İlkay UNAY GAILHARD* and Karin KATARIA*

Economic crisis and labour force transition to inactivity: a comparative study in German rural and urban areas

This study analyses the determinants of labour force transition to inactivity in the German labour market. Using German Labour Force Survey data the influence on the transition flow to inactivity of factors such as age, education, marital status, sex and registration with the public employment service are examined. We present estimates of degree of urbanisation-specific multinominal logit models to analyse the determinants of individuals' transition probabilities in rural and urban areas. By comparing the influence of the factors that affect transition to inactivity before (2002-07) and during (2008-09) the global economic crisis, this paper contributes to the general understanding of transitional labour market flow dynamics during the crisis period. The findings suggest that during the crisis period education level and marital status have had different impacts in rural and urban regions on the transition to inactivity. While these two factors influenced the transition to inactivity before the crisis, their effect has been stronger during it. Additionally the results suggest that the interaction of individuals with institutional settings (e.g. registration with the public employment service) have to be taken into account when designing active labour market policy measures, especially during crisis periods. Knowledge about the influence of these factors on the transition to inactivity, and their different effects in rural and urban areas, provides important information for designing policies aiming to reduce the transition to inactivity during crisis periods.

Keywords: labour force transition, inactivity, economic crisis, rural and urban areas, multinominal logit model, Germany

* Leibniz-Institut für Agrarentwicklung in Mittel- und Osteuropa (IAMO), Theodor-Lieser-Straße 2, D-06120 Halle (Saale), Germany. Corresponding author: unaygailhard@iamo.de

Introduction

As a consequence of the global economic crisis in September 2008, the German economy declined by 6.7 per cent in GDP between the beginning of 2008 and the first quarter of 2009 (Bogedan *et al.*, 2010). However, average unemployment rates showed a 5 per cent rise in 2009, which was the lowest in Europe (BA, 2009). While studies exist that explain the reasons for this modest increase in unemployment (Faik, 2012) and the stabilising effect of short-time work contracts that avoid fluctuation in the labour market (Crimmann *et al.*, 2012), not much is known about the labour market in terms of transition to the undesired state of inactivity.

The study of Baqueiro-Espinosa and Unay Gailhard (2011) on economic inactivity in Germany during the 2008-09 global economic crisis showed that in rural areas in 2008, relative to the average of previous years (2002-07), the flow to inactivity from unemployment increased by 3 per cent for the age group 25-54 and by 9 per cent for the age group 55-64. In the second year of crisis, 2009, this increase was much larger: 19 per cent for the age group 15-24. Similar patterns are observed for urban areas, but with lower percentages. Regardless of crisis periods, the work of Gomes (2012) on the transition probabilities between economic statuses in UK labour market in 1993-2010 found that every quarter, on average 11 per cent of the unemployed moved into inactivity but still wanted a job while only 6 per cent moved into inactivity and did not want a job[1]. An increase in the probability of flow to inactivity from unemployment can be explained by the discouraged individuals and disguised unemployment (Seeborg and DeBoer, 1989; Copus *et al.*, 2006). These two categories are considered within the concept of hidden unemployment[2]. More generally,

these individuals are the persons on the margin of the labour force, defined as marginal attachment (Jones-Stephen and Riddell, 1995) by indicating that they want work but are not engaging in job search for individual or economic reasons.

Increases in flow to inactivity from unemployed and employed status provide information on the tendency of marginal attachment during crisis periods. A particularly important issue involves the understanding of factors that affect transition to inactivity during an economic crisis. Flows out of the labour market within an inactive status allow the variation in unemployment during economic crisis periods to be explained (Davis *et al.*, 2006).

In this paper we focus on the impact of the crisis on rural and urban labour force transition in Germany, and we aim to answer the following questions: (a) how has the global economic crisis influenced labour force transition to inactivity in Germany; (b) are there differences in the impact of the crisis on rural and urban labour force transition; and (c) if so, what are the determining factors that cause a change in labour flow before and during the crisis period?

The research focuses on the spatial division of rural and urban regions in Germany by estimating a degree of urbanisation-specific multinominal logit model (MLM). The MLM is used to examine how various factors (e.g. human capital and interaction of individuals with institutional settings) influence the labour force transition flows to inactivity from unemployed and employed status in rural and urban regions. We thus conduct a comparative analysis that highlights the differences between urban and rural areas during two economic periods: before (2002-07) and during (2008-09) the crisis. The results show how factors such as age, gender, marital status, education and registration with the public employment service influence the transition probabilities of individuals to an economically inactive status.

Several studies exist that analyse transition probabilities in the labour market in developing countries (Haltiwanger and Voopivec, 2002; Tasci and Tansel, 2005; Blunch and Sulla, 2011) as well as developed countries (Marston, 1976;

---

[1]   Barham (2002), using the UK Labour Force Survey, reported that "the number of inactive individuals has grown double the number of unemployed in 1984 to five times the number in 2001" (p.1).

[2]   Components of hidden unemployment are considered differently in the literature. In our study variables of inactive status of individuals are derived from the German LFS, which involved the above mentioned two components of hidden unemployment: discouraged individuals and disguised unemployment.

Bellman *et al.*, 1995; Faik, 2012; Gomes, 2012) both before and during the crisis. While most of these studies focus on gender differences by using gender-specific MLM, there is, to the best of our knowledge, no study that analyses the labour force transition probabilities regarding differences in the degree of urbanisation. This study thereby contributes to the rural studies literature by looking at labour force flows by degree of urbanisation during the 2008-09 global economic crisis. This work also complements previous literature on transitional labour market flow dynamics by focusing on factors influencing transition to inactivity, rather than unemployment, in crisis periods.

Transitional labour markets: theory and determining factors in transition flows

Previous studies on transitional labour markets (TLM) (e.g. Marston, 1976; Schmid, 1995; Kruppe, 2002) have distinguished transition flows as follows: transition between employment status; transitions between unemployment and employment; transition between education and employment; and transition between employment and retirement. In our study, by considering Marston's approach (Marston, 1976), we distinguish between individuals in the transition matrix that flow between jobs, unemployment and inactivity.

Inactive individuals are defined as those who are neither classified as employed nor as unemployed. As reflected in the labour force survey (LFS), examples of inactive individuals include those who are not seeking employment, discouraged workers that believe there is no work available, individuals looking after children, and incapacitated adults (Eurostat, 2006). Some studies (Blanchard and Diamond, 1990; Gomes, 2012) have disaggregated inactivity into two subgroups: inactive individuals that want a job and those do not want a job. However, these subgroups are not available in the German LFS used by us. By considering the findings of Joyce *et al*. (2003) that show the subgroups of inactivity have the same transition probability to employment status as the unemployed, our research uses inactivity without any subgroup distinction.

TLM studies provide two main emphases for the notion of reducing the extent of social exclusion (being in the out-of-labour force or inactive) in labour markets. Firstly, existing analyses emphasise individuals both from the labour market (employed, unemployed) and out of the labour market (inactive). Secondly, there is an emphasis on regulating activities in the whole transition matrix (training, part-time work, informal work, childcare etc.) including both within and outside of the labour market (Detzel and Rubery, 2002).

With regards to the previous findings of TLM studies, a number of hypotheses on the role of human capital and institutional settings on the labour force transition can be derived. These findings highlight the high sensibility of the youth age group to financial and economic crises across different countries (ILO, 2010; Scarpetta *et al*., 2010). Choudhry *et al*. (2012) found that the impact of the 2007-08 economic crisis on the unemployment rate of young people is highly significant for high income countries. According to Blunch and Sulla (2011), in Serbia during the 2008-09 crisis there was a significant age effect in the labour force transition to inactivity from unemployment and employment status. They found that being in the age group 35-44 positively influenced the transition to inactivity from unemployment status; the effect seems higher than for individuals in the 25-34 and 45-54 age groups.

The probability of transition to inactivity decreased with increasing level of education. Regardless of economic crises, in European Union (EU) Member States for the period 1997-2007 Eichhorst *et al*. (2010) concluded that the high level of education positively contributed to the probability of transition from non-employment (unemployment and inactivity) to employment. According to Lauerová and Terrell (2002), education is important in explaining flows to employment status from unemployment and out-of-labour force in all studied post-communist labour markets such as Bulgaria, Czech Republic, Germany, Hungary, Poland and Slovakia. The less educated individuals are more likely to be laid off or quit and less likely to find a job. Moreover, Gomes (2012) found that in the UK in the period 1993-2010 individuals educated to a high level faced fewer fluctuations in transition probabilities between the three economic statuses (employed, unemployed and inactivity) than the less educated individuals.

Gender and marital status are other important factors highlighted in the labour force transition literature (Bellman *et al*., 1995; Tasci and Tansel, 2005; Blunch and Sulla, 2011). Estimation of transition probabilities by Blunch and Sulla (2011) showed that, relative to males, females were disadvantaged in the Serbian labour market in terms of flow from unemployment and inactivity status during the first year of the economic crisis. Tasci and Tansel (2005) found that in the Turkish labour market during the 2001 economic crisis there was a higher probability of single men and women losing a job. Additionally, while marriage increases the likelihood of transition to employment from inactivity for males, marriage reduces the likelihood of finding a job from inactivity status for females.

Regarding the role of institutional settings on the labour force transition during economic recessions, some studies also refer to the public employment service as an influencing factor (e.g. Curti, 1998). Caseworkers in the public employment service are responsible for implementing countries' active labour market policies and for helping the registered unemployed individuals they are expected to counsel. Depending on the country regulations, the public employment service provides vocational training and offers temporary employment possibilities and job search programmes to registered unemployed individuals.

In Germany, during the economic stagnation year of 2002 the government enacted several regulations in order to reform the labour market including the public employment service, the unemployment benefit system and active labour market policy. This labour market reform (*Hartz Reform*) aimed to activate unemployed job seekers that attached to public employment offices within a strict regime during the job search process. Studies on the effectiveness of the demanding requirements of the reforms (such as mandatory participation in activation programmes and reducing unemployment benefit duration) highlight the influence of the implemented regulations on the labour market. Achatz

and Trappmann (2009) show that within less than one year, 14 per cent of unemployment benefit recipients had left benefit rolls and half of those took up full or part-time jobs. Regarding the effects of activation policies on older age unemployed individuals, Nivorozhkin *et al.* (2013) found that while monitoring standard job search requirements is an effective method of activating unemployed people, this regulation has little effect on older workers, leading to increased exit rates from unemployment.

Different than effectiveness studies, Eichhorst *et al.* (2010) discuss whether an increasingly inclusive labour market is associated with a reduction in job quality (measured by contract type). They conclude that it depends on the study country: there are two trends in post-industrial labour markets; one towards more precarious employment for the recently non-employed (unemployment and inactivity) in Belgium, Czech Republic, France and Italy and another towards more permanent employment in Denmark, Hungary, Spain and the UK. These findings lead us to assume that being registered with the public employment service has a positive influence on transition to employment for working age group individuals and a negative effect on transition to inactivity from employed and unemployed status[3].

TLM studies focusing on periods of economic crisis rarely investigate the spatial division of urban-rural regional differences. A few exceptions (e.g. Tasci and Tansel, 2005; Blunch and Sulla, 2011) show that transition to unemployment and inactivity probability differs between urban and rural areas during crisis periods. Blunch and Sulla (2011) found that urban areas were influenced more than rural areas both in terms of transition flow to unemployment and inactivity status. Additionally, findings by Tasci and Tansel (2005) suggest that individuals who live in urban areas are more likely to transition out of employed status compared to those who live in rural areas.

In this study, we take these findings as a starting point and investigate how factors such as age, education, gender, marital status and registration with the public employment service influence the transition flow to inactivity by estimating a degree of urbanisation-specific model in Germany both before (2002-07) and during (2008-09) the economic crisis period.

Methodology

A number of studies on labour force transition analyse transition possibilities by using multinomial logit models (MLM) (Bellman *et al.*, 1995; Gustafsson *et al.*, 2002; Lauerová and Terrell, 2002; Tasci and Tansel, 2005; Blunch and Sulla, 2011). These studies consider the transition flow as a polytomous problem. The transition of the individuals from one labour force status to another has been investigated as a stochastic process within the concept of the Markov Process. An individual can have three statuses, which we denote as

'e' for employment, 'u' for unemployment and 'i' for inactivity. Each year an individual can transition from one status to another with the following probabilities:

i → e, P = Pie   i → u, P = Piu   i → i, P = Pii
e → e, P = Pee   e → u, P = Peu   e → i, P = Pei
u → e, P = Pue   u → u, P = Puu   u → i, P = Pui

Pie, for example, denotes the transition probability of an individual from inactive to employed status. Corresponding to the given nine labour force transition possibilities between former (previous) year (f) and current year (c), matrix M could be shown as:

M = (mfc)

where mfc is the probability of transition ef, uf and if making the transition ec, uc and ic. Finally, we assign the transition matrix M as follows within nine independent transition probabilities:

$$M = \begin{bmatrix} Pie & Piu & Pii \\ Pee & Peu & Pei \\ Pue & Puu & Pui \end{bmatrix}$$

By taking the approach proposed by Marston (1976), in our study the transition from state f to c is defined as the ratio of the number of individuals in state f at time *t* who are in state c at time *t*+1, to the stock of individuals in the original state f at time *t*.

We analyse transitions in both rural and urban areas in Germany. The aim of using urbanisation-specific MLM is to test whether rural inhabitants have different levels of transition probabilities in the labour market than urban individuals. The model results also help us to identify significant factors (such as age, education, gender, marital status and registration with public employment offices) that affect individuals' transitions in the labour market both before and during the economic crisis. The applied MLM considers three choices of economic status: employed, unemployed and inactive, where the values of status Sn have no natural order:

$$Sn \in \{1, 2, \dots J\}$$

and the probability that an individual n chooses alternative economic status j is:

$$P_{nj} = \frac{e^{x'_n \beta_j}}{\sum_{i=1}^{J} e^{x'_n \beta_i}}$$

Since the coefficients of MLM do not have a straightforward interpretation (Greene, 1993; Cameron and Triverdi, 2009), studies on labour force transition usually report marginal effects and interpret the results using the average marginal effects of the estimated MLM model (Tasci and Tansel, 2005; Blunch and Sulla, 2011). The marginal, or partial, effect measures the effect on the conditional mean of y of a change in one of the regressors Xk (Cameron and Triverdi, 2009).

We provide the estimates of marginal effects in this study. Of the six constructed transition possibilities, the

---

[3] As used in the study of Bellman *et al.* (1995), variables such as amount of unemployment benefit and income of the individual would be ideal for the labour force transition model. However these variables are not available in the used study survey. The findings of Blunch and Sulla (2011) show that unemployment benefit negatively influenced the probability to transition out of unemployment to inactivity during the 2008-09 crisis in Serbia. Similarly, in the eastern German labour market in 1991, the results of Bellman *et al.* (1995) suggest that increases in monthly benefit income would lower the probability of labour force exit of individuals.

focus of our paper is the two transition flows to inactivity status: the transition from unemployment to inactivity (Pui) and transition from employment to inactivity (Pei). For Pei, the study investigated 358,196 transitions, 107,905 for rural and 250,291 for urban areas. Additionally, for Pui, the total number of transitions is 47,670, 13,894 for rural and 33,776 for urban areas.

The data used in this study come from the annual German LFS that was obtained from the European Commission, Eurostat and EU for the years 2002-2009. These data divide the working age population (15 years and above) into three labour force groups – persons in employment, unemployed persons and inactive persons. The possibility of transition flows were mainly derived using yearly data at the country level, which is the average of quarterly surveys. By not taking into account individuals living in peri-urban (intermediate) areas, a comparative analysis considering individuals living in rural and urban areas was performed. This allowed us to determine if the probabilities derived from rural areas differed significantly from urban areas.

Results

Tables 1 and 2 show the results of the average marginal effect of the MLM for rural and urban areas, respectively, within the two study periods. Interpretations of the results are ordered according to the following variables: age, sex, marital status[4], education and being registered with the public employment service. Here we discuss each variable as a significant determining factor explaining the transition to inactivity.

---

[4] During the calibration process, single individuals were merged with the marital status of individuals equal to widowed and divorced or legally separated.

Determinants of transition to inactivity from unemployment – Pui

Age: For individuals living in rural areas, the marginal effect of age has a statistically significant and positive effect on the transition to inactivity from unemployment. We also observe significant and positive marginal effects for individuals living in urban areas. Considering the two different study periods (pre- and mid-crisis), we observe that both in rural and urban areas, for the older age group (55-64) the positive coefficient of the marginal effects on the transition from being unemployed to inactivity has increased slightly. Relative to urban areas, the statistically significant and positive marginal effects for the older age group during the crisis increased more in rural areas (0.152 to 0.281).

Sex: For individuals living in both types of study area (rural and urban), the marginal effect of being male on the transition to inactivity from unemployment is significant and negative. During the economic crisis the marginal effect of being male (on the Pui) was higher in both rural and urban areas compared to the previous period. Regarding the differences in the marginal effect of being male in rural and urban areas, we find that during the crisis, for males living in urban areas, the probability of transition (Pui) decreases more than for males living in rural areas. Findings show that the parameter of being male is important for explaining the transition flow to inactivity from being unemployed for both rural and urban areas during the crisis period.

Marital status: For individuals in both the rural and urban areas, the marginal effects of being single on the transition to inactivity from unemployment are not significant.

Registration with the public employment service: Examining the marginal effect on transition to inactivity from unemployment (Pui) for registered individuals with the

Table 1: Multinominal logit model, RURAL AREAS. Labour force transitions (average marginal effects).

	Before the crisis (2002-2007)						During the crisis (2008-2009)					
	Peu	Pei	Pue	Pui	Pie	Piu	Peu	Pei	Pue	Pui	Pie	Piu
AGE (years)												
25-54	0.004*	0.001	-0.012	-0.022	-0.100**	-0.024**	-0.003	0.003	0.093	0.063	-0.244**	-0.037
	(0.002)	(0.003)	(0.023)	(0.022)	(.016)	(0.009)	(0.011)	(0.014)	(0.121)	(0.127)	(0.076)	(0.050)
55-64	0.007**	0.035**	-0.178**	0.152**	-0.269**	-0.045**	-0.007	0.036**	-0.094	0.281**	-0.401**	-0.049
	(0.002)	(0.003)	(0.024)	(0.022)	(0.019)	(0.010)	(0.012)	(0.014)	(0.127)	(0.130)	(0.080)	(0.052)
SEX												
Male	0.007**	-0.007**	0.012*	-0.034**	-0.038**	0.008**	0.006**	-0.011**	0.073**	-0.057*	-0.005	-0.001
	(0.001)	(0.001)	(0.006)	(0.006)	(0.008)	(0.003)	(0.003)	(0.004)	(0.032)	(0.031)	(0.034)	(0.016)
MARITAL STATUS												
Single	0.001	0.004**	0.006	0.005	0.051**	-0.013**	0.002	0.007*	0.043	-0.029	0.047	-0.012
	(0.001)	(0.001)	(0.006)	(0.006)	(0.006)	(0.003)	(0.003)	(0.004)	(0.035)	(0.032)	(0.032)	(0.015)
EDUCATION												
Medium	0.002	-0.002*	0.043**	-0.043**	0.076**	0.005	0.004	0.003	0.005	-0.036	0.108**	-0.004
	(0.001)	(0.001)	(0.008)	(0.007)	(0.007)	(0.003)	(0.004)	(0.006)	(0.042)	(0.039)	(0.036)	(0.017)
High	-0.004**	-0.008	0.028**	-0.042**	0.107**	0.011**	0.005	-0.008	0.134**	-0.128*	0.178**	0.002
	(0.001)	(0.002)	(0.012)	(0.011)	(0.009)	(0.005)	(0.007)	(0.007)	(0.063)	(0.066)	(0.046)	(0.027)
REGISTER												
(PES)	0.089**	0.034**	-0.388**	-0.200**	0.031**	0.138**	0.082**	0.027**	-0.387**	-0.180**	0.002	0.145**
	(0.001)	(0.001)	(0.006)	(0.006)	(0.012)	(0.003)	(0.003)	(0.004)	(0.026)	(0.031)	(0.042)	(0.014)
# of obs.	101,946		13,242		15,671		5,959		652		792	
LR χ²(14)	25,485.480		8,100.340		5,160.180		931.650		267.760		177.550	
Prob > χ²	0.000		0.000		0.000		0.000		0.000		0.000	
Pseudo R²	0.501		0.325		0.276		0.384		0.195		0.170	

PES: Public Employment Service; for other abbreviations (Peu etc.) see text
Parentheses are standard errors of average marginal effects. Significance levels: *=p<0.10, **=p<0.05
Source: Own calculation from German LFS

Table 2: Multinominal logit model, URBAN AREAS. Labour force transitions (average marginal effects).

	Before the crisis (2002-2007)						During the crisis (2008-2009)					
	Peu	**Pei**	**Pue**	**Pui**	**Pie**	**Piu**	**Peu**	**Pei**	**Pue**	**Pui**	**Pie**	**Piu**
AGE (years)												
25-54	0.003	-0.003	0.027*	0.024	-0.046**	-0.011**	0.007	-0.003	-0.014	0.008	-0.099**	-0.051**
	(0.002)	(0.003)	(0.014)	(0.018)	(0.010)	(0.005)	(0.007)	(0.009)	(0.053)	(0.073)	(0.038)	(0.023)
55-64	0.004*	0.037**	-0.151**	0.192**	-0.206**	-0.034**	0.010	0.028**	-0.176**	0.196**	-0.334**	-0.096**
	(0.002)	(0.003)	(0.015)	(0.018)	(0.012)	(0.006)	(0.007)	(0.009)	(0.056)	(0.074)	(0.044)	(0.025)
SEX												
Male	0.006**	-0.011**	0.002	-0.038**	0.014**	0.013**	0.006**	-0.008**	0.014	-0.079**	0.034**	-0.005
	(0.000)	(0.001)	(0.004)	(0.004)	(0.004)	(0.002)	(0.002)	(0.002)	(0.016)	(0.018)	(0.016)	(0.009)
MARITAL STATUS												
Single	0.000	0.001	0.023**	-0.003	0.041**	-0.007**	0.005**	-0.001	0.045**	-0.008	0.044**	-0.012**
	(0.001)	(0.001)	(0.004)	(0.004)	(0.004)	(0.002)	(0.002)	(0.002)	(0.017)	(0.020)	(0.015)	(0.008)
EDUCATION												
Medium	0.000	-0.002*	0.048**	-0.061**	0.059**	0.004**	-0.002	-0.001	0.032*	-0.025	0.068**	0.016*
	(0.001)	(0.001)	(0.004)	(0.005)	(0.004)	(0.002)	(0.002)	(0.003)	(0.018)	(0.020)	(0.015)	(0.009)
High	-0.006**	-0.011**	0.070**	-0.093**	0.104**	0.009**	-0.007**	-0.010**	0.051*	-0.080**	0.106**	0.039**
	(0.001)	(0.001)	(0.006)	(0.007)	(0.005)	(0.003)	(0.003)	(0.004)	(0.027)	(0.033)	(0.018)	(0.011)
REGISTER												
(PES)	0.094**	0.042**	-0.334**	-0.246**	0.020**	0.145**	0.084**	0.043**	-0.377**	-0.213**	-0.020	0.159**
	(0.000)	(0.001)	(0.003)	(0.004)	(0.006)	(0.001)	(0.002)	(0.002)	(0.013)	(0.024)	(0.020)	(0.007)
# of obs.	230,819		31,643		41,320		19,472		2,133		3,002	
LR χ^2(14)	56,357.100		17,660.820		12,688.460		3,429.920		864.300		752.680	
Prob > χ^2	0.000		0.000		0.000		0.000		0.000		0.000	
Pseudo R^2	0.454		0.290		0.266		0.385		0.192		0.193	

PES: Public Employment Service; for other abbreviations (Peu etc.) see text
Parentheses are standard errors of average marginal effects. Significance levels: * = $p < 0.10$, ** = $p< 0.05$
Source: Own calculation from German LFS

public employment service, the estimated coefficients are statistically significant and negative. This result holds for both rural and urban areas and in both study periods. For individuals registered in both rural and urban areas, the marginal effect on the transition to inactivity decreased during the crisis period (e.g. -0.24 to -0.21 for urban areas).

Education level: The estimated marginal effects of higher education (bachelor's, master's degree or doctorate) on the transition to inactivity from unemployment are statistically significant and negative for individuals in both rural and urban areas. This result holds both before and during the crisis, and implies that regardless of degree of urbanisation and the economic conjuncture of the country, highly educated individuals are less likely to go to inactive from unemployed status compared to less educated individuals. Relative to before the crisis, for more educated individuals, the marginal effect on the transition to inactivity from unemployment, Pui increased (-0.042 to -0.128 for rural areas) during the crisis. For highly educated individuals living in variously urbanised locations, the marginal effect of transition to inactivity is strongly negative for times of crisis. However, regarding the marginal effects on transition to inactivity, we could not observe a similar trend for individuals with medium levels of education (second stage of secondary education and post-secondary non-tertiary education).

Determinants of transition to inactivity from employment –Pei

Age: Similar to transition to inactivity from unemployed (Pui), for individuals living in both rural and urban areas the marginal effect of being an older worker on the transition to inactivity from employment (Pei) is statistically significant and positive. In that transition flow (Pei), older age group (55-

64) individuals are more likely to become inactive compared to those who belong to younger age groups. Regarding the study periods (before and during the economic crisis), for the older age group (55-64) in rural areas the positive coefficient number of marginal effects on transition from employed to inactivity remained stable. Additionally, in urban areas, for the same age group the positive marginal effects on transition flow (Pei) changed very slightly. With regard to age as a determinant for transition to inactivity from employed status (Pei), the older age group (55-64) variable has a similar positive coefficient of marginal effects on transition in both study areas (rural and urban) and study periods (before and during the crisis).

Sex: As we observed for the results of transition from unemployed to inactivity (Pui), males who live in rural or urban areas are less likely to become inactive than females[5]. The marginal effects of being male on the transition to inactivity from employment are statistically significant and negative in both rural and urban areas. Examining the coefficient numbers of the marginal effect for both transition probabilities (Pei and Pui), for Pei, coefficient numbers are low (e.g. 0.007 or 0.008), while for Pui, coefficient numbers are higher (e.g. 0.079 or 0.055). For males in both urban and rural areas the negative marginal effect on the transition from being employed to being inactive (Pei) changed very slightly during the crisis. Regardless of economic conjuncture, being male has an identical marginal effect on the transition from being employed to being inactive.

Marital status: Regarding the effect of the two considered marital statuses (single and married) on transition, being single is not found to have a statistically significant influence on the transition flow to inactivity (Pei) in urban

---

[5] In German Labour Force Survey females on maternity leave from a job are considered to be in employment.

areas, while the marginal effect on the transition to inactivity is significant and positive for rural areas (0.004 pre-crisis and 0.007 mid-crisis).

Education level: Average marginal effect results for education levels show different results regarding the two degree of urbanisation models. While higher education (bachelor's, master's degree or doctorate) is not found to influence the transition flow to inactivity (Pei) for individuals living in rural areas, a marginal effect of transition to inactivity is statistically significant and negative for those living in urban areas. Moreover, for highly educated individuals living in urban areas the marginal effect on transition to inactivity is statistically significant and negative. Regarding the crisis period, we observe that for highly educated individuals living in urban areas, the likelihood of becoming inactive after being employed has a similar coefficient (-0.01) before and during the crisis. The obtained equal marginal effects for highly educated individuals before and during a crisis suggest that an adverse economic situation did not increase the likelihood of becoming inactive after being employed.

Discussion

Our results suggest that, in urban and rural areas, education level and marital status both influenced the transition to inactivity during the economic crisis (2008-09), though to varying degrees. For urban areas, highly educated individuals (bachelor's, master's degree or doctorate) were less likely to flow to inactivity from being employed and unemployed compared to medium (second stage of secondary and post-secondary education) and lower educated individuals during the crisis period. However, we did not find the same trend for rural areas. During a period of economic crisis in rural areas, highly educated individuals are less likely to flow to inactivity from being unemployed, and education levels were not found to have a statistically significant impact on transition to inactivity from being employed. Although broadly consistent with the results of Gomes (2012), where it appears that highly educated individuals are significantly less likely to flow to inactivity from unemployment than less educated individuals, our findings suggest that a higher education effect is observed only for individuals living in urban areas.

Another important difference between urban and rural areas during the economic crisis period was observed with regard to the effect of marital status on the probability of becoming inactive. Our study results suggest that single individuals in rural areas were more likely to become inactive compared to married individuals in the crisis period. However, for the same variable, we did not observe a similar effect in urban areas. During times of economic crisis in urban areas, marital status did not show a statistically significant impact on the transition to inactivity from employed status as in rural areas. Hence, the negative effect of being single on the transition to inactivity was only observed in rural areas during the crisis, but this effect was not statistically significant in urban areas.

We used the years 2002-07 as a proxy for labour market conditions before the economic crisis. Regarding probabilities of transitioning to inactivity from being unemployed

and employed in this period, similar to the crisis period, it is found that for both urban and rural areas there is a significant difference for two factors: education level and marital status. While these factors similarly influence the transition to inactivity before the crisis, their effect was observed to be stronger during times of economic crisis. These results imply that, in rural areas, unmarried individuals are more likely to transition to inactivity compared to urban areas. Additionally, this effect increases during periods of economic crisis. Policy makers could concentrate on reducing inactivity rates in rural areas by working on focus groups of individuals who are single. The findings for both urban and rural areas before the crisis imply that medium level educated individuals are less likely to transition to inactivity. However, during the crisis, these individuals lost this advantage in rural and urban areas. Indeed, Eichhorst *et al.* (2010) show that while a high level education is a significant factor for explaining the transition into permanent contract from non-employment (unemployment and inactivity), medium level education is not. Therefore, regardless of degree of urbanisation, this medium level educated group may be considered a target group by policy makers during periods of economic crisis.

In addition to the comparative analysis of urban and rural areas before and during an economic crisis period, for transition to inactivity we found that the decision to flow to inactivity has a much greater impact on the older age group (55-64) relative to prime age group individuals (25-54). This confirms that being close to the retirement age (the official retirement age in Germany is 65) positively influences the transition flow to inactivity. According to the theoretical model, this difference can be explained by the different nature of these age groups such as an observed early retirement trend for the older age group in Germany (OECD 2009). In Germany, where promoting employment for the older age group is a serious alternative for the expected large gap in the labour supply for 2020 (Höhn *et al.,* 2008), the participation rate of the older age group (only men) was 63 per cent in 2008 (OECD 2009). Overall, the average retirement age is still significantly earlier than 65 years.

While our paper does not go into the details of the destinations of transition flows, Kruppe (2002) shows that there is a considerably higher transition from unemployment to 'passive' status (around 20 per cent including retired and inactivity) in Germany relative to other studied EU Member States. While 6 per cent of individuals leaving unemployment enter education or apprenticeship, 11 per cent of individuals leave unemployment for retirement after a period of unemployment.

We also observe that for older age group individuals a positive effect on transition to inactivity from unemployment increased during the crisis for both rural and urban areas. This implies that although the older age group is more likely to flow to inactivity, the economic crisis increased this probability for that age group. Regarding the political and practical implications, keeping older age individuals in the labour market may be a successful active labour market policy during an economic crisis period.

For males, a negative effect on transition to inactivity from unemployment decreasing during the crisis was observed for both study areas. This implies that in both study areas, for

males, the probability of being inactive decreases relative to females during times of crisis. Regarding the register variable, the negative and significant effect implies that the likelihood of getting inactive from unemployment declines with registration with the public employment service. During the crisis period, flow to inactivity from unemployed still has a negative effect with very slight changes. Therefore, we could conclude that even if registration with the public employment service could have a negative impact to the flow to inactivity; its impact stays stable during the crisis period. Our overall results suggest that beside human capital aspects, interactions of individuals with institutional settings have to be taken into account when designing active labour market policy measures during economic crisis periods.

Acknowledgments

References

Achatz, J. and Trappmann, M. (2009): Pathways out of unemployment assistance recipiency. IAB-Kurzbericht 28. *Nürnberg:* Institut für Arbeitsmarkt- und Berufsforschung.

BA (2009): The labour market in Germany – a year of crisis for the German labour market, Report on the labour market. Nürnberg: Bundesagentur für Arbeit.

Baqueiro-Espinosa, O. and Unay Gailhard, I. (2011): Labour Force Transitions in Germany: Adopting Micro-Simulation Model to the Study the Impact of Policies at Municipality level. EU FP7 PRIMA Project Working Paper. Halle (Saale): IAMO.

Barham, C. (2002): Economic Inactivity and Labour Market. Labour Market Division Working Paper. London: ONS.

Bellman, L., Estrin, S., Lehmann, H. and Wadsworth, J. (1995): The Eastern German Labor Market in Transition: Gross Flow Estimates from Panel Data. Journal of Comparative Economics **20** (2), 139-170. http://dx.doi.org/10.1006/jcec.1995.1007

Blanchard, O.J. and Diamond, P. (1990): The cyclical behavior of the gross-flows of U.S. workers. Brookings Papers on Economic Activity **21** (2), 85-156. http://dx.doi.org/10.2307/2534505

Blunch, N.H. and Sulla, V. (2011): The Financial Crisis, Labor Market Transitions and Earnings: A Gendered Panel Data Analysis for Serbia. Discussion Paper No. 6151. Bonn: Forschungsinstitut zur Zukunft der Arbeit.

Bogedan, C., Kraemer, B. and Maucher, M. (2010): The changing labour market in Germany in times of crisis. Brussel: SOLIDAR.

Cameron, C.A. and Trivedi, P.K. (2009): Microeconomics using Stata. College Station TX: Stata Press.

Choudhry, T.M., Marelli, M. and Signorelli, M. (2012): Youth unemployment rate and impact of financial crises. International Journal of Manpower **33** (1), 76-95. http://dx.doi.org/10.1108/01437721211212538

Copus, A., Hall, C., Barnes, A. and others (2006): Study on Employment in Rural Areas. Brussel: European Commission.

Crimmann, A., Wießner, F. and Bellmann, L. (2012): Resisting the crisis: short-time work in Germany. International Journal of Manpower **33** (8), 877-900. http://dx.doi.org/10.1108/01437721211280362

Curti, M. (1998): Does economic stagnation affect unemployed workers, even when re-employed? International Journal of Manpower **19** (6), 410-423. http://dx.doi.org/10.1108/01437729810233235

Davis, S.J., Faberman, R.J. and Haltiwanger, J. (2006): The flow approach to labor markets: new data sources and micro-macro links, Journal of Economic Perspectives **20** (3), 3-26. http://dx.doi.org/10.1257/jep.20.3.3

Detzel, P. and Rubery, J. (2002): Employment Systems and Transitional Labour Markets: A Comparison of Youth Labour Markets in Germany, France and the UK. In G. Schmid and B. Gazier (eds), The dynamics of full employment: Social integration through transitional labour markets. Cheltenham: Edward Elgar, 106-148.

Eichhorst, W., Konle-Seidl, R., Koslowski, A. and Marx, P. (2010): Quantity over Quality? A European Comparison of the Changing Nature of Transitions between Non-Employment and Employment. Discussion Paper No. 5285. Bonn: Forschungsinstitut zur Zukunft der Arbeit.

Eurostat (2006): Labour force survey in the EU, Candidate and EFTA Countries. Main characteristics of the national surveys, 2005. Luxembourg: European Union.

Faik, J. (2012): Income Inequality and Poverty in Front of and During the Economic Crisis: An Empirical Investigation for Germany 2002-2010. SOEPpapers on Multidisciplinary Panel Data Research 450. Berlin: DIW.

Gomes, P. (2012): Labour market flows: Facts from the United Kingdom. Labour Economics **19** (2), 165-175. http://dx.doi.org/10.1016/j.labeco.2011.08.002

Greene, W.H. (2003): Econometric Analysis. New York: Prentice Hall.

Gustafsson, S.S., Kenjoh, E. and Wetzels, C. (2002): Postponement of Maternity and the Duration of Time Spent at Home after First Birth: Panel Data Analyses Comparing Germany, Great Britain, the Netherlands and Sweden. Labour Market and Social Policy Occasional Papers No. 59. Paris: OECD.

Haltiwanger, J.C. and Vodopivec, M. (2002): Gross worker and job flows in a transition economy: an analysis of Estonia. Labour Economics **9** (5), 601-630. http://dx.doi.org/10.1016/S0927-5371(02)00048-9

Höhn, C., Mai, R. and Micheel, F. (2008): Demographic Change in Germany. In I. Hamm, H. Seitz, H. and M. Werding (eds), Demographic Change in Germany: The Economic and Fiscal Consequences. Berlin: Springer, 9-33.

ILO (2010): Global Employment Trends for Youth. Special issue on the impact of global economic crisis on youth. Genève: International Labour Organization.

Jones-Stephen, R.G. and Riddell, W.C. (1995): The Measurement of Labor Force Dynamics with Longitudinal Data: The Labour Market Activity Survey Filter. Journal of Labor Economics **13** (2), 351-85. http://dx.doi.org/10.1086/298378

Joyce, M., Jones, J. and Thomas, J. (2003): Non-employment and Labour Availability. Bank of England Quarterly Bulletin, Autumn: 291-303.

Kruppe, T. (2002): The dynamics of employment in the European Union: an exploratory analysis. In G. Schmid and B. Gazier (eds). The dynamics of full employment: Social integration through transitional labour markets. Cheltenham: Edward Elgar, 277-297.

Lauerová, J. and Terrell, K. (2002): Explaining Gender Differences in Unemployment with Micro Data on Flows in Post-Communist Economies. Discussion Paper No. 600. Bonn: IZA.

Marston, S.T. (1976): Employment Instability and High Unemployment Rates. Brookings Papers on Economic Activity **7** (1), 169-210. http://dx.doi.org/10.2307/2534049

Nivorozhkin, A., Gordo, L.M. and Schneider, J. (2013): Job search requirements for older workers: the effect on reservation wages. International Journal of Manpower **34** (5), 517-535. http://dx.doi.org/10.1108/IJM-05-2013-0114

OECD (2009): Society at a Glance 2009: OECD Social Indicators. Paris: OECD.

Scarpetta, S., Sonnet, A. and Manfredi, T. (2010): Rising youth unemployment during the crisis: how to prevent negative long-term consequences on a generation? Social, Employment and Migration Working Papers No. 6. Paris: OECD.

Schmid, G. (1995): Is Full Employment Still Possible? Transitional Labour Markets as a New Strategy of Labour Market Policy. Economic and Industrial Democracy **16** (3), 429-456. http://dx.doi.org/10.1177/0143831X95163005

Seeborg, M.C. and DeBoer, L. (1989): The Unemployment Rates of Men and Women: A Transition Probability Analysis. Industrial and Labor Relations Review **42** (3), 404-414. http://dx.doi.org/10.2307/2523397

Tasci, M. and Tansel, A. (2005): Unemployment and Transitions in the Turkish Labor Market: Evidence from Individual Level Data. Discussion Paper Series No. 1663. Bonn: IZA.