Evaluating the Organisational Performance of Local Job Centers*

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Abstract

In a quasi experimental setting the German federal government allowed part of the municipalities to design their own organisational structure for job centers that care for long-term unemployed. Using a unique panel data set on organizational characteristics of all job centers enables us to determine the impact of the intensity and quality of care with which long-term unemployed are looked after and the impact of different activating strategies on the matching probability of long-term unemployed. Combining all matching and layoff probabilities and taking the income effects of sanctions and workfare programmes into account enables us to compare the performance of job centers according to the concept of the income perspective of a long-term unemployed.

Keywords: Matching efficiency, income perspective, evaluation.

JEL-Classification: J63, J64, J68,

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1 Introduction

Bringing unemployed into work has been top on the agenda of many European governments over the last two decades. Different countries have adopted different strategies and changed their institutions to activate the unemployed. Several authors beginning by Nickell (1997), Elmeskov et al. (1998), Nickell and Layard (1999), Blanchard and Wolfers (2000), Belot and van Ours (2001, 2004) and Nickel et al. (2005) have investigated the impact of different institutional settings and their interactions with economic shocks on the unemployment rate. These studies have taught us a great deal about the role of unions, employment protection, active labor market policies and the unemployment benefit and tax system as well as the interactions between these institutions in determining the size of unemployment. However, many organisational features of these institutions can only crudely be pictured by the cross-country indices that are used to make the institutions comparable across countries. In order to learn more about the organisational details that determine the success of an institutional setting an experiment allowing for different organisational structures within a country is needed to identify the impact of single organisational features.

In a quasi experimental setting the German federal government allowed around 15% of the municipalities to design their own organisational structure for job centers that care for long-term unemployed. Each of the 16 German Länder was allows to nominate as many regions for the experiment as it has seats in the federal Länder parliament (Bundesrat). The ratio of seats to regions in each of the Länder can be regarded as the ex-ante probability to participate in the experiment and can, therefore, be used as a perfect instrument.

Using a unique data set on organisational characteristics of all job centers enables us to determine the impact of the organisational features on the matching probabilities of long-term unemployed as well as the impact of the activating strategies adapted by the job centers including active labour market policies and sanctions. The variety of organisational characteristics allows for a very comprehensive analysis. We are

therefore able to add to the empirical literature that focuses only on single aspects like the impact of sanctions or on single active labor market programmes.[1]

Our estimation results indicate that a fast and intensive activation process as well as sanctions increase the probability of long-term unemployed to find a job. Specialized case management decreases the employment probability by signalling to those long-term unemployed that are not referred to case managers that they are either left behind or unmonitored. Public employment schemes decrease the workers incentive to search and therefore reduce the job finding probability. The direct communication of new vacancies to case managers improves the matching efficiency significantly, while the sole existence of an own vacancy recruitment service has no positive effect on the matching efficiency.

All evaluation studies regardless whether they focus on a single aspects of an organisation or if they encompass a big range of organisational characteristics, they all need to focus on one outcome variable for their final evaluation. Micoreconometric studies usually focus on the hazard rate out of unemployment, studies investigating the impact of institutions in a cross-country comparison focus on the unemployment rate. Calmfors (1994) suggests to look in addition at different macroeconomic variables like the level of employment and the in- and outflow of unemployment. We go one step further and aggregate our results on the matching function into regular and short-time employment by combining all matching and layoff probabilities according to the concept of the income perspective of a long-term unemployed (value of being unemployed) based on matching theory (see Pissarides, 2000). This allows us to take the income effects of sanctions and workfare programmes into account and enables us to compare the performance of job centers based on the welfare of long-term unemployed.

[1]The effects of sanctions have been studied by van den Berg et al. (2004), Lalive et al. (2005), Abbring et al. (2005) and Svarer (2007). See Schmid et al. (2001), Black et al. (2003), Hagen (2003), Hujer and Zeiss (2003), Caliendo et al. (2008) and Graversen and van Ours (2008) for studies on employment and training programmes. Meyer (1995), Gorter and Kalb (1996), and Dolton and O'Neill (1996) and Ashenfelter et al. (2000) analysed the impact of an increased monitoring.

The advantage of the concept of the income perspectives is that it takes not only the current income of an unemployed but also the income of prospective labor states into account by weighting the prospective incomes depend on the probabilities of entering and exiting the respective employment states.

Our paper also contributes to the empirical literature estimating matching functions for Germany like Gross (1997), Entorf (1998) and Fahr and Sunde (2005). Like the later we use regional data to estimate the matching function for long-term unemployed and take regional interdependencies into account.[2] Fahr and Sunde (2006) use a stochastic frontier analysis approach to investigate the efficiency of the matching process on the regional level. Due to the lack of further information they are, however, not able to explain what accounts for the matching (in)efficiency. Our unique data set allows us to look into this black box.

The paper is organised as follows. Section 2 describes the setup of the quasi experiment and the political campaign that accompanied the experiment. In section 3 we develop the concept of income perspective within a one sided matching model that encompasses the main features of the institutional setup and derive the structural estimation equation. Section 4 describes the organisational differences between job centers and the instruments used for identification. Section 5 presents the estimation results on the organisational characteristics that influence the matching functions into regular and short-time employment. The estimation results form the basis for the simulation results in subsection 5.2, where matching probabilities as well as the income perspective of long-term unemployed and short-time employed workers for the counterfactual cases where all job centers had been organised as ARGE- or zkT-job center are presented and discussed. Section 6 concludes.

[2]For an overview of the literature analysing matching functions using regional data see Table 2 in Petrongolo and Pissarides (2001).

2 The Quasi Experiment

The 2005 labor market reform in Germany integrates the former social assistance and unemployment assistance systems. Before the reform the local municipalities were responsible for social assistance recipients and the Federal Employment Agency was responsible for unemployment assistance recipients. Unemployment assistance recipients were long-term unemployed, those unemployment insurance entitlements had ended. The integration of the two systems opened up the question of responsibility for the long-term unemployed (*Erwerbfähige Hilfebedürftige*).

The municipalities feared to loose political influence, if they would give up such an important task. Especially the rural county association, supported by the majority of the German Länder, campaigned for giving the local municipalities the sole responsibility for the care of long-term unemployed in so-called zkT-job centers. The federal government that predominantly finances the social security system favored joint local agencies, where a local employment agency and one or more municipal providers work together and carry out their responsibilities in mutual cooperation. Due to the federal system in Germany, where the Länder have a veto right, if the majority of the Länder oppose a law passed by the federal parliament, the federal government was forced to agree to a quasi experiment, where 69 out of 442 regions were allowed to design their own organisation and activation process for long-term unemployed in zkT-job centers. The remaining regions formed joint local agencies, the so-called ARGE-job centers.

The number of 69 regions for zkT-job centers was chosen, because the federal Länder parliament (*Bundesrat*), that opposed the federal government's initial plan, has 69 seats. And each of the Länder was allowed to nominate as many regions for the zkT-job center model as it has seats in the *Bundesrat*. These seats are approximately proportional to the population size of the 16 German Länder. The number of regions in the Länder vary, however, with the size of the Länder (see Table B.1 in Appendix B). Metropolitan Länder like Hamburg and Berlin consist of one region, while each has three seats in the *Bundesrat*. Rural Länder like Bavaria has 96 regions, but only 6

seats in the *Bundesrat*. The ratio of seats in the *Bundesrat* to the number of regions in each of the Länder gives the ex-ante probability for a region to be chosen to become a zkT-job center.[3] The ex-ante probability to participate is our main instrument to identify the treatment effect.

In order to be nominated by a Länder government the municipalities had to apply. Not all mayors of the regions shared the view of the rural county association that it is preferable to be solely responsible for the long-term unemployed. Mainly the mayors on the board of the rural county association and the mayors, who were Länder presidents of the rural county association, pushed their municipalities to apply. Thus, the dummy variable indicating whether the mayor of a region was a board member of the rural county association or a Länder president in 2004 then the decision was taken is used as the second instrument to explain which regions choose to apply to become zkT-job centers.

3 Theory

The one sided matching model allows for different policy and institutional parameters to influence the matching efficiency and search intensity of long-term unemployed. Since we want to evaluate the performance of local job centers we concentrate on the search process of long-term unemployed and treat the formation of wages and the creation of vacancies as exogenous parameters.

3.1 Income Perspective of Long-term Unemployed

Workers are risk neutral, infinitely lived and discount their future income at rate r. According to the institutional setting of a two tier unemployment system long-term

[3]The ex-ante probability for regions in metropolitan Länder is set to unity. If some länder did not use their full share of seats, then the remaining seats where given to the Länder that nominated more regions than they had seats according to the populations size of the Länder.

unemployed receive benefits $b_0 + gb_g - s(\sigma_i, \overline{s})\, b_s$, where b_0 stands for the regular benefit level. The benefits increase with g the probability to be employed in a public employment scheme that implies additional income b_g for those taking part. The benefits decrease with the sanction probability $s(\sigma_i, \overline{s})$ and level b_s of sanctions. The probability of being sanctioned decreases with the individual search intensity σ_i of long-term unemployed, i.e. $s'_\sigma(\sigma_i, \overline{s}) < 0$ and $s''_{\sigma\sigma}(\sigma_i, \overline{s}) > 0$ and increases with the sanction sensitivity of the staff of a job center, i.e. $s'_{\overline{s}}(\sigma_i, \overline{s}) > 0$ and $s''_{\sigma\overline{s}}(\sigma_i, \overline{s}) < 0$. The sanction sensitivity measures the affinity of the staff of a job center to sanction for a given search intensity. Searching with intensity σ_i is associated with the cost $c(\sigma_i)$, with $c'_\sigma(\sigma_i) > 0$ and $c''_{\sigma\sigma}(\sigma_i) > 0$. In order to be able to simulate the income perspective of long-term unemployed in the absence of any data on search costs we consider the limiting case of an infinitesimal search cost, i.e. $c(\sigma_i) = o(1)$.

The job finding probability is given by $q_l^j(\sigma_i) = \dfrac{\sigma_i}{\sigma} m_l^s(\sigma u_l, v, \eta)$, where the superscript $j \in \{r, s, e\}$ denotes either the transition from unemployment into a regular job $j = r$, from unemployment into a short-time job $j = s$ and from a short-time job into regular employment $j = e$. The matching probability of an unemployed increases with the individual search intensity σ_i and decrease with the average search intensity of all long-term unemployed σ as well as with the number of long-term unemployed u_l searching for the same jobs. The matching probability increases with the number of vacancies v and with the efficiency of the matching process η which itself depends on the organisational characteristics of the local job center.

The income perspective of a long-term unemployed rU_l (value of being long-term unemployed) is, therefore, given by

$$rU_l = b_0 + gb_g - s(\sigma_i, \overline{s})\, b_s - c(\sigma_i) + q_l^r(\sigma_i)\left[W^r - U_l\right] + q_l^s(\sigma_i)\left[W^s - U_l\right]. \quad (1)$$

Workers finding a short-time job, which does not entitle to regular unemployment benefits, receive an income $b_0 + \underline{w} + gb_g - s(\underline{\sigma}_i, \overline{s})\, b_s$. Since they still receive regular benefits, they are also subject to the rules laid down by the local job center. This implies that they also face a certain probability $s(\underline{\sigma}_i, \overline{s})$ to be sanctioned that is influenced by

the sanction sensitivity $\overline{s}$ of the local job center. The search intensity of short-time employees still receiving regular benefits is denoted by $\underline{\sigma}_i$.

$$rW^s = b_0 + \underline{w} + gb_g - s\left(\underline{\sigma}_i, \overline{s}\right) b_s - c\left(\underline{\sigma}_i\right) + q_l^e\left(\underline{\sigma}_i\right)\left[W^r - W^s\right] + \delta^s\left[U_l - W^s\right]. \quad (2)$$

Workers employed at a regular job receive income w and are entitled to regular unemployment benefits after an employment spell of T periods. A worker employed at a regular job has the following income perspectives,

$$rW^r = w + \delta^r\left[\left(1 - \left(\frac{1-\delta^r}{1+r}\right)^T\right) U_l + \left(\frac{1-\delta^r}{1+r}\right)^T U_s - W^r\right], \quad (3)$$

where δ^r and δ^s denote the rates at which a regular and short-time employment relationship ends. If a worker is laid off before he has been employed for at least T periods, he is not entitled to regular unemployment benefits and will enter the pool of long-term unemployed. If the worker is employed long enough, then he receives regular unemployment benefits b_1 after being laid off. Unemployed workers receiving regular unemployment benefits are termed short-term unemployed. They have a job finding rate q_s^r that is treated as exogenous, since our focus lies on evaluating the performance of the job centers responsible for long-term unemployed. The income perspective of a short-term unemployed is given by

$$\left(r + q_s^r\right) U_s = \left(1 - \left(\frac{1-q_s^r}{1+r}\right)^D\right)\left[b_1 + q_s^r W^r\right] + \left(\frac{1-q_s^r}{1+r}\right)^D \left(r + q_s^r\right) U_l, \quad (4)$$

where the entitlement for regular unemployment benefits ceases after the entitlement duration D. Thereafter short-term unemployed become long-term unemployed.

We will evaluate the performance of a job center organisation by looking at the income perspective of long-term unemployed rU_l and the income perspective of a short-time employee still receiving regular benefits rW^s. We will simulated both using the empirical specification of the matching functions of long-term unemployed and short-time employees with the specific characteristics of the two organisations zkT and ARGEn, the sample transition rates $(q_s^r, \delta^r, \delta^s)$ and the information on wages, benefit

levels, sanction levels and probabilities as well as the probabilities to be employed in a public employment programme. Since we assume that the transition rates $(q_s^r, \delta^r, \delta^s)$ and wages are exogenous, maximizing the income perspective of long-term unemployed is equivalent to maximizing the welfare of all individuals in the economy.

3.2 Public Policy and Search Intensity

The matching probability depends on the matching efficiency and the search intensity chosen by long-term unemployed or the short-time employees, respectively. While the matching efficiency is influenced by the organisational structure of the local job center and exogenous regional factors, the search intensity is chosen by each individual. A long-term unemployed or short-time employee chooses the search intensity such that marginal costs equal the expected gain from finding a regular or short-time job taking into account the reduction in the probability of being sanctioned. Formally differentiating equation (1) and equation (2) give

$$c'_\sigma(\sigma_i^*) = -s'_\sigma(\sigma_i^*, \overline{s})\, b_s + \frac{\partial q_l^r(\sigma_i^*)}{\partial \sigma_i^*}\left[W^r - U_l\right] + \frac{\partial q_l^s(\sigma_i^*)}{\partial \sigma_i^*}\left[W^s - U_l\right], \text{ and} \quad (5)$$

$$c'_\sigma(\underline{\sigma}_i^*) = -s'_\sigma(\underline{\sigma}_i^*, \overline{s})\, b_s + \frac{\partial q_l^e(\underline{\sigma}_i^*)}{\partial \underline{\sigma}_i^*}\left[W^r - W^s\right]. \quad (6)$$

Since we assume for the theoretical argument that all individuals are identical, it follows that all long-term unemployed chose the same search intensity. The derivative of the matching probability is therefore given by

$$\left.\frac{\partial q_l^j(\sigma_i)}{\partial \sigma_i}\right|_{\sigma_i=\sigma} = \frac{m_l^j(\sigma u_l, v, \eta)}{\sigma}, \quad \text{where} \quad j \in \{r, s, e\}$$

Job centers differ in the sanction sensitivity $\overline{s}$ and the public employment probability g. The following proposition shows how long-term unemployed and short-time employees adjust their search intensity given a job centers sanction sensitivity and public employment probability.

Proposition 1 *The search intensity of long-term unemployed* $\sigma^*(\overline{s}, g)$ *and of short time employees still receiving regular benefits* $\underline{\sigma}^*(\overline{s}, g)$ *increases with the sanction sensitivity of a job center* $\overline{s}$ *and decreases with the probability* g *to be employed in a public employment scheme.*

Proof. See Appendix A. ■

A higher probability to be employed in a public employment scheme increases the current income of a long-term unemployed and therefore reduces the benefits of searching. This implies that long-term unemployed in job centers with a high public employment probability search less intense compared to workers employed in job centers with a low public employment probability.

A higher sanction sensitivity implies a higher sanction probability for a given search intensity. It is thus optimal for long-term unemployed in job centers with a high sanction sensitivity to increase their search intensity more than long-term unemployed in job centers with a low sanction sensitivity, although they are sanctioned more often.

Given the results in Proposition 1 and assuming a Cobb-Douglas type matching function, the empirical specification of the matching function of long-term unemployed workers can be derived as follows,

$$q_l^j = m_l^j\left(\sigma^*\left(g, \overline{s}\right) u_l, v, \eta\right) \tag{7}$$

$$\ln y^j = \alpha_0^j + \alpha_1^j \ln u_l + \alpha_2^j \ln v + \alpha_1^j \ln \sigma^*\left(g, \overline{s}\right) + \gamma\eta, \tag{8}$$

where y^j equals the number of long-term unemployed exiting long-term unemployment into regular employment (if $j = r$) or short-time employment (if $j = s$), i.e. $y^j = q_l^j u_l$.

Assuming a multiplicative relationship for the factors that are according to Proposition 1 expected to influence the search intensity σ^* of long-term unemployed, the empirical specification becomes,

$$\ln y^j = \alpha_0^j + \alpha_1^j \ln u_l + \alpha_2^j \ln v + \beta_1^j \ln g + \beta_2^j \ln \overline{s} + \gamma\eta, \tag{9}$$

where according to Proposition 1 β_1^j is expected to be negative and β_2^j to be positive.

The matching efficiency η depends on a vector $\mathbf{W}$ of organisational variables of the local job center as well as on a vector of regional economic variables $\mathbf{X}$ and on a stochastic error term. Assuming a linear relationship gives the final empirical specification for the matching function,

$$\ln y_t^j = \alpha_0^j + \alpha_1^j \ln u_{l,t-1} + \alpha_2^j \ln v_{t-1} + \beta_1^j \ln g_{t-1} + \beta_2^j \ln \overline{s}_{t-1} + \gamma_1^j \mathbf{W}_{t-1} + \gamma_2^j \mathbf{X}_{t-1} + e_t, \quad (10)$$

where the appropriate time indices imply that the number of workers y_t^j finding a job between two time periods are influence by the variables at time $t-1$.

4 The Data Set

In 2006, 442 regional job centers were responsible for the long-term unemployed in Germany. The job centers in 353 regions are organised as ARGE-job center, in 69 regions as zkT-job center and in 20 regions the job centers are organised differently. Our analysis concentrates on the comparison between the two major organisations ARGE- and zkT-job center.

We combine three different data sets for the 422 labor market regions covering the period from September 2006 until June 2007. The monthly labor market variables like number of unemployment, entries and exits and stock of and the new inflow of vacancies as well as the information on sanctions and active labor market policies are from the Federal Employment Agency. Further geographic background variables as well as local GDP are from the Federal Statistical Office. The organisational variables characterising the activation and support process for the long-term unemployed in a regional job center are based on a yearly questionnaire of the executive managers of each job center (*IAW-SGBII-organisationserhebung*). Due to non-responses our sample comprises of 390 regions.

4.1 Differences between Job Centers

Differences in Labor Market Characteristics

According to the geographic characteristics 68.6% of ARGE- and 87.9% of zkT-job centers operate in rural regions, 10.7% of ARGE- and 2.5% of zkT-job centers operate in metropolitan regions and the respective rest in urban regions. The average numbers of long-term unemployed (ratio of long-term unemployed to working age population) differ quite substantially from 8,500 in a ARGE-region to 6,100 in zkT-regions. The average numbers of short-term unemployed (short-term unemployment rate) are in contrast quite similar across the two organisations with 3,600 in ARGE-regions and 3,400 in zkT-regions.

The labor market flows are defined on a monthly basis. Around 2.06% of long-term unemployed in ARGE-regions and 2.36% in zkT-regions enter a regular job within a month. More similar are the ratios of long-term unemployed that start employment at a short-time job with 1.45% in ARGE-regions and 1.60% in zkT-regions. The matching probability of short-time employees that still receive long-term unemployment benefits is 2.85% in ARGE-regions and 3.12% in zkT-regions. The average job separation rates for previously long-term unemployed workers are 3.92% in regular jobs and 5.82% in short-time jobs for all regions and the average matching rate of short-term unemployed into a regular employment is 9.91%. Further descriptive statistics are presented in Tables B.2 and B.3 in Appendix B.

Organisational Differences

The organisational differences between zkT- and ARGE-job centers result from the possibility of the zkT-job centers to organise their job centers in their own interest. A second reason for organisational differences even within a type of job center is the different background of the job center staff. At the beginning of the reform 46% of the staff in ARGE-job centers and 37% in zkT-job centers had previous experience in placing unemployed in the labor market, while 38% of the staff in ARGE-job centers

and 62% in zkT-job center had experience with counselling and qualification. These differences come from the fact that ARGE-job centers drew the majority of its staff from local employment offices responsible for short-term unemployed, while zkT-job centers that are under the sole control of the local municipalities employed only primarily staff from the former local social assistance agency. This background and the possibility to experiment created the following organisational differences between zkT- and ARGE-job center (compare Table B.4 in Appendix B).

The fraction of new entrants into long-term unemployment having their first interview within the first two weeks after filing the application averages 64.3% in ARGE- and 42.0% in zkT-job centers. The first interview lasts on average 49 minutes in ARGE- and 52 minutes in zkT-job centers. The primary goal of the first interviews is to sign an agreement between the long-term unemployed and the job center (*Eingliederungsvereinbarung*) that lays down the search requirements for a long-term unemployed and other obligations like the participation in an active labor market programme. The fraction of long-term unemployed at a job center that signed such an agreement ranges from 67.8% in ARGE- to 70.9% in zkT-job centers. This agreement is a prerequisite for imposing sanctions. On average ARGE-job centers sanction 2.3% of all long-term unemployed while zkT-job centers sanction only 1.0%. In ARGE-job centers 6.9% of all long-term unemployed compared to 5.5% in zkT-job centers take part in a public employment programme.

Decisive for the matching efficiency is also the organisation of the vacancy recruitment service. The fraction of ARGE-job centers having their own vacancy recruitment service for long-term unemployed is with 16.4% far lower than the 89.4% at zkT-job centers. Job centers without their own vacancy recruitment service rely on the vacancy recruitment service of the local employment agencies responsible for short-term unemployed. The fraction of vacancy recruitment services in job centers that directly communicate the new vacancies to the case managers differs from 6.4% for ARGE- and 14.5% for zkT-job centers.

Another factor that is expected to have some influence on the matching efficiency is the ratio of long-term unemployed to staff responsible for activation. This relationship is on average 210 in ARGE- and 180 in zkT-job centers. 76.6% of ARGE and 19.1% of zkT-job centers organise their activation process using a specialized case management, where long-term unemployed are profiled according to their labor market distance and those selected are counselled by special case managers. The other 23.4% of ARGE and 80.9% if zkT-job center use a generalized case management, where all long-term unemployed are coached equally without prior profiling. Job centers also differ in their focus on child care. On a scale from 1(=low) to 5(=very high) zkT-job centers emphasize the importance of child care at an average level of 4.0 while the level at ARGE-job centers averages only 3.2. All these organisational differences mentioned above are inputs in the regressions and are used for the simulations in section **??**.

4.2 Choice of Instruments

Instruments for the Choice to become a zkT-job center

As we have to consider the possibility that municipalities opting for zkT-job centers base their decision on unobservable characteristics, we have to find instruments that are uncorrelated with the labor market performance in a region but influenced the decision to become a zkT-job center.

Based on the political decision process – described in detail in section 2 – that lead to the quasi experiment, each of the German Länder was allowed to nominate as many regions as it has seats in the federal Länder parliament (*Bundesrat*). We can, therefore, use the ratio of seats in the *Bundesrat* to the number of regions in each of the Länder as the ex-ante probability for a region to be chosen to become a zkT-job center. Since this ex-ante probability to participate is clearly uncorrelated with labor market performance, it is the perfect instrument to identify the treatment effect (see Table B.1 in Appendix B).

In order to be nominated by a Länder government the municipalities had to apply.

Mainly the mayors on the board of the rural county association and the mayors, who were Länder presidents of the rural county association, pushed their municipalities to apply, since the rural county association feared a loss of power if the task to care for long-term unemployed was given to ARGE-job centers. Thus, the dummy variable indicating whether the mayor of a region was a board member or a Länder president of the rural county association in 2004 then the decision was taken is used as the second instrument to explain which regions choose to apply to become zkT-job centers. The decision to be on the board or a Länder president of the rural county association is based on the political ambition of a mayor and not on the labor market performance of a region. This instrument is, therefore, equally uncorrelated to the local labor market performance as the overidentification test in Tables 2 and 3 show.

Table 1: Selection Regression for zkT-Job Center

	Probit (1)		**Probit (2)**	
Ex-ante probability to participate	0.004	(1.92)	0.004	(1.56)
Board Member of the rural county association			0.276	(2.63)
Urban or metropolitan region	-0.162	(2.50)	-0.160	(2.48)

The sample includes 405 regions. t-values are given in parentheses. All regressions include the number of short- and long-term UI recipients, social assistance recipients, party of county mayor, influence of the state government, population size as well as geographic characteristics directly as well as the respective value for the neighboring regions (regression output is shown Table C.1 in Appendix C).

A probit regression based on 2004 data explaining which municipalities applied for and have eventually been selected to care for the long-term unemployed in zkT-job centers shows that the ex-ante probability to participate has a positive and significant (on a 10% significance level) influence on the decision. The dummy variable indicating whether the mayor of a region was a board member of the rural county association or a Länder president in 2004 has a strong positive impact on the decision and is highly significant as shown in Table 1. The whole regression output is shown in Table C.1 in Appendix C. The first stage regression statistics in regression Tables 2 and 3 show

F-statistics confirming the importance of these two variables in explaining the choice to become a zkT-job center.

Table 1 also shows that urban or metropolitan regions were less likely to apply for the zkT-job center model. This reflects the fact that the rural county association but not the city association favored and lobbied for the zkT-job center model. However, we do not use the urban or metropolitan dummy as instrument, since geographic characteristics are correlated with labor market performance. They are, therefore, directly included in the regressions in Tables 2 and 3.

Instrument for the Fraction of Long-term Unemployed taking part in Public Employment Schemes

The fraction of long-term unemployed in a region taking part in public employment schemes is usually regarded as being influenced by the current labor market performance of a region. To address this potential endogeneity problem we use monthly data on the financial resources and commitments of the local job centers to construct a valid instrument as follows. The yearly budget of a job-center is determined on the number of long-term unemployed in the previous years. Each job center commits itself in contracts with providers of active labor market programmes to send a certain number of long-term unemployed to take part in the programmes. These commitments can reach months or years into the future. The local job center has therefore only the limited amount of the remaining budget without long-term commitments (yearly budget minus monthly expenditures minus commitments until the end of the year) to pay for additional active labor market programmes. Thus, the remaining budget without commitments is correlated with the fraction of long-term unemployed taking part in public employment schemes. This is confirmed by the first stage regression statistics in the regression Tables 2 and 3 that confirm the importance of this instrument in explaining the fraction of long-term unemployed taking part in public employment schemes. At the same time the commitments and the yearly budget are independent of fluctuations in the monthly labor market performance. The overidentification tests in the regression

Tables 2 and 3 confirm the exogeneity of the remaining budget without commitments, if one believes in the exogeneity of the ex-ante probability to participate.

5 Estimation and Simulation

We estimate the matching function for long-term unemployed to find a regular or a short-time job respectively and take the organisational details, the activation process and the active labor market policies of the local job centers into account. Based on the differences between the ARGE- and zkT-job center described in section 4.1 we then simulate the counterfactual matching probabilities and calculate the income perspective of long-term unemployed for a Germany wide introduction of the ARGE- or the zkT-job center respectively.

5.1 Estimation Results

The estimation results for the matching probability into regular employment indicate no significant impact of the zkT-job center indicator variable after controlling for observable organisational differences between job centers. The selection regression that includes the mills ratio from the Probit (2) estimation in Table 1 as well as the instrumental variable regressions 2SLS in Table 2 show no evidence that unobserved characteristics that are correlated with the number of long-term unemployed finding a regular job are present in the model. The estimation results for the matching probability into short-time employment in Table 3 show a similar pattern for the zkT-job center indicator variable. The estimation results for the matching probability of short-time employees into regular employment, however, indicate for the zkT-job center indicator variable a significant negative sign in the OLS and Selection regressions (see Table 4). The sign turns positive and becomes insignificant in the 2SLS regression, where the fraction of long-term unemployed taking part in public employment schemes is instrumented. Given the insignificance of the zkT-job center indicator variable in the 2SLS

regressions for all transition rates, we are confident that the performance of a job center can be fully described by the organisational variables included in the regressions.

For the OLS, Selection and 2SLS regressions in Tables 2 and 3, we pool our monthly observations and adjust the standard errors by clustering the observations according to regions. Comparing the fixed effects regression (FE 2SLS) results with the pooled regressions we see that the significant coefficient estimates remain quite stable, with some changes in magnitude for sanctions and public employment schemes which can be interpreted by a time invariant component influencing the impact of these variables. The stability of the rest of the coefficients makes us confident that we controlled sufficiently for cross regional heterogeneity in the OLS, Selection and 2SLS regressions.

The regression results confirm the theoretical predictions in section 3.2 that a higher fraction of long-term unemployed taking part in public employment schemes reduces the number of long-term unemployed finding a regular or short-time job. The coefficients in the regressions for the matching probability into regular and short-time employment (see Tables 2, 3 and 4) are negative and stable across all specifications. The test statistics and the robustness of the coefficient indicate that the coefficients are unbiased.

According to the theoretical model the additional income for workers employed in public employment schemes reduces the incentive to search for a regular or short-time job. Similarly one could argue that public employment schemes create a lock-in effect, since the participants have less time available to search for regular employment. Both hypotheses are indistinguishable empirically. The observed negative influence of public employment schemes is in line with previous studies on public employment schemes in Germany by Hujer and Zeiss (2003) and Caliendo et al. (2008), who show a lock-in effect for the majority of participants.

The lock-in effect varies with the fraction of long-term unemployed in public employment schemes over time. The fact that the FE 2SLS estimation results show a larger negative impact of public employment schemes than the pooled estimation results indicates that there is a time invariant component to public employment schemes

Table 2: Number of long-term unemployed finding regular employment

	OLS		**Selection**		**2SLS**		**FE 2SLS**	
zkT-Job Center	-0.011	(0.38)	-0.042	(0.79)	0.038	(0.17)		
Long-term unemployed taking part in public employment schemes	-0.012	(5.22)	-0.012	(5.17)	-0.007	(0.40)	-0.036	(0.66)
Sanctions	0.030	(6.33)	0.030	(6.28)	0.031	(3.48)	0.003	(0.37)
First interview within 2 weeks	0.000	(2.45)	0.001	(2.48)	0.001	(1.75)	0.000	(0.94)
Length of first interview	0.063	(3.39)	0.063	(3.42)	0.063	(3.38)	0.001	(0.02)
Agreement signed	0.000	(0.62)	0.000	(0.55)	0.000	(0.46)	0.000	(0.59)
Own vacancy recruitment service	-0.005	(0.28)	-0.006	(0.30)	-0.016	(0.30)	-0.015	(0.60)
Vacancies passed on to case manager	0.057	(2.85)	0.057	(2.86)	0.059	(2.51)	0.067	(2.85)
Specialized case management	-0.015	(1.06)	-0.015	(1.02)	-0.008	(0.26)	-0.025	(0.70)
Long-term unemployed / Staff	0.100	(0.22)	0.096	(0.21)	0.102	(0.20)	0.069	(0.19)
Emphasis on child care	0.007	(1.30)	0.008	(1.36)	0.005	(0.56)	-0.004	(0.59)
Mills Ratio			0.020	(0.66)				
R^2	0.927		0.927		0.925		0.678	
F-Statistic (zkT-Job Center)					F(3,3039) = 12.85			
F-Statistic (Long-term unempl. in PES)					F(3,3039) = 28.57		F(1,2669) = 9.84	
Overidentification-Test (p-value)					χ^2: p = 0.661			

The sample includes 3093 observations of 390 regions. t-values are given in parentheses and are calculated using the region identifier to cluster the observations. All regressions include the number of short- and long-term unemployed, the stock and the inflow of vacancies, industry structure, regional GDP as well as geographic characteristics directly as well as the respective value for the neighboring regions (regression output is shown Table C.2 in Appendix C). Time dummies are also included.

that has a positive impact on the job finding probability. Indeed, Black et al. (2003) and Graversen and van Ours (2008) find a threat effect of public employment schemes for the US and Denmark that increase the matching probability of unemployed prior to the programme. The comparison between the FE 2SLS results and the pooled estimation results suggests the same for Germany and shows that the lock-in effect dominates the threat effect of public employment programmes.

The second theoretical prediction concerning the impact of sanctions on the matching probabilities is also confirmed by the estimated coefficients. A higher proportion of sanctioned long-term unemployed indicating a higher sanction sensitivity of the local

Table 3: Number of long-term unemployed finding short-time employment

	OLS		**Selection**		**2SLS**		**FE 2SLS**	
zkT-Job Center	-0.014	(0.48)	-0.093	(1.61)	-0.109	(0.38)		
Long-term unemployed taking part in public employment schemes	-0.007	(3.22)	-0.004	(3.20)	-0.027	(1.84)	-0.019	(0.42)
Sanctions	0.011	(2.58)	0.011	(2.47)	0.012	(1.24)	0.001	(0.11)
First interview within 2 weeks	0.000	(1.02)	0.000	(1.20)	0.000	(0.36)	0.000	(2.21)
Length of first interview	0.031	(1.61)	0.032	(1.66)	0.030	(1.48)	0.050	(2.16)
Agreement signed	-0.000	(0.83)	-0.000	(1.01)	-0.000	(0.21)	0.000	(0.34)
Own vacancy recruitment service	-0.021	(1.31)	-0.022	(1.36)	-0.002	(0.03)	-0.003	(0.16)
Vacancies passed on to case manager	0.045	(2.16)	0.046	(2.21)	0.042	(1.74)	0.009	(0.46)
Specialized case management	-0.023	(1.84)	-0.022	(1.76)	-0.038	(0.93)	-0.013	(0.41)
Long-term unemployed / Staff	-0.104	(0.55)	-0.115	(0.61)	-0.015	(0.04)	0.375	(1.24)
Emphasis on child care	0.007	(1.32)	0.008	(1.51)	0.012	(1.17)	-0.001	(0.11)
Mills Ratio			0.051	(1.71)				
R^2	0.955		0.955		0.950		0.271	
F-Statistic (zkT-Job Center)					F(3,3045) = 12.43			
F-Statistic (Long-term unempl. in PES)					F(3,3045) = 29.72		F(1,2675) = 9.60	
Overidentification-Test (p-value)					χ^2: p = 0.081			

The sample includes 3097 observations of 390 regions. t-values are given in parentheses and are calculated using the region identifier to cluster the observations. All regressions include the number of short- and long-term unemployed, the stock and the inflow of vacancies, industry structure, regional GDP as well as geographic characteristics directly as well as the respective value for the neighboring regions (regression output is shown Table C.4 in Appendix C). Time dummies are also included.

job center staff increases the matching probability into a regular or short-time job. This positive effect of sanctions as one of the instruments of the job centers confirms the findings by Lalive et al. (2005), who found significant positive effects of sanctions for Swiss unemployment recipients, van den Berg et al. (2004), who found positive effects of sanctions for Dutch welfare recipients, and Abbring et al. (2005), who found positive effects of sanctions on Dutch unemployment benefit recipients. Svarer (2007) also finds positive effects of sanctions on the job-finding rate in Denmark.

In the theoretical model we have only captured the ex-ante threat effect of sanctions caused by the sanction sensitivity of a job center. The literature found an ex-ante threat

Table 4: Number of Short-time employed finding regular employment

	OLS		**Selection**		**2SLS**		**FE 2SLS**	
zkT-Job Center	-0.080	(2.05)	-0.214	(3.39)	0.058	(0.16)		
Long-term unemployed taking part in public employment schemes	-0.005	(1.85)	-0.005	(1.79)	-0.013	(0.56)	-0.098	(1.14)
Sanctions	0.027	(3.49)	0.026	(3.38)	0.032	(2.19)	-0.004	(0.39)
First interview within 2 weeks	0.000	(1.15)	0.000	(1.35)	0.000	(0.98)	0.001	(2.65)
Length of first interview	0.059	(2.42)	0.061	(2.49)	0.059	(2.39)	0.077	(1.80)
Agreement signed	0.001	(1.43)	0.001	(1.20)	0.001	(1.46)	0.000	(0.60)
Own vacancy recruitment service	0.005	(0.25)	0.004	(0.18)	-0.027	(0.31)	0.062	(1.55)
Vacancies passed on to case manager	0.060	(2.04)	0.061	(2.07)	0.067	(1.92)	0.065	(1.74)
Specialized case management	-0.049	(2.74)	-0.047	(2.62)	-0.032	(0.62)	-0.054	(0.94)
Long-term unemployed / Staff	-0.180	(0.26)	-0.198	(0.29)	-0.018	(0.02)	-0.046	(0.08)
Emphasis on child care	0.006	(0.77)	0.007	(1.01)	0.002	(0.17)	0.013	(1.22)
Mills Ratio			0.087	(2.48)				
R^2	0.870		0.871		0.867		0.327	
F-Statistic (zkT-Job Center)					F(3,3039) = 12.85			
F-Statistic (Long-term unempl. in PES)					F(3,3039) = 28.55		F(1,2669) = 9.87	
Overidentification-Test (p-value)					χ^2: p = 0.162			

The sample includes 3093 observations of 390 regions. t-values are given in parentheses and are calculated using the region identifier to cluster the observations. All regressions include the number of short- and long-term unemployed, the stock and the inflow of vacancies, industry structure, regional GDP as well as geographic characteristics directly as well as the respective value for the neighboring regions (regression output is shown Table C.3 in Appendix C). Time dummies are also included.

effect and an ex-post effect of sanctions on the individuals that are sanctioned. While the ex-ante threat effect depends on the reputation of a job center and is therefore time-invariant over the short time horizon that we focus on[4], it is not surprising that the FE 2SLS estimates on the sanction coefficients are smaller than the pooled estimation results. The FE 2SLS results even indicate that there is no significant ex-post effect of sanctions. This result seems to fit the findings by Boockmann et al. (2008) that look at individual exit rates of sanctioned long-term unemployed over the same time horizon and find no significant effects.

[4]We have only data for the months September 2006 until June 2007.

The positive impact of the fraction of new entrants into long-term unemployment having their first interview within the first two weeks after filling their application and the positive impact of the length of the first interview indicate that the matching efficiency increases with a fast and intense activation process. The fact that signing an agreement between the job center and the long-term unemployed that lays down the search requirements and other obligations on part of the long-term unemployed does itself not increase the probability to find a job as the results in Tables 2, 3 and 4 show. The agreements have to be enforced and if necessary, sanctions have to follow in order to increase the search intensity of long-term unemployed. This mixed evidence can be related to the literature examining the role of increased monitoring by Meyer (1995), Gorter and Kalb (1996), and Dolton and O'Neill (1996), who found significant positive effects of monitoring in the US, Netherlands, and the UK, respectively. Ashenfelter et al. (2000) found, however, no significant effects of increased monitoring in the US. Our results indicate that violations have to be sanctioned[5] and that the pure number of long-term unemployed that is taken care of by one activation staff member has no systematic influence on the matching efficiency.

A specialized case management has compared to a general case management a negative impact on the matching efficiency. The profiling that precedes a specialized case management seems to signal to the long-term unemployed that are not referred to specialized case managers that they are so likely to find a job that they do not have to increase their search intensity. This result indicates that job centers should ensure that no long-term unemployed feels left unmonitored.

Job centers with their own vacancy recruitment service are no better than job centers that rely on the vacancy recruitment service of the local employment agency that is responsible for short-term unemployed. The matching efficiency can only be

[5]The sanctions used to calculate the sanction probability include sanctions for not conforming to the signed agreement, for turning down a job offer or the participation in an active labor market programme and for quitting an acitve labor market programme.

improved if the vacancy recruitment service communicates the vacancies directly to the case managers as shown in Tables 2, 3 and 4.

The availability of child care can be essential to enable mothers to find employment. Job centers that emphasize the role of child care in the activation process are more likely (although statistically not significant) to bring long-term unemployed into work.

The following simulations are based on the pooled estimation results. They are used to compare the performance of the zkT-job centers to the performance of the ARGE-job centers using as the welfare measure the income perspective of long-term unemployed and short-time employees that are taken care of by the local job center.

5.2 Simulation Results

Matching Probabilities

The simulations for the matching probabilities into regular and short-time employment are based on the OLS, Selection and 2SLS regressions in Tables 2, 3 and 4. In order to simulate the counterfactual cases where all regions are organising their job centers as either ARGE or zkT-job center, not only the zkT-job center indicator variable but also all other organisation variables are simulated to represent the sample distribution of either ARGE- or zkT-job centers, respectively. Depending on the underlying distribution of the variable of interest for the respective organisation we use non-parametric Kernel densities, parametric (log-)normal densities or quantile densities to simulate the distribution of the variable of interest for the counterfactual situation. Table B.4 in Appendix B shows the descriptive statistics of the simulated organisation variables and the method applied to obtain the distribution of each simulated variable.

The simulations are only based on the pooled regressions, because only the pooled estimations are able to capture the time invariant impacts of public employment schemes and sanctions. Simulations based on the FE 2SLS estimates would assign only the lock-in effect to public employment schemes and only the ex-post effect to sanctions while the simulated counterfactual distributions of these variables would at

the same time influence the expectations of long-term unemployed and cause a threat effect of public employment schemes and sanctions. While the counterfactual distributions of these variables would indicate that a region changed its organisation, the fixed regional effects from the FE 2SLS regressions invoke time invariant effects that are inconsistent with the simulated change in the organisation. The simulations are therefore only consistent, if they are based on pooled estimation results.

Table 5: Simulated Matching Probabilities

	Sample	**ARGE-Job Center**		**zkT-Job Center**	
From long-term unemployment into regular employment					
Sample	0.0208				
OLS		0.0207**	[0.0205; 0.0209]	0.0199**	[0.0198; 0.0200]
Selection		0.0208**	[0.0206; 0.0209]	0.0194**	[0.0192; 0.0195]
2SLS		0.0207	[0.0206; 0.0209]	0.0206	[0.0204; 0.0207]
From short-time employment into regular employment					
Sample	0.0287				
OLS		0.0284**	[0.0282; 0.0287]	0.0257**	[0.0255; 0.0259]
Selection		0.0288**	[0.0285; 0.0290]	0.0228**	[0.0226; 0.0230]
2SLS		0.0282	[0.0280; 0.0285]	0.0286	[0.0283; 0.0288]
From long-term unemployment into short-time employment					
Sample	0.0148				
OLS		0.0148**	[0.0148; 0.0149]	0.0144**	[0.0143; 0.0145]
Selection		0.0149**	[0.0149; 0.0150]	0.0134**	[0.0133; 0.0135]
2SLS		0.0149**	[0.0148; 0.0149]	0.0136**	[0.0136; 0.0137]

** indicate that the difference between the ARGE- and the zkT-estimates are statistically significant on a 95% confidence interval. The simulated values as well as the 95% confidence interval are based on 1000 bootstrap replications.

The simulated matching probability form long-term unemployment into regular employment q_l^r for the counterfactual case where all job centers are organised as ARGE-job centers increases the matching probability compared to the zkT-job center counterfactual by 0.01 to 0.14 percentage points depending on the specification. All simulation estimates except the one based on the 2SLS regression are significant. While the

ARGE-simulation estimates are not statistically different from the status quo matching probabilities as shown in Table 5, the respective counterfactual simulations for zkT-job centers are significantly below the status quo.

The ARGE-zkT difference of 0.02 to 0.06 percentage points for the simulated matching probability from short-time employment into regular employment q_l^e confirm the findings.

The simulated values for the matching probability for long-term unemployed into short-time jobs q_l^s differ significantly between the ARGE- and the zkT-job center counterfactual. The ARGE-job centers have a 0.04 to 0.15 percentage points higher matching probability than the zkT-job center. While the simulated ARGE-counterfactual seems not to differ from the status quo, the zkT-counterfactual reveals a significant lower performance.

Income Perspective

The income perspective is the weighted average over all incomes in the different labor market states (long-term, short-term unemployment as well as regular and short-time employment) where the weights are given by the probabilities to enter and exit the respective labour market states. The current state is given an additional weight equal to the monthly discount rate r, which we assume to be 0.5% per month. The income perspective therefore aggregates different labor market indicators like the matching probabilities into regular and short-time employment into an aggregate welfare measure, that also takes the income implications of different sanction and active labor market policies into account. It is thus the appropriate measure to evaluate the performance of different job center organisations. The income perspective of a long-term unemployed rU_l and short-time employees rW^s is determined by the equation system (1) to (4). The four unknown income perspectives of unemployed and employed are uniquely identified given the linear structure of the equations.

The simulated matching probabilities q_l^r, q_l^e and q_l^s play according to equations (1) to (4) the key role in the simulation of the income perspective of a long-term unemployed

and short-time employees. In both counterfactual cases the other monthly transition rates like the separation rates δ^r from regular and δ^s from short-time employment of 3.92% and 5.82% as well as the matching probability of short-term unemployed q_l^s of 9.91% are set equal (compare Table B.3 in Appendix B). The same applies for the current net income w of regular employed, which averages 1,208 Euro per month and the unemployment benefit b_1 of short-term unemployed, which averages 757 Euro per month (compare Table 6).

Table 6: Simulated Income Perspectives (in Euro)

	Sample	**ARGE-Job Center**		**zkT-Job Center**	
Current Income of					
long-term unemployed	533.0	533.3**	[533.0; 533.5]	532.3**	[532.0; 532.5]
short-time employed	656.0	656.2**	[656.0; 656.5]	655.5**	[655.3; 655.8]
regular employed	1,207.6				
short-term unemployed	757.4				
Income Perspective of long-term unemployed					
Sample	827.2				
OLS		826.2**	[825.2; 827.1]	819.0**	[818.2; 819.9]
Selection		826.7**	[825.8; 827.6]	812.7**	[811.9; 813.6]
2SLS		826.2**	[825.2; 827.1]	824.2**	[823.3; 825.1]
Income Perspective of short-time employed					
Sample	837.7				
OLS		836.6**	[835.6; 837.4]	828.7**	[827.9; 829.5]
Selection		837.2**	[836.3; 838.1]	821.2**	[820.4; 822.0]
2SLS		836.5	[835.5; 837.3]	834.8	[834.0; 835.7]

** indicate that the difference between the ARGE- and the zkT-estimates are statistically significant on a 95% confidence interval. The simulated values as well as the 95% confidence interval are based on 1000 bootstrap replications.

The current net income of long-term unemployed $b_0 + gb_g - s(\sigma, \overline{s})\, b_s$, varies with the fraction g of long-term unemployed taking part in public employment schemes and the probability $s(\sigma, \overline{s})$ to be sanctioned.[6] The current net income of long-term

[6]The basic benefit level b_0 equals the sum of average long-term unemployment benefits of 325 Euro

unemployed, therefore, differs slightly between the two counterfactual situations with 533.3 Euro per month for the ARGE counterfactual and 532.3 Euro per month for the zkT counterfactual. The same holds for the net income $b_0 + \underline{w} + gb_g - s(\sigma, \overline{s})\, b_s$ of short-time employees, which averages 656.2 Euro per month for the ARGE counterfactual and 655.5 Euro per month for the zkT counterfactual.[7] The significant difference implies that in expected income terms the higher sanction probability in ARGE-job centers is offset by the higher probability to take part in a public employment scheme.

As shown in Table 6 the income perspective of a long-term unemployed rU_l in the counterfactual ARGE case is around 826 Euro per month across the different specifications and statistically higher than the zkT counterfactual with 812 to 826 Euro per month. The income perspective of a short-time employee rW^s is with around 836 Euro per month in the ARGE counterfactual also higher than in the zkT counterfactual with 821 to 835 Euro per month. Thus, job centers organised as ARGE are not only able to integrate long-term unemployed short-time employed faster into work, but they are also able to provide a higher current and expected income. Based on the concept of the income perspective ARGE-job centers are therefore better in increasing the welfare of long-term unemployed than zkT-job centers.

6 Conclusion

In a quasi experimental setting the German federal government allowed part of the municipalities to design their own organisational structure for job centers that care for long-term unemployed. Using a unique panel data set on organisational characteristics of all job centers enables us to determine the impact of the intensity and quality of

per month and an housing allowance of averaged 199 Euro per month. The average compensation for work in a public employment scheme b_g is around 190 Euro per month and the average sanction b_s amounts to 139 Euro per month.

[7] The average gross income from short-time employment is 211 Euro per month. The net income is 122 Euro.

the care with which long-term unemployed are looked after as well as the impact of the activating strategies such as active labour market policies and sanctions on the job finding probabilities of long-term unemployed and short-time employed that are still in need for long-term unemployment benefits. Our estimation results indicate that sanctions as well as a fast and intensive activation process increase the job finding probability. While the sole existence of an own vacancy recruitment service has no positive effect on the matching efficiency, the direct communication of new vacancies to case managers improves the matching efficiency significantly.

Based on the estimation results we compare the performance of the government designed job centers (ARGE) with those designed by the municipalities (zkT) using the matching-theory based concept of income perspective of long-term unemployed and short-time employed. The concept of income perspectives takes not only the current income of an unemployed but also the income of prospective labour market states into account. The weights given to prospective incomes depend on the probabilities of finding and losing the respective jobs. Our simulation results show that the ARGE-job center are able to provide a higher income perspective than zkT-job centers.

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Appendix A: Proof of Proposition 1

We start with showing that $\partial U_l/\partial \overline{s} < 0$, $\partial U_l/\partial g > 0$ and $\partial W^s/\partial \overline{s} < 0$, $\partial W^s/\partial g > 0$. Differentiating equations (1) and (2) with respect to $x \in \{\overline{s}, g\}$ imply

$$\left[r + q_l^r\left(1 - \frac{\partial W^r}{\partial U_l}\right) + q_l^s\right]\frac{\partial U_l}{\partial x} = \frac{\partial y}{\partial x} + q_l^s\frac{\partial W^s}{\partial x} \tag{A.1}$$

$$\left[r + q_l^e + \delta^s\right]\frac{\partial W^s}{\partial x} = \frac{\partial y}{\partial x} + \left[q_l^e\frac{\partial W^r}{\partial U_l} + \delta^s\right]\frac{\partial U_l}{\partial x}, \tag{A.2}$$

where $y = gb_g - s\left(\sigma_i, \overline{s}\right)b_s$. Rearranging implies

$$\frac{\partial U_l}{\partial x} = \frac{\left[r + q_l^e + \delta^s + q_l^s\right]}{\left[r + q_l^r\left(1 - \frac{\partial W^r}{\partial U_l}\right) + q_l^s\right]\left[r + q_l^e + \delta^s\right] - q_l^s\left[q_l^e\frac{\partial W^r}{\partial U_l} + \delta^s\right]}\frac{\partial y}{\partial x}, \tag{A.3}$$

$$\frac{\partial W^s}{\partial x} = \frac{\left[r + q_l^r\left(1 - \frac{\partial W^r}{\partial U_l}\right) + q_l^s\right] + \left[q_l^e\frac{\partial W^r}{\partial U_l} + \delta^s\right]}{\left[r + q_l^r\left(1 - \frac{\partial W^r}{\partial U_l}\right) + q_l^s\right]\left[r + q_l^e + \delta^s\right] - q_l^s\left[q_l^e\frac{\partial W^r}{\partial U_l} + \delta^s\right]}\frac{\partial y}{\partial x}. \tag{A.4}$$

Noting that condition,

$$\left[r + q_l^r\left(1 - \frac{\partial W^r}{\partial U_l}\right) + q_l^s\right]\left[r + q_l^e + \delta^s\right] > q_l^s\left[q_l^e\frac{\partial W^r}{\partial U_l} + \delta^s\right]$$

ensures $sgn\left[\frac{\partial U_l}{\partial x}\right] = sgn\left[\frac{\partial W^s}{\partial x}\right] = sgn\left[\frac{\partial y}{\partial x}\right]$. $\frac{\partial W^r}{\partial U_l} \leq 1$ is a sufficient condition to ensure that the above inequality holds. Substituting U_s out of equation (3) using equation (4) and differentiating implies

$$\frac{\partial W^r}{\partial U_l} = \frac{\delta^r\Gamma}{r + \delta^r\left[\frac{r}{(r+q_s^r)} + \frac{q_s^r}{(r+q_s^r)}\Gamma\right]} < 1.$$

where $\Gamma = \left[1 - \left(\frac{1-\delta^r}{1+r}\right)^T + \left(\frac{1-\delta^r}{1+r}\right)^T\left(\frac{1-q_s^r}{1+r}\right)^D\right]$.

(i) We first consider the search intensity of long-term unemployed given in equation (5). Total differentiation of equation (5) implies according to the implicit function

theorem,

$$\begin{aligned}\frac{d\sigma^*}{dx} &= \frac{\dfrac{\partial^2 y}{\partial\sigma\partial x}+\dfrac{1}{\sigma}\left(q_l^r\left[\dfrac{\partial W^r}{\partial U_l}-1\right]\dfrac{\partial U_l}{\partial x}-q_l^s\dfrac{\partial U_l}{\partial x}+q_l^s\dfrac{\partial W^s}{\partial x}\right)}{c''_{\sigma\sigma}\left(\sigma_i^*\right)+s''_{\sigma\sigma}\left(\sigma_i^*,\overline{s}\right)b_s}, \\ &= \frac{\dfrac{\partial^2 y}{\partial\sigma\partial x}+\dfrac{1}{\sigma}\left(r\dfrac{\partial U_l}{\partial x}-\dfrac{\partial y}{\partial x}\right)}{c''_{\sigma\sigma}\left(\sigma_i^*\right)+s''_{\sigma\sigma}\left(\sigma_i^*,\overline{s}\right)b_s}, \end{aligned} \tag{A.5}$$

where the last equality follows from equation (A.1). Rearranging equation (A.3) and extending gives

$$\frac{\left[q_l^r\left(1-\dfrac{\partial W^r}{\partial U_l}\right)+q_l^s\right]\left[r+q_l^e+\delta^s\right]-q_l^s\left[r+q_l^e\dfrac{\partial W^r}{\partial U_l}+\delta^s\right]}{\left[r+q_l^e+\delta^s+q_l^s\right]}\frac{\partial U_l}{\partial x}=\frac{\partial y}{\partial x}-r\frac{\partial U_l}{\partial x},$$

which implies that $sgn\left[\dfrac{\partial y}{\partial x}-r\dfrac{\partial U_l}{\partial x}\right]=sgn\left[\dfrac{\partial y}{\partial x}\right]$. Using this fact implies according to equation (A.5) that

$$\begin{aligned}\frac{d\sigma^*}{dg} &= \frac{\dfrac{1}{\sigma}\left(r\dfrac{\partial U_l}{\partial g}-\dfrac{\partial y}{\partial g}\right)}{c''_{\sigma\sigma}\left(\sigma_i^*\right)+s''_{\sigma\sigma}\left(\sigma_i^*,\overline{s}\right)b_s}<0, \\ \frac{d\sigma^*}{d\overline{s}} &= \frac{-s''_{\sigma\overline{s}}\left(\sigma_i,\overline{s}\right)b_s+\dfrac{1}{\sigma}\left(r\dfrac{\partial U_l}{\partial\overline{s}}-\dfrac{\partial y}{\partial\overline{s}}\right)}{c''_{\sigma\sigma}\left(\sigma_i^*\right)+s''_{\sigma\sigma}\left(\sigma_i^*,\overline{s}\right)b_s}>0.\end{aligned}$$

(ii) Now we turn to the search intensity of short-time employees still receiving benefits given in equation (6). Total differentiation of equation (6) implies according to the implicit function theorem,

$$\frac{d\underline{\sigma}^*}{dx}=\frac{\dfrac{\partial^2 y}{\partial\underline{\sigma}\partial x}+\dfrac{1}{\underline{\sigma}}\left(q_l^e\dfrac{\partial W^r}{\partial U_l}\dfrac{\partial U_l}{\partial x}-q_l^e\dfrac{\partial W^s}{\partial x}\right)}{c''_{\underline{\sigma}\underline{\sigma}}\left(\underline{\sigma}_i^*\right)+s''_{\underline{\sigma}\underline{\sigma}}\left(\underline{\sigma}_i^*,\overline{s}\right)b_s}, \tag{A.6}$$

Rearranging equation (A.4) and exting implies

$$q_l^e\frac{\partial W^r}{\partial U_l}\frac{\partial U_l}{\partial x}-q_l^e\frac{\partial W^s}{\partial x}=q_l^e\frac{-\left(1-\dfrac{\partial W^r}{\partial U_l}\right)\left[r+\delta^s+q_l^s+q_l^r\right]}{\left[r+q_l^r\left(1-\dfrac{\partial W^r}{\partial U_l}\right)+q_l^s\right]\left[r+q_l^e+\delta^s\right]-q_l^s\left[q_l^e\dfrac{\partial W^r}{\partial U_l}+\delta^s\right]}\frac{\partial y}{\partial x}.$$

Thus, $sgn\left[q_l^e \frac{\partial W^r}{\partial U_l}\frac{\partial U_l}{\partial x} - q_l^e \frac{\partial W^s}{\partial x}\right] = sgn\left[-\frac{\partial y}{\partial x}\right]$. Using this fact implies according to equation (A.6) that

$$\begin{aligned}
\frac{d\underline{\sigma}^*}{dg} &= \frac{\frac{1}{\underline{\sigma}}\left(q_l^e \frac{\partial W^r}{\partial U_l}\frac{\partial U_l}{\partial g} - q_l^e \frac{\partial W^s}{\partial g}\right)}{c''_{\underline{\sigma}\underline{\sigma}}\left(\underline{\sigma}_i^*\right) + s''_{\underline{\sigma}\underline{\sigma}}\left(\underline{\sigma}_i^*, \overline{s}\right) b_s} < 0, \\
\frac{d\underline{\sigma}^*}{d\overline{s}} &= \frac{-s''_{\sigma\overline{s}}\left(\sigma_i, \overline{s}\right) b_s + \frac{1}{\underline{\sigma}}\left(q_l^e \frac{\partial W^r}{\partial U_l}\frac{\partial U_l}{\partial \overline{s}} - q_l^e \frac{\partial W^s}{\partial \overline{s}}\right)}{c''_{\underline{\sigma}\underline{\sigma}}\left(\underline{\sigma}_i^*\right) + s''_{\underline{\sigma}\underline{\sigma}}\left(\underline{\sigma}_i^*, \overline{s}\right) b_s} > 0.
\end{aligned}$$

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Appendix B: Deskriptive Statistics

Table B.1: The Quasi-Experiment in Germany

German Länder	**Number of Seats in Bundesrat**	**Number of Regions**	**Number of zkT-job centers**	**Population in 1000**
Baden-Württemberg	6	44	5	10,736
Bavaria	6	96	4	12,469
Berlin	4	1	0	3,395
Brandenburg	4	18	5	2,559
Bremen	3	2	0	663
Hamburg	3	1	0	1,744
Hesse	5	26	13	6,092
Mecklenburg-Western Pomerania	3	18	1	1,707
Lower Saxony	6	46	13	7,994
North Rhine-Westphalia	6	54	9	18,058
Rhineland-Palatinate	4	36	2	4,059
Saarland	3	6	1	1,050
Saxony	4	29	6	4,274
Saxony-Anhalt	4	24	5	2,470
Schleswig-Holstein	4	15	2	2,833
Thuringia	4	23	2	2,335

Source: Federal Statistical Office.

Table B.2: Descriptive Statistics of Basic Regression Variables

Variables	**Mean**	**Std.Dev.**
Number of exists into regular employment	144.927	156.482
Number of exists into short-time employment	115.910	123.780
Long-term unemployed	8368.97	9692.16
Long-term unemployed in neighboring regions	41274.7	38570.0
Short-term unemployed	3573.99	2772.86
Short-term unemployed in neighboring regions	19519.2	12099.4
Stock of vacancies	1405.43	2191.36
Stock of vacancies in neighboring regions	6910.00	6740.34
New inflow of vacancies	559.203	711.294
New inflow of vacancies in neighboring regions	2766.69	2300.43
Rural region (Dummy)	0.69845	–
Number of rural neighboring regions	4.28641	1.98190
Metropolitan region (Dummy)	0.10213	–
Number of metropolitan neighboring regions	0.43943	0.98794
Number of neighbors	5.16044	2.20714
East-Germany (Dummy)	0.29607	–
Mills-Ratio	-0.15689	.43759
Executive Committee of the German County Association	0.03125	–

Source: Federal Employment Service and Federal Statistical Office, September 2006 until June 2007.

Table B.3: Descriptive Statistics of Transition Rates used for Simulation

Variables	**Mean**	**Std.Dev.**
Matching prob. of Long-term Unempl. into regular employment	0.0208	0.0084
Matching prob. of Short-time Empl. into regular employment	0.0286	0.0117
Matching prob. of Long-term Unempl. into short-time employment	0.0148	0.0035
Separation rate from regular employment	0.0392	0.0247
Separation rate from short-time employment	0.0582	0.0156
Matching prob. of Short-term Unempl. into regular employment	0.0991	0.0483

Source: Federal Employment Service, September 2006 until June 2007.

Table B.4: Descriptive Statistics of Simulated Variables

	ARGE-Job Center				**zkT-Job Center**			
	Sample[a]		**Simulation**[b]		**Sample**[a]		**Simulation**[b]	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
First interview within 2 weeks[c] (%)	64.3	33.4	64.6	31.4	42.0	35.4	44.4	33.7
Agreement signed[c] (%)	67.8	19.5	67.7	19.4	70.9	20.1	70.5	20.0
Length of first interview[c] (min)	48.5	13.6	48.4	13.3	52.4	15.7	51.9	15.1
Vacancy recruitment service[d] (Dummy) (%)	16.4	–	16.4	–	89.4	–	89.4	–
Vacancies passed on to case manager[d] (Dummy) (%)	6.9	–	6.8	–	14.1	–	14.2	–
Specialized case management[d] (Dummy) (%)	76.6	–	76.6	–	19.1	–	19.2	–
Long-term unemployed / Activation staff[e]	210	150	205	68	181	45	181	44
Connection to local organization promoting economic development[d] (low=1 to very high=5)	2.4	1.4	2.4	1.4	3.6	1.2	3.6	1.2
Emphasis on child care[d] (low=1 to very high=5)	3.2	1.0	3.2	1.0	4.0	1.0	4.0	1.1
Sanctions[e] (%)	2.3	1.6	2.4	1.8	1.0	0.5	1.0	0.5
Long-term unemployed taking part in public employment schemes[e] (%)	6.9	3.2	7.0	3.9	5.5	3.6	5.6	3.4
Expenditure on ALMP / Total expenditure[c]	54.5	0.9	54.5	0.9	53.8	0.9	53.5	0.9

[a] *Source:* IAW-SGBII-Organisationserhebung, 2006 and 2007.

[b] All simulated values are based on 1000 bootstrap replications.

[c] Simulation based on Kernel density with bandwidth 1.

[d] Simulation based on quantile densities (in case of Dummies based on the sample mean).

[e] Simulation based on (log-)normal density.

Appendix C: Further Regression Results

Table C.1: Choice to become a zkT-job center - Marginal Effects

	Probit (1)		**Probit (2)**	
Ex-ante probability to participate	0.004	(1.92)	0.004	(1.56)
Board Member of the rural county association			0.276	(2.63)
Urban or metropolitan region	-0.162	(2.50)	-0.160	(2.48)
Municipalities per county	-0.002	(0.91)	-0.001	(1.07)
East Germany	-0.023	(0.24)	-0.003	(0.03)
Federal States: Bavaria, Baden-Wuerttemberg, Hesse	-0.085	(1.54)	-0.083	(1.51)
Mayor belongs to social democratic party (SPD)	-0.020	(0.49)	-0.016	(0.38)
Federal Länder government Christian Democratic Union (CDU/CSU)	-0.009	(0.10)	-0.002	(0.03)
Influence of the federal state government	-0.011	(0.32)	-0.004	(0.11)
Influence of the federal government x CDU/CSU ruling	0.054	(1.37)	0.049	(1.26)
Recipients of unemployment benefits in 1000	-0.069	(1.08)	-0.065	(1.03)
Recipients of unemployment benefits in neighboring regions in 1000	-0.023	(1.35)	-0.026	(1.54)
Recipients of unemployment assistance in neighboring regions in 1000	0.013	(2.01)	0.014	(2.08)
Recipients of unemployment assistance in 1000	0.019	(0.75)	0.016	(0.63)
Recipients of income support in 10000	-0.025	(1.55)	-0.022	(1.36)
Recipients of income support in neighboring regions in 10000	-0.002	(0.63)	-0.002	(0.72)
Outflows in regular employment in 1000	0.328	(0.99)	0.381	(1.16)
Outflows in regular employment in neighboring regions in 1000	0.031	(0.35)	0.039	(0.44)
Population 18-64 in 10000	0.011	(0.95)	0.007	(0.60)
Population 18-64 in neighboring regions in 10000	0.003	(1.11)	0.003	(1.44)
Gross value added per capita	0.004	(1.54)	0.004	(1.79)
Gross value added per capita in neighboring regions	0.003	(0.87)	0.003	(0.98)

The sample includes 405 regions and t-values are given in parentheses.

Table C.2: Number of long-term unemployed finding regular employment (Table 2 continued)

	OLS		**Selection**		**2SLS**		**FE 2SLS**	
Long-term unemployed	0.776	(11.97)	0.776	(11.97)	0.771	(10.67)	2.676	(3.39)
Short-time employed	-0.040	(0.66)	-0.040	(0.66)	-0.034	(0.51)	0.075	(0.35)
Short-term unemployed	0.233	(6.20)	0.233	(6.20)	0.239	(4.75)	0.500	(5.07)
Long-term unemployed in neighboring regions	0.003	(0.03)	0.004	(0.05)	0.002	(0.02)	0.371	(1.71)
Short-time employed in neighboring regions	-0.045	(0.50)	-0.047	(0.50)	-0.053	(0.50)	-0.314	(1.42)
Short-term unemployed in neighboring regions	-0.156	(2.72)	-0.158	(2.74)	-0.147	(2.26)	-0.103	(0.84)
Stock of vacancies	0.024	(1.93)	0.025	(1.97)	0.024	(0.95)	0.044	(1.31)
Inflow of new vacancies	0.022	(1.78)	0.022	(1.82)	0.020	(1.20)	0.013	(0.85)
Stock of vacancies in neighboring regions	0.002	(0.05)	0.002	(0.07)	0.002	(0.07)	0.035	(0.96)
Inflow of new vacancies in neighboring regions	0.064	(2.77)	0.064	(2.76)	0.064	(2.52)	0.009	(0.43)
Fraction of employees in agriculture	0.018	(2.13)	0.018	(2.15)	0.018	(2.09)	0.002	(0.04)
Fraction of employees in the industry	0.002	(1.95)	0.002	(2.00)	0.002	(1.91)	0.030	(2.05)
Fraction of employees in agriculture in neighboring regions	0.026	(2.48)	0.026	(2.44)	0.024	(2.12)	0.021	(0.25)
Fraction of employees in the industry in neighboring regions	0.000	(0.10)	0.000	(0.12)	0.000	(0.08)	-0.016	(0.63)
GDP	0.004	(0.15)	0.004	(0.17)	0.002	(0.09)	0.696	(0.42)
GDP in neighboring regions	0.060	(2.94)	0.059	(2.92)	0.064	(2.51)	1.163	(0.47)
Rural regions	-0.062	(1.71)	-0.056	(1.46)	-0.063	(1.68)		
Metropolitan regions	-0.069	(1.97)	-0.070	(2.00)	-0.077	(1.81)		
East German regions	-0.047	(1.11)	-0.050	(1.20)	-0.065	(0.95)		

The sample includes 3093 observations of 390 regions. t-values are given in parentheses and are calculated using the region identifier to cluster the observations. Time dummies are also included.

Table C.3: Number of short-time employed finding regular employment (Table 4 continued)

	OLS		**Selection**		**2SLS**		**FE 2SLS**	
Long-term unemployed	-0.215	(2.68)	-0.215	(2.73)	-0.198	(2.03)	0.471	(0.37)
Short-time employed	0.962	(12.41)	0.961	(12.66)	0.947	(10.19)	1.077	(3.12)
Short-term unemployed	0.278	(6.25)	0.278	(6.25)	0.257	(3.95)	0.582	(3.69)
Long-term unemployed in neighboring regions	-0.006	(0.06)	0.001	(0.01)	0.026	(0.21)	0.314	(0.91)
Short-time employed in neighboring regions	0.013	(0.13)	0.011	(0.11)	-0.026	(0.19)	-0.231	(0.65)
Short-term unemployed in neighboring regions	-0.202	(3.22)	-0.209	(3.36)	-0.204	(2.78)	-0.319	(1.63)
Stock of vacancies	0.009	(0.51)	0.012	(0.67)	0.024	(0.64)	0.049	(0.91)
Inflow of new vacancies	0.044	(2.66)	0.046	(2.78)	0.051	(2.07)	0.045	(1.87)
Stock of vacancies in neighboring regions	-0.014	(0.39)	-0.012	(0.32)	-0.016	(0.43)	-0.022	(0.37)
Inflow of new vacancies in neighboring regions	0.070	(2.24)	0.068	(2.21)	0.064	(1.97)	0.047	(1.33)
Fraction of employees in agriculture	0.009	(0.92)	0.010	(1.03)	0.008	(0.83)	0.002	(0.03)
Fraction of employees in the industry	-0.000	(0.31)	-0.000	(0.24)	-0.000	(0.28)	0.068	(2.93)
Fraction of employees in agriculture in neighboring regions	0.027	(1.82)	0.026	(1.77)	0.029	(1.90)	-0.140	(1.01)
Fraction of employees in the industry in neighboring regions	-0.005	(2.82)	-0.004	(2.78)	-0.004	(2.31)	0.020	(0.49)
GDP	-0.028	(1.01)	-0.026	(0.96)	-0.039	(1.02)	0.330	(0.12)
GDP in neighboring regions	0.056	(2.15)	0.054	(2.08)	0.064	(1.90)	-5.483	(1.38)
Rural regions	-0.067	(1.43)	-0.044	(0.89)	-0.060	(1.19)		
Metropolitan regions	-0.040	(0.90)	-0.044	(1.02)	-0.036	(0.68)		
East German regions	-0.043	(0.81)	-0.056	(1.09)	-0.036	(0.40)		

The sample includes 3093 observations of 390 regions. t-values are given in parentheses and are calculated using the region identifier to cluster the observations. Time dummies are also included.

Table C.4: Number of long-term unemployed finding regular employment (Table 3 continued)

	OLS		**Selection**		**2SLS**		**FE 2SLS**	
Long-term unemployed	0.905	(31.22)	0.905	(32.27)	0.908	(30.62)	1.888	(2.66)
Short-term unemployed	0.055	(1.63)	0.055	(1.63)	0.025	(0.55)	0.189	(2.23)
Long-term unemployed in neighboring regions	0.062	(2.36)	0.065	(2.46)	0.087	(2.23)	0.076	(1.83)
Short-term unemployed in neighboring regions	-0.052	(1.21)	-0.056	(1.32)	-0.083	(1.69)	-0.265	(2.50)
Stock of vacancies	0.005	(0.46)	0.007	(0.62)	0.014	(0.47)	0.019	(0.65)
Inflow of new vacancies	0.011	(1.07)	0.012	(1.17)	0.019	(1.21)	0.009	(0.73)
Stock of vacancies in neighboring regions	-0.020	(0.82)	-0.018	(0.77)	-0.022	(0.89)	0.005	(0.16)
Inflow of new vacancies in neighboring regions	0.032	(1.67)	0.031	(1.62)	0.028	(1.29)	0.001	(0.04)
Fraction of employees in agriculture	0.007	(0.97)	0.008	(1.05)	0.006	(0.69)	0.023	(0.56)
Fraction of employees in the industry	-0.002	(2.40)	-0.002	(2.36)	-0.002	(2.00)	0.030	(2.43)
Fraction of employees in agriculture in neighboring regions	-0.001	(0.10)	-0.002	(0.16)	0.006	(0.49)	-0.001	(0.02)
Fraction of employees in the industry in neighboring regions	-0.001	(0.44)	-0.000	(0.38)	-0.000	(0.19)	0.000	(0.02)
GDP	0.072	(3.81)	0.073	(3.89)	0.068	(2.27)	-0.116	(0.08)
GDP in neighboring regions	-0.027	(1.45)	-0.028	(1.53)	-0.036	(1.19)	-0.272	(0.13)
Rural regions	0.018	(0.55)	0.032	(0.92)	0.025	(0.64)		
Metropolitan regions	-0.102	(3.25)	-0.104	(3.38)	-0.073	(2.12)		
East German regions	-0.055	(1.68)	-0.063	(1.92)	0.012	(0.21)		

The sample includes 3097 observations of 390 regions. t-values are given in parentheses and are calculated using the region identifier to cluster the observations. Time dummies are also included.