

"GROSS LABOUR MARKET FLOWS IN EUROPE:  
SOME STYLIZED FACTS"

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## Summary

The purpose of this paper is to establish some stylized facts on gross labor market flows - using mostly new data from France, Germany, the UK and the US - which any theory of unemployment ought to explain. The regularities on gross labor market flows that we isolate are inconsistent with a large class of theories of labor markets and business cycles. Key results are: flows into and out of unemployment are countercyclical; these flows move tightly together, over both the cycle and the long run; the bulk of exits from unemployment actually represent *job findings* rather than exits from the labor force; employment inflows and outflows are procyclical.

## 1. Introduction

High unemployment remains a highly visible feature of the European economic landscape. The conventional wisdom that has emerged over the past fifteen years is that high unemployment rates in Europe are symptomatic of insufficient economic activity or malfunctioning labor markets. Regardless of the cause, persistence or sluggish behavior of the stocks of unemployment and employment in European countries --in contrast to the United States, Canada, and Japan-- is taken as *prima facie* evidence of declining gross hiring and firing activity and deteriorating worker mobility.<sup>1</sup>

Table 1 provides clear evidence that this conventional wisdom of European labor markets is grossly inconsistent with facts. For example, France's employment office reported 4.1 million new cases of unemployment in 1987 or about 340,000 *per month*, while unemployment itself averaged only 2.6 million. Put another way, every month roughly 1.7% of the French labor force passed through the state of unemployment. As Table 1 makes clear, the picture is similar for both Germany and the United Kingdom.<sup>2</sup>

[Table 1 about here]

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<sup>1</sup> See for example, Blinder (1988).

<sup>2</sup> For those familiar with US labor markets, these numbers may seem somewhat modest. See Marston (1976), Darby Haltiwanger and Plant (1986), and Diamond and Blanchard (1989).

The purpose of this paper is to establish some stylized facts on gross labor market flows which any theory of unemployment ought to explain. It is often asserted that, for most phenomena, scrutiny of gross flows is unlikely to yield additional insights that are not provided already by net changes. The regularities on gross labor market flows that we isolate are inconsistent with a large class of theories of labor markets and business cycles. For example, much conventional macroeconomic analysis rests on the presumption that the driving force in the upswing of a business cycle is an increasing *outflow* of workers from unemployment as they take up of productive jobs. The data from all countries we examine, however, indicate that expansions are associated with a decline in outflows. Even more striking is that, for Germany and France at least, the bulk of exits from unemployment, which increase in downturns, actually represent *job findings* rather than exits from the labor force.<sup>3</sup>

The paper proceeds as follows. In Section 2, we present data on unemployment flows for France, Germany, the UK and the US and characterize their long run behavior. Their key countercyclical pattern is established in Section 3. In Section 4 we show that this pattern implies that in both phases of a business cycle inflows into unemployment must lead outflows and thus are the active element driving the dynamics of the stock of unemployment. Unemployment flows, however, include a number of flows of

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<sup>3</sup> This observation, and its implication for some theories of unemployment, has previously been made by Darby et. al. (1986).

potentially different nature: quits, layoffs, new entrants and re-entrants in the labor force. Other flows (in and out of employment, and in and out of the labor force) are also of interest. For evidence on these other or more detailed flows, we adduce data from France and Germany which, to the best of our knowledge, have not yet been analyzed, at least in the academic literature. Sections 5 (detailed unemployed flows), 6 (employment flows) and 7 (out-of-the labor force flows) present these data. Our main results are summarized in Section 8 as five stylized facts. In the final section we discuss some of the implications of our stylized facts for theoretical and empirical research on both labor markets and business cycle theory.

## 2. Long Term Trends

The upper panels of Figure 1 display monthly inflows into (I) and outflows from (O) unemployment (U) - normalized by the labor force (N) - for France, Germany, the United Kingdom, and the United States.<sup>4</sup> Several important observations can be made at the outset. First is the striking size difference between the US and Europe, which has diminished only slightly over the sample period. The reason for this size is unlikely to be linked to higher labor force growth in the US, which averaged less than 0.1% per month

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<sup>4</sup> Sources: France and Germany, new registrations over the period at unemployment offices. UK: new claimants for unemployment benefits (current official definition) DHSS flow series (UBS1), males only. US: those surveyed in the CPS who report current spells of unemployment of less than 5 weeks. For an assessment of problems with the US data, see Poterba and Summers (1986) and Abowd and Zellner (1985).

over the sample studied. A more likely factor is the household survey method used to count the unemployed in the US, versus the unemployment registry data used in the three other countries. Clark and Summers (1979) find that transitions in and out of the labor force account for about half of the unemployment flows in the United States. This contrast can also be explained in part by low labor force attachment of young Americans; a large fraction of the transitions are also spurious, reflecting survey ambiguity and response variation.<sup>5</sup>

Besides their size, a second interesting fact about the inflow and outflow series is their high coherence over both the cycle and the sample. In one sense this must be true since small deviations of the two implies sharp movements in the stock of unemployment, and we do not observe such movements, even in the United States. This coherence is reflected in the fact that both inflows and outflows as a percent of the labor force have trended upward by at least 50% in all economies since the 1960s, dwarfing the differences between them associated with the business cycle. The trendlike aspect of these series is confirmed in Table 2 where we show the results of some Dickey-Fuller tests. Statistically, except for the US, the unemployment flows are best characterized as stationary around a linear (or piecewise linear) trend; conventional Dickey-Fuller tests reject nonstationarity at the 5%

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<sup>5</sup> For more detailed analyses of US gross flows data see Poterba and Summers (1986) and Abowd and Zellner (1985). The potential for measurement technique to account for all the difference is limited, however, since the same labor force survey method is also used to measure unemployment in Sweden, where inflows into unemployment have also increased over the past two decades.

level. For whatever reason, this trend seems to be a robust fact in the data.<sup>6</sup> For the US, the best characterization seems to be that the flows are integrated of order 1.

[Figure 1 and Table 2 about here]

### 3. Cyclical Behavior of Unemployment Flows

The lower panels of Figure 1 display two business cycle indicators: the rate of capacity utilization in manufacturing and a measure of bankruptcies.<sup>7</sup> Evidently, both flows move countercyclically. It should not be terribly surprising that inflows into unemployment are highly cyclical. The striking fact about Figure 1 is the countercyclical nature of *both* flows. It is not conventional wisdom that gross outflows out of unemployment increase in a downturn, and decline in an upturn. Models of unemployment flows explain that the outflow *rate*, defined as the proportion of unemployed workers who find a job  $O/U$ , decreases during a recession. We find indeed that the outflow rate is procyclical<sup>8</sup> because the countercyclicity of the unemployment

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<sup>6</sup> This was the conclusion of Darby et al (1986) and Hughes (1987) in their studies of US and UK labor market flows; for another view see Pissarides (1986). This trend could also be due to increased reporting, as UK, French and German data are based on registry data. Increases in the attractiveness of unemployment benefits and the effectiveness of reporting procedures over the sample might be responsible for the secular increases. Yet a similar increase is also evident in the US.

<sup>7</sup> For the three European countries we employ the number of failures and reorganizations reported during the quarter normalized by real GNP; for the US we use the nominal liabilities of failed enterprises normalized by nominal GNP.

<sup>8</sup> Regressions not reported.

stock U more than offsets the countercyclicality of outflows O. These models, however, do not predict that the gross flows themselves - normalized or not by the labor force - are countercyclical. In fact, in Pissarides (1985) flows from unemployment to employment decline in a downturn. In Section 5, using data for Germany and France - the two countries for which we have clear evidence - we show that indeed the countercyclical outflows out of unemployment correspond to *people flowing into jobs*.

Statistical support for this visual impression is given in Table 3, which reports regressions of unemployment flows on the rate of capacity utilization. Given the previous evidence that unemployment flows are stationary around a linear trend, the regressions include a time trend as well as seasonal dummies for undeseasonalized series. With the exception of aggregate British outflows, we find evidence that both unemployment flows (in and out) are counter-cyclical. The effect is stronger in France and Germany, with a short term elasticity close to one percent.<sup>9</sup>

[Table 3 about here]

#### 4. Inflows "Lead" Outflows

In Figure 2, we present the gross annual unemployment flows - in absolute numbers - along with unemployment stocks. Inspection

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<sup>9</sup> With the exception of France, similar results (not reported) were obtained when the bankruptcy measure was substituted for capacity utilization.

of Figure 2 confirms that increases in unemployment are to a first approximation associated with increased inflows into unemployment. There is a strong impression that movements in inflows lead those of outflows, which is reinforced by the annual averaging of the data, which purges the highest frequency movements.

[Figure 2 about here]

Formal tests of whether one variable "causes" or "leads" another one are notoriously unreliable.<sup>10</sup> Fortunately, such a formal test is not needed here. The evolution of unemployment is trivially governed by the simple identity:

$$U_t = U_{t-1} + I_t - O_t \quad (1)$$

so increases (decreases) in unemployment occur when inflows exceed (are exceeded by) outflows. We know that both flows move together and countercyclically. Thus, in all the countries we observe, unemployment increases in a period of rising inflows and outflows. *To the extent that the same behavior should drive both gross and net flows, this behavior is inconsistent with any business cycle model of which we are aware that assigns a causative role to*

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<sup>10</sup> Darby et al. (1986) and Hughes (1987) present Granger-causality type test results which show that inflows contain information about future inflows but also that outflows contain information about future inflows. Darby et al show however that most of the variance in both series is accounted for by innovations to the inflow equation. Time aggregation in the data, from monthly to quarterly frequencies may obfuscate any clear relationship in the data, however.

outflows.

The finding that inflows exceed outflows while increasing in a cyclical downturn suggests that inflows play the active role in unemployment fluctuations.<sup>11</sup> As we show in the next section, a large proportion of laid-off German and French workers search for new jobs actively and quickly succeed in finding new employment. A smaller residual either leaves the labor force or remains in unemployment for a longer period of time.

A puzzling implication of these facts is that, in the aggregate, firms simultaneously increase hirings and firings in recessions. One possibility is that some firms fire workers in downturns while other firms do the hirings. This would represent a case of *firm heterogeneity*. Another possibility is that the same firms actually do both the firings and the hirings. This could be the symptom of *worker heterogeneity*. In this view, firms continually scan the labor market in an attempt to find the most productive workers. In a downturn, the size and average quality of the pool of unemployed workers increases, so this scanning activity has a higher average return. In any event, the representative agent paradigm used to model both business cycle and labor market phenomena is hard-pressed to account for the facts on gross flows. We return to these issues in the final section of the paper.

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<sup>11</sup> This has already been noted by Darby et al (1986) for the US and Hughes (1987) for the UK. In contrast, Pissarides (1985) needs to argue that the initial inflow burst is taken over by a decline in the outflow rate, seen as the proximate source of the rise in unemployment.

## 5. Unemployment flows: Where to and from?

### 5.1. Disaggregated Data

The joint and countercyclical movements of unemployment flows may conceal different behavior of some of their components. For example, an increased number of outflows during a recession may simply correspond to discouraged unemployed workers who drop into out-of-the labor force. Similarly, the decline in inflows during the expansion phase of the cycle may reflect the fact that workers joining the labor force go straight into jobs, rather than transiting through unemployment. Thus it is important to go beyond aggregate gross flows.

For purposes of discussing the data we will refer frequently to Figure 3, which denotes three possible states of the working-age population: employed (L), unemployed (U) and "out-of-the labor force" (OLF). Following the US/ILO concepts, the "labor force" refers to the union of states L and U. These three states give rise to 7 gross flows as shown on the figure. Our objective is to identify the relative magnitudes and cyclical behavior of job separations into unemployment (S), job findings from unemployment (F), "discouraged"<sup>12</sup> workers (D), and entrants into the labor force via employment (E). In addition we would like

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<sup>12</sup> "Discouraged" workers includes unemployed workers purged from the unemployment rosters as they reach the limit period of benefits eligibility. Indeed, the reason why the French ANPE is able to monitor closely unemployment flows is that it is the administration in charge of distributing unemployment benefits. As part of monitoring eligibility, the ANPE collects detailed information of the workers employment and unemployment history.

to track direct accessions from OLF (A), job separations that lead to immediate exit from the labor force - primarily retirements and women on maternity leave - (B), and finally job changes without intervening unemployment (C).

[Figure 3 about here]

Unfortunately, consistent data on all these flows do not seem to exist in time series form in any country. Unemployment inflows are often disaggregated by origin but less often by reason. Outflows, which are a residual from the accounting identity (1), are rarely followed up for reason of exit. Most countries measure C via surveys of existing manufacturing establishments only. In the United States the raw gross flows data are not published because they do not obey the accounting identity (1).<sup>13</sup>

In this section we analyze what are arguably the best existing time series on disaggregated gross flows in the European Community. The first source is an annual analysis of the universe of West German social insurance and unemployment office data conducted by the Federal Employment Office,<sup>14</sup> which tracks, on an annual basis, all of the above flows including A and B, but excluding C. Unfortunately, these data are annual and do not allow a further disaggregation of flows by reason. In the upper panels

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<sup>13</sup> This is a cheap shot, since the reason for this is missing responses and the assignment problem that arises with such individuals.

<sup>14</sup> Arbeitskräfte-Gesamtrechnung der Bundesanstalt für Arbeit, as described by Reyher and Bach (1988).

of Figure 4, we show the breakdown of inflows and outflows (normalized by the labor force) in Germany.

The second data set that we were able to obtain offers an even more detailed breakdown of French unemployment flows. It is compiled by the unemployment agency ANPE which collects monthly information on unemployment inflows and outflows by *reason*. Such detail seems to be available only in France. The quarterly flow data exist since 1976:1 for inflows and since 1979:2 for outflows. The breakdown corresponding to Figure 3 is shown in the lower panels of Figure 4. One assumption had to be made to classify two categories of outflows: workers eliminated from the roster because they fail to send in their monthly postcard (category M1a) and "others" (M1b). We treat these workers as flowing back into employment (possibly in the underground economy) on the basis of discussions with officials and because this results in flows to and from employment and out-of-the labor force of similar average sizes.<sup>15</sup>

[Figure 4 about here]

## 5.2. Inflows into Unemployment

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<sup>15</sup> Another potential, but relatively small, pitfall in the outflow data concerns those unemployed workers who, as they move across administrative regions, are recorded as leaving unemployment in their initial unemployment agency under a separate well-identified heading, and then recorded as entering unemployment in their new agency under the reason which motivated their initial inscription. We cannot therefore purge them from the data. We have chosen to eliminate them from the outflows data, at the cost of inconsistency with the inflow data. This represents about 5% of outflows.

### 5.2.1 Separations versus inflows from out of the labor force

The countercyclical behavior of inflows into unemployment may reflect either flows from employment (separations) or flows from OLF (new entrants or re-entrants into the labor force). The evidence in Figure 4 is that the number of separations is much larger - by a factor of 2 to 3 - than the number of new entrants. This conclusion may be surprising to those familiar with the recent OECD (1986) survey of labor market flexibility, which cited national manufacturing establishment studies to document a decline in separation rates. Because of the way it is collected, establishment data often fail to capture separations induced by plant closures and bankruptcies. More comprehensive surveys (as well as the evidence in fn 8) indicate that these are an important source of job separations.<sup>16</sup> Junakar and Price (1987) find a significant role for "structural change" proxies in an aggregate UK inflow equation.

In order to test this observation more formally, we reproduce in Tables 4 (for Germany) and 5 (for France) the same regressions as in Table 3 to detect the cyclical behavior of total flows. Despite limited data availability (annual since 1970 in Germany, quarterly since 1976:1 in France) the key capacity utilization variable retains a smaller but highly significant elasticity in the French inflow regression, while the implied long run

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<sup>16</sup> A recent study in France by UNEDIC, the agency in charge of social insurance funds, estimated that in 1987 at least half of all new jobs created (as opposed to hires) and jobs destroyed (as opposed to fires) arose through the creation and destruction of enterprises. Most of these had staffs of fewer than 10. (Le Monde, April 11, 1989, p.21-22.)

elasticity in Germany is 3.6 as compared to 3.3 with the longer quarterly series. At the detailed level, the German data strongly confirm that both inflows move countercyclically. The French data offer weaker support, which is not surprising given the relative flatness of both curves over the reduced sample period.

In expansions less people flow into unemployment, not simply because separations are lower, but also because flows from OLF decline. We will see that this corresponds to new entrants or re-entrants flowing directly into jobs (A on Figure 3) rather than through unemployment and that out-of-the labor force flows (A+E) do not exhibit any cyclical pattern.

### 5.2.2 Quits versus layoffs

Separations include job losers and those who quit their jobs voluntarily. A priori, one would expect layoffs to be countercyclical and quits to be procyclical. This is well established for the United States (see for example Akerlof et al 1988 and references therein). Table 5, which presents evidence for France, confirms this intuition. Voluntary quits into unemployment in France, however, are dwarfed by quits into other jobs and quits from the labor force, and represent a minor component of total unemployment inflow.<sup>17</sup> Applying quit rates estimated in the *Mouvement de main d'oeuvre*, a survey of large enterprises, there were roughly 1.2 million quits in France in

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<sup>17</sup>This finding is similar to those of Pissarides and Wadsworth (1989) and Akerlof et al. (1988) for the United States and the United Kingdom. Comparable official data for Germany are not available.

1987; from the ANPE data we know that only about 240,000 went into unemployment. The remainder represented job changes or exits from the labor force. This contrasts with the number for job losers: of an estimated 3.5 million during 1987, roughly three million entered registered unemployment. (It could be mentioned that the most significant increase in job separations in France originates in the termination of one-year contracts, which have become increasingly popular in France over the past decade.) The regression results also reveals a negative time trend in quits since 1976.

### 5.2.3 New entrants versus re-entrants

The French data also distinguishes the inflows from OLF according to whether they correspond to a first attempt to join the labor force or to workers re-entering. While total inflows from OLF are not clearly countercyclical, there is evidence (see Table 5) that the number of new entrants tends to increase during a recession. This might result from attempts by households to insure themselves against job losses of the primary breadwinner.

### 5.3. Outflows from Unemployment: Job Findings versus Discouraged Workers

The countercyclical movements of outflows from unemployment may be interpreted in two ways. First, outflows might simply reflect the so-called "discouraged worker" effect: in a recession, unemployed workers take a dim view of future employment prospects

and simply leave the labor force.<sup>18</sup> An alternative view attributes increased outflows from unemployment to increased inflows: laid-off workers immediately search for a new job, and find one. Distinguishing between the two interpretations is quite important. At the theoretical level, labor markets are seen as inefficient under the first interpretation, and quite efficient under the second. For policy purposes, the discouraged worker effect implies the need to compensate for labor market failures through such schemes as retraining, subsidies, and unemployment support; the second interpretation would eschew direct intervention in favor of measures which further enhance labor market effectiveness, e.g. assisting identifiably disadvantaged groups.

For the evidence, we turn again to the German and French annual data shown in Figures 4. Just as in the case of inflows, we find that flows from unemployment to employment (F) are numerically much more important than exits from the labor force (D). A large majority of workers who leave unemployment do so because they have found a job. This contrasts sharply with the findings of Clark and Summers (1979), who attribute up to half of unemployment flows in the US to entry and exit from the labor force. Interestingly, movements from and into the labor force represent an increasing proportion of unemployment flows over the sample for both France and Germany.

It is often believed that the number of job findings<sup>19</sup> is

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<sup>18</sup> For evidence with respect to the US see Perry (1977).

<sup>19</sup> Here again, there is a sharp difference between total job findings (possibly normalized by the size of the labor force) and

procyclical while the number of discouraged workers behaves countercyclically. Figure 4 suggests that both categories of outflows from unemployment move countercyclically. As before, we test this visual impression statistically and display the results in Tables 4 and 5. For comparison with Table 3 (since we use a different data set, see Section 5.2.1), we first present regressions performed for total outflows. There is much similarity between the two sets of German data: the implied cyclical long run elasticity is now 4.39 as compared to 3.83 with the longer quarterly series. In the French case, the new sample starts only in 1979:1, which might explain the low degree of significance of the capacity utilization variable.

The following regressions support the view that both outflows from unemployment are countercyclical: this surprising behavior is not solely due to discouraged workers leaving the labor force. Put differently, the flows between the states of employment and unemployment are shown to decrease during a cyclical upswing.<sup>20</sup>

[Tables 4 and 5 about here]

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the finding rate (job findings divided by the stock of unemployed). The rate itself is procyclical, see Section 3.

<sup>20</sup> We noted above that we had decided to classify two categories of outflows as flows into employment (no-shows and "others"). If we rerun the same regressions by classifying them as flows into out-of-the-labor-force we obtain different results: flows into employment are no longer countercyclical, while exits from the labor force are procyclical. These two uncertain categories (which represent about 20% of gross outflows) do not exhibit any cyclical behavior.

## 6. Employment Flows

Except for the United Kingdom and Germany, time series on gross employment flows are not available for a period of time sufficient to allow safe inference with respect to "stylized facts."<sup>21</sup> The UK data are published in the Employment Gazette and are for manufacturing only. For Germany, we can reconstruct series based on the annual survey used in Section 5, which provides value for A, B, F and S. Thus inflows into employment are measured as A+F and outflows as B+S. Note however that this measure misses the employment-to-employment flows (C). Figure 5 shows the available data.<sup>22</sup> Inflows are clearly seen to be strongly *procyclical*, outflows less obviously so.

When the regression test is conducted along the same line as before, this observation is confirmed for the UK: we find that the elasticities of employment inflows and outflows with respect to the rate of capacity utilization are, respectively, 0.10 (2.13) and 0.05 (3.59). The German annual data imply a positive inflow elasticity of 0.78 (2.61) but a negative outflow elasticity of -0.46 (-1.98). The short French quarterly series yield positive elasticities of 2.19 (3.98) and 0.47 (1.24) for inflows and outflows respectively.

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<sup>21</sup> Data on employment inflows (A+F+C) and outflows (B+S+C) for France and Germany are only available on a quarterly basis since 1985:1. The US data, which were discontinued in 1982, only cover the manufacturing sector. They are discussed in detail by Akerlof Rose and Yellen (1988).

<sup>22</sup> The French and German quarterly series are not reported as they are dominated by seasonal variation.

[Figure 5 about here]

These results lead us to reconsider the whole pattern of flows recorded on Figure 3. Indeed, total employment inflows are:

$$EI = F + A + C$$

while employment outflows are given by:

$$EO = S + B + C$$

Since  $F$  and  $S$  have been found to be countercyclical, it must be that the other components are strongly procyclical. We can only observe the flows  $A$  and  $B$  in Germany, and have no data on  $C$ . The German data is shown on Figure 6.  $A$  and  $B$  are roughly of the same size as  $F$  and  $S$  and clearly procyclical. This is confirmed by the usual regressions: the cyclical elasticities of  $A$  and  $B$  are, respectively 1.18 (1.94) and 0.93 (1.70).

We conclude that total employment flows are procyclical. The flows between employment and unemployment are countercyclical, but are offset by procyclical flows between employment and OLF and by employment-to-employment flows.<sup>23</sup> During an expansion for example, fewer workers are laid-off and fewer unemployed workers come back into employment, but more workers change jobs without transiting through unemployment. In addition, direct entries into the labor force occur more through employment than through unemployment while more employed workers quit the labor force, possibly because

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<sup>23</sup> "Mostly" because of the contrast between the German and British data. German outflows, measured as  $B+S$ , are countercyclical, which means that  $B$  is not sufficiently procyclical to offset the countercyclical behavior of  $S$ . British outflows, measured as  $B+S+C$  are clearly procyclical.

the need for a second-earner decreases in good times. An implication of the strong procyclical pattern of job-to-job changes is, again, that heterogeneities are important: firm heterogeneities, as workers move to new opportunities when they exist, and workers heterogeneities, as firms recruit more heavily from outside the labor force.

[Figure 6 about here]

### 7. Out-of-the-Labor-Force Flows

To complete the picture, we use the German data to shed some light on flows in and out "out-of-the labor force". These data are annual observations available for the period 1975-87. Total flows and their breakdown are shown on Figure 7. Quite clearly, the flows between OLF and employment are far larger than those between OLF and unemployment. The earlier are procyclical (see Section 6), the latter countercyclical (Section 5). The regression analysis rejects the assumption that the total flows exhibit any cyclical pattern.

Finally, we ask whether there is any particular pattern of net movements across the three states of Figure 3. In Germany, for all years over the period 1975-87, net movements have occurred counter-clockwise: net flows run from employment to unemployment (and are countercyclical), from unemployment to OLF (no cyclical pattern) and from OLF to employment (procyclical). For the other country where data are available, France, net movements are clockwise and not significantly linked to cyclical effects. The lack of a pattern probably reflects cyclical and institutional

determinants of these flows that are not addressed here.<sup>24</sup>

[Figure 7 about here]

## 8. Summing-up: the Stylized Facts

We have attempted to bring to bear available data on gross labor flows, largely based on the European experience. The evidence is based on data from four countries, with considerable detail for Germany and France. While much work remains to be done, the following facts are robust, at least in Europe:

8.1. Unemployment inflows and outflows move tightly together, both over cycles and along a common trend. Such is not the case for flows corresponding to the two other states: employment and out-of-the labor force.

8.2. Unemployment inflows and outflows are countercyclical, as are all their components (layoffs, discouraged workers, new entrants and re-entrants), except for quits which are procyclical.

8.3. Jobs losses represent by far the largest component of flows into unemployment.<sup>25</sup> Quits into unemployment represent a minor component of total inflows.

8.4. Employment inflows and outflows are procyclical. Since the flows between employment and unemployment are countercyclical, the other components of employment flows (i.e. employment to employment and between employment and out-of-the labor force) must be (and indeed, are) strongly procyclical.

8.5. OLF inflows and outflows do not exhibit a cyclical pattern.

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<sup>24</sup> For example, the decision to enter the labor force through unemployment or employment may be influenced by the business cycle, access to apprenticeships, as well as the availability of unemployment benefits to inexperienced workers.

<sup>25</sup> In France, much of the increase in job losses correspond to expiration of short-term contracts.

Since flows between OLF and unemployment are countercyclical and flows between OLF and employment are procyclical, during recessions (expansions) entrants tend to transit more through unemployment (employment).

## 9. Challenges to Economic Theory

The stylized facts we list above contain implications that cannot be dismissed as is often the case with gross versus net flows. Indeed the pattern of gross unemployment flows over the cycle poses a challenge to several paradigms of the business cycle which assume that during a cyclical upswing the driving force is the *outflow* of workers from unemployment into employment while in the downswing the driving force is the *inflow* into unemployment. These paradigms view unemployment inflows as either negatively correlated with outflows or orthogonal to them.

This is clearly the case with models based on agents' misperception of relative prices of labor and goods (Friedman 1968, Lucas 1973), or nominal contracts cum aggregate demand shifts (Fischer 1977, Taylor 1979), or search models with workers misperceiving relative wage offers (Lucas and Prescott 1974).<sup>26</sup> These models focus on the probability of exiting unemployment, thus relying on outflows in both phases of the cycle. Similarly, real business cycle models which stress productivity shocks and intertemporal substitution of labor supply in response to improved economic opportunities (Kydland and Prescott 1982, Eichenbaum and Singleton 1986) associate business cycle upturns with an increase

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<sup>26</sup> This point is brought up in Darby et. al. (1986).

of exits of workers from unemployment into productive activity.

Since theories of the business cycle and labor markets are closely related, our findings also challenge theories of the labor market that rely on a "representative worker" to derive their results. With the exception of Junakar and Price (1983) and Hughes (1987), most studies concentrate on movements in the outflow rate -  $F/U$  in our notation - as the proximate cause of the rise in European unemployment. One example is Pissarides (1986), who attributes almost all of the increase in unemployment in the UK since the early 1970s to declines in the job finding rate ( $F/U$ ).<sup>27</sup> Similarly, Blanchard and Summers (1986) have interpreted falling ( $F/U$ ) as evidence of insiders unduly restricting access to jobs. Such models provide no explanation for the countercyclical pattern of the number of job findings. They neither shed light on the driving role of unemployment inflows in the downswing of cycles nor do they recognize the tightness of comovements between unemployment inflows and outflows.<sup>28</sup>

The evidence presented indicates substantial labor market activity at all stages of the business cycle, for all countries.

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<sup>27</sup> Pissarides (1986) analyzes the rate of exit and entry into UK unemployment, assuming constant labor force and ignoring gross exits and entries into the labor force.

<sup>28</sup> It is possible to construct models with procyclical, yet passive exit rates in which the inflows into unemployment are the forcing variable. (See Burda 1989). Examining the behavior of the outflow rate (gross outflows normalized by the unemployment stock) may be misleading. If  $f=F/U$  and  $u=U/N$ , then  $F/N=fu$ , and  $f$  is clearly procyclical as long as  $u$  is more countercyclical than  $F/N$ . Division of gross outflows by a variable that is itself endogenous will mask both its magnitude and its cyclical behavior. This critique is less relevant when labor force is the normalizing variable.

Yet the burden of labor market turnover is not shared equally by all participants. There is strong international evidence (OECD 1984) that many employment relationships are very durable and that a large fraction of employment is spent in relationships which last almost a lifetime (Hall 1982). Similarly, a large amount of total unemployment is spent by persons in long-term unemployment, as Clark and Summers (1979) pointed out for the United States. All this implies that *heterogeneity* among labor market participants should be an important component of any good theory. This fact has been well known in the US for some time, but is most often dismissed in the discussion of European unemployment. The stylized facts lend support to models as diverse as Henderson and Salant (1978), Lilian (1982), Long and Plosser (1982), and Pissarides (1983, 1985) not because they incorporate equilibrium behavior, but because they explicitly or implicitly allow for heterogeneity. By extension, the "matching function" view of labor markets, in which the stocks of unemployment and vacancies are mapped into a flow outcome of job finds (e.g. Pissarides 1985, Burda 1989, Blanchard Diamond 1989) also finds support in the data.

Not only do the stylized facts presented here challenge current theories, they also suggest promising directions for research. The remarkable closeness of unemployment inflows and outflows, in contrast with large and long-lasting deviations between inflows and outflows in the two other states (employment and out-of-the labor force) must correspond to a powerful mechanism which results in a stable "natural" rate of unemployment. That this fact is observed in all four countries studied here indicates that these mechanisms are active in very

different social and institutional settings. The facts support Hall's (1979) emphasis on the equality of unemployment inflows and outflows as the condition for labor market equilibrium. Under this interpretation, the sizes of the employed and out-of-the labor force populations are viewed as a residual, possibly open to wider variations around equilibrium than unemployment.

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## APPENDIX: DATA SOURCES

### France:

Unemployment Stock: Statistiques du Travail - Bulletin Mensuel, Ministère du Travail

Unemployment Inflows, Outflows: Bulletin Mensuel du Statistique, INSEE

Civilian Employment on Payrolls: Main Economic Indicators, OECD

Engagement Rate, Leaving Rate: Mouvements de Manoeuvre (MMO), Ministère du Travail (survey based on enterprises with 50+ employees)

Rate of Capacity Utilization: Main Economic Indicators, OECD (not seasonally adjusted)

Bankruptcies: Bulletin Trimestriel, Banque de France

Gross National Product, constant prices: (International Monetary Fund)

### Germany:

Unemployment Stocks, Inflows, Outflows: Bundesanstalt für Arbeit, Arbeitsstatistik, Jahreszahlen.

All labor market flows: Arbeitskräfte-Gesamtrechnung der Bundesanstalt für Arbeit.

Total Employment: Main Economic Indicators, OECD (not seasonally adjusted)

Employment Inflows, Outflows: Beschäftigtenstatistik, Amtliche Nachrichten der Bundesanstalt für Arbeit.

Rate of Capacity Utilization, manufacturing: Business Surveys, Main Economic Indicators, OECD.

Insolvencies, not seasonally adjusted: Statistisches Bundesamt

Gross National Product, real. International Monetary Fund.

### United Kingdom:

Unemployment Stocks, Outflows, Inflows (males only), from Hughes (1987)

Employees in Employment, seasonally adjusted. DRI @Europe

Engagement and Leaving Rates, manufacturing only, table 2.19 Employment Gazette

Firms operating at full capacity, manufacturing.  
Business surveys, Main Economic Indicators, OECD.

Bankruptcies and company liquidations: Financial Statistics,  
Central Statistic Office.

Gross National Product, constant prices: International Monetary  
Fund.

**United States:**

Unemployment: BLS Survey, seasonally adjusted.

Inflows and Outflows: Unemployment less than 5 weeks, seasonally  
adjusted, from Bureau of Labor Statistics

Employment: civilian employment, Bureau of Labor Statistics

Current liabilities of failures, total manufacturing, seasonally  
adjusted. DRI @USCEN.

Rate of Capacity Utilization: Federal Reserve Board's Index for  
all manufacturing, seasonally adjusted.

Gross National Product (current prices): International Monetary  
Fund.

**Table 1**  
**Gross Labor Market Flows in 1987**  
(thousands)

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**France**

Inflows into unemployment	4,115
Outflows from unemployment	4,128
Inflows into employment	4,528
Outflows from employment	4,814

**Germany**

Inflows into unemployment	3,726
Outflows from unemployment	3,636
Inflows into employment	6,046
Outflows from employment	5,811

**United Kingdom**

Inflows into unemployment	3,032
Outflows from unemployment	3,478
Inflows into employment	1,680
Outflows from employment	1,694

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Sources: France: Unemployment is new registrations at ANPE offices. Employment are the categories "entrées" and "sorties" from the monthly MMO survey of manufacturing establishments reported in the Bulletin Mensuel de Statistique de Travail.

Germany: unemployment flows come from new registrations at the Arbeitsämter (employment offices) reported by the Bundesanstalt für Arbeit. Employment is taken from the Beschäftigtenstatistik, which is based on social insurance files and is comprehensive.

UK: The Employment Gazette. By current definition, the inflow into unemployment is given by new spells of unemployment benefits. Employment flows are for manufacturing only.

Table 2. Dickey-Fuller Tests for Nonstationarity  
of Inflows and Outflows†

Country	# of lag differences	$\tau$ -statistic	Durbin's t-stat	Q(20)
France (1970:1-1989:4)				
Inflows	3	-3.43	0.77	26.0
Outflows	3	-3.58	-0.72	18.6
Germany (1963:1-1989:3)				
Inflows	3	-4.02	-0.42	29.4
Outflows	5	-2.71	0.45	11.2
United Kingdom (1963:1-1986:3)				
Inflows	5	-5.27	-1.48	19.9
Outflows	5	-4.68	-1.01	20.4
United States (1962:1-1989:4)				
Inflows	3	-2.57	-1.80	18.1
Outflows	2	-1.34	-1.07	9.8

†Against the alternative of trend stationarity. All data are seasonally unadjusted, with the exception of the US. Number of lags includes a fourth difference in all countries except the US.

Table 3. Cyclical Behavior of Unemployment Flows  
 Quarterly Observations - Dependant Variables: logs of I and O

	constant	time	lagged dependent	capacity utiliz.	SEE	DW t-stat
<b>France</b> (1972:1-1988:4)						
Inflows	6.50 (3.90)	0.66 (4.04)	0.51 (4.60)	-0.90 (-3.26)	0.060	1.07
Outflows	5.53 (4.61)	0.65 (4.22)	0.55 (5.79)	-0.72 (-3.31)	0.062	0.00
<b>Germany</b> (1961:2-1988-4)						
Inflows	8.39 (3.58)	0.22 (3.41)	0.70 (10.27)	-0.99 (-2.63)	0.138	0.24
Outflows	6.80 (3.92)	0.16 (2.90)	0.77 (14.41)	-0.88 (-2.91)	0.132	0.95
<b>U.K.</b> (1961:1-1986:3)						
Inflows	4.43 (6.49)	0.25 (4.10)	0.39 (4.16)	-0.14 (-2.78)	0.132	1.27
Outflows	3.67 (6.19)	0.22 (3.64)	0.46 (5.18)	-0.05 (-1.17)	0.130	0.67
<b>U.S.</b> (1960:2-1989:4)						
Inflows	1.28 (2.61)	0.01 (2.63)	0.85 (17.17)	-0.27 (-2.56)	0.042	2.20
Outflows	2.03 (4.93)	0.11 (3.82)	(a)	-0.44 (-5.46)	0.038	0.42

Notes: Not reported are seasonal dummies. In parentheses are shown the t-statistics. D-W is Durbin-Watson's t statistics for ARI in the presence of lagged dependent variable. All variables in logs, except for the time trend.(a) Two lags were required for US outflows: lag 1: 0.56 (6.22); lag 2: 0.27 (3.18).

Table 4. Cyclical Behavior of Unemployment Flows in Germany  
Annual Observations: 1971-88

	constant	time	lagged	capacity	SEE	DW
			dependent	utiliz.		t-stat
<b>Inflows</b>						
Total (S+E)	12.67 (3.43)	1.72 (2.04)	0.46 (3.18)	-1.92 (-2.97)	0.080	1.49
From employment (S)	15.17 (3.91)	1.64 (2.17)	0.33 (2.06)	-2.29 (-3.44)	0.080	1.39
From out of the labor force (E)	7.72 (2.11)	1.41 (1.22)	0.71 (7.03)	-1.33 (-1.80)	0.102	2.10
<b>Outflows</b>						
Total (F+D)	9.81 (3.69)	1.09 (1.53)	0.64 (5.61)	-1.58 (-3.19)	0.078	2.06
Into employment (F)	8.78 (3.05)	1.10 (1.30)	0.65 (5.21)	-1.41 (-2.58)	0.087	0.92
Into "out of the labor force" (D)	12.67 (3.60)	1.40 (1.77)	0.51 (3.56)	-2.13 (-3.11)	0.106	1.73

*Notes:* In parentheses are shown the t-statistics. D-W is Durbin-Watson's t statistics for ARI in the presence of lagged dependent variable. All variables in logs, except for the time trend.

Table 5. Cyclical Behavior of Unemployment Flows in France  
Quarterly Observations

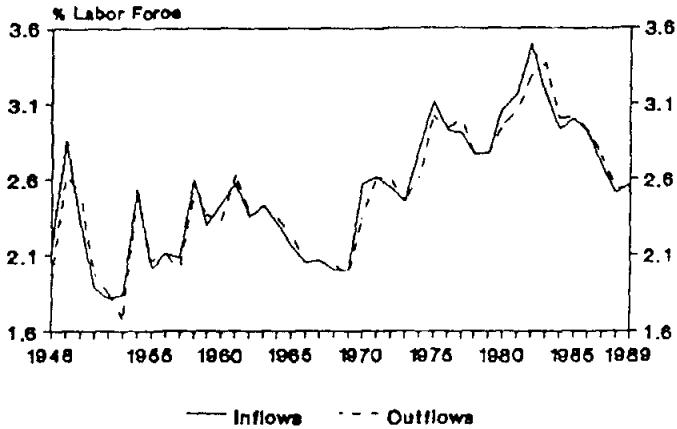
	constant	time	lagged	capacity	SEE	DW
			dependent	utiliz.		t-stat
<b>Inflows</b>						
(1976:2-89:1)						
Total	6.99 ( 4.72)	0.96 (5.43)	0.17 (1.12)	-0.55 (-2.59)	0.031	1.35
From employment <sup>(a)</sup>						
(S)	8.82 ( 3.27)	0.63 (3.58)	0.46 (3.30)	-0.50 (-1.37)	0.055	1.39
Layoffs	9.48 ( 3.24)	0.86 (3.56)	0.47 (3.35)	-0.75 (-1.79)	0.060	1.14
Quits	0.38 ( 0.23)	-0.29 (-2.41)	0.82 (10.65)	0.45 (1.62)	0.043	-0.48
From out of the labor force <sup>(b)</sup>						
(E)	16.11 ( 4.28)	1.02 (6.19)	-0.18 (-1.21)	-0.60 (-0.83)	0.116	-0.10
New entrants	22.13 ( 4.67)	0.67 (4.20)	-0.30 (-2.15)	-1.68 (-1.76)	0.152	-1.65
Re-entrants	4.22 ( 1.71)	0.22 (1.84)	0.71 (6.85)	-0.29 (-0.56)	0.085	-0.47
<b>Outflows</b>						
(1979:2-89:1)						
Total	4.09 ( 2.45)	0.85 (3.77)	0.36 (2.17)	-0.15 (-0.42)	0.054	0.79
Into employment <sup>(c)</sup>						
(F)	10.30 ( 3.22)	0.39 (2.80)	0.45 (3.00)	-0.76 (-1.81)	0.056	1.16
Into "out of the labor force" <sup>(d)</sup>						
(D)	1.82 (0.65)	0.44 (1.14)	0.87 (8.21)	-0.09 (-0.12)	0.093	1.33

Notes: Not reported are seasonal dummies. In parentheses are shown the t-statistics. D-W is Durbin-Watson's t statistics for AR1 in the presence of lagged dependent variable. All variables in logs, except for the time trend.

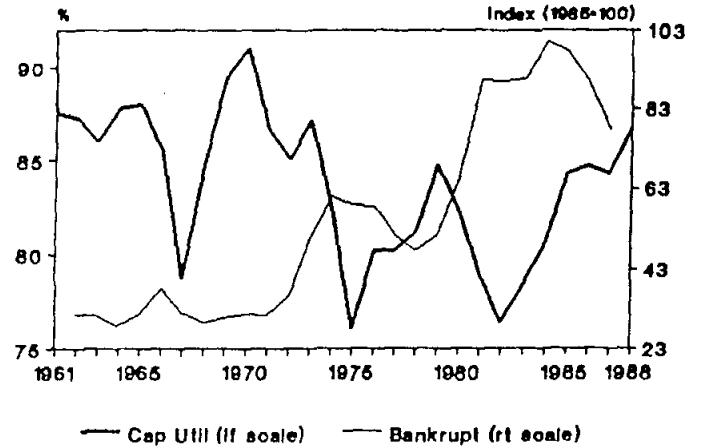
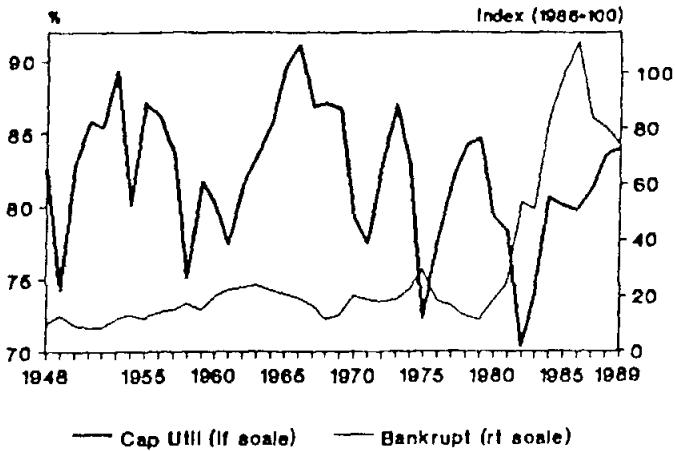
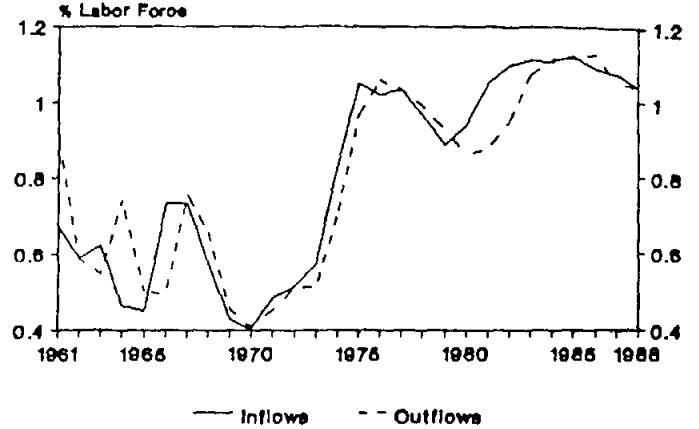
(a) layoffs and quits; (b) new entrants, re-entrants, and others; (c) job finds, no report and "others"; (d) all other outflows.

Figure 1: Monthly Unemployment Flows

United States



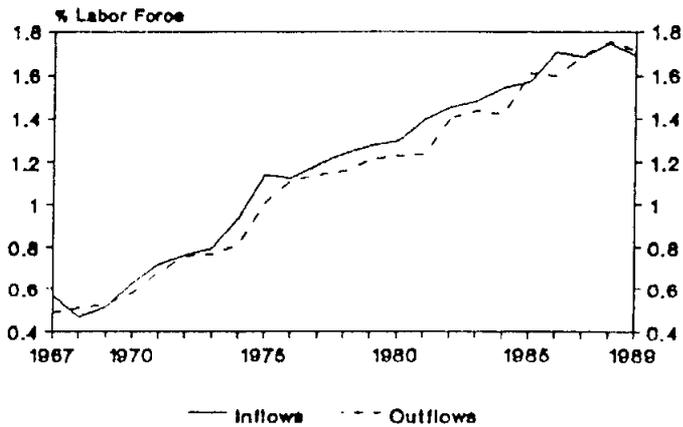
Germany



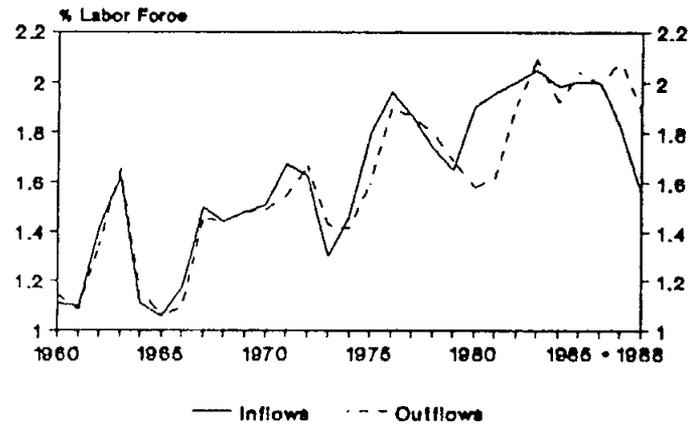
Source: See Data Appendix

# Figure 1: Monthly Unemployment Flows (Cont.)

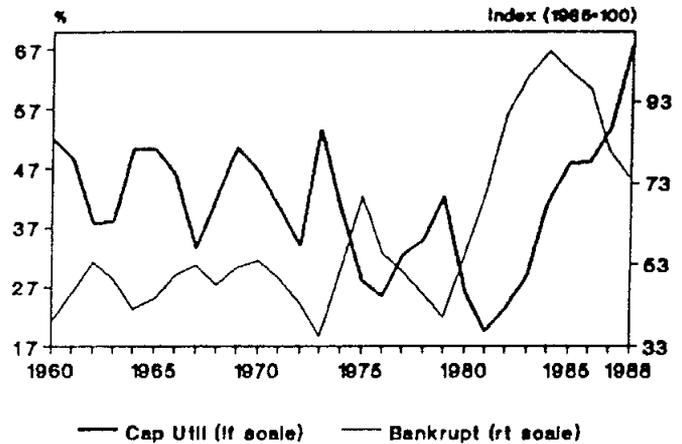
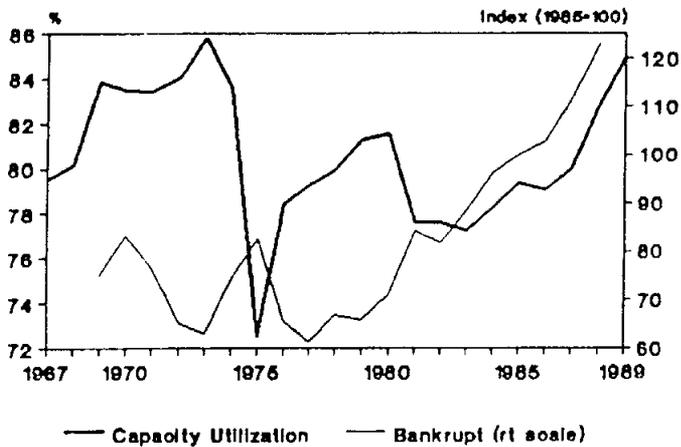
## France



## United Kingdom



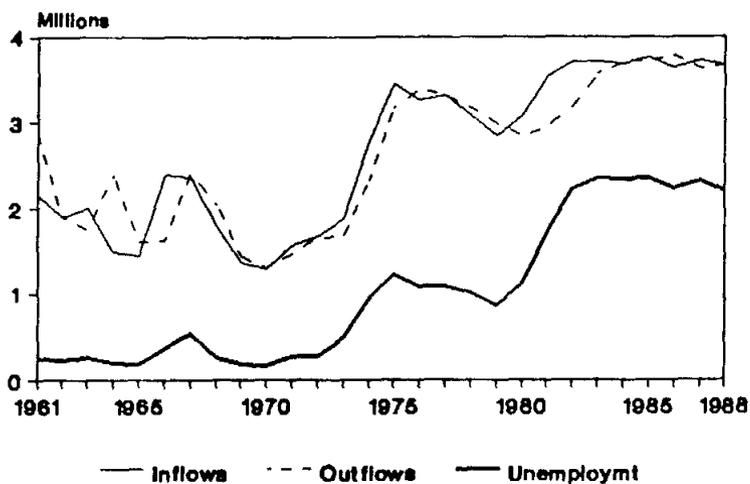
• Samples differ before and after 1986



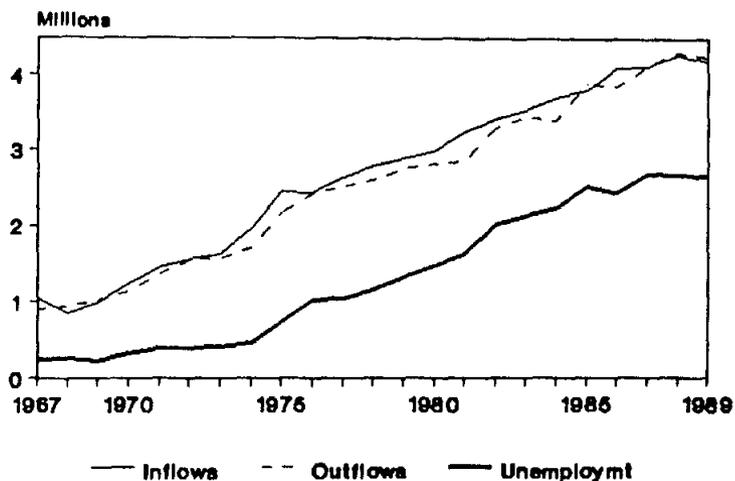
Source: See Data Appendix

# Figure 2: Unemployment: Gross Annual Flows and Stocks

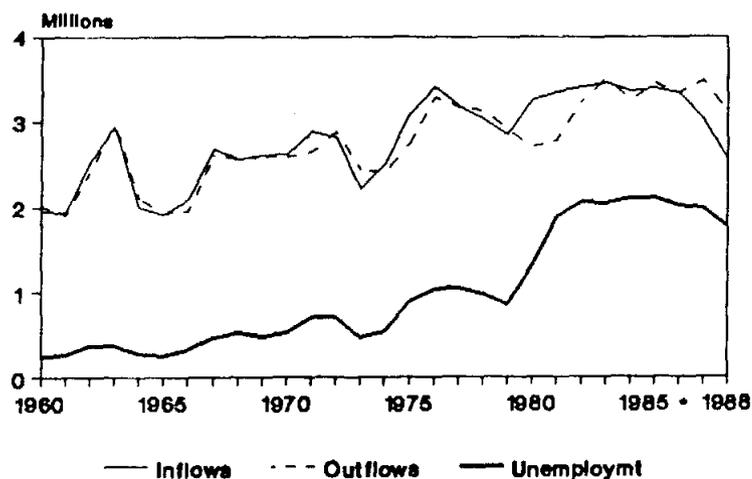
## Germany



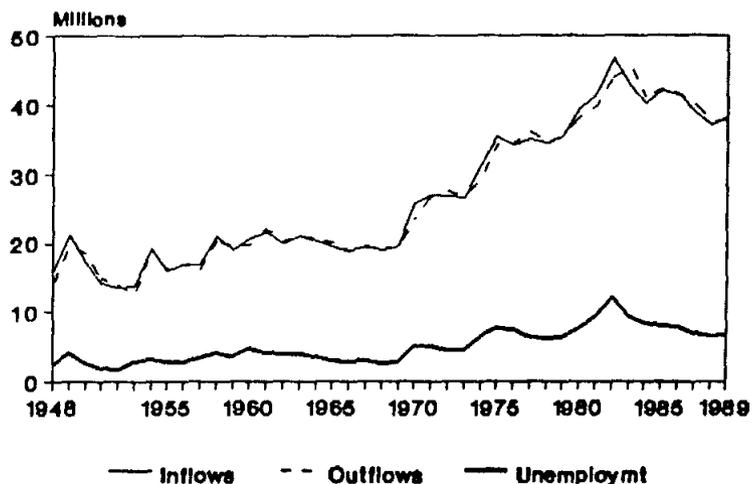
## France



## United Kingdom



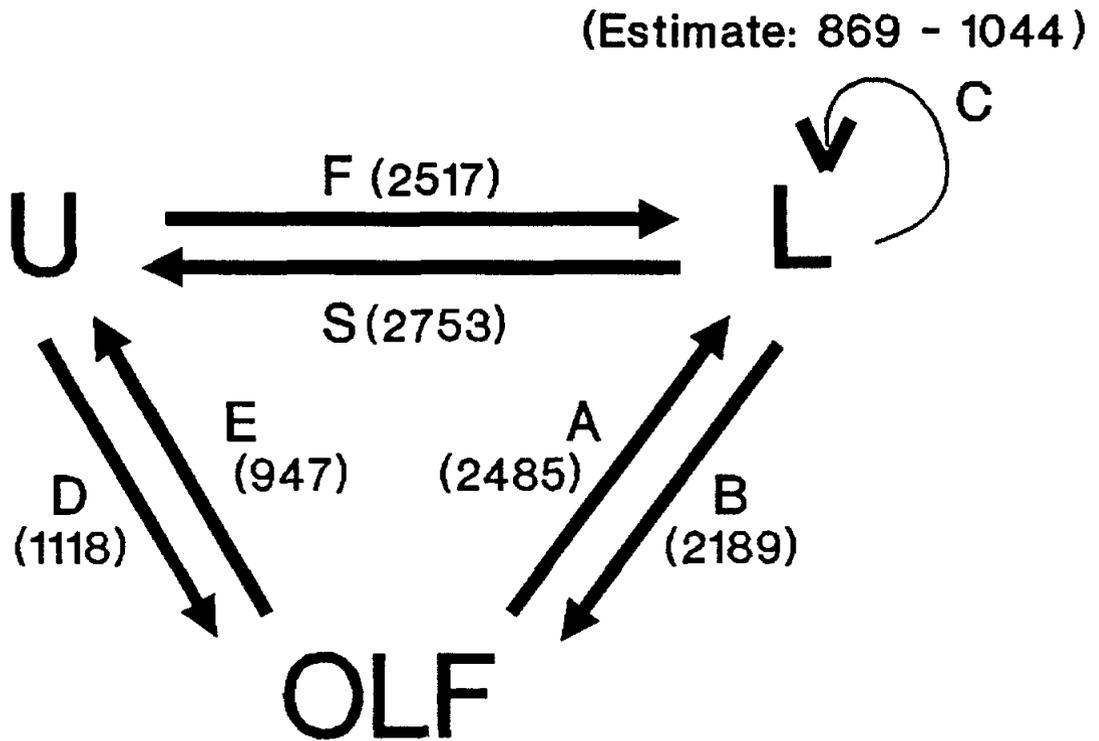
## United States



• Samples differ before and after 1986

Source: See Data Appendix

Figure 3: Labor Flows

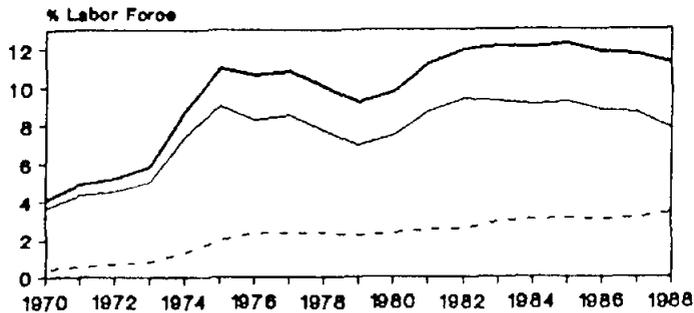


Note: Figures refer to Germany (1000 workers) 1987

Figure 4: Disaggregated Unemployment Flows  
(% of Labor Force)

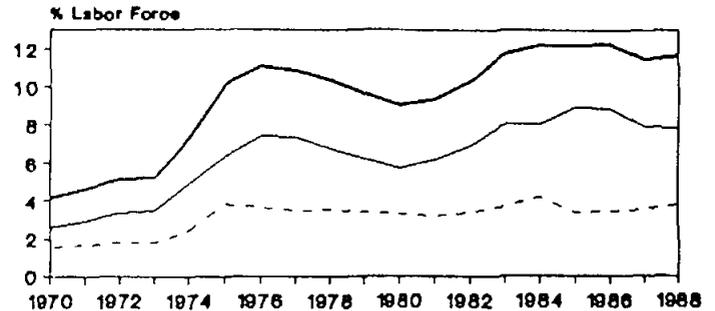
## Germany

Unemployment Inflows



— Flows from Emp (S)    - - - Flows from OLF (E)  
 — Total Inflows (S+E)

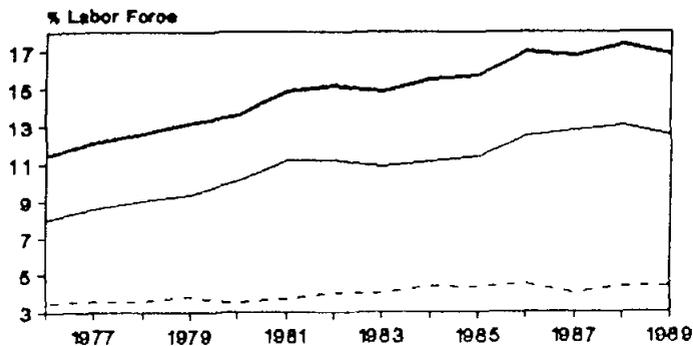
Unemployment Outflows



— Flows to Emp (F)    - - - Flows to OLF (D)  
 — Total Outflows (F+D)

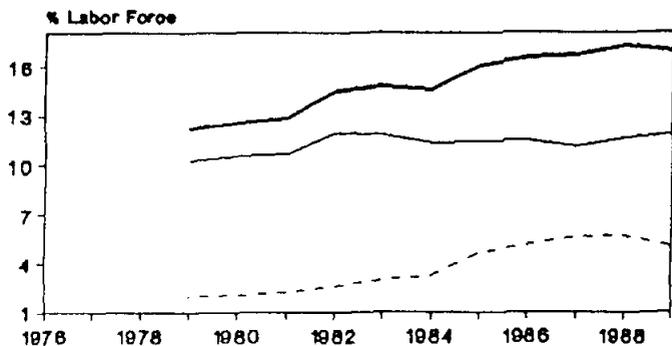
## France

Unemployment Inflows



— Flows from Emp (S)    - - - Flows from OLF (E)  
 — Total Inflows (S+E)

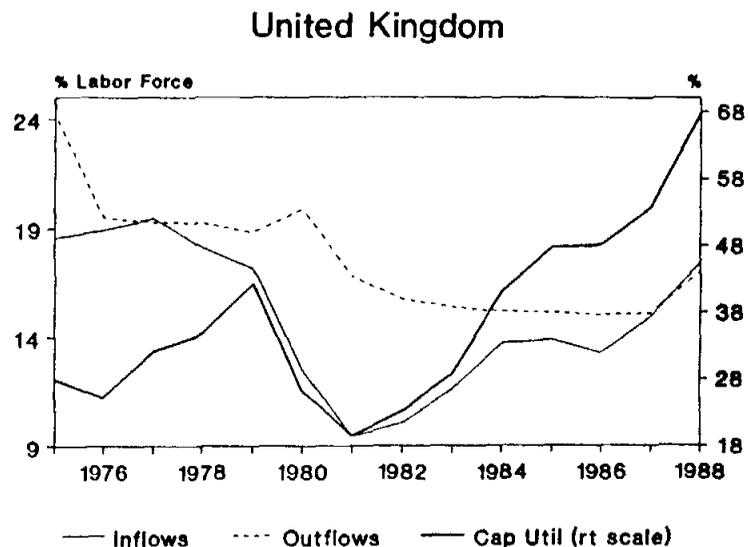
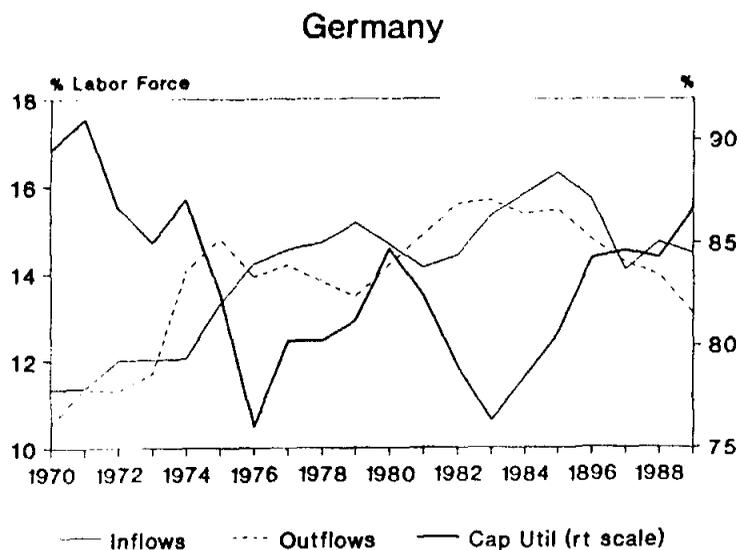
Unemployment Outflows



— Flows to Emp (F)    - - - Flows to OLF (D)  
 — Total Outflows (F+D)

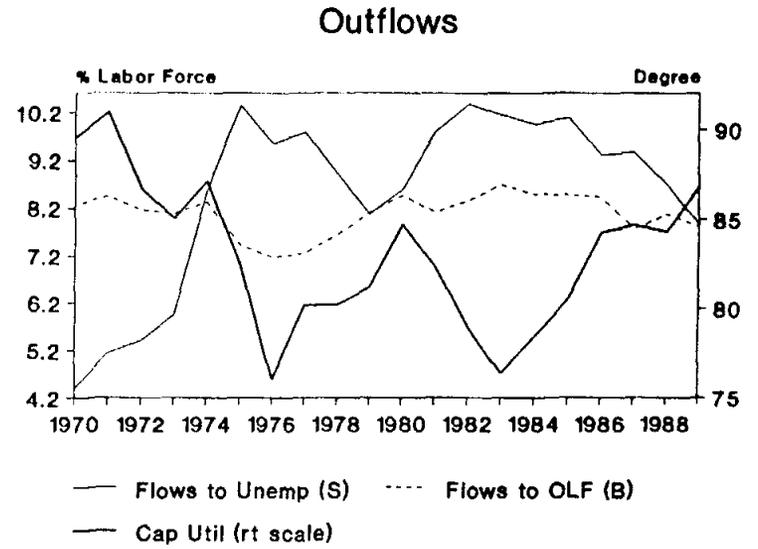
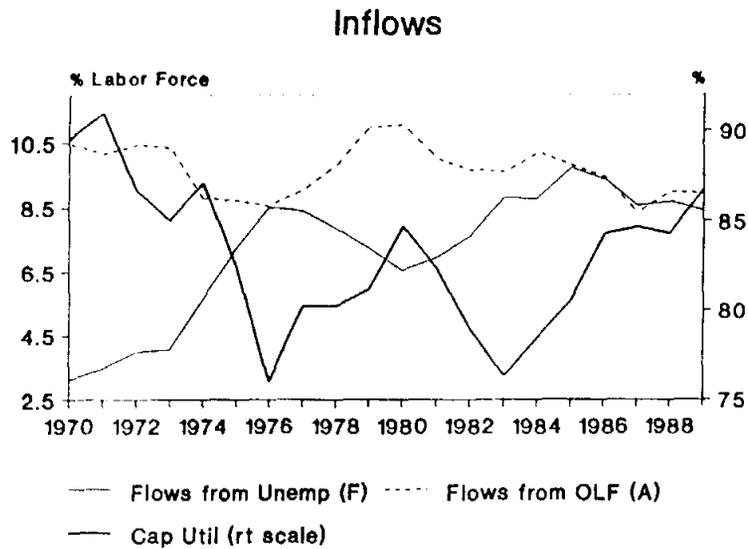
Source: France - Ministère du Travail  
 Germany - Arbeitskräfte - Gesamtrechnung der Bundesanstalt für Arbeit

# Figure 5: Annual Employment Flows (% of Labor Force)



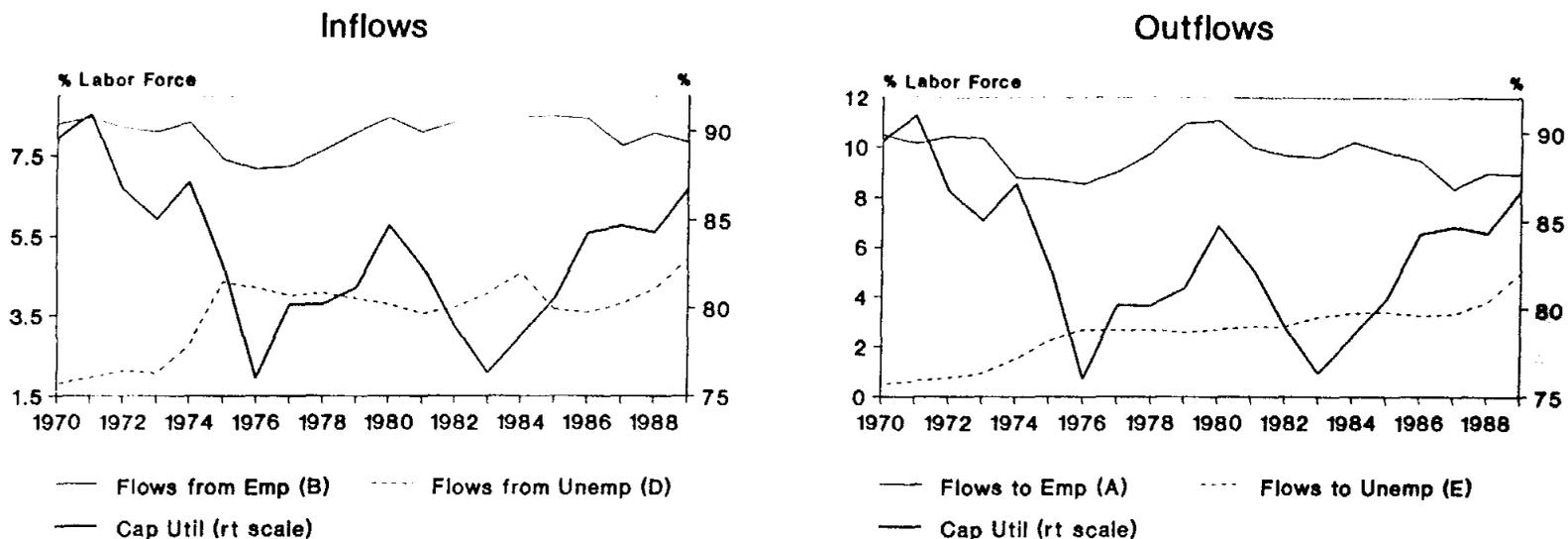
Source: Germany - Beschäftigtenstatistik der Bundesanstalt für Arbeit  
 United Kingdom - Employment Gazette

# Figure 6: Annual Employment Flows in Germany (% of Labor Force)



Source: Arbeitskräfte - Gesamtrechnung der Bundesanstalt für Arbeit

# Figure 7: Annual Out-of-the-Labor Force Flows in Germany (% of Labor Force)



Source: Arbeitskräfte - Gesamtrechnung der Bundesanstalt für Arbeit

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90/10/TM	Joyce BRYER and Tawfik JELASSI	"The Impact of Language Theories on DSS Dialog", January 1990	90/26 OB/BP	Charles KADUSHIN and Michael BRIMM	"Why networking Fails: Double Binds and the Limitations of Shadow Networks", February 1990
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			90/32 SM	Srinivasan BALAK- RISHNAN and Mitchell KOZA	"Information Asymmetry, Adverse Selection and Joint-Ventures: Theory and Evidence", Revised, January 1990
			90/33 OB	Caren SIEHL, David BOWEN and Christine PEARSON	"The Role of Rites of Integration in Service Delivery", March 1990

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