Schaffner, Sandra

Working Paper

Heterogeneity in the Cyclical Sensitivity of Job-to-Job Flows

Ruhr Economic Papers, No. 118

Provided in Cooperation with:
RWI – Leibniz-Institut für Wirtschaftsforschung, Essen

Suggested Citation: Schaffner, Sandra (2009) : Heterogeneity in the Cyclical Sensitivity of Job-to-Job Flows, Ruhr Economic Papers, No. 118, ISBN 978-3-86788-131-9, Rheinisch-Westfälisches Institut für Wirtschaftsforschung (RWI), Essen

This Version is available at:
https://hdl.handle.net/10419/29928

Ruhr Economic Papers

Sandra Schaffner

Heterogeneity in the Cyclical Sensitivity of Job-to-Job Flows

#118

RWI

Ruhr Economic Papers

Published by

Ruhr-Universität Bochum (RUB), Department of Economics
Universitätsstr. 150, 44801 Bochum, Germany

Technische Universität Dortmund, Department of Economic and Social Sciences
Vogelpothsweg 87, 44227 Dortmund, Germany

Universität Duisburg-Essen, Department of Economics
Universitätsstraße 12, 45117 Essen, Germany

Rheinisch-Westfälisches Institut für Wirtschaftsforschung (RWI)
Hohenzollernstr. 1/3, 45128 Essen, Germany

Editors:

Prof. Dr. Thomas K. Bauer
RUB, Department of Economics
Empirical Economics
Phone: +49 (0) 234/3 22 83 41, e-mail: thomas.bauer@rub.de

Prof. Dr. Wolfgang Leininger
Technische Universität Dortmund, Department of Economic and Social Sciences
Economics – Microeconomics
Phone: +49 (0) 231 /7 55-32 97, email: W.Leininger@wiso.uni-dortmund.de

Prof. Dr. Volker Clausen
University of Duisburg-Essen, Department of Economics
International Economics
Phone: +49 (0) 201/1 83-36 55, e-mail: vclausen@vwl.uni-due.de

Prof. Dr. Christoph M. Schmidt
RWI
Phone: +49 (0) 201/81 49-227, e-mail: christoph.schmidt@rwi-essen.de

Editorial Office:

Joachim Schmidt
RWI, Phone: +49 (0) 201/81 49-292, e-mail: joachim.schmidt@rwi-essen.de

Ruhr Economic Papers #118

Responsible Editor: Christoph M. Schmidt

ISSN 1864-4872 (online) – ISBN 978-3-86788-131-9

Ruhr Economic Papers
#118

Sandra Schaffner

Heterogeneity in the Cyclical Sensitivity of Job-to-Job Flows

Bibliografische Information der Deutschen Nationalbibliothek
Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über http://dnb.d-nb.de abrufbar.

ISSN 1864-4872 (online)
ISBN 978-3-86788-131-9

Sandra Schaffner*

Heterogeneity in the Cyclical Sensitivity of Job-to-Job Flows

Abstract
Although the cyclical aspects of worker reallocation are investigated in numerous studies, only scarce empirical evidence exists for Germany. Kluve, Schaffner, and Schmidt (2009) emphasize the heterogeneity of cyclical influences for different subgroups of workers, defined by age, gender and skills. This paper contributes to this literature by extending this analysis to job-to-job flows. In fact, job-to-job transitions are found to be the largest flows in the German labor market. The findings suggest that job-finding rates and job-to-job transitions are procyclical while separation rates are acyclical or even countercyclical. The empirical framework employed here allows demographic groups to vary in their cyclical sensitivity. In Germany, young workers have the highest transition rates into and out of employment and between different jobs. Additionally, these transitions are more volatile than those of medium-aged or old workers. By contrast, old workers experience low transition rates and less pronounced swings than the core group of medium-aged, medium-skilled men.

JEL Classification: E32, J63, J64, E24

Keywords: Labor force, employment dynamics, worker flows, business cycle, worker heterogeneity, job-to-job

July 2009

---

* RWI. – I am grateful to Christoph M. Schmidt for very helpful suggestions and comments. I gratefully acknowledge the support of the Collaborative Research Centre SFB 475 (DFG) and of the Leibniz Association. – All correspondence to Sandra Schaffner, RWI, Hohenzollernstr. 1–3, 45218 Essen, Germany, e-mail: sandra.schaffner@rwi-essen.de.

1 Introduction

Germany has been suffering from high unemployment rates since two decades, accompanied by a low GDP growth. Especially in some regions of East Germany the unemployment rate has persistently been higher than 20%. In recent years, GDP growth has risen, though, while unemployment has declined. Yet, people of different ages and different skill levels apparently benefit to a different extent from this improved economic situation. This impression has prompted Schmidt (2000) and subsequently Kluve, Schaffner, and Schmidt (2009) to examine for different demographic groups the heterogeneous cyclical sensitivity of unemployment rates and of transition intensities across labor market states. These previous papers indeed document that the heterogeneity of labor market dynamics is substantial. They have not considered job-to-job flows, however, when calculating intensities of job loss and re-employment, although job-to-job transition rates are an important component of the German labor market.

The present paper, by contrast, explicitly models this important type of transition intensity as well, using a particularly rich data set provided by the research institute of the Federal Employment Agency, the IAB employment subsample (IABS). The analysis pays particular attention to the question whether the cyclical behavior of job-to-job transitions differs across demographic groups and from that observed for other transition intensities. While the explicit consideration of job-to-job flows shows their importance for labor market dynamics, the results by and large confirm the economic conclusions of Kluve et al. (2009). The heterogeneity in cyclical sensitivity of job-to-job transitions is similar to the transitions between employment and unemployment. This finding suggests that some groups are not only more sensitive to the cycle than others in their probability to become unemployed or to leave unemployment but also in their probability to change their job. Following Shimer (2005) our results indicate that young workers are more likely to be in low-quality matches during expansions while old and female workers are less sensitive to the cycle.

The remainder of the paper is organized as follows: Section 2 provides a brief overview of the literature, while section 3 describes the data used and the estimation framework. Section 4 documents the estimation results regarding the flows between the labor force states with an emphasis on transitions between jobs. Finally, section 5 concludes.

2 Previous Literature

As Burda and Wyplosz (1994) show, persistent unemployment rates do not imply a low activity on the labor market. Rather, the gross flows are quite high and the level of unemployment is a result of the transition rates between the core labor market states, employment, unemployment, and non-participation. Therefore, an examination of the transition rates promises providing insights into the heterogeneity of unemployment rates and especially the heterogeneity of cyclical sensitivity. On the aggregate level, there exists an extensive literature on labor market dynamics (for an overview see Yashiv, 2008). Most of these studies find that separations are quite flat over the business cycle, while new hires are more volatile. Corresponding, empirical evidence on labor market dynamics in Germany is scarce. An exception is Bachmann (2005) who gives an overview of labor market transitions in West Germany with the IAB employment subsample (IABS). His findings also suggest that separations are quite flat over the cycle, while accessions are procyclical.

Most studies disregard job-to-job flows, though, mainly as a consequence of lacking adequate data. This is unfortunate. For instance, the studies by Hall (2005) and Shimer (2005) argue that the standard search and matching model by Mortensen and Pissarides (1994) which is often used to explain unemployment does only explain the cyclical dynamics of the labor market under the assumption of extremely large productivity shocks. Moreover, Fallick and Fleischmann (2004), Shimer (2005), and Nagypál (2008) suggest that job-to-job transitions are important for cyclical worker reallocation. They show that in expansions, higher productivity raises the quality of all matches. Therefore, more low-quality matches become productive and are realized. Hence, the probability to change the employer is higher in expansions because more low-quality matches exist, and job-to-job transitions tend to be procyclical.

Nagypál (2008) and Fallick and Fleischmann (2004) find, when using the Current Population Survey (CPS), these transitions to be quite frequent with 2.4% and 2.6% per month, respectively. Job-to-job transition intensities are therefore more than twice as high as transitions from employment to unemployment. The findings for the yearly U.S. job-to-job rates differ across the various studies. Royality (1998) finds a transition rate of 16% for women and 20% for men with the National Longitudinal Survey of Youths. Blanchard and Diamond (1990) observe a mean rate of 12% for the years 1975-1985 by using the CPS, while Stewart (2002) detects 8.6% to 13.7% for the years 1975-

2000. By contrast, Bachmann (2005) finds a monthly job-to-job transition rate of only 0.82% for Germany. This rate is lower than the findings for the U.S. but also higher than the corresponding transition intensity from employment to unemployment. Moreover, the job-to-job transitions in Bachmann (2005) differ between education groups and industries. Furthermore, younger workers have the highest job-to-job transitions, while men experience higher transitions than women.

The studies covering the U.S. have in common that they find job-to-job transitions to be procyclical (e.g. Petrongolo & Pissarides, 2001). By contrast, the results of Burda and Wyplosz (1994) show that job-to-job flows in France, Germany, and the UK are countercyclical. To address heterogeneity in the cyclical sensitivity across different demographic groups, Kluve et al. (2009) employ a model that allows for heterogeneity in the cyclical dependence of labor market dynamics by means of cyclical loading factors. In their empirical implementation, they use the retrospective information of the German Socioeconomic Panel (SOEP) and the IAB employment subsample. Their findings suggest that the re-employment rate, i.e. the transition from unemployment to employment, is the most decisive rate for differences in unemployment. Young workers experience more pronounced swings while women experience less pronounced swings in their re-employment rate. Additionally to Kluve et al. (2009), this study also examines job-to-job transitions with respect to heterogeneous cyclical sensitivity.

3 Data and estimation framework

The empirical application employs the IAB employment subsample (IABS). It is a 2% random sample of all employees registered with the German social insurance system between January 1, 1975 and December 31, 2001. This data contains daily information on employment and registered unemployment. For our analysis West and East Germany are examined separately. Furthermore, we restrict our estimation sample to those workers aged 16 to 64 years. The disadvantage of this data is that it does not consider all kinds of employment. Yet, this is compensated by the fact that the data is process-produced and that it contains an enormous number of observations. In contrast to surveys, exact dates of a spell and the wages are unequivocally reliable.

Until the year 1998, however, the marginally employed do not form part of the IABS. Spells of self-employment are also not included in the data. Also

not covered are family workers, judges, civil servants, soldiers, conscripts, individuals in community service as an alternative to military service, students enrolled in higher education, and marginally employed before the year 1999. Moreover, gaps in the employment history can be due to non-participation. Nevertheless, the large majority of the working population is covered by the data: For instance, in 1995 79.4% of all people in paid work in West Germany appear in the data (Bender, Haas, & Klose, 1999).

Unemployment rates are a result of transitions between the different labor market states. These states can be summed up as employment (E), unemployment (U) and non-participation (N). The data do not contain any information on the concrete mode of non-participation. The only indicator for non-participation is leaving the data. There is some measurement error because we cannot distinguish those becoming civil servants from those becoming self-employed and we will never observe those never receiving unemployment benefits and never being employed in a regular job (under the requirement of social security contributions). Another problem emerges when calculating the stock of non-participants. It is not possible to observe if someone dies. The person is counted as non-participating until the age of 64. However, this problem affects only the level of non-participation. Every month people between 16 and 64, who are not working or registered unemployed are counted as not participating. It is assumed that the education level as well as the region (East, West) remains the same in these periods of non-participation as it is when they are observed the last time.

The empirical strategy closely follows Kluve et al. (2009). In particular, 18 demographic cells are distinguished, defined by sex, three education groups, and three age groups. The group of unskilled workers comprises those without a high school degree (Abitur) and without a vocational degree. Medium-skilled workers are those with a high school degree or a vocational degree, and high-skilled workers, those with an university degree. The age groups are defined as follows: young (16-25), medium-aged (26-49), and old (50-64). Descriptive statistics are displayed in Table 1. The mean unemployment rate of East German women (20%) is particularly high, but also East German men experience an unemployment rate of almost 16%. Remarkably, the education levels are also higher in the East than in the West. Furthermore the education levels of men and women are quite similar in the East, while there are bigger differences in the West.

The model we adopt assumes that a given transition rate π does not only differ in its mean value between these demographic cells but also differs in

Table 1: Descriptive Statistics of the two Samples*

	West Germany (1975-2001)		East Germany (1992-2001)	
	Men	Women	Men	Women
Observations	252,946,856	1,399,275	9,853,841	9,125,205
Unemployment rate	6.54	7.17	15.97	19.74
young (16-24 yrs)	16.10	15.91	18.94	16.94
medium (25-49 yrs)	55.86	54.91	55.77	58.55
old (50-64 yrs)	28.04	29.17	25.28	24.51
low-skilled	16.69	27.30	15.44	14.37
medium-skilled	66.86	62.60	73.88	76.49
high-skilled	16.45	10.10	10.67	9.14
employed	74.24	53.20	66.19	63.10
unemployed	5.12	4.11	12.58	15.52
non-participating	20.63	42.69	21.22	21.38

*in percent

its cyclical sensitivity between these groups. Cyclical sensitivity is expressed as the deviation of the reaction to aggregate cyclical swings from that of the core group. The core group is defined as medium-aged, medium-skilled men. Therefore, the estimating equation depends on two parts:

$$\begin{aligned} \pi_{igmt} &= \alpha + \gamma \cdot 1_{fem} + \sum_{i \neq 5} (\beta_i + \delta_i 1_{fem}) 1_i + \sum_{m \neq 6} \mu_m \cdot 1_m + \\ &\quad \tau_{GDP} \cdot (1 + d_f \cdot 1_{fem} + d_u \cdot 1_{unskilled} + d_h \cdot 1_{high-skilled} + \\ &\quad d_y \cdot 1_{young} + d_o \cdot 1_{old}) \cdot \Delta \ln GDP_t + \epsilon_{igmt}. \end{aligned} \tag{1}$$

The first part explains the differences in transition rates between the nine demographic groups i ($i = 1, \ldots, 9$), the gender g and the month m ($m = 1, \ldots, 12$). The mean transition rate of the core group is captured by α, while γ captures the female deviation from this core value. The coefficients β_i describe the differences in transition rates of male workers, while the coefficients δ_i express deviations of the female structure from that for males. Seasonality is captured by μ_m for the different months, where June is the reference category.

The second part of the equation describes the cyclical sensitivity of the transition rate with respect to contemporaneous GDP growth, captured by its coefficient τ_{GDP}. For five groups loading factors allow their cyclical behavior to deviate from the average cycle: female (loading factor d_f), unskilled (d_u), high-skilled (d_h), young (d_y), and old (d_o) workers. The loading factors amplify or dampen the cyclical swings in transition intensity. A positive

value would indicate that this group experiences the cyclical influence in a more pronounced way, while a negative value indicates that for this group the cyclical swings are less pronounced. A value of -1 would even imply that this group is detached from the cycle. The error term is represented by ϵ_{igmt}.

To explore the issue of cyclical sensitivity more deeply, an alternative specification distinguishes three-year time-periods, so-called "regimes". These sub-periods are 1975-77, 1978-80, 1981-83, 1984-86, 1987-89 for West Germany, and 1990-92, 1993-95, 1996-98, and 1999-2001 for both parts of the country. We treat the aggregate cycle as an unobservable, and estimate its impact to be τ_t $(t = 1, \ldots, 9)$ for the typical worker. This period-specific coefficient is interacted with some set of loading factors to allow for heterogeneity in cyclical behavior. This change implies that there is a nonlinear relationship between economic activity on the one hand and cyclical reactions on the other:

$$\begin{aligned} \pi_{igmt} &= \alpha + \gamma \cdot 1_{fem} + \sum_{i \neq 5} (\beta_i + \delta_i 1_{fem}) 1_i + \sum_{m \neq 6} \mu_m \cdot 1_m + \\ & \sum_{t \neq 5} \tau_t (1 + d_f \cdot 1_{fem} + d_u \cdot 1_{unskilled} + d_h \cdot 1_{high-skilled} + \\ & d_y \cdot 1_{young} + d_o \cdot 1_{old}) \cdot 1_t + \epsilon_{igmt}. \end{aligned} \tag{2}$$

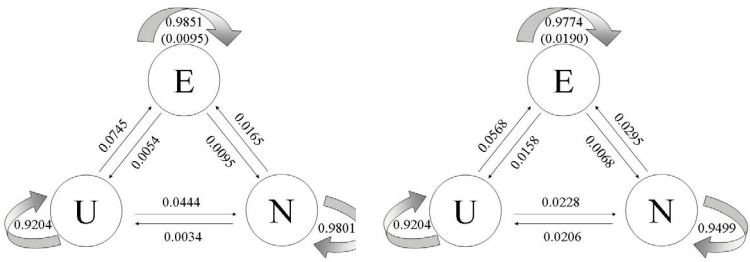
To account for the differences between the West and the East, all equations are estimated separately for West and East Germany.

4 Results

4.1 Aggregate Monthly Flows

Figure 1 documents the typical transition intensities between labor market states in our sample. The mean monthly flows are measured as the share of the stock of workers in the previous state for all transitions. In West Germany some 7.5% of all unemployed workers return to employment per month while another 4.4% leave the labor market. The transition rates out of unemployment (5.7% and 2.3%, respectively) are lower in the East, while the job-loss rate (from employment to unemployment) is higher in the East (1.6%) than in the West (0.5%). Transition intensities from non-participation to unemployment are almost negligible (0.3%) in West Germany while in the East they are in the same order of magnitude (2.1%) as the flows in reverse direction. Overall the pool of unemployed workers is quite persistent, with some 88.1% in the West and some 92.0% in the East retaining their status in

Figure 1: Average Monthly Worker Flows, IABS



(a) West Germany (b) East Germany

The figures corresponding to the grey arrows indicate the share of workers remaining in the respective labor market state; for employment the number in parentheses also document the frequency of job-to-job flows. I.e., of the 98.51% of workers in the West who stay employed in a typical month, 97.56% remain in their old job, while 0.95% change their jobs.

a typical month. This observation applies even more intensely to the state of non-participation, with perhaps the exception of flows from non-participation to employment in East Germany (3.0%).

In this paper we focus on movements into and out of the state of employment and on job-to-job transitions (from one job to another). The monthly rate of job-to-job transitions of 1.0% (West) and 1.9% (East), respectively, are in the same range for West Germany as those found by Bachmann (2005). These transition rates are the largest in West and East Germany. However, both job-to-job transitions are lower than those found for the U.S. Most importantly job-to-job transitions tend to be more frequent than either transition, to unemployment or to non-participation. Consequently, a comprehensive analysis of German labor market dynamics needs to take them into account. In the following subsections, we will look more closely at the anatomy of job-to-job flows with respect to age, gender and skills, and over the economic cycle.

4.2 The Heterogeneity of Job-to-Job Transitions

The previous subsection has documented the importance of job-to-job transitions on the overall turbulence of the German labor market. Here, we take a closer look at their role, as compared to the other transition intensities across labor market states, for different demographic groups, distinguished

Table 2: Job-to-Job Transitions in West Germany - Heterogeneity

	Men		
	Unskilled	Medium-skilled	High-skilled
Young	1.38	1.86	1.22
(16-24)	(0.66)	(0.68)	(0.81)
Medium	0.99	0.97	0.95
(25-49)	(0.96)	(0.68)	(0.95)
Old	0.43	0.45	0.42
(50-64)	(0.51)	(0.58)	(0.66)
	Women		
	Unskilled	Medium-skilled	High-skilled
Young	1.26	1.77	1.29
(16-24)	(0.72)	(1.04)	(0.92)
Medium	0.75	0.81	0.90
(25-49)	(0.63)	(0.75)	(0.85)
Old	0.40	0.42	0.38
(50-64)	(0.56)	(0.60)	(0.67)

Standard deviation in parentheses.

by gender, age and skills. Tables 2 and 3 report for West and East Germany, respectively, average transition rates for the different demographic groups. The comparison of the job-to-job flows for West and East Germany reveals considerable differences between the two parts of Germany. In the initial phase after German reunification, job-to-job transitions were much more frequent in East Germany than in West Germany. In subsequent years, East German rates have considerably come down towards West German magnitudes, although they are still somewhat higher. Our emphasis here is on the differences across demographic groups. The biggest discrepancies to the core transition rates arise across age groups. While job-to-job transition rates become smaller with age in the West they are even more pronounced for medium-aged male workers in the East. The job-to-job transition rates do not differ significantly between men and women. Female transition rates are somewhat smaller for most demographic groups. Furthermore, unskilled workers less often change from one job to another than medium-skilled workers. Young unskilled workers have the highest transition rates of all groups. Overall, the heterogeneity between the demographic groups seems to be substantially higher in the West.

4.3 The Cyclical Behavior of Job-to-Job Transitions

This section compares the results of estimating equations (1) and (2) between the various transition intensities beginning with a focus on the estimated

Table 3: Job-to-Job Transitions in East Germany - Heterogeneity

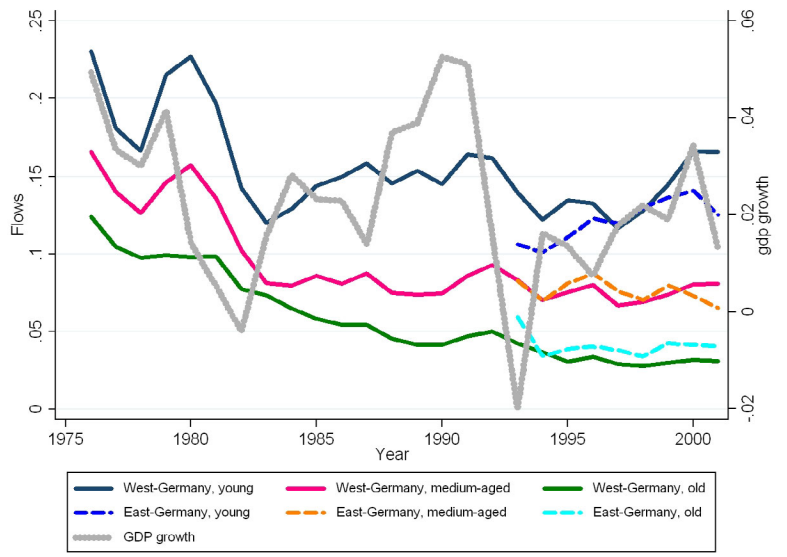
	Men		
	Unskilled	Medium-skilled	High-skilled
Young	1.73	2.60	1.29
(16-24)	(6.79)	(5.77)	(1.48)
Medium	2.13	2.18	2.02
(25-49)	(4.55)	(7.65)	(8.71)
Old	1.85	1.67	1.71
(50-64)	(9.11)	(7.00)	(9.16)
	Women		
	Unskilled	Medium-skilled	High-skilled
Young	1.71	2.24	2.05
(16-24)	(6.80)	(6.98)	(7.81)
Medium	1.48	1.72	1.80
(25-49)	(3.99)	(8.34)	(9.20)
Old	1.25	1.43	1.57
(50-64)	(4.64)	(7.74)	(9.21)

Standard deviation in parentheses.

cyclical coefficients τ_{GDP}. To get an impression of the cyclical behavior of the transition rates, Figures 2 to 4 contrast GDP growth with various transition rates of different demographic groups over the period from 1975 to 2001. Like Kluve et al. (2009), in Figure 2 we find rates of the job loss (transition from employment to unemployment) to differ between the age groups. Young workers have the highest job-loss rates and old workers the lowest. These differences are the same in both parts of Germany. While there is a rather steady decrease in the job-loss rates of medium-aged and old workers, these flows seem to be procyclical for young workers. The re-employment rates (transition from unemployment to employment) are drawn in Figure 3 for the different gender-age cells. Again, the transition rates are the highest for young workers and the lowest for old workers. While gender differences are quite low in the West, they are higher in the East. For old workers, the re-employment rate is steadily decreasing, while it seems to be procyclical for young and medium-aged workers in West Germany.

The job-to-job flows are shown in Figure 4. Similarly to the job-loss and re-employment rates, young workers display the highest transition rates and old workers the lowest. Additionally, the job-to-job transition rate is more volatile for young workers than for older workers and seems to be procyclical. While there is a time trend of increasing job-to-job flows in the West, with an accelerated increase during the most recent years, job-to-job flows of medium-aged and old workers in the East have decreased substantially

Figure 2: Transition from Employment to Unemployment - Job Loss Rate



from their very high initial values following reunification. It is the job-to-job transition rate of young workers which indicates a relatively close attachment to the economic cycle.

Table 4 shows the estimated coefficients τ_{GDP} for these three transition rates and West and East Germany, separately. (The full estimation results for the job-to-job flows are presented in the Appendix) The coefficients are those of equation (1) and therefore reflect the cyclical sensitivity for the baseline group (medium-skilled, middle-aged men). The estimated coefficient is negative for the job loss rate in West Germany and therefore indicates that the job loss rate is countercyclical. However, the estimated coefficient for East Germany is insignificant which indicates that the job loss rate is acyclical in the East. The estimated coefficient for the re-employment rate τ_{GDP}^{UE} is positive and significant for both parts of Germany. Thus, as already indicated in Figure 3, the re-employment rate seems to be procyclical. The estimated coefficient is also positive for the job-to-job transition in West and East Germany. This finding is in accordance with findings for the U.S. (e.g. Petrongolo & Pissarides, 2001). The absolute cyclical influence on the job-to-job transition rate is higher in East Germany than in West Germany.

Figure 3: Transition from Unemployment to Employment - Re-Employment Rate

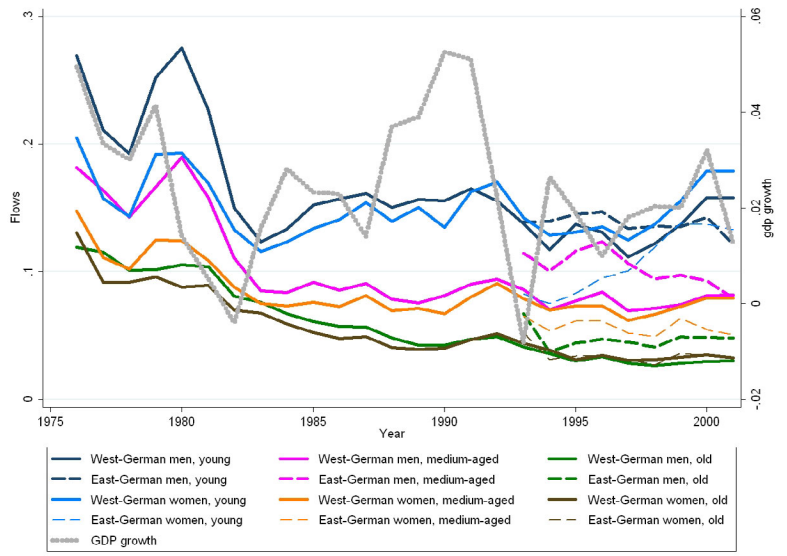
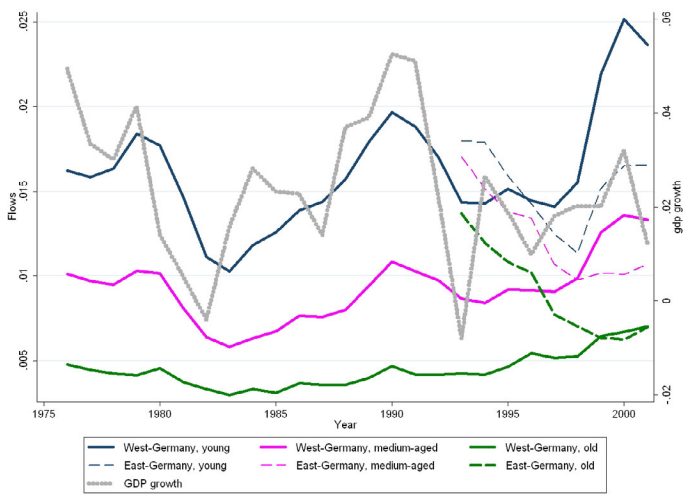


Table 4: Cyclical Sensitivity of Transitions - Estimation Results

τ_{GDP}^{EU}	τ_{GDP}^{UE}	τ_{GDP}^{EE}
West Germany		
-0.028	0.550	0.045
(-4.70)	(6.74)	(6.09)
East Germany		
-0.028	0.234	0.238
(-1.05)	(6.74)	(3.19)

Estimated coefficients of Equation (1). Asymptotic t-values in parentheses.

Figure 4: Transition Flows from Job to Job



Summed up, the results indicate that job-finding and job-to-job transition rates are procyclical. Worker reallocation therefore increases during economic upswings. While the cyclical influences play a bigger role for the job-to-job transition in East than in West Germany, job loss rates are only sensitive to the cycle in the West.

The estimated loading factors for applying the two models to the job loss rate in East and West Germany are displayed in Table 5. Female and high-skilled workers in West Germany experience less pronounced swings than the core group in both models. Their job loss rate is less dependent on the cyclical behavior than that of male, medium-aged, and medium-skilled workers. While all other groups in the first model, using GDP growth as indicator for cyclical behavior, do not differ significantly from the core group, there is some evidence, when using the regimes as indicator for the economic cycle, that young and unskilled workers experience more pronounced swings in their job-loss rates. All estimated coefficients except for high-skilled workers in the second specification are insignificant in the East German sample.

The estimated coefficients for the re-employment rate are given in Table 6. In both models, including GDP growth or unobserved regimes, heterogeneity in cyclical sensitivity can be observed. As seen before, the re-employment rate of the core group is procyclical. In both specifications and in the West

Table 5: Transition Rates from Employment to Unemployment - Excess Cyclical Sensitivity

Women	Unskilled	High-Skilled	Young	Old
		West Germany		
		Model 1		
-0.632	0.372	-0.358	0.293	-0.049
(-3.70)	(1.42)	(-1.92)	(1.17)	(-0.24)
		Model 2		
-0.375	0.211	-0.319	0.521	-0.124
(-7.33)	(2.76)	(-5.22)	(5.68)	(-1.91)
		East Germany		
		Model 1		
-2.110	-1.511	-0.682	0.187	0.735
(-1.15)	(-1.19)	(-0.81)	(0.18)	(0.86)
		Model 2		
0.567	0.853	-0.662	-0.061	-0.138
(1.40)	(1.53)	(-2.16)	(-0.18)	(-0.43)

The models were estimated via Nonlinear Least Squares. Asymptotic t-values in parentheses.

Table 6: Transition Rates from Unemployment to Employment - Excess Cyclical Sensitivity

Women	Unskilled	High-Skilled	Young	Old
		West Germany		
		Model 1		
-0.509	0.080	-0.435	0.329	-0.348
(-4.46)	(0.52)	(-3.34)	(1.84)	(-2.65)
		Model 2		
-0.506	0.010	-0.100	0.435	-0.362
(-12.31)	(0.19)	(-1.96)	(6.35)	(-7.68)
		East Germany		
		Model 1		
-0.731	0.381	-0.151	-0.290	-0.494
(-5.83)	(2.08)	(-1.08)	(-7.42)	(-3.83)
		Model 2		
-0.013	0.172	-0.226	-0.284	-0.468
(7.02)	(1.43)	(-2.26)	(-10.05)	(4.89)

The models were estimated via Nonlinear Least Squares. Asymptotic t-values in parentheses.

Table 7: Job-to-job Transition Rates - Excess Cyclical Sensitivity

Women	Unskilled	High-Skilled	Young	Old
		West Germany		
		Model 1		
-0.380	0.279	-0.438	0.764	-0.692
(-3.10)	(1.46)	(-3.07)	(3.03)	(-4.75)
		Model 2		
0.151	0.286	-0.257	0.402	-0.577
(2.75)	(3.96)	(-4.62)	(5.20)	(-10.76)
		East Germany		
		Model 1		
-0.084	-0.204	$2 \cdot 10^{-4}$	-0.234	0.071
(-0.34)	(-0.71)	(0.00)	(-0.82)	(0.22)
		Model 2		
0.025	-0.175	-0.002	-0.185	-0.091
(0.19)	(-1.15)	(-0.01)	(-1.22)	(-0.53)

The models were estimated via Nonlinear Least Squares. Asymptotic t-values in parentheses.

and East we observe that women, high-skilled workers and the elderly experience less pronounced swings in their job-finding rate than the core group. While young workers in West Germany experience more pronounced swings (in the second specification), young workers in East Germany are less influenced by the cycle.

Finally, the heterogeneity in the cyclical sensitivity of job-to-job transitions is shown in Table 7. (Full estimation results are presented in the Appendix.) In West Germany high-skilled workers and old workers experience less pronounced swings, while young workers are more influenced by the cycle. While women seem to be less sensitive to the cycle in the first specification, it is the other way round in the second specification. A possible explanation for this discrepancy can be that there is some influence by the economic growth which is measured by GDP growth but also by additional factors which are better captured by the regimes: The estimated coefficient for the GDP growth is relatively small in West Germany while the estimated coefficients for the regimes (full results are shown in the Appendix) indicate that job-to-job transitions are increasing over time. In East Germany there are no significant differences between the demographic groups.

5 Concluding Remarks

This paper analyzes the German labor market by examining its dynamics and their cyclical sensitivity. The main focus of this analysis is the heterogeneity in the dynamics of flows out of or into employment. We do not only allow for differences between demographic groups in the size of the transition rates but also in their cyclical sensitivity. Using the IAB employment subsample for the years 1975 to 2001 for West Germany and 1992 to 2001 for East Germany, 18 demographic groups are distinguished. Job-to-job transitions are large compared to other transitions and therefore form a substantial part of labor market dynamics. However, compared to U.S. findings these rates are somewhat smaller. Transition rates from job-to-job are the largest for young workers. In West Germany one can observe increasing job-to-job transition rates for all groups of workers.

Using GDP growth and, in a nonlinear model, a more flexible specification of regimes, cyclical dependence is estimated. Loading factors account for the deviation in the cyclical sensitivity from the core group. The job-loss rate is found to be countercyclical in the West and acyclical in the East using GDP growth as the cyclical indicator. Both, re-employment rates and the job-to-job transition rates are found to be procyclical in both parts of Germany. Moreover, for all transition rates young workers display higher transition rates than the core groups and old workers have lower transition rates. Additionally, in West Germany re-employment and job-to-job transition rates are more volatile for young workers than for the core group and less volatile for the old workers. Similarly, West Germany women are less sensitive to the cycle than their male counterparts.

These findings supplement to those of Kluve et al. (2009) using the SOEP and the IABS to estimate these models for job-loss and re-employment rates. They also confirm the findings of earlier studies (Bachmann, 2005; Nagypál, 2008) that re-employment rate and job-to-job transition rates are large and procyclical. However, our findings suggest that women and old workers are less sensitive to the cycle, while the job-to-job transition rates of young workers are strongly procyclical. Thus, the modified search and matching models by Hall (2005) and Shimer (2005) are more relevant for young workers, searching actively for a new job while they are employed than for old and female workers. Young workers are therefore more likely to realize low-quality matches than other worker groups.

References

Bachmann, R. (2005). *Labour Market Dynamics in Germany: Hirings, Separations, and Job-to-Job Transitions over the Business Cycle* (SFB 649 Discussion Paper No. 2005-45). Humboldt-Universität zu Berlin.

Bender, S., Haas, A., & Klose, C. (1999). Die IAB-Beschäftigtenstichprobe 1975-1995. *ZA-Information*, *45*, 104–115.

Blanchard, O., & Diamond, P. (1990). The Cyclical Behavior of Gross Flows of Workers in the US. *Brookings Papers on Economic Activity*(2), 81-155.

Burda, M., & Wyplosz, C. (1994). Gross Worker and Job Flows in Europe. *European Economic Review*, *38*(6), 1287-1315.

Fallick, B., & Fleischmann, C. A. (2004). *Employer-to-Employer Flows in the U.S. Labor Market: The Complete Picture of Gross Worker Flows* (Finance and Economics Discussion Series No. 2004-34). Board of Governors of the Federal Reserve System (U.S.).

Hall, R. E. (2005). Employment Fluctuations with Equilibrium Wage Stickiness. *American Economic Review*, *95*(1), 50-65.

Kluve, J., Schaffner, S., & Schmidt, C. (2009). *Labor Force Status Dynamics in the German Labor Market: Individual Heterogeneity and Cyclical Sensitivity* (mimeo). RWI Essen.

Mortensen, D., & Pissarides, C. (1994). Job Creation and Job Destruction in the Theory of Unemployment. *Review of Economic Studies*, *61*, 397-415.

Nagypál, E. (2008). *Worker Reallocation over the Business Cycle: the Importance of Employer-to-Employer Transitions.* (mimeo)

Petrongolo, B., & Pissarides, C. A. (2001). Looking into the Black Box: A Survey of the Matching Function. *Journal of Economic Literature*, *39*(2), 390-431.

Royality, A. B. (1998). Job-to-Job and Job-to-Nonemployment Turnover by Gender and Education Level. *Journal of Labor Economics*, *16*(2), 392-443.

Schmidt, C. (2000). The Heterogeneity and Cyclical Sensitivity of Unemployment: An exploration of German Labor Market Flows. *Ifo-Studien*, *46*, 73-98.

Shimer, R. (2005). The Cyclicality of Hires, Separations, and Job-to-Job Transitions. *Federal Reserve Bank of St. Louis Review*, *87*(4), 493-507.

Stewart, J. (2002). *Recent Trends in Job Stability and Job Security: Evidence from the March CPS* (Working Paper No. 356). BLS.

Yashiv, E. (2008). U.S. Labor Market Dynamics Revisited. *Scandinavian Journal of Economics*, *109*(4), 779-806.

Appendix - Additional Tables

Table 8: Job-to-Job Transitions in West Germany - Results Equation (1)

Core Values					
Constant	0.56	Female	-0.12	GDP	0.04
	(17.21)	Deviation	(-3.49)	growth	(6.09)
Demographics: Deviation from the Core					
		Unskilled	Medium-skilled		High-skilled
Young		0.31	0.82		0.23
(16-24)		(8.00)	(23.38)		(5.88)
Medium		$2 \cdot 10^{-3}$	-		0.03
(25-49)		(0.07)			(0.82)
Old		-0.50	-0.45		-0.44
(50-64)		(-12.94)	(-12.70)		(-11.31)
Female Deviation					
		Unskilled	Medium-skilled		High-skilled
Young		0.04	0.06		0.23
(16-24)		(0.89)	(1.47)		(5.12)
Medium		-0.09	-		0.10
(25-49)		(-1.99)			(2.28)
Old		0.12	0.12		0.12
(50-64)		(2.83)	(2.71)		(3.64)
Seasonal Factors					
January	February	March	April	May	June
2.23	$-4 \cdot 10^{-3}$	-0.04	0.37	0.03	-
(86.82)	(-1.69)	(-1.49)	(14.70)	(1.32)	
July	August	September	October	November	December
0.41	0.26	0.28	0.46	$-3 \cdot 10^{-3}$	-0.19
(15.92)	(10.32)	(11.03)	(17.95)	(-0.11)	(-7.54)
Cyclical Sensitivity					
Women	Unskilled	High-skilled	Young	Old	
-0.38	0.28	-0.44	0.76	-0.69	
(-3.10)	(1.46)	(-4.62)	(3.03)	(-4.75)	
Diagnostics					
Number of Obs.	5814	Adj. R-squared	0.7856		

The model was estimated via Nonlinear Least Squares. Asymptotic t-values in parentheses.

Table 9: Job-to-Job Transitions in East Germany - Results Equation (1)

Core Values					
Constant	-0.14	Female	-0.36	GDP	0.24
	(-0.17)	Deviation	(-0.40)	growth	(3.19)
Demographics: Deviation from the Core					
		Unskilled	Medium-skilled		High-skilled
Young		0.10	0.71		-0.51
(16-24)		(0.10)	(0.77)		(-0.50)
Medium		0.20	-		-0.16
(25-49)		(0.21)			(-0.17)
Old		-0.17	-0.60		- 0.56
(50-64)		(-0.17)	(-0.65)		(-0.55)
Female Deviation					
		Unskilled	Medium-skilled		High-skilled
Young		0.44	0.10		1.13
(16-24)		(0.37)	(0.08)		(0.95)
Medium		-0.18	-		0.24
(25-49)		(-0.15)			(0.20)
Old		-0.13	0.22		0.32
(50-64)		(-0.11)	(0.18)		(0.28)
Seasonal Factors					
January	February	March	April	May	June
11,14	-0.10	0.05	0.28	0.08	-
(16.15)	(-0.15)	(0.07)	(0.40)	(0.12)	
July	August	September	October	November	December
0.45	0.30	0.40	0.41	$6 \cdot 10^{-3}$	-0.20
(0.66)	(0.44)	(0.58)	(0.60)	(0.01)	(-0.28)
Cyclical Sensitivity					
Women	Unskilled	High-skilled	Young	Old	
-0.08	-0.20	$2 \cdot 10^{-4}$	-0.23	0.07	
(-0.34)	(-0.71)	(0.00)	(-0.82)	(0.22)	
Diagnostics					
Number of Obs.		2159	Adj. R-squared		0.1827

The model was estimated via Nonlinear Least Squares. Asymptotic t-values in parentheses.

Table 10: Job-to-Job Transitions in West Germany - Results Equation (2)

Core Values					
Constant	0.751		Female	-0.141	
	(27.02)		Deviation	(-5.02)	
Demographics: Deviation from the Core					
	Unskilled		Medium-skilled	High-skilled	
Young	0.478		0.935	0.273	
(16-24)	(16.03)		(32.79)	(9.46)	
Medium	0.058		-	-0.039	
(25-49)	(2.04)			(-1.39)	
Old	-0.569		-0.570	-0.629	
(50-64)	(-19.61)		(-19.73)	(-20.75)	
Female Deviation					
	Unskilled		Medium-skilled	High-skilled	
Young	0.039		0.065	0.226	
(16-24)	(1.01)		(1.67)	(5.82)	
Medium	-0.088			0.101	
(25-49)	(-2.26)			(2.59)	
Old	0.125		0.120	0.117	
(50-64)	(3.21)		(3.08)	(3.00)	
Regimes					
(75-77)	(78-80)	(81-83)	(84-86)	(87-89)	
-0.168	-0.031	-0.307	-0.281	-0.142	
(-8.46)	(-1.78)	(-12.43)	(-11.90)	(-7.46)	
(90-92)	(93-95)	(96-98)	(99-01)		
-	-0.163	-0.134	0.342		
	(-8.30)	(-7.08)	(13.07)		
Seasonal Factors					
January	February	March	April	May	June
2.23	-0.038	0.006	0.375	0.034	-
(98.69)	(-1.69)	(0.29)	(16.70)	(1.50)	
July	August	September	October	November	December
0.406	0.263	0.281	0.457	-0.003	-0.192
(18.09)	(11.73)	(12.54)	(20.39)	(-0.13)	(-8.57)
Cyclical Sensitivity					
Women	Unskilled	High-skilled	Young	Old	
0.151	0.286	-0.257	0.402	-0.577	
(2.75)	(3.96)	(-4.62)	(5.20)	(-10.76)	
Diagnostics					
Number of Obs.	5814		Adj. R-squared	0.8339	

The model was estimated via Nonlinear Least Squares. Asymptotic t-values in parentheses.

Table 11: Job-to-Job Transitions in East Germany - Results Equation (2)

Core Values					
Constant	7.182		Female	-0.311	
	(5.80)		Deviation	(-0.27)	
Demographics: Deviation from the Core					
	Unskilled		Medium-skilled	High-skilled	
Young	-2.637		-0.701	-1.907	
(16-24)	(-1.62)		(-0.54)	(-1.16)	
Medium	-1.12		-	-0.175	
(25-49)	(-0.87)			(-0.14)	
Old	-0.849		0.041	0.068	
(50-64)	(-0.52)		(0.03)	(0.04)	
Female Deviation					
	Unskilled		Medium-skilled	High-skilled	
Young	0.442		0.100	1.102	
(16-24)	(0.38)		(0.09)	(0.95)	
Medium	-0.184		-	0.238	
(25-49)	(-0.16)			(0.21)	
Old	-0.134		0.218	0.3189	
(50-64)	(-0.12)		(0.19)	(0.28)	
Regimes					
(91-92)	(93-95)		(96-98)	(99-01)	
-	-6.508		-6.881	-6.837	
	(-5.92)		(-6.00)	(-5.99)	
Seasonal Factors					
January	February	March	April	May	June
1.116	-0.102	0.045	0.277	0.080	-
(16.72)	(-0.15)	(0.07)	(0.42)	(0.12)	
July	August	September	October	November	December
0.454	0.304	0.397	0.414	0.006	-0.196
(0.68)	(0.46)	(0.60)	(0.62)	(0.01)	(-0.29)
Cyclical Sensitivity					
Women	Unskilled	High-skilled	Young	Old	
0.025	-0.175	-0.002	-0.185	0.091	
(0.19)	(-1.15)	(-0.01)	(-1.22)	(0.53)	
Diagnostics					
Number of Obs.	2159		Adj. R-squared	0.2344	

The model was estimated via Nonlinear Least Squares. Asymptotic t-values in parentheses.