as a measure of labor-market capacity. Among the conceptual problems facing transition analyses are the "correct" choice of labor-market states and the increasingly blurred lines between these states. The most serious practical problem is the lack of regular and reliable data in much of the OECD. The transitions data now available are generally taken from labor-force surveys with short panel components. These surveys follow households over several months or quarters primarily to reduce survey costs, not to track changes over time in individual's labor-market status. As a result, much of the available data on transitions suffers from potentially serious problems related to sample attrition, as households move, dissolve, or regroup between sample periods. Any attempt to improve measurements of labor-market capacity, therefore, should include efforts to improve the collection of data on labor-market flows.<sup>4</sup>

## Notes

I thank all the participants at the Capacity Team meeting in Amsterdam in March for helpful comments and discussions.

<sup>1</sup> Among others, see, for example: Abowd and Zellner (1985), Atkinson and Micklewright (1991), Barkume and Horvath (1995), Blanchard and Diamond (1990, 1992), Kim and Summers (1979), Schettkat (1996), and Williams (1995).

<sup>2</sup> In other research for the project on "New Cross-National Architecture for Labor-Market Statistics," Barbara Hamilton and Barry Bluestone (2002) and Kea Tijdens (2002) address the importance of measuring hours, rather than binary labor-market states. An examination of hours converts unemployment into a much less discrete concept, by introducing the possibility that different workers are prepared to work a different number of hours at the going wage or as wages rise to induce a greater supply. At the same time, by focusing on hours of available work, an analysis of hours looks beyond the stock of the unemployed –to both existing workers (who can work more hours) and to the population that is not currently in the labor force (and who could bypass unemployment and enter directly into work).

<sup>3</sup> An important area needing further research is the pattern of flows between part-time and full-time work over the business cycle. Firms may respond to changes in demand by adjusting hours rather than levels of employment and this responsiveness may be changing over time as the economy becomes more "flexible" and more service-oriented.

<sup>4</sup> While costly, greater effort to find and match individuals across monthly, quarterly, or annual surveys would potentially pay big dividends. "Match" rates across months in the US CPS are typically about 95%. At some levels, the 5% failure rate is small, especially given the level of geographic mobility, but the failure rate is large –and not orthogonal–when compared to the size of month-to-month transitions across labor-market states.

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**TABLE 1**  
**Gross labor-market flows, November to December 1993**  
(Thousands)

Status Nov 1993	Status Dec 1993		
	Not in the labor force	Unemployed	Employed
Not in the labor force	61,993	1,403	2,403
Unemployed	1,532	4,173	1,631
Employed	2,672	1,517	116,950

Source: Barkume and Horvath (1995), p. 29.

**TABLE 2**

**Unemployment-to-employment flows as a share of all flows into employment and employment-to-unemployment flows as a share of all flows out of employment (percent)**

Country	Period	Unemployment-to-employment flows as a share of all flows into employment			Employment-to-unemployment flows as a share of all flows out of employment		
		All	Males	Females	All	Males	Females
Austria	1995-97	11.1	19.0	7.8	35.9	38.8	32.4
Belgium	1990-99	38.8	35.1	42.8	41.8	40.7	43.4
Canada	1995-98	25.2	28.2	22.1	28.1	31.8	24.8
Denmark	1990-99	27.6	26.6	28.5	43.6	47.0	40.5
Finland	1996-98	38.1	40.7	36.2	47.3	54.9	41.3
France	1990-99	43.2	44.6	41.8	51.2	52.6	49.9
Germany	1990-99	21.5	22.0	20.9	41.4	41.5	41.1
Ireland	1990-97	33.5	46.3	21.4	56.0	60.9	48.5
Italy	1992-99	47.1	47.9	46.0	24.9	23.5	27.0
Netherlands	1990-99	22.7	23.9	21.9	29.9	32.9	27.1
Portugal	1990-99	37.2	34.6	39.8	33.4	32.6	34.2
Spain	1990-99	52.7	54.0	50.9	59.5	60.3	58.2
United Kingdom	1990-99	19.7	24.3	15.6	37.0	46.3	27.1

Notes: Analysis of flows data from ILO, *KILM 2001-2002*, Table 19. Data for Belgium exclude 1995; data for France exclude 1991.

**TABLE 3**  
**Unemployment-to-employment and employment-to-unemployment**  
**flows over the business cycle**

	All	Males	Females
<i>(a) UE/(UE+NE) flows</i>			
Gender-specific			
Standardized	1.37**	1.40**	1.15**
Unem. Rate	(0.368)	(0.368)	(0.388)
R-squared	0.800	0.776	0.822
<i>(b) EU/(EU+EN) flows</i>			
Gender-specific			
Standardized	2.10**	2.38**	1.65**
Unem. Rate	(0.227)	(0.227)	(0.267)
R-squared	0.905	0.910	0.875

Notes: Analysis of labor-market transition data from ILO, KILM 2001-2002, Table 19. UE is "unemployment to employment"; NE, "not-in-the-labor-force to employment"; EU, "employment to unemployment"; EN, "employment to not-in-the-labor-force."

Table shows the coefficients from an OLS regression of indicated labor-market flows (in percent) against the gender-specific standardized unemployment rate (in percent). Standardized unemployment rate for males and females estimated by author using OECD data.

All regressions include 12 country dummy variables and have 105 observations. Standard errors in parentheses; \*\* indicates statistically significant at the 1% level; \*, statistically significant at the 5% level; #, at the 10% level.



**TABLE 4**  
**Year-to-year changes in labor market status, United Kingdom**

Status in first year	Status in second year		
	Employed	Unemployed	NILF
<i>(a) 1989-90</i>			
Employed	91.5	2.4	6.0
Unemployed	38.4	35.5	26.1
NILF	9.9	3.4	86.7
<i>(b) 1999- 2000</i>			
Employed	91.5	2.1	6.5
Unemployed	35.6	33.5	31.0
NILF	10.1	3.0	87.0
<i>(c) Change 1989-90 to 1999-00</i>			
Employed	0.0	-0.3	0.5
Unemployed	-2.8	-2.0	4.9
NILF	0.2	-0.4	0.3

Notes: Schmitt and Wadsworth (2002), Table 8, analysis of United Kingdom Labour Force Survey. NILF is not-in-labor-force.

**TABLE 5**  
**Average monthly transition rate among labor-market states, January 1980-July 1989**  
 (Percent of total in initial state)

Status in first month	Status in second month			
	NILF	Unem.	Part-time	Full-time
<i>(a) Men</i>				
NILF	90.9	3.5	3.2	2.4
Unemployed	14.9	58.1	10.4	16.6
Part-time	9.4	5.6	57.4	27.7
Full-time	1.1	1.4	3.6	93.9
<i>(b) Women</i>				
NILF	93.5	2.4	2.7	1.4
Unemployed	27.0	49.9	12.0	11.1
Part-time	9.2	2.5	68.9	19.4
Full-time	2.2	1.1	7.5	89.3

Notes: Analysis of Williams (1995), Table 1. NILF is "not in labor force."