THE HETEROGENEITY AND CYCLICAL SENSITIVITY OF UNEMPLOYMENT: AN EXPLORATION OF GERMAN LABOUR MARKET FLOWS

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U nemployment does not fall uniformly on workers. Instead, some workers seem to experience a higher risk of losing employment, less success in finding employment once being out of a job, and – on average – a higher unemployment rate than others. In the German labour market, this heterogeneity across workers is quite substantial. We can document, for four three-year subperiods, 1983–85 to 1992–94, average unemployment rates of male West-German workers in nine demographic cells distinguished by age and formal education level. We find that the dispersion of unemployment rates across demographic groups during any period exceeds by far the fluctuation of the complete structure over time.

The unemployment experience of "problem groups"

Based on relatively coarse aggregate data, observers of the German labour market, economists and the general public alike, have apparently identified several "problem groups" whose labour market prospects seem daunting, women and unskilled workers, and – implicated less frequently – young and old workers, respectively. As a consequence of their difficult position, it is often argued that it might be warranted to target labour market policy directly to these groups of workers. Yet, despite potentially drastic consequences for the appropriate economic policy, little is known about either

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the long-term structure of unemployment or its behaviour over the cycle. One principal piece of evidence justifying the particular attention being awarded to these "problem groups" is the comparatively high unemployment rates of women and, even more pronounced, of unskilled workers.

Moreover, in a comparison across OECD countries, Germany typically stands out for its comparatively low youth unemployment rates. This has apparently led many observers to conclude that young German workers are particularly well protected from adverse labour market shocks by the often heralded apprenticeship system. On the other hand, unemployment rates of old German workers are far from negligible. In particular, the apparent notion that old workers who lose their jobs face low prospects of finding re-employment has fuelled intense debates over the apparent benefits of early retirement schemes.

Even a thorough analysis of unemployment rates will not reveal the mechanics underlying their demographic heterogeneity. One has to ask, whether for any given demographic group, its unemployment rate is typically relatively high (or low), because workers in this group tend to lose their jobs more (less) often than other workers, because they have a more (less) difficult time finding re-employment, or because of both? These questions can only be addressed by an investigation of labour market flows, again at the level of detailed demographic cells. As for unemployment rates, it will be difficult to base such an analysis on anything less detailed than individual-level data. In addition, individuals have to be observed over time to allow a description of their movements across labour market states.

Finally, characterising the average demographic structure of unemployment rates and of transition intensities across labour market states hardly provides a complete account of the facts. On the contrary, it might be quite instructive to extend the analysis further to describe the behaviour of the complete structure of rates and flow intensities over the cycle.

There is a large dispersion of unemployment rates across demographic groups

In order to provide a more informed basis for discussing the issues mentioned above, this paper formally describes the permanent demographic heterogeneity of unemployment rates, using monthly data from the *German Socio-Economic Panel* GSOEP for the period 1983–1994. Moreover, the paper extends the formal analysis to describe the behaviour of the complete structure of unemployment rates over the cycle. In addition, the paper analyses a detailed monthly account of worker flows between three principal labour market states, *employment, unemployment, and out-of-the-labour force,* based on detailed information regarding major demographic characteristics, gender, age, and education. In the course of the analysis, the paper suggests a specific empirical model that parsimoniously characterises the long-term structure of unemployment rates and flow intensities across 18 demographic cells. In addition, the model captures cyclical behaviour by a series of loading factors translating unobserved aggregate shocks to the labour market into observed fluctuations in cell-specific outcomes.

The cyclical sensitivity of unemployment rates

Over the sampling period, male and female unemployment rates in the sample have, on average, been approximately 4% and 5%, respectively. The estimation of the formal empirical model (reported in the Table) reveals that these average figures hide a substantial heterogeneity across demographic cells. First, average female unemployment rates in the core group (medium-aged, medium-skilled) are significantly higher than those of core male workers. Second, there is a distinct demographic structure in male unemployment rates, while the female unemployment structure is considerably more homogenous.

The average intertemporal developments can be summarised by two observations. First, there was a steady improvement in unemployment rates during the first three periods. The average unemployment rate in the first period 1983–85 was higher, that in the third period 1989–91 considerably lower than for the baseline period 1986–88. Second, the strong performance of the third period, feeding on the re-unification boom, was not repeated in the fourth period 1992–94. Instead, average unemployment rates almost returned to the level of period 1986–88, although they remained slightly lower. That is, judging on the basis of these estimates, the performance of the West German labour market deteriorated in the early 1990s. But this only seems alarming when compared to the boom period of 1989–91.

The cyclical sensitivity of problem groups is captured in four loading factors displayed in the Table. Women do indeed experience relatively pronounced swings in their unemployment rates over the cycle. Their unemployment rates are raised moderately above average in an economic downswing and lowered moderately more than for the average worker in an economic recovery. By contrast, unskilled workers experi-

The Cyclical Sensitivity of Problem Groups

Unemployment rates			
Regime 1: 1983–85	Regime 2: 1986–88	Regime 3: 1989–91	Regime 4: 1992–94
0.6527 (10.050)	–	– 0.8649 (– 11.394)	– 0.1141 (– 2.310)
Cyclical sensitivity: Loading factors			
Women	Unskilled	Young	Old
0.4183 (3.399)	– 0.2692 (– 2.043)	2.0731 (8.618)	– 1.0578 (– 8.738)
Rates of job loss			
Regime 1: 1983–85	Regime 2: 1986–88	Regime 3: 1989–91	Regime 4: 1992–94
0.1063 (4.270)	–	– 0.1084 (– 4.367)	0.0448 (1.986)
Cyclical sensitivity: Loading factors			
Women	Unskilled	Young	Old
– 0.0266 (– 0.113)	– 0.9253 (– 2.8239)	1.1617 (2.876)	– 0.2740 (– 0.970)
Re-employment rates			
Regime 1: 1983–85	Regime 2: 1986–88	Regime 3: 1989–91	Regime 4: 1992–94
– 0.5047) (– 1.573)	–	0.9230 (1.747)	– 0.5604 (– 1.566)
Cyclical sensitivity: Loading factors			
Women	Unskilled	Young	Old
– 0.3292 (– 0.616)	– 0.7645 (– 1.142)	4.470 (1.591)	– 0.3928 (– 0.619)

The models were estimated via Nonlinear Least Squares. Asymptotic t-values are reported in parentheses. A loading factor of *0* indicates that for the corresponding group of workers cyclical swings are of the same order of magnitude as for the average worker; a loading factor of *– 1* implies that the corresponding group of workers is isolated from the economic cycle.

ence somewhat less pronounced swings around their high average value than the average worker.

Compared to these relatively moderate loading factors, those of young and of old workers indicate quite strong, albeit in their implications exactly opposite, deviations from the cyclical experience of the average worker. The estimates imply that young workers experience very pronounced cyclical swings. In boom periods their unemployment rates decline by approximately triple the amount of that for the average worker. In economic downswings, however, their unemployment rate also rises by a threefold magnitude.

This observation moderates the notion of the comparatively successful German youth labour market. While German youth unemployment rates are relatively low in a comparison across OECD countries, according to these estimates young workers (approximately one out of five German workers) are considerably more vulnerable to cyclical swings than the average worker. By contrast, the estimates reported in the Table imply that old workers are completely detached from the economic cycle.

The cyclical sensitivity of transition intensities

We modelled transition rates of male workers from employment to unemployment and vice versa, normalised to the intensities of medium-aged and medium-skilled workers. For female workers, the demographic structure is more homogenous than for males. In the average pair of months in the sampling period, approximately 0.4% of employed male and female workers in the sample went into unemployment. As it was demonstrated to be the case for unemployment rates, the average figures are hiding a substantial heterogeneity across demographic cells. Among men, employment is less stable for unskilled workers, but also for young medium-skilled workers. By contrast, old medium-skilled and high-skilled workers enjoy significantly higher job stability, as do medium-aged high-skilled workers.

On average, during the sampling period more than 9% of all unemployed German men in the sample left unemployment each month to take up employment. Female re-employment rates in the labour force core are considerably lower than those of males. This large difference would be consistent with less success in generating job offers, but also with higher reservation wages preventing the acceptance of forthcoming job offers.

For male workers, it is the medium-age unskilled and old workers of any skill who display particularly low re-employment rates. In fact, based on these estimates, for old male workers the probability of returning into employment is almost negligible. As for the male-female difference in the demographic core group, it is impossible to infer from these estimates alone whether this low re-employment rate is a purely demand-driven phenomenon. Furthermore, since we do not observe any counterfactual situation, nothing is implied by these estimates regarding the potential effects of early retirement schemes. By contrast to old male workers, young medium-skilled and high-skilled, and medium-aged high-skilled male workers experience relatively high re-employment rates.

Over time, job loss rates change in a manner consistent with the fluctuations in unemployment rates. During the first three sub-periods, job loss rates for the typical worker declined steadily. In the final period 1992–94, much of this decline in job loss rates was reversed. In fact, according to these estimates, the job loss rate in this fourth period was even significantly larger than it had been in the baseline period 1986–88. The estimated loading factors imply that the cyclical swings of job loss rates of women and of old workers are basically in line with that of the average worker.

By contrast, the job loss rates of unskilled workers – who happen to experience high job loss rates on the average – appear not to display any cyclical behaviour whatsoever. Instead, the corresponding coefficient estimate is insignificantly different from – 1, thus completely offsetting positive as well as negative shocks to overall job loss rates. The job loss rates of young workers, however, are very sensitive to the cycle. For young workers cyclical swings are amplified to approximately double the magnitude experienced by the average worker.

Cyclical swings in re-employment rates are statistically less well-established than those for unemployment rates or rates of job loss. Nevertheless, the same general pattern emerges from the estimates. There was a steady improvement in re-employment rates during the first three sub-periods, with the difference between the first and the

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third period being statistically significant. Between the third period 1989–91 and the fourth period 1992–94, one can observe a dramatic (and clearly statistically significant) reversal, with an estimated drop in average re-employment rates of more than one percentage point.

None of the estimated loading factors is statistically significant at conventional values. If anything emerges from these estimates, then it is unskilled workers are disattached from the cycle and that young workers are very sensitive to the cycle.

Finally, the cyclical behaviour of unemployment rates on the one hand and of transition intensities between employment and unemployment on the other does not quite add up for women and old workers. Over the cycle, female workers display relatively pronounced swings in unemployment rates, yet the fluctuations in their flow intensities are rather modest. This is consistent with an *added-worker* idea implying a counter-cyclical participation behaviour of women. By contrast, old workers display at best only moderately dampened cyclical swings in their flow intensities, yet their unemployment rates seem to be completely disattached from the cycle. This pattern is consistent with a *discouraged worker* argument. These considerations indicate that an ultimate account of cyclical patterns probably has to take into account movements in and out of non-participation.