

Welfare transitions before and after reforms of the German welfare system

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Abstract

We study state dependence in the German welfare system and investigate whether transition patterns changed after recent reforms of the welfare system (Hartz Reforms). Using data from the German Socio-Economic Panel, we apply dynamic multinomial logit estimators and find that state dependence in welfare receipt is not a central feature of the German welfare system. We find that transition patterns changed after the reform: transitions to employment became more likely and persistence in welfare and inactivity declined. We observe a large relative increase in transitions from employment to welfare. Finally, immigrants' responsiveness to the labor market situation increased after the reform.

Keywords: Hartz Reforms, state dependence, unemployment benefit II, immigration, dynamic multinomial logit

JEL Classification: I38, J61

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1 Introduction

In recent years, the German labor market has seen impressive developments: between 2005 and 2011, the unemployment rate dropped from 13.0 to 7.9 percent and employment surged from 38.9 to 41.1 millions (SVR 2012). The labor market was robust to the Great Recession of 2009 and unemployment did not increase during the recent crisis. Interestingly, these beneficial developments were preceded by substantial reforms of the German welfare system that aimed at enhancing work incentives and labor market flexibility, particularly for the unemployed and for welfare recipients. Some economists assert that the reforms contributed to the positive developments by providing incentives that increase welfare exit and reduce welfare persistence (e.g., SVR 2011). In combination with easing labor market conditions this may have affected welfare transitions.

This paper studies the structural determinants of labor market and welfare transitions in the periods before and after the reforms. We do not aim at identifying causal reform effects but address two research questions: (1) did the patterns and dynamics of welfare transitions change from before to after the reform, and (2) are welfare transitions more responsive to the labor market situation after the reforms? In addition, we examine heterogeneities in welfare transitions and in changes in welfare transitions across population groups. In particular, we focus on differences between immigrants and natives because the literature provides evidence that the propensity to receive welfare benefits differs for these groups (Barrett and McCarthy 2008, Sarvimäki 2011).

Answers to our research questions are of substantial interest: first, many observers are specifically interested in the workings of the German “job miracle”. While Burda and Hunt (2011) see employer expectations, wage moderation, and working time accounts as the key factors behind the German job miracle, SVR (2011) also discuss the role of recent reforms. We provide evidence on the plausibility of the connection between the 2005-reforms and subsequent employment dynamics. Given that many countries are faced with high unemployment, the German experience may

provide an informative benchmark case. Second, we contribute to the literature that studies the connection between individual welfare transitions and aggregate labor market conditions (e.g., Hoynes 2000 and Hoynes et al. 2012). Hoynes (2000) showed the close connection between unemployment and welfare receipt in the United States between 1987 and 1992 when welfare recipients strongly responded to job opportunities and wage growth. Third, we add to the international discussion of heterogeneous response patterns across population groups. Particularly in countries with a large immigrant population, it is important to understand the difference in responses to incentive mechanisms between natives and immigrants.¹

Using data from the German Socio-Economic Panel Study (SOEP), we estimate dynamic multinomial logit models. This approach allows us to study welfare transitions in the German welfare system. In particular, we focus on true state dependence, i.e., the extent to which the experience of transfer receipt affects subsequent transition patterns. Our results show little evidence of true state dependence in the German welfare system. We find that transition patterns changed after the reform: transitions to employment became more likely and persistence in welfare and inactivity declined. We observe a large relative increase in transitions from employment to welfare. Finally, among immigrants welfare persistence and welfare-to-employment transitions became more responsive to the labor market after the reform.

This study is related to several discussions in the literature. Some contributions discuss developments of the German labor market and the response to the recent welfare reforms. While Fertig et al. (2006) did not find improvements in policy effectiveness after the reforms, Fahr and Sunde (2009) and Klinger and Rothe (2012) find that the early Hartz Reforms significantly improved the efficiency of labor market matching, benefiting particularly the long term unemployed.²

¹ For a survey of the international literature, see Barrett and McCarthy (2008). Evidence for Germany is provided, e.g., by Castronova et al. (2001), Kogan (2004), Riphahn (2004), Riphahn and Wunder (2012).

² Several government mandated studies evaluated the effects of elements of the reform packages. Caliendo (2009) summarizes that labor market institutions became more efficient and work incentives for the unemployed increased after the reform.

Our approach to the study of labor market flexibility ties in with an international literature on state dependence in transfer receipt. Closest to ours is the contribution by Hansen and Lofstrom (2009) who use data on Swedish men observed 1990 and 1996 to study the transition between welfare receipt, unemployment, and employmentg. They find higher state dependence among immigrants than natives. Hansen and Lofstrom (2011) separately study welfare exit and entry of Swedish natives and immigrants and find that the difference in welfare receipt between natives and immigrants results from differences in entry to rather than in exit from welfare. In the literature on welfare state dependence Hansen et al. (2006) analyse Canadian welfare participation and Chay et al. (2004) focus on Californian data. Both studies find true state dependence in welfare receipt which varies across population groups. A study without evidence in favor of true state dependence of welfare receipt is Cappellari and Jenkins (2009) investigating the case of Britain. In a prior study, we focused on differences in transition patterns in the German welfare system after the reform between natives and several immigrant groups (EU citizens, non-EU citizens, immigrants with German citizenship) (Wunder and Riphahn 2011). There, we find substantial differences between population groups but little evidence for true state dependence.

A separate literature is concerned with consequences of welfare reforms for recipient behaviors. Following the 1996 reform of the U.S. federal welfare program, studies addressed a variety of outcomes (for a survey, see Blank 2002), among them the propensity to take up work (e.g., Grogger and Karoly 2005), responses to time limited eligibility, and the relevance of the macroeconomy for labor force participation (Bitler and Hoynes 2010, Ziliak et al. 2000). Blank (2002) summarizes evidence of substantial changes in welfare transition patterns in response to the U.S. welfare reforms.³ By comparing welfare dynamics before and after the German reform, we contribute to this literature on welfare reforms.

³ For evidence on reforms in the UK, Sweden, and Canada see, e.g., Brewer et al. (2006), Edmark (2009), and Fortin et al. (2004).

This paper is structured as follows. In section two we summarize the institutional framework and the key reform elements that might affect state dependence. Section three describes the data and section four the empirical approach. The results are shown in section five and section six presents concluding remarks.

2 Institutions

Ever increasing unemployment rates and the apparent failure of prior labor market policies led the German government to implement far-reaching reforms to activate the unemployed, modernize labor market services, and change the philosophy of the German welfare state. The reform changed the welfare and the unemployment insurance system (for a discussion, see Schneider 2012). Because it cut back on some claims against the welfare state the reform received substantial public attention and opposition. Next, we describe the German welfare system before and after the reform, discuss why welfare transitions might have changed, and briefly describe the situation of immigrants.

In case of unemployment, workers are generally covered by the unemployment insurance. Unemployment benefits (*Arbeitslosengeld*) replace up to 67% of previous net earnings. The maximum duration of benefit payment was reduced from 32 months before the reform to 24 months afterwards. The benefit is now labeled unemployment benefit I (UB I). Prior to the reform, those who had exhausted their unemployment benefit entitlement and those who were not (yet) entitled to unemployment benefits were eligible for unemployment assistance (*Arbeitslosenhilfe*), a tax-financed means-tested transfer. Unemployment assistance replaced up to 57% of prior net earnings.

The basic tenet of the German welfare state is that those receive public transfers, whose own income falls short of their needs. Thus prior to the reform, individuals could claim social assistance (*Sozialhilfe*) if their total income—independent of its source—fell below the legally defined

subsistence level. Social assistance thus was a means-tested program that was provided also to top up labor earnings and unemployment benefits in case of need.⁴

The reform then combined unemployment assistance and social assistance in the so-called unemployment benefit II (UB II), a means-tested and tax-financed benefit. Individuals who are in need of support, independent of whether they are employed, receive UB I, or exhausted their UB I eligibility, may be eligible for UB II. The benefit covers the legally defined minimum income and is not related to prior earnings. Individuals in need can claim UB II if they are able to work at least 15 hours per week. Those who are not able to work, e.g., due to sickness or disability, are—as before—entitled to social assistance.

The reform came into effect in January 2005 as one element of a wider reform project. The overall reform project had several objectives: (a) to improve the effectiveness and efficiency of labor market services. Thus, after the reform, local employment offices introduced differentiated approaches to support the unemployed at an individual level. (b) To activate the unemployed based on the idea ‘fordern and fördern’, i.e. ‘assist and demand.’ Since the reform, the employment offices explicitly demand individual activities and have the unemployed sign ‘agreements on objectives.’ At the same time search incentives were increased by shortened unemployment benefit payouts and by an intensified use of sanctions. Official statistics show that more sanctions are imposed when the economy is thriving (BA 2013). (c) Finally, labor market regulations were relaxed, e.g., with respect to employment protection, temporary employment, and temporary agency employment (Klinger and Rothe 2012, Caliendo 2009).

The reform adjusted the regulations of earnings allowances and marginal tax rates to increase work incentives (see, e.g., Dietz et al. 2011): the maximum earnings allowance increased and

⁴ Since the means test considers household size, a given household income renders large households more likely to be eligible for additional social assistance than small households.

marginal tax rates declined.⁵ In addition to strengthening work incentives, the reform also requires welfare recipients to actively search for jobs: all recipients of UB II have to look for a job and are obliged to discuss their search strategy with the employment office. In contrast, before the reform social assistance benefits were paid independent of labor market status and search effort. These changes may well reduce welfare persistence and state dependence in welfare.

Immigrants are treated like natives within the unemployment insurance, i.e., with respect to unemployment benefit and unemployment assistance before the reform and UB I after the reform. As for natives, their eligibility depends on the individual contribution record. The situation for immigrants is more complex in the minimum income support programs of social assistance and UB II. Individuals without German citizenship can receive minimum income support if they are (i) permanently in Germany, (ii) physically able to work (after the reform), and (iii) potentially allowed to take up employment; the last condition excludes, e.g., asylum seekers. Ethnic Germans (*Aussiedler*) as well as naturalized immigrants are treated like natives.⁶ Immigrants residing in Germany in order to find employment are generally not eligible for benefits. However, a long list of circumstances renders EU citizens eligible for UB II receipt even then (BMAS 2009).

Immigrants' right to stay in Germany can be refused if an immigrant is eligible for means-tested public support. Special protection is granted to migrants from signatory states of the European Convention on Social and Medical Assistance of 1953.⁷ These immigrants can stay in Germany even if they receive welfare benefits (Classen 2012).

Prior studies show no difference in take-up behavior for natives and immigrants (see, e.g., Riphahn 2001, Frick and Groh-Samberg 2007, Bruckmeier and Wiemers 2011). However, BMAS (2009) points out that the expiration of UB I generates a substantially higher transition rate to UB

⁵ For details see, Riphahn and Wunder (2012), where we compare the characteristics associated with benefit receipt among natives and immigrants and provide a non-parametric study of the groups' respective life cycle trajectories of benefit receipt. The paper does not look at state dependence and does not provide a dynamic analysis of the situation before and after the reform.

⁶ Ethnic Germans are former German citizens or those belonging to the German people. After World War II, many migrated to West Germany and were granted German citizenship (Kurthen 1995, Dietz 1999).

⁷ This covers immigrants from EU member states, Iceland, Norway, and—importantly—Turkey.

II receipt among immigrant than native households: immigrant households and thus their needs are larger while their income and wealth are smaller than natives'. As, the public debate about the reforms enhanced awareness of the new benefit program many observers expect an overall increase in the propensity to take up benefits given eligibility (e.g., Bruckmeier and Wiemers 2011).

3 Data

Using household data from the German Socio-Economic Panel Study (SOEP) (Wagner et al. 2007), we conduct separate analyses for natives and immigrants. We set the immigration status of the household according to the status of the household head.⁸ Since the number of immigrant households is small in East Germany, our analysis considers households in West German only.⁹

We study welfare transitions before and after 2005, when the last step of the Hartz Reforms was implemented. The pre and post reform samples cover the years 2000 to 2004 and 2005 to 2010, respectively. Households are selected if they are part of the sample in 2000 or 2005, which define the initial states.¹⁰ Recipients of unemployment assistance and UB II are required to be able to work. Therefore, we include only household heads of working age (25-60) and exclude the disabled.

Our dependent variable classifies households into three labor market states that indicate whether the household is (1) receiving welfare, (2) employed, or (3) inactive at the time of the survey. In a first step, we code all households who receive welfare benefits. Before the reform, we classify a household as receiving welfare if at least one person in the household receives one of the means-tested benefit schemes, i.e., social assistance or unemployment assistance. After the

⁸ This information comes from a "migration background"-indicator in the data, which considers first or second generation immigrant status independent of citizenship (Frick and Lohmann 2010).

⁹ Other studies use similar sample selection criteria (e.g., Kogan 2004, Riphahn 2004, Wunder and Riphahn 2011).

¹⁰ The pre reform sample and the post reform sample cover periods of different length. We decided to use fewer waves for the pre reform period than for the post reform period in order to be able to include the SOEP innovation sample F, which started in 2000.

reform, we regard households as welfare recipients if at least one person in the household receives UB II. Non-recipient households are labelled “employed” if the household head is employed and “inactive” otherwise. The latter group includes household heads who are out of the labor force or unemployed and who may receive unemployment insurance benefits. The rationale behind this definition of an “inactive group” is that these households neither work nor rely on welfare benefits but instead have other non-welfare income (e.g., unemployment insurance benefits or savings).¹¹ It is possible that welfare receiving households have employed or unemployed heads; in such cases where earnings or unemployment benefits are insufficient to meet the household’s needs and are topped up by welfare benefits we code benefit receipt.

Using weighted data to reflect the population of interest, Table 1 reports the observed annual distribution of the three labor market states for the pre reform years 2000-2004 and the post reform years 2005-2010. In general, welfare recipient rates are higher after the reform with a noticeable jump shortly after the reform came into effect. The increase in reciprocity rates is consistent with the decrease in non-take-up in the after-reform period found by Bruckmeier and Wiemers (2011). After the reform, we observe rising employment and falling inactivity, reflecting the positive labor market trend and falling unemployment in this period (BA 2010).

There are remarkable differences between immigrants and natives. The share of immigrant households receiving welfare is more than twice as large as that of natives (e.g., in 2006: 15.2% vs. 7.1%). Correspondingly, the share of immigrant households that are classified as employed is considerably lower than that of natives, on average by 10 percentage points.

Table 2 reports labor market transitions. Persistence is evident in all states. In the total population, welfare receipt has a persistence rate of more than 70%. Patterns change slightly from before to after the reform: while the welfare exit rate to employment increases (from 18.4% to 20.3%), welfare exit to inactivity becomes less frequent (from 10.3% to 6.1%). Labor market transitions

¹¹ Across all years we observe that 17% and 30% of native and immigrant inactive households have unemployed heads, respectively.

appear to be less favorable for immigrants than for natives. Immigrants have a much higher risk of welfare entry and less stable employment than natives. Welfare persistence increases among immigrants (from 68.1% to 75.4%), whereas no change occurs among natives. Also, welfare exit to employment increases for natives and declines for immigrants after the reform.

Table A1 in the appendix shows descriptive statistics of the pre and post reform samples. Compared to natives, immigrant household heads have, on average, 1.5 years less education and are more often married. Also, their number of children is higher. Table A2 shows characteristics by labor market and immigrant status. Comparing welfare recipients and employed households, we observe small differences in the number of children while the share of married household heads is clearly smaller among welfare recipients. The share of single parents is considerably higher among welfare recipients than among households classified as inactive or employed. The figures also indicate a difference in average education between employed households and welfare recipients of two years among natives and one year among immigrants.

Table A3 shows average values for selected characteristics by labor market transition. Native household heads who receive welfare in t and $t - 1$ have, on average, 2.2 years of education less than those continuously employed. For immigrants, this difference amounts to 1.1 years. The share of female household heads among permanent welfare recipients is higher than among continuously employed household heads (68% vs. 34% for natives, 55% vs. 32% for immigrants). Thus, one may suspect that a lack of human capital and/or gender-specific labor market opportunities are connected to persistence in welfare participation.

4 Estimation strategy

The conceptual framework of our analysis uses a dynamic discrete choice model: a household chooses the labor market state (inactivity, employment, or welfare receipt) with the highest utility.

Let U_{ijt} be the utility of household i in state j at time t :

$$U_{ijt} = \boldsymbol{\beta}'_j \mathbf{x}_{it} + \boldsymbol{\gamma}'_j \mathbf{y}_{i,t-1} + \alpha_{ij} + \varepsilon_{ijt}. \quad (1)$$

Utility depends on the observed household characteristics, \mathbf{x}_{it} . $\boldsymbol{\beta}_j$ is a vector of alternative-specific coefficients. The coefficient vector $\boldsymbol{\gamma}_j$ captures the effect of the previous state, $\mathbf{y}_{i,t-1}$, on the current state choice. We take account of household-specific unobserved heterogeneity by including a random error α_{ij} . ε_{ijt} is an idiosyncratic error that is assumed to be independently distributed with a type I extreme value distribution.

Dynamic models of labor market state choice which allow for the presence of unobserved effects raise the problem of endogenous initial conditions: while transitions within the panel of observations are modeled, the transition to the very first observed state has no observed predecessor. We apply the conditional maximum likelihood estimator suggested by Wooldridge (2005) to solve this problem.

The specification of the Wooldridge approach models the unobserved heterogeneity α_{ij} as a function of the initial state \mathbf{y}_{i0} , individual-specific averages of a subset of the explanatory variables \mathbf{x}_i ,¹² and a new random error, a_{ij} , that is uncorrelated with the initial state. We assume a_{ij} to be normally distributed with zero mean and variance σ_a^2 , i.e. $a_{ij} | (\mathbf{y}_{i0}, \mathbf{x}_i) \sim N(0, \sigma_a^2)$. Hence, the probability that individual i is in state j at time t conditional on observed and unobserved characteristics and the labor market state in $t - 1$ can be written as

$$P(Y_{it} = j | \mathbf{x}_i, \mathbf{y}_{i,t-1}, \mathbf{y}_{i0}, \mathbf{a}_i) = \frac{\exp(\boldsymbol{\beta}'_j \mathbf{x}_{it} + \boldsymbol{\gamma}'_j \mathbf{y}_{i,t-1} + \boldsymbol{\delta}'_{j1} \mathbf{y}_{i0} + \boldsymbol{\delta}'_{j2} \mathbf{x}_i + a_{ij})}{\sum_{k=1}^{J=3} \exp(\boldsymbol{\beta}'_k \mathbf{x}_{it} + \boldsymbol{\gamma}'_k \mathbf{y}_{i,t-1} + \boldsymbol{\delta}'_{k1} \mathbf{y}_{i0} + \boldsymbol{\delta}'_{k2} \mathbf{x}_i + a_{ik})}. \quad (2)$$

¹² This approach in the spirit of Mundlak (1978) and follows the literature (see, e.g., Stewart 2007, Caliendo and Uhlenborff 2008, Mosthaf et al. 2009, Cappellari and Jenkins 2009, Prowse 2010, Wunder and Riphahn 2011).

Normalizing the coefficient vectors $\beta_1, \gamma_1, \delta_{11}, \delta_{12}$, and the unobserved heterogeneity, a_{i1} , to zero for the first alternative ($k = 1$), we can estimate a dynamic multinomial logit model with random effects. We use Gauss-Hermite quadrature to integrate the random effect out of the corresponding log-likelihood.¹³

We use predicted probabilities \bar{P} for an individual randomly sampled from the population to describe state dependence in labor market transitions. The calculation requires integrating over the distribution of the random effect (Skrondal and Rabe-Hesketh 2009):

$$\bar{P}(Y_t = j | \mathbf{y}_{t-1}, \mathbf{y}_0, \mathbf{x}^0) = \int \hat{P}(Y_t = j | \mathbf{y}_{t-1}, \mathbf{x}^0, \boldsymbol{\alpha}) h(\boldsymbol{\alpha} | \mathbf{x}, \mathbf{y}_0; \boldsymbol{\delta}) d\boldsymbol{\alpha}, \quad (3)$$

where we set the vector \mathbf{x}^0 to equal the sample average of the control variables. \hat{P} is the conditional probability. We assess the uncertainty of the prediction by approximate 95% confidence intervals for the predicted probabilities.¹⁴

5 Results

This section presents the results obtained from dynamic multinomial logit models. Section 5.1 describes patterns of welfare transitions and highlights changes in dynamics after the reform. Section 5.2 turns to the question of how welfare transitions relate to labor market conditions. The discussion addresses differences between immigrants and natives. We report results on robustness checks in section 5.3.

¹³ We use the Stata program `-gllamm-` written by Rabe-Hesketh et al. (2004).

¹⁴ We use a parametric bootstrap approach with 1000 random draws from the sampling distribution of parameters. The procedure is available in the Stata ado-files `-gllapred-` and `-ci_marg_mu-` (Rabe-Hesketh et al. 2004, Skrondal and Rabe-Hesketh 2009).

5.1 Welfare transitions and state dependence

Table 3 shows the estimation results for the full sample. The positive estimates of the γ_j coefficients presented in the first rows indicate persistence in labor market states: employment in $t - 1$ is associated with higher log-odds of employment in t and welfare receipt in $t - 1$ is associated with higher log-odds of welfare receipt in t , both relative to inactivity.

Interestingly, welfare receipt in $t - 1$ is linked to higher log-odds of employment in t relative to inactivity. However, size and significance of the coefficient of lagged employment as a determinant of welfare receipt change between the pre and post reform periods. While the coefficient estimate is near zero (0.07) and statistically insignificant before the reform, it is larger (0.56) and statistically significant in the post reform period. Thus, employment in $t - 1$ goes along with a significant increase in the log-odds of welfare receipt in t after the reform. This suggests that the welfare system incentivizes welfare recipients to take up employment. We return to the employment-to-welfare transition in greater detail below.

Next, we discuss model-based predictions in Table 4 separately for the entire population (Panels A and B), native households (Panels C and D), and immigrant households (Panels E and F).¹⁵ The calculations are based on separate estimations and average characteristics of the respective pre and post reform subsamples.¹⁶

The predictions reveal four interesting results. First, they confirm the persistence in labor market states in both sample periods. The probability of each labor market state in t is highest when the household was already in that state in $t - 1$. Comparing pre and post periods, we observe a decline in the probability of welfare persistence, from 8.3% to 6.0%, i.e. by 28%. Separate analyses for immigrants and natives show that the decline in welfare persistence is more pronounced among immigrants (Panels C-F).

¹⁵ Additional estimation results for natives and immigrants are in tables A4 and A5 in the Appendix.

¹⁶ For comparison, we also calculated predicted probabilities as the average of individually predicted probabilities. The results are similar in nature to the discussed and are presented in Table A6 in the Appendix.

Second, we find a clear increase in the probability of employment-to-welfare transitions, from 0.9% to 1.6% (Panels A and B). Judging from the non overlapping confidence intervals, the increase is statistically significant. The same pattern is observed for the immigrant and native samples, separately. Although the overall risk of this transition is small, the sharp relative increase by 78 percent for the full sample is noteworthy, because we hardly observe other statistically significant changes over time. In addition, this result is remarkable because individuals are typically entitled to unemployment insurance benefits in the case of job loss (cf. section 2). Hence, one would expect that in the case of a job loss newly unemployed workers move from employment to the state of inactivity, which includes the receipt of unemployment insurance benefits. The increased risk of employment-to-welfare transitions may result from an increased propensity to take up short term or low paid employment: short-term employment may be insufficient to generate UB I eligibility for the period after the short-term contract expired; low paid employment may not cover household needs and thus may go along with welfare benefit eligibility in addition to employment.

Third, the probability of a transition to employment increased after the reform; in addition, welfare-to-employment transitions are considerably more likely than inactivity-to-employment transitions. The increase in the probability of welfare exit to employment is particularly pronounced among immigrants (from 69% to 83%, Panels E and F). Among immigrants, the probability of inactivity-to-employment transition increased by approximately twenty percentage points, which is the largest absolute change. For both groups persistence in inactivity declined after the reform. In general, this suggests that work incentives for welfare recipients and inactive households increased after the reform and that newly introduced activation measures might be effective, particularly among immigrants. In addition, this could be an indication of new job opportunities.

Finally, we turn to the control variables and model diagnostics in Table 3. With respect to the control variables, we generally find similar patterns before and after the reform; e.g., higher education increases the log-odds of employment relative to inactivity and makes transitions to welfare relatively less likely. After the reform, the gender-specific life cycle patterns of labor market transitions are estimated more precisely and with larger coefficients, as indicated by the significant coefficients of the age-female interaction terms.

Likelihood ratio tests yield that individual-specific error term components significantly improve the model fit. The specification takes account of the potential endogeneity of health and the number of children by including their individual-specific averages (see variables labeled M in Table 3). The initial labor market state as of period $t = 0$ is another component of the unobserved household effect. It yields highly significant coefficients, suggesting that the initial state indeed matters in explaining the current state.

5.2 Welfare transitions and labor market conditions

To address our second research question, this section investigates how welfare transitions relate to the labor market situation. Hoynes (2000) studies this relationship based on Californian administrative data. She confirms significant correlations between local labor markets and the duration of welfare receipt and the probability of recidivism. We add state unemployment rates and their interactions with lagged labor market states to our specification. This allows us to infer whether welfare transitions tend to vary with labor market conditions.¹⁷ Jointly the three additional coefficients are statistically significant in three out of four models.

In general, the log-odds of employment decrease and the log-odds of welfare receipt increase with rising unemployment. To ease comparison between the pre and post reform period, we

¹⁷ Tables A7 and A8 show the parameter estimates for the pre and post reform period, respectively.

present transition probabilities as a function of the unemployment rate graphically in Figures 1 and 2, after separate estimations for the native and immigrant subsamples.

Among natives, state persistence hardly varies with the unemployment rate. Comparing pre and post reform periods, we detect only slight changes in the slope of the more or less flat curves (Figure 1.1). Among immigrants, the curve for welfare persistence features a steeper slope after the reform (see dotted line in Figure 2.1). Thus, immigrant welfare persistence became more responsive to unemployment. Moreover, the downward shift of the curve indicates a general decrease in immigrants' welfare persistence.

For both natives and immigrants, the probability of welfare entry (from inactivity as well as from employment) increases with rising unemployment (Figures 1.2 and 2.2). This pattern hardly changed after the reform. Among immigrants, welfare entry from inactivity is less sensitive to the unemployment rate after than before the reform. As the overall probability of welfare entry declined, the reform incentives may have fostered additional job search activities.

We find that welfare exit to employment is less likely in periods of high unemployment (Figures 1.3 and 2.3). Overall, the rate of welfare-to-employment transitions increased after the reform. While the responsiveness of welfare exit towards the unemployment rate hardly changed for natives, labor market conditions became more important for immigrants' welfare exit to employment after the reform: the respective dashed line in Figure 2.3 is considerably steeper in the post than in the pre reform period.

In sum, welfare transitions are clearly correlated with labor market conditions. Immigrants' unemployment gradients of welfare persistence and welfare exit to employment are considerably higher after than before the reform. This increased labor market responsiveness may indicate that immigrants benefit from the job creation in the economic boom early after the reform.

5.3 Robustness checks

To check the robustness of our results, we re-estimated the dynamic multinomial logit model using four different specifications. First, we address a potential measurement error in the initial labor market state indicator. We use the labor market state as of 2005, which may have been measured shortly after the reform. At that time, former recipients of unemployment insurance benefits might not have been aware of institutional reforms and labeling changes that took effect on January 1, 2005 and they may have falsely indicated their benefit type. We omitted the 2005 data, started our window of observation in 2006 instead and re-estimated the model setting the initial condition to 2006. Based on predictions from these estimation results we find that the results are similar to those presented above.¹⁸ In particular, trends in welfare entry and welfare exit are equivalent to those found in the full sample. This indicates that our results are not driven by measurement error in the 2005 data.

Our second robustness check calculates predictions setting the initial state to welfare receipt. This indicates how the choice of the initial condition affects the transition probabilities. Table 5 reports the results. Again, we find substantial declines in the persistence of inactivity and welfare receipt for natives, however, now at higher levels than observed in Table 4. Among immigrants a decline in welfare persistence cannot be confirmed. However, their probability of remaining in welfare receipt is again not significantly higher than that of moving from inactivity to welfare. Controlling for the endogenous initial condition explains a substantial part of the overall state dependence observed in the raw data (Table 2). So the small magnitude of the probability of remaining on welfare calculated for households with average characteristics in Table 4 is connected in large part to the control for endogenous initial conditions.

Our third robustness check addresses the definition of the dependent variable. A feature of UB II is that it is paid to all individuals in need of support (see section 2). If earnings are insufficient to

¹⁸ The results are in Table A9 in the Appendix.

meet household needs, households receive welfare payments even if their members are employed. These households with employed welfare recipients are called *Aufstocker*. In the definition of the dependent variable used above, *Aufstocker* are coded as welfare recipients. We re-estimate our model using an alternative definition of labor market states where *Aufstocker* are coded as employed households. Table 6 shows the predictions from these estimations. We find the expected mechanical changes in transition probabilities: the transition rate from employment to welfare declines compared to Table 4 because households taking up welfare while employed no longer change their state. Also, the transition probability from inactivity to employment increases and that from inactivity to welfare decreases as a consequence of changed definitions. However, more importantly, our first key result on welfare dynamics, i.e. the decline in welfare persistence after the reform, no longer holds with redefined outcomes. Now, welfare persistence slightly increases after the reform for natives, and for immigrants we hardly observe a change in welfare persistence. Jointly, the results in Tables 4 and 6 suggest, that households who receive welfare while being employed are more likely to leave welfare dependence after than before the reform. This apparently drives the decline in welfare persistence in Table 4. The other two key results, i.e. the strong increase in the transition rate from employment to welfare and the increasing transition rate from inactivity to employment are generally confirmed with the recoded dependent variable.

Finally, we re-estimated our transition models controlling for federal state fixed effects. These fixed effect failed to be jointly statistically significant and the predicted transition patterns hardly differ from the overall pattern described in Table 4 above.¹⁹

6 Conclusion

In this paper, we use dynamic multinomial logit models to analyze welfare transitions before and after reforms of the German welfare system. We study changes in welfare dynamics and explore

¹⁹ The results are available upon request.

the role played by labor market conditions for welfare transitions. We investigate heterogeneities in the welfare transitions of immigrants and natives accounting for the endogeneity of initial conditions and unobserved heterogeneity.

We draw four main conclusions: first, true state dependence in welfare receipt is not a dominant factor explaining welfare receipt in Germany. The probability of welfare persistence is not significantly higher than the probability of entering welfare from inactivity. Second, our evidence suggests that the pre- and post-reform transition patterns differ. In particular, the transition to employment became more likely and the persistence in welfare receipt and inactivity declined. This may suggest that the reforms enhanced labor market attachment and work incentives for welfare recipients and inactive individuals. Third, immigrants' responsiveness to the labor market has increased after the reform, e.g., with respect to welfare persistence and welfare exit. Finally, the overall decline in welfare persistence after the reform seems to be due to those households who receive welfare to top up their earnings. After the reform, this group has an increased propensity to leave welfare receipt than prior to the reform.

In general, our evidence shows that the labor market situation contributes to explain welfare transitions. In particular, welfare entry is lower and welfare exit is higher when unemployment is low. Our analysis also points to a change after the reform that may not have been intended: there is a substantial increase in the employment-to-welfare transition rate; i.e., the rate at which households start to receive welfare given that the head of the household was employed before increased substantially in relative terms.

Several explanations are plausible: first, households might have become more likely to fall below the eligibility threshold while employed if they earn lower incomes than before. Second, employed households may not acquire sufficient claims for unemployment insurance benefits (UB I) during their employment periods after the reform if short-term employment became more

common. In that case a loss of employment is more likely to generate welfare dependence as a claim against the unemployment insurance for UB I could not be established.²⁰

Overall, our findings suggest that the reforms may have contributed to the German job miracle, as non-working individuals have a higher labor market attachment after the reform. As an example, the probability to take up employment in period t following unemployment in $t - 1$ increased on average from 52 to 72 percent among immigrants while their propensity to enter welfare following unemployment in $t - 1$ dropped from 12 to 8 percent. The propensity to remain unemployed dropped from 36 to 20 percent for an average immigrant and from 22 to 19.5 percent among natives. Based on our analysis we cannot claim that the reforms are the most important or even the only explanation for the impressive development on the German labor market. Nevertheless, the German experience with incentivizing non-working households may be instructive for economies with troubled labor markets.

²⁰ A recent analysis of the Federal Employment Agency shows that about 18% of those who became unemployed in 2010 moved directly into UB II (Jahn and Stephan 2012). In particular, subcontract and temporary workers had a considerably increased risk to receive UB II after a job loss. More than 40% of these individuals moved directly from employment to welfare. Unfortunately we do not have evidence on these transition patterns for the period prior to the reform. Koller and Rudolph (2011) consider the new job forms that emerged in the wake of the Hartz reforms as unstable as only 55% last longer than six months.

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Figures and Tables

Table 1
Observed distribution of labor market states by year

Year	State at time t			Sample size
	Inactivity	Employment	Welfare	
A. Total population: pre reform				
2000	10.44	85.75	3.81	5,082
2001	9.86	86.21	3.93	4,871
2002	11.52	83.73	4.75	4,268
2003	12.17	82.34	5.49	3,951
2004	11.12	82.27	6.60	3,644
Total	10.97	84.2	4.83	21,816
B. Total population: post reform				
2005	13.14	80.72	6.14	3,873
2006	11.52	80.21	8.27	3,736
2007	10.59	82.33	7.08	3,359
2008	8.87	84.70	6.43	3,057
2009	9.09	85.45	5.46	2,698
2010	8.87	84.04	7.09	2,401
Total	10.51	82.74	6.75	19,124
C. Natives: pre reform				
2000	9.95	86.96	3.09	4,163
2001	9.17	87.64	3.19	3,997
2002	11.09	85.16	3.75	3,510
2003	11.56	83.72	4.73	3,258
2004	10.94	83.25	5.82	3,016
Total	10.47	85.49	4.03	17,944
D. Natives: post reform				
2005	12.57	81.86	5.57	3,260
2006	11.40	81.48	7.12	3,145
2007	10.61	83.43	5.96	2,845
2008	8.54	85.70	5.76	2,603
2009	9.17	86.31	4.52	2,313
2010	8.63	85.46	5.92	2,071
Total	10.30	83.87	5.83	16,237
E. Immigrants: pre reform				
2000	13.73	77.55	8.71	919
2001	14.55	76.49	8.95	874
2002	14.22	74.75	11.03	758
2003	16.04	73.67	10.29	693
2004	12.32	75.99	11.68	628
Total	14.21	75.72	10.07	3,872
F. Immigrants: post reform				
2005	17.38	72.23	10.40	613
2006	12.26	72.56	15.18	591
2007	10.49	75.38	14.13	514
2008	11.02	78.21	10.77	454
2009	8.57	79.82	11.60	385
2010	10.50	74.38	15.13	330
Total	11.86	75.27	12.87	2,887

Note: Percentage of households weighted using cross-sectional weights.

Source: SOEP 2001-2010.

Table 2
Observed probabilities of labor market transitions

State in $t - 1$	State at time t		
	Inactivity	Employment	Welfare
A. Total population: pre reform			
Inactivity	0.633	0.272	0.095
Employment	0.047	0.944	0.010
Welfare receipt	0.103	0.184	0.712
B. Total population: post reform			
Inactivity	0.607	0.299	0.095
Employment	0.037	0.950	0.013
Welfare receipt	0.061	0.203	0.736
C. Natives: pre reform			
Inactivity	0.645	0.281	0.075
Employment	0.043	0.949	0.008
Welfare receipt	0.104	0.168	0.728
D. Natives: post reform			
Inactivity	0.616	0.305	0.079
Employment	0.034	0.954	0.011
Welfare receipt	0.069	0.204	0.727
E. Immigrants: pre reform			
Inactivity	0.590	0.242	0.169
Employment	0.066	0.915	0.019
Welfare receipt	0.103	0.216	0.681
F. Immigrants: post reform			
Inactivity	0.576	0.276	0.149
Employment	0.050	0.928	0.023
Welfare receipt	0.045	0.201	0.754

Note: Share of household heads weighted using cross-sectional weights.

Source: SOEP 2000-2010.

Table 3
Estimation results: total population

Variable	Pre reform				Post reform			
	Employment		Welfare receipt		Employment		Welfare receipt	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Employed in t-1	2.276***	(0.142)	0.071	(0.220)	2.182***	(0.141)	0.561**	(0.223)
Welfare receipt in t-1	1.415***	(0.242)	2.041***	(0.281)	1.485***	(0.238)	1.789***	(0.269)
Age	0.451***	(0.075)	0.162	(0.124)	0.738***	(0.089)	0.550***	(0.153)
Age squared	-0.565***	(0.083)	-0.196	(0.137)	-0.884***	(0.098)	-0.646***	(0.169)
Female	0.535	(2.076)	3.033	(3.408)	7.965***	(2.356)	13.590***	(4.026)
Age × Female	-0.118	(0.097)	-0.155	(0.158)	-0.492***	(0.110)	-0.672***	(0.187)
Age sq. × Female	0.170	(0.110)	0.155	(0.178)	0.610***	(0.124)	0.753***	(0.210)
Education	0.113***	(0.019)	-0.177***	(0.036)	0.055***	(0.021)	-0.178***	(0.041)
School in Germany: no	-0.421***	(0.144)	0.597***	(0.206)	-0.016	(0.200)	0.616**	(0.294)
Married	-0.223**	(0.110)	-1.123***	(0.177)	-0.644***	(0.125)	-1.673***	(0.207)
Health status: good	0.018	(0.105)	-0.473***	(0.173)	-0.158	(0.117)	-0.612***	(0.187)
No. of kids LT 6	0.542***	(0.134)	0.659***	(0.235)	0.381***	(0.146)	0.186	(0.246)
No. of kids GE 6	0.240**	(0.120)	0.416**	(0.186)	0.160	(0.132)	0.218	(0.204)
Year 2002	-0.143	(0.098)	0.061	(0.170)	—	—	—	—
Year 2003	-0.322***	(0.100)	0.153	(0.173)	—	—	—	—
Year 2004	-0.136	(0.106)	0.586***	(0.178)	—	—	—	—
Year 2007	—	—	—	—	0.162	(0.115)	-0.385**	(0.181)
Year 2008	—	—	—	—	0.355***	(0.122)	-0.387**	(0.195)
Year 2009	—	—	—	—	0.229*	(0.127)	-0.674***	(0.212)
Year 2010	—	—	—	—	0.266**	(0.133)	-0.067	(0.212)
Employed in t=0	2.301***	(0.227)	0.239	(0.300)	2.576***	(0.222)	-0.382	(0.313)
Welfare receipt in t=0	-0.022	(0.293)	2.295***	(0.396)	0.402	(0.293)	2.991***	(0.410)
M: Health status: good	0.500***	(0.176)	-0.401	(0.293)	0.696***	(0.206)	-0.485	(0.349)
M: No. of kids LT 6	-1.373***	(0.202)	-0.799**	(0.365)	-1.166***	(0.265)	0.040	(0.421)
M: No. of kids GE 6	-0.227	(0.156)	-0.250	(0.241)	0.182	(0.145)	0.194	(0.230)
Constant	-9.783***	(1.623)	-2.826	(2.735)	-15.176***	(1.924)	-9.890***	(3.348)
$Var(a_{ij})$	2.394	(0.380)	1.914	(0.563)	2.440	(0.365)	4.203	(0.847)
$Cov(a_{i,empl}, a_{i,welf})$	0.092	(0.399)			0.036	(0.405)		
log likelihood	-4936.0963				-4317.5091			
No. of household-year observations	16,734				15,251			
No. of households	5,094				3,882			

Note: Dynamic multinomial logit models with random effects. Dependent variable: labor market state (inactivity, employment, welfare receipt). M: denotes individual-specific averages of a variable. Significance level: * <0.1 , ** <0.05 , *** <0.01 .

Source: SOEP 2000-2010.

Table 4
Predicted probabilities of labor market transitions
given subsample-period-specific average characteristics

State at time $t - 1$	State at time t									
	Inactive			Employment			Welfare			
	Mean	95%-CI		Mean	95%-CI		Mean	95%-CI		
A. Pre reform										
Inactive	0.246	0.206	0.292	0.718	0.667	0.757	0.037	0.027	0.053	
Employment	0.055	0.049	0.061	0.936	0.929	0.942	0.009	0.008	0.012	
Welfare	0.089	0.064	0.126	0.828	0.762	0.868	0.083	0.056	0.133	
B. Post reform										
Inactive	0.195	0.161	0.237	0.767	0.724	0.800	0.038	0.029	0.053	
Employment	0.042	0.036	0.048	0.942	0.935	0.948	0.016	0.014	0.021	
Welfare	0.066	0.046	0.095	0.874	0.835	0.901	0.060	0.045	0.085	
C. Natives: pre reform										
Inactive	0.220	0.180	0.269	0.759	0.705	0.797	0.021	0.014	0.036	
Employment	0.050	0.045	0.057	0.943	0.936	0.949	0.007	0.005	0.009	
Welfare	0.081	0.053	0.120	0.854	0.787	0.894	0.065	0.040	0.117	
D. Natives: post reform										
Inactive	0.195	0.159	0.242	0.773	0.726	0.812	0.032	0.023	0.048	
Employment	0.041	0.036	0.047	0.947	0.939	0.953	0.013	0.010	0.017	
Welfare	0.067	0.045	0.100	0.877	0.829	0.907	0.057	0.039	0.089	
E. Immigrants: pre reform										
Inactive	0.362	0.262	0.494	0.521	0.381	0.622	0.118	0.080	0.206	
Employment	0.074	0.059	0.095	0.900	0.874	0.916	0.026	0.019	0.045	
Welfare	0.123	0.070	0.201	0.693	0.513	0.781	0.184	0.119	0.362	
F. Immigrants: post reform										
Inactive	0.204	0.127	0.326	0.721	0.591	0.793	0.076	0.047	0.134	
Employment	0.046	0.033	0.064	0.914	0.885	0.932	0.040	0.028	0.064	
Welfare	0.056	0.027	0.105	0.830	0.735	0.884	0.115	0.074	0.188	

Note: Calculations are based on estimation results in Tables A4 and A5. Simulation-based 95% confidence intervals are calculated using 1000 replications.

Table 5
Predicted probabilities of labor market transitions
given subsample-period-specific average characteristics of welfare recipients
setting initial state to welfare

State at time $t - 1$	State at time t									
	Inactive			Employment			Welfare			
	Mean	95%-CI		Mean	95%-CI		Mean	95%-CI		
A. Natives: pre reform										
Inactive	0.374	0.270	0.505	0.207	0.140	0.284	0.419	0.282	0.539	
Employment	0.190	0.126	0.284	0.509	0.401	0.617	0.301	0.187	0.415	
Welfare	0.095	0.064	0.137	0.190	0.135	0.251	0.715	0.646	0.776	
B. Natives: post reform										
Inactive	0.236	0.162	0.328	0.251	0.182	0.329	0.513	0.401	0.611	
Employment	0.092	0.058	0.140	0.517	0.421	0.623	0.392	0.283	0.490	
Welfare	0.070	0.045	0.102	0.270	0.203	0.337	0.660	0.592	0.731	
C. Immigrants: pre reform										
Inactive	0.386	0.256	0.555	0.149	0.079	0.239	0.465	0.292	0.600	
Employment	0.186	0.103	0.294	0.570	0.406	0.708	0.245	0.129	0.396	
Welfare	0.133	0.089	0.200	0.218	0.145	0.292	0.649	0.559	0.740	
D. Immigrants: post reform										
Inactive	0.244	0.134	0.415	0.221	0.126	0.333	0.535	0.383	0.662	
Employment	0.093	0.041	0.181	0.451	0.330	0.605	0.456	0.295	0.578	
Welfare	0.063	0.033	0.119	0.261	0.168	0.358	0.676	0.570	0.772	

Note: Calculations are based on estimation results in Tables A4 and A5. Simulation-based 95% confidence intervals are calculated using 1000 replications.

Table 6
Predicted probabilities of labor market transitions
given subsample-period-specific average characteristics (alternative definition of states)

State at time $t - 1$	State at time t									
	Inactive			Employment			Welfare			
	Mean	95%-CI		Mean	95%-CI		Mean	95%-CI		
A. Total population: pre reform										
Inactive	0.253	0.211	0.303	0.723	0.669	0.764	0.025	0.017	0.037	
Employment	0.053	0.048	0.059	0.943	0.936	0.948	0.005	0.004	0.007	
Welfare	0.104	0.073	0.146	0.850	0.795	0.886	0.047	0.030	0.081	
B. Total population: post reform										
Inactive	0.194	0.160	0.236	0.782	0.739	0.816	0.024	0.017	0.037	
Employment	0.040	0.035	0.045	0.953	0.947	0.958	0.008	0.006	0.011	
Welfare	0.095	0.066	0.134	0.853	0.801	0.887	0.052	0.036	0.081	
C. Natives: pre reform										
Inactive	0.224	0.183	0.275	0.765	0.712	0.804	0.011	0.007	0.020	
Employment	0.049	0.043	0.056	0.948	0.941	0.954	0.003	0.002	0.005	
Welfare	0.090	0.059	0.137	0.884	0.829	0.920	0.025	0.014	0.051	
D. Natives: post reform										
Inactive	0.195	0.158	0.239	0.791	0.745	0.827	0.014	0.009	0.025	
Employment	0.039	0.034	0.045	0.955	0.948	0.960	0.006	0.005	0.009	
Welfare	0.098	0.061	0.149	0.866	0.803	0.909	0.036	0.022	0.065	
E. Immigrants: pre reform										
Inactive	0.391	0.280	0.535	0.504	0.354	0.615	0.105	0.068	0.209	
Employment	0.069	0.056	0.089	0.918	0.892	0.931	0.013	0.009	0.029	
Welfare	0.156	0.090	0.256	0.708	0.522	0.800	0.136	0.080	0.299	
F. Immigrants: post reform										
Inactive	0.201	0.132	0.316	0.722	0.584	0.802	0.077	0.045	0.153	
Employment	0.042	0.030	0.058	0.938	0.915	0.951	0.021	0.014	0.034	
Welfare	0.071	0.033	0.131	0.796	0.661	0.867	0.134	0.079	0.256	

Note: Calculations are based on estimation results in Tables A10 and A11. Simulation-based 95% confidence intervals are calculated using 1000 replications.

Figure 1 Labor market transitions and unemployment rate (natives)

Fig. 1.1: Persistence in employment and welfare participation

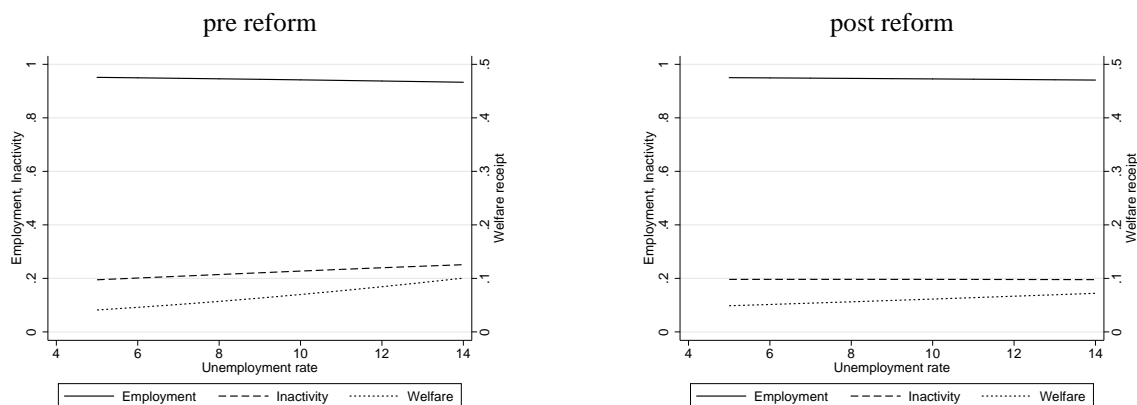


Fig. 1.2: Welfare entry

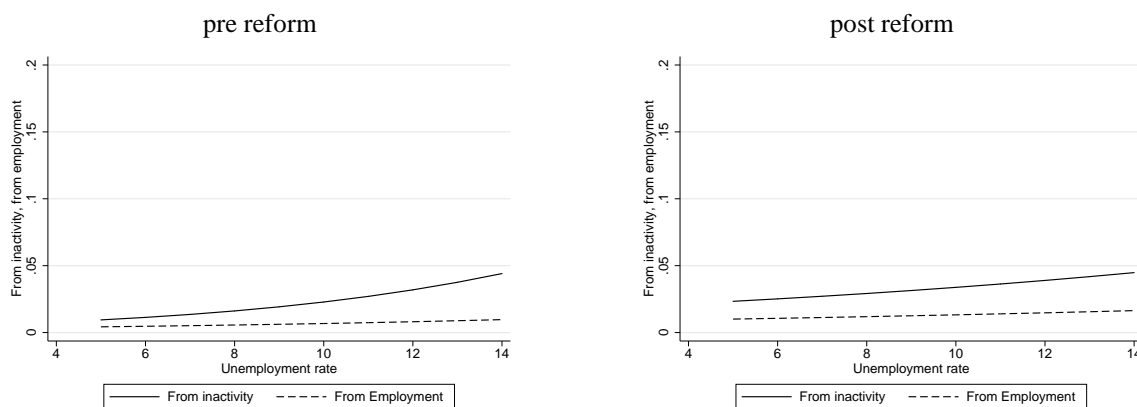
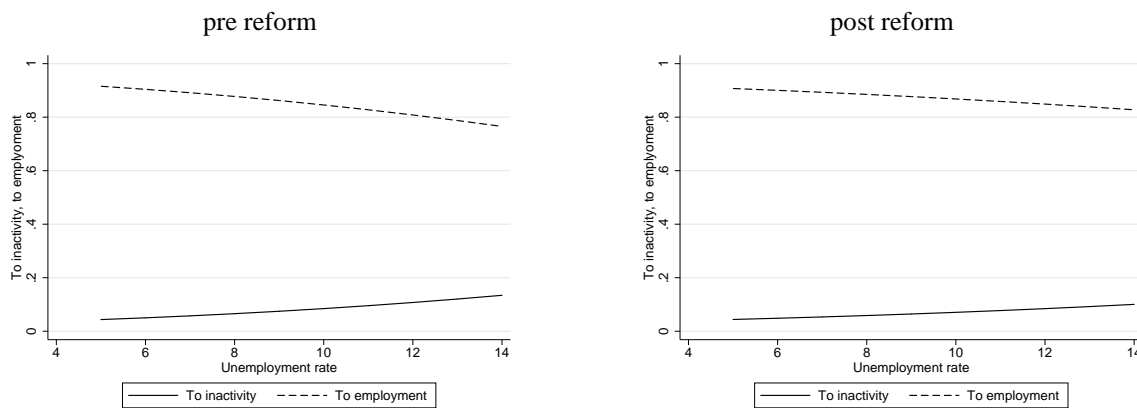


Fig. 1.3: Welfare exit



Note: Predicted probabilities given average characteristics. Figures 1.1 uses a secondary vertical axes to indicate transition probabilities.

Figure 2
Labor market transitions and unemployment rate (immigrants)

Fig. 2.1: Persistence in employment and welfare participation

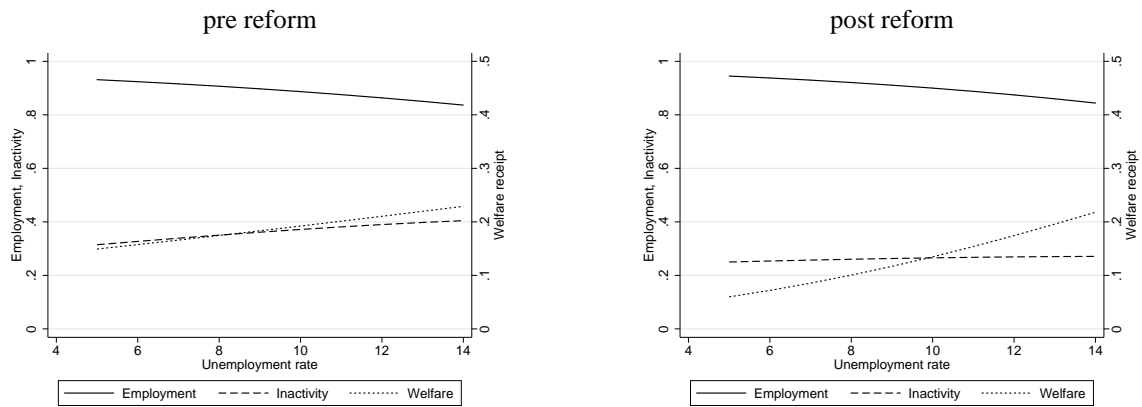


Fig. 2.2: Welfare entry

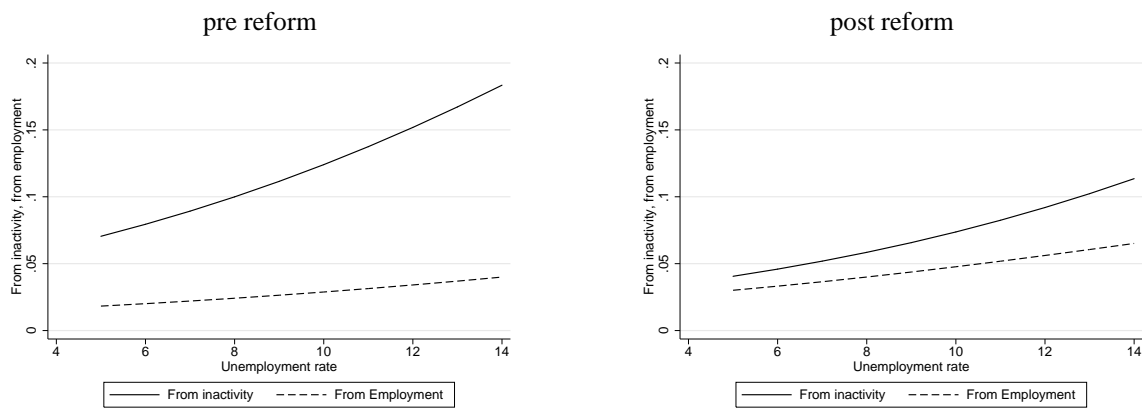
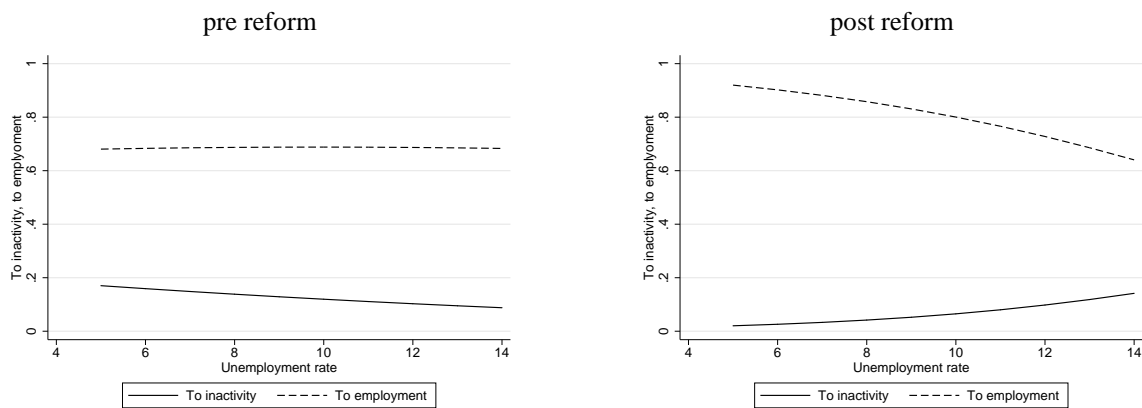


Fig. 2.3: Welfare exit



Note: Predicted probabilities given average characteristics. Figures 2.1 uses a secondary vertical axes to indicate transition probabilities.

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Table A1
Descriptive statistics

Variable	Pre reform (2000-2004)				Post reform (2005-2010)			
	Natives		Immigrants		Natives		Immigrants	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Inactivity	0.11	0.31	0.15	0.35	0.10	0.30	0.11	0.32
Employment	0.86	0.35	0.77	0.42	0.86	0.35	0.78	0.42
Welfare	0.04	0.18	0.09	0.28	0.05	0.21	0.11	0.31
Age	43.09	8.57	42.52	9.17	44.25	8.39	43.57	8.74
Female	0.35	0.48	0.27	0.44	0.41	0.49	0.37	0.48
Education in years	12.59	2.74	11.00	2.41	12.75	2.75	11.31	2.52
Married	0.66	0.47	0.79	0.40	0.63	0.48	0.78	0.42
Health status: good	0.60	0.49	0.57	0.50	0.55	0.50	0.54	0.50
School in Germany: no	0.00	0.00	0.60	0.49	0.00	0.00	0.47	0.50
Number of children LT6	0.23	0.52	0.33	0.60	0.17	0.45	0.24	0.52
Number of children GE6	0.57	0.86	0.81	0.99	0.52	0.83	0.80	0.96
Year 2001	0.29	0.45	0.30	0.46	0.00	0.00	0.00	0.00
Year 2002	0.26	0.44	0.26	0.44	0.00	0.00	0.00	0.00
Year 2003	0.24	0.43	0.24	0.42	0.00	0.00	0.00	0.00
Year 2004	0.22	0.41	0.21	0.41	0.00	0.00	0.00	0.00
Year 2006	0.00	0.00	0.00	0.00	0.24	0.43	0.26	0.44
Year 2007	0.00	0.00	0.00	0.00	0.22	0.41	0.23	0.42
Year 2008	0.00	0.00	0.00	0.00	0.20	0.40	0.20	0.40
Year 2009	0.00	0.00	0.00	0.00	0.18	0.38	0.17	0.38
Year 2010	0.00	0.00	0.00	0.00	0.16	0.37	0.15	0.35
Initial condition (in 2005)								
Inactivity	0.10	0.30	0.13	0.34	0.11	0.32	0.17	0.38
Employment	0.87	0.34	0.78	0.41	0.85	0.36	0.74	0.44
Welfare receipt	0.03	0.18	0.09	0.28	0.04	0.19	0.09	0.29
Number of person-year observations	13,781		2,953		12,977		2,274	

Source: SOEP 2000-2010.

Table A2
Averages of selected variables by labor market state

Variable	Pre reform			Post reform		
	Inactivity	Employment	Welfare	Inactivity	Employment	Welfare
A. Natives						
Age	43.91	43.01	42.61	44.00	44.30	43.87
Female	0.65	0.31	0.65	0.69	0.37	0.64
Education in years	12.07	12.74	10.63	12.45	12.87	11.08
Married	0.70	0.67	0.36	0.72	0.63	0.32
Health status: good	0.56	0.62	0.39	0.54	0.56	0.33
School in Germany: no	0.00	0.00	0.00	0.00	0.00	0.00
Number of children LT6	0.36	0.21	0.31	0.34	0.15	0.22
Number of children GE6	0.49	0.57	0.68	0.50	0.52	0.61
Household size	2.92	2.82	2.70	2.98	2.72	2.48
Single person	0.16	0.19	0.22	0.13	0.20	0.28
Single parent	0.07	0.06	0.34	0.07	0.07	0.30
Couple Without Children	0.21	0.21	0.12	0.21	0.23	0.10
Couple with children	0.54	0.52	0.28	0.57	0.49	0.30
Other household type	0.02	0.02	0.03	0.02	0.01	0.02
B. Immigrants						
Age	42.56	42.18	45.42	44.63	43.49	43.10
Female	0.53	0.22	0.29	0.66	0.31	0.55
Education in years	10.52	11.17	10.40	10.79	11.52	10.41
Married	0.81	0.79	0.78	0.82	0.79	0.62
Health status: good	0.51	0.61	0.37	0.47	0.57	0.39
School in Germany: no	0.55	0.59	0.73	0.48	0.47	0.50
Number of children LT6	0.46	0.29	0.40	0.39	0.22	0.21
Number of children GE6	0.68	0.82	0.92	0.72	0.78	1.00
Household size	3.44	3.37	3.66	3.40	3.30	3.23
Single person	0.07	0.10	0.09	0.07	0.08	0.17
Single parent	0.09	0.07	0.12	0.08	0.09	0.27
Couple Without Children	0.17	0.15	0.15	0.16	0.16	0.06
Couple with children	0.63	0.67	0.55	0.68	0.65	0.50
Other household type	0.04	0.02	0.09	0.02	0.02	0.01

Source: SOEP 2001-2004 and 2006-2010.

Table A3
Averages of selected variables by labor market transitions

State in $t - 1$	Variable	State at time t		
		Inactivity	Employment	Welfare
A. Natives				
Inactivity	Age	44.8	39.0	40.9
	Female	0.67	0.66	0.63
	Education	12.2	12.7	10.9
Employment	Age	41.4	42.7	43.1
	Female	0.56	0.34	0.53
	Education	12.4	12.8	11.5
Welfare receipt	Age	42.3	41.5	43.5
	Female	0.72	0.56	0.68
	Education	11.0	11.5	10.6
B. Immigrants				
Inactivity	Age	40.4	36.9	44.4
	Female	0.69	0.66	0.36
	Education	10.9	11.6	10.0
Employment	Age	40.6	41.5	43.3
	Female	0.45	0.32	0.36
	Education	10.9	11.7	10.7
Welfare receipt	Age	42.1	41.6	41.5
	Female	0.49	0.37	0.55
	Education	10.3	11.0	10.6

Note: Weighted data using cross-sectional weights.

Source: SOEP 2000-2010.

Table A4

Separate estimation results for natives and immigrants: pre reform

Variable	Natives				Immigrants			
	Employment		Welfare receipt		Employment		Welfare receipt	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Employed in t-1	2.218***	(0.161)	0.302	(0.268)	2.563***	(0.299)	-0.238	(0.390)
Welfare receipt in t-1	1.387***	(0.307)	2.332***	(0.349)	1.548***	(0.399)	1.662***	(0.470)
Age	0.524***	(0.090)	0.297*	(0.161)	0.259**	(0.131)	-0.015	(0.198)
Age squared	-0.649***	(0.100)	-0.359**	(0.178)	-0.344**	(0.147)	0.040	(0.218)
Female	2.151	(2.467)	4.574	(4.261)	-3.645	(3.966)	0.805	(6.039)
Age × Female	-0.193*	(0.115)	-0.226	(0.197)	0.073	(0.188)	-0.051	(0.284)
Age sq. × Female	0.252*	(0.129)	0.234	(0.221)	-0.033	(0.216)	0.041	(0.322)
Education	0.117***	(0.022)	-0.255***	(0.048)	0.106***	(0.039)	0.008	(0.057)
School in Germany: no	—		—		-0.292	(0.219)	0.330	(0.353)
Married	-0.251**	(0.127)	-1.214***	(0.209)	-0.117	(0.238)	-0.488	(0.357)
Health status: good	0.040	(0.123)	-0.308	(0.213)	-0.045	(0.208)	-0.809***	(0.302)
No. of kids LT 6	0.684***	(0.157)	0.720**	(0.308)	0.141	(0.260)	0.709*	(0.375)
No. of kids GE 6	0.191	(0.144)	0.271	(0.238)	0.273	(0.218)	0.635**	(0.305)
Year 2002	-0.245**	(0.113)	-0.062	(0.212)	0.168	(0.199)	0.273	(0.290)
Year 2003	-0.355***	(0.117)	0.183	(0.213)	-0.249	(0.199)	0.068	(0.299)
Year 2004	-0.239*	(0.123)	0.574***	(0.218)	0.175	(0.215)	0.662**	(0.311)
Employed in t=0	2.575***	(0.269)	0.108	(0.373)	1.313***	(0.424)	0.329	(0.490)
Welfare receipt in t=0	0.028	(0.378)	2.232***	(0.486)	-0.429	(0.456)	2.007***	(0.648)
M: Health status: good	0.509**	(0.206)	-0.711**	(0.357)	0.521	(0.348)	0.402	(0.517)
M: No. of kids LT 6	-1.698***	(0.240)	-1.279**	(0.504)	-0.529	(0.373)	-0.312	(0.549)
M: No. of kids GE 6	-0.128	(0.190)	-0.209	(0.311)	-0.367	(0.275)	-0.455	(0.385)
Constant	-11.359***	(1.971)	-4.315	(3.561)	-5.808**	(2.826)	-2.375	(4.317)
$Var(a_{ij})$	2.803	(0.476)	1.647	(0.646)	1.245	(0.586)	1.771	(0.961)
$Cov(a_{i,empl}, a_{i,welf})$	0.204	(0.509)			-0.276	(0.592)		
log likelihood	-3668.710				-1232.784			
No. of household-year observations	13,781				2,953			
No. of households	4,172				922			

Note: Dynamic multinomial logit models with random effects. Dependent variable: labor market state (inactivity, employment, welfare receipt). M: denotes individual-specific averages of a variable. Significance level: *<0.1, **<0.05, ***<0.01.

Source: SOEP 2000-2004.

Table A5
Separate estimation results for natives and immigrants: post reform

Variable	Natives				Immigrants			
	Employment Coef.	S.E.	Welfare receipt Coef.	S.E.	Employment Coef.	S.E.	Welfare receipt Coef.	S.E.
Employed in t-1	2.221***	(0.156)	0.523**	(0.264)	2.091***	(0.354)	0.695	(0.431)
Welfare receipt in t-1	1.472***	(0.286)	1.941***	(0.326)	1.636***	(0.443)	1.877***	(0.456)
Age	0.736***	(0.096)	0.830***	(0.184)	0.726***	(0.242)	-0.261	(0.295)
Age squared	-0.875***	(0.106)	-0.934***	(0.203)	-0.913***	(0.266)	0.208	(0.324)
Female	7.876***	(2.591)	18.760***	(4.910)	7.965	(5.953)	-3.037	(7.365)
Age × Female	-0.485***	(0.121)	-0.908***	(0.226)	-0.508*	(0.276)	0.092	(0.343)
Age sq. × Female	0.600***	(0.137)	1.014***	(0.253)	0.629**	(0.308)	-0.092	(0.387)
Education	0.047**	(0.023)	-0.177***	(0.046)	0.137**	(0.057)	-0.060	(0.079)
School in Germany: no	—		—		0.101	(0.318)	-0.045	(0.416)
Married	-0.685***	(0.136)	-1.906***	(0.237)	-0.675**	(0.332)	-1.051***	(0.394)
Health status: good	-0.116	(0.131)	-0.911***	(0.226)	-0.359	(0.265)	-0.088	(0.337)
No. of kids LT 6	0.388**	(0.161)	0.370	(0.291)	0.316	(0.356)	-0.095	(0.471)
No. of kids GE 6	0.124	(0.146)	0.306	(0.248)	0.341	(0.308)	0.189	(0.373)
Year 2007	0.180	(0.125)	-0.486**	(0.213)	0.054	(0.283)	-0.219	(0.352)
Year 2008	0.330**	(0.133)	-0.332	(0.225)	0.469	(0.306)	-0.525	(0.394)
Year 2009	0.226	(0.138)	-0.919***	(0.254)	0.276	(0.322)	-0.090	(0.400)
Year 2010	0.313**	(0.146)	-0.199	(0.249)	0.061	(0.332)	0.175	(0.411)
Employed in t=0	2.562***	(0.245)	-0.089	(0.374)	2.592***	(0.558)	-0.992	(0.607)
Welfare receipt in t=0	0.371	(0.349)	3.203***	(0.507)	0.391	(0.523)	1.901***	(0.596)
M: Health status: good	0.577**	(0.225)	-0.257	(0.403)	1.209**	(0.507)	-0.600	(0.647)
M: No. of kids LT 6	-1.068***	(0.298)	0.110	(0.520)	-1.655***	(0.603)	-0.775	(0.719)
M: No. of kids GE 6	0.265	(0.164)	-0.054	(0.294)	-0.246	(0.315)	0.461	(0.396)
Constant	-15.202***	(2.086)	-16.502***	(4.077)	-14.694***	(5.345)	7.980	(6.519)
$Var(a_{ij})$	2.484	(0.401)	3.898	(0.963)	1.902	(0.897)	2.413	(1.144)
$Cov(a_{i,empl}, a_{i,welf})$	0.022	(0.497)			-0.475	(0.717)		
log likelihood		-3456.030				-826.853		
No. of household-year observations		12,977				2,274		
No. of households		3,266				616		

Note: Dynamic multinomial logit models with random effects. Dependent variable: labor market state (inactivity, employment, welfare receipt). M: denotes individual-specific averages of a variable. Significance level: *<0.1, **<0.05, ***<0.01.

Source: SOEP 2005-2010.

Table A6
Predicted probabilities of labor market transitions
given observed characteristics

State at time $t - 1$	State at time t									
	Inactive			Employment			Welfare			
	Mean	95%-CI		Mean	95%-CI		Mean	95%-CI		
A. Natives: pre reform										
Inactive	0.237	0.183	0.304	0.724	0.655	0.777	0.039	0.022	0.070	
Employment	0.078	0.057	0.103	0.902	0.873	0.925	0.020	0.011	0.035	
Welfare	0.100	0.061	0.152	0.802	0.718	0.855	0.098	0.059	0.173	
B. Natives: post reform										
Inactive	0.218	0.164	0.283	0.730	0.662	0.784	0.053	0.032	0.086	
Employment	0.067	0.047	0.091	0.902	0.871	0.927	0.032	0.019	0.050	
Welfare	0.091	0.058	0.137	0.823	0.755	0.869	0.086	0.055	0.139	
C. Immigrants: pre reform										
Inactive	0.351	0.216	0.525	0.518	0.345	0.649	0.131	0.063	0.265	
Employment	0.097	0.051	0.163	0.860	0.778	0.916	0.043	0.018	0.093	
Welfare	0.134	0.061	0.246	0.665	0.457	0.780	0.201	0.108	0.408	
D. Immigrants: post reform										
Inactive	0.225	0.119	0.394	0.663	0.498	0.769	0.112	0.051	0.219	
Employment	0.081	0.035	0.152	0.831	0.740	0.901	0.088	0.039	0.164	
Welfare	0.080	0.029	0.175	0.752	0.612	0.841	0.168	0.090	0.295	

Note: Calculations are based on estimation results in Tables A4 and A5. Simulation-based 95% confidence intervals are calculated using 1000 replications.

Table A7
Estimation results: regional unemployment rate (pre reform)

Variable	Natives				Immigrants			
	Employment		Welfare receipt		Employment		Welfare receipt	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Employed in t-1	1.995***	(0.397)	1.174*	(0.689)	2.791***	(0.707)	0.797	(1.039)
Welfare receipt in t-1	2.630***	(0.868)	4.047***	(0.787)	-0.076	(1.102)	1.381	(1.118)
Employed in t-1 × unempl. Rate	0.025	(0.041)	-0.088	(0.067)	-0.030	(0.071)	-0.107	(0.104)
Welfare receipt in t-1 × unempl. Rate	-0.125	(0.083)	-0.172**	(0.071)	0.172	(0.111)	0.033	(0.109)
Unemployment rate	-0.063*	(0.037)	0.153***	(0.048)	-0.097	(0.062)	0.106	(0.073)
Age	0.517***	(0.090)	0.339**	(0.163)	0.249*	(0.132)	-0.054	(0.198)
Age squared	-0.642***	(0.100)	-0.403**	(0.180)	-0.337**	(0.148)	0.082	(0.218)
Female	1.878	(2.459)	5.565	(4.312)	-4.375	(4.012)	0.217	(6.044)
Age × Female	-0.180	(0.115)	-0.269	(0.200)	0.106	(0.190)	-0.028	(0.284)
Age sq. × Female	0.239*	(0.129)	0.279	(0.223)	-0.071	(0.218)	0.020	(0.322)
Education	0.121***	(0.023)	-0.265***	(0.048)	0.113***	(0.039)	-0.000	(0.057)
School in Germany: no	—		—		-0.240	(0.220)	0.280	(0.352)
Married	-0.264**	(0.127)	-1.186***	(0.211)	-0.128	(0.240)	-0.463	(0.357)
Health status: good	0.040	(0.123)	-0.313	(0.214)	-0.063	(0.209)	-0.805***	(0.303)
No. of kids LT 6	0.690***	(0.156)	0.739**	(0.310)	0.134	(0.262)	0.678*	(0.372)
No. of kids GE 6	0.196	(0.144)	0.267	(0.239)	0.296	(0.221)	0.644**	(0.305)
Year 2002	-0.217*	(0.113)	-0.116	(0.214)	0.222	(0.201)	0.249	(0.291)
Year 2003	-0.287**	(0.120)	0.052	(0.218)	-0.129	(0.205)	-0.019	(0.307)
Year 2004	-0.163	(0.126)	0.445**	(0.222)	0.303	(0.222)	0.559*	(0.319)
Employed in t=0	2.553***	(0.268)	0.141	(0.376)	1.324***	(0.419)	0.297	(0.492)
Welfare receipt in t=0	0.067	(0.382)	2.153***	(0.480)	-0.373	(0.459)	1.951***	(0.645)
M: Health status: good	0.496**	(0.205)	-0.730**	(0.359)	0.481	(0.350)	0.412	(0.518)
M: No. of kids LT 6	-1.710***	(0.240)	-1.283**	(0.509)	-0.481	(0.376)	-0.344	(0.547)
M: No. of kids GE 6	-0.149	(0.189)	-0.190	(0.313)	-0.382	(0.278)	-0.475	(0.386)
Constant	-10.693***	(2.007)	-6.590*	(3.651)	-4.822*	(2.864)	-2.287	(4.334)
$Var(a_{ij})$	2.737	(0.268)	1.680	(0.693)	1.279	(0.770)	1.713	(0.746)
$Cov(a_{i,empl}, a_{i,welf})$	0.278	(0.615)			-0.300	(0.574)		
log likelihood		-3656.795				-1225.318		
No. of household-year observations		13,781				2,953		
No. of households		4,172				922		

Note: Dynamic multinomial logit models with random effects. Robust standard errors clustered by region in parentheses. Dependent variable: labor market state (inactivity, employment, welfare receipt). M: denotes individual-specific averages of a variable. Significance level: * <0.1 , ** <0.05 , *** <0.01 .

Source: SOEP 2000-2004.

Table A8
Estimation results: regional unemployment rate (post reform)

Variable	Natives				Immigrants			
	Employment		Welfare receipt		Employment		Welfare receipt	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Employed in t-1	2.268***	(0.373)	0.849	(0.648)	3.521***	(0.750)	2.464**	(1.028)
Welfare receipt in t-1	2.584***	(0.726)	3.202***	(0.781)	4.264***	(1.159)	3.391***	(1.157)
Employed in t-1 × unempl. Rate	-0.005	(0.038)	-0.035	(0.064)	-0.132*	(0.079)	-0.164	(0.111)
Welfare receipt in t-1 × unempl. Rate	-0.118*	(0.071)	-0.131*	(0.074)	-0.260**	(0.123)	-0.136	(0.113)
Unemployment rate	-0.006	(0.035)	0.092*	(0.053)	-0.042	(0.070)	0.138*	(0.080)
Age	0.733***	(0.096)	0.823***	(0.183)	0.714***	(0.234)	-0.418	(0.295)
Age squared	-0.871***	(0.106)	-0.926***	(0.201)	-0.896***	(0.259)	0.388	(0.322)
Female	7.810***	(2.592)	18.635***	(4.876)	8.417	(5.506)	-4.625	(7.047)
Age × Female	-0.482***	(0.121)	-0.902***	(0.224)	-0.533**	(0.255)	0.179	(0.328)
Age sq. × Female	0.597***	(0.137)	1.008***	(0.251)	0.663**	(0.285)	-0.194	(0.369)
Education	0.049**	(0.023)	-0.180***	(0.046)	0.128**	(0.050)	-0.056	(0.069)
School in Germany: no	—		—		0.167	(0.292)	-0.214	(0.425)
Married	-0.680***	(0.136)	-1.864***	(0.235)	-0.513*	(0.296)	-0.836**	(0.360)
Health status: good	-0.120	(0.130)	-0.915***	(0.225)	-0.371	(0.253)	-0.059	(0.325)
No. of kids LT 6	0.393**	(0.161)	0.372	(0.290)	0.357	(0.340)	-0.015	(0.445)
No. of kids GE 6	0.127	(0.146)	0.308	(0.247)	0.393	(0.288)	0.275	(0.352)
Year 2007	0.154	(0.132)	-0.371*	(0.224)	-0.219	(0.284)	-0.154	(0.357)
Year 2008	0.286*	(0.150)	-0.155	(0.251)	-0.018	(0.316)	-0.426	(0.414)
Year 2009	0.188	(0.149)	-0.769***	(0.270)	-0.119	(0.323)	-0.001	(0.412)
Year 2010	0.272*	(0.160)	-0.029	(0.272)	-0.352	(0.343)	0.313	(0.436)
Employed in t=0	2.558***	(0.244)	-0.040	(0.375)	2.231***	(0.482)	-1.488***	(0.572)
Welfare receipt in t=0	0.408	(0.352)	3.145***	(0.504)	0.208	(0.427)	1.628***	(0.522)
M: Health status: good	0.591***	(0.225)	-0.218	(0.399)	1.108**	(0.472)	-0.641	(0.622)
M: No. of kids LT 6	-1.078***	(0.297)	0.111	(0.515)	-1.639***	(0.564)	-0.944	(0.675)
M: No. of kids GE 6	0.259	(0.164)	-0.035	(0.293)	-0.314	(0.287)	0.389	(0.374)
Constant	-15.100***	(2.106)	-17.313***	(4.064)	-14.136***	(5.059)	9.539	(6.459)
$Var(a_{ij})$	2.476	(0.404)	3.643	(0.623)	1.197	(0.514)	1.784	(1.241)
$Cov(a_{i,empl}, a_{i,welf})$	-0.012	(0.467)			-1.462	(0.431)		
log likelihood		-3452.143				-819.835		
No. of household-year observations		12,977				2,274		
No. of households		3,266				616		

Note: Dynamic multinomial logit models with random effects. Robust standard errors clustered by region in parentheses. Dependent variable: labor market state (inactivity, employment, welfare receipt). M: denotes individual-specific averages of a variable. Significance level: * <0.1 , ** <0.05 , *** <0.01 .

Source: SOEP 2000-2004.

Table A9
Predicted probabilities of labor market transitions
given subsample-specific average characteristics setting the initial condition to 2006

State at time $t - 1$	State at time t									
	Inactive			Employment			Welfare			
	Mean	95%-CI		Mean	95%-CI		Mean	95%-CI		
A. Natives, post reform										
Inactive	0.184	0.143	0.244	0.790	0.727	0.829	0.026	0.016	0.050	
Employment	0.038	0.032	0.044	0.953	0.945	0.959	0.009	0.007	0.014	
Welfare	0.068	0.038	0.113	0.885	0.820	0.923	0.047	0.027	0.088	
B. Immigrants, post reform										
Inactive	0.149	0.085	0.281	0.779	0.633	0.855	0.073	0.039	0.156	
Employment	0.042	0.028	0.064	0.921	0.885	0.940	0.037	0.025	0.065	
Welfare	0.041	0.018	0.101	0.850	0.717	0.902	0.109	0.066	0.226	

Note: Simulation-based 95% confidence intervals are calculated using 1000 replications.

Table A10
Estimation results: alternative definition of states

Variable	Natives			
	Employment		Welfare receipt	
	Coef.	S.E.	Coef.	S.E.
Employed in t-1	2.196***	(0.139)	0.516**	(0.237)
Welfare receipt in t-1	0.991***	(0.258)	1.767***	(0.285)
Age	0.724***	(0.087)	0.668***	(0.161)
Age squared	-0.866***	(0.096)	-0.777***	(0.178)
Female	8.237***	(2.316)	15.247***	(4.253)
Age × Female	-0.498***	(0.108)	-0.770***	(0.197)
Age sq. × Female	0.610***	(0.122)	0.873***	(0.221)
Education	0.046**	(0.020)	-0.181***	(0.043)
School in Germany: no	-0.021	(0.196)	0.832***	(0.301)
Married	-0.707***	(0.122)	-1.778***	(0.215)
Health status: good	-0.183	(0.116)	-0.571***	(0.205)
No. of kids LT 6	0.395***	(0.145)	0.169	(0.263)
No. of kids GE 6	0.186	(0.130)	0.270	(0.215)
Year 2007	0.111	(0.113)	-0.186	(0.197)
Year 2008	0.304**	(0.121)	-0.252	(0.214)
Year 2009	0.152	(0.125)	-0.375	(0.229)
Year 2010	0.216	(0.132)	0.183	(0.228)
Employed in t=0 (2006)	2.386***	(0.215)	-0.586*	(0.356)
Welfare receipt in t=0 (2006)	1.133***	(0.275)	2.375***	(0.354)
M: Health status: good	0.612***	(0.202)	-0.217	(0.366)
M: No. of kids LT 6	-1.133***	(0.261)	0.035	(0.448)
M: No. of kids GE 6	0.181	(0.142)	0.040	(0.246)
Constant	-14.574***	(1.892)	-12.341***	(3.546)
$Var(a_{ij})$	2.247	(0.344)	3.438	(0.727)
$Cov(a_{i,empl}, a_{i,welf})$	0.691	(0.461)		
log likelihood		-4039.3653		
No. of household-year observations		15,251		
No. of households		3,882		

Note: Dynamic multinomial logit models with random effects. Dependent variable: labor market state (inactivity, employment, welfare receipt), *Aufstocker* are coded as employed. M: denotes individual-specific averages of a variable. Significance level: *<0.1, **<0.05, ***<0.01.

Source: SOEP 2005-2010.

Table A11
Estimation results: alternative definition of states (natives and immigrants)

Variable	Natives				Immigrants			
	Employment		Welfare receipt		Employment		Welfare receipt	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Employed in t-1	2.213***	(0.153)	0.706**	(0.293)	2.185***	(0.336)	0.304	(0.412)
Welfare receipt in t-1	0.967***	(0.315)	1.884***	(0.346)	1.312***	(0.441)	1.761***	(0.469)
Age	0.732***	(0.095)	1.006***	(0.219)	0.634***	(0.233)	-0.041	(0.281)
Age squared	-0.868***	(0.105)	-1.126***	(0.240)	-0.805***	(0.255)	-0.037	(0.306)
Female	8.240***	(2.550)	22.617***	(5.793)	6.844	(5.852)	-1.615	(7.097)
Age × Female	-0.495***	(0.119)	-1.101***	(0.264)	-0.447*	(0.270)	0.018	(0.329)
Age sq. × Female	0.606***	(0.134)	1.239***	(0.293)	0.555*	(0.302)	-0.012	(0.369)
Education	0.040*	(0.022)	-0.185***	(0.054)	0.126**	(0.055)	-0.061	(0.071)
School in Germany: no	—		—		0.007	(0.306)	0.005	(0.371)
Married	-0.734***	(0.133)	-2.166***	(0.276)	-0.772**	(0.320)	-1.112***	(0.364)
Health status: good	-0.146	(0.130)	-0.934***	(0.260)	-0.346	(0.262)	-0.095	(0.338)
No. of kids LT 6	0.428***	(0.159)	0.198	(0.329)	0.294	(0.353)	-0.016	(0.459)
No. of kids GE 6	0.148	(0.144)	0.448	(0.281)	0.389	(0.304)	0.130	(0.364)
Year 2007	0.122	(0.124)	-0.232	(0.245)	0.029	(0.280)	-0.141	(0.351)
Year 2008	0.272**	(0.132)	-0.092	(0.257)	0.424	(0.302)	-0.510	(0.403)
Year 2009	0.146	(0.137)	-0.532*	(0.283)	0.221	(0.317)	-0.024	(0.409)
Year 2010	0.254*	(0.145)	0.102	(0.281)	0.047	(0.326)	0.249	(0.410)
Employed in t=0	2.452***	(0.240)	-0.940*	(0.480)	2.177***	(0.503)	-0.257	(0.556)
Welfare receipt in t=0	1.129***	(0.328)	2.625***	(0.452)	0.923*	(0.481)	1.698***	(0.512)
M: Health status: good	0.510**	(0.222)	0.009	(0.460)	1.030**	(0.491)	-0.388	(0.605)
M: No. of kids LT 6	-1.075***	(0.293)	0.404	(0.601)	-1.553***	(0.588)	-0.995	(0.694)
M: No. of kids GE 6	0.264	(0.161)	-0.459	(0.344)	-0.232	(0.311)	0.394	(0.374)
Constant	-14.878***	(2.060)	-20.454***	(4.893)	-12.269**	(5.177)	3.647	(6.260)
$Var(a_{ij})$	2.313	(0.382)	3.866	(0.960)	1.707	(0.794)	1.326	(0.823)
$Cov(a_{i,empl}, a_{i,welf})$	0.158	(0.590)			0.555	(0.619)		
log likelihood	-3196.7524				-801.9247			
No. of household-year observations	12,977				2,274			
No. of households	3,266				616			

Note: Dynamic multinomial logit models with random effects. Dependent variable: labor market state (inactivity, employment, welfare receipt), *Aufstocker* are coded as employed. M: denotes individual-specific averages of a variable. Significance level: *<0.1, **<0.05, ***<0.01.

Source: SOEP 2005-2010.