

Unemployment Duration in Germany: Individual and Regional Determinants of Local Job Finding, Migration and Subsidized Employment

Arntz, Melanie; Wilke, Ralf Andreas

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Unemployment Duration in Germany: Individual and Regional Determinants of Local Job Finding, Migration and Subsidized Employment

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Melanie Arntz^{*} and Ralf A. Wilke[#]

^{*} Centre for European Economic Research (ZEW Mannheim), P.O.Box 10 34 43,

D-68034 Mannheim, Germany, Email: arntz@zew.de

[#] University of Leicester, Department of Economics, University Road, Leicester LE17RH,

UK, Email: raw27@le.ac.uk

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16 This work uses the Sample of the Integrated Employment Biographies V.1 (IEBS) of the
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3 Abstract:
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5 Recent labour market reforms in Germany aim, among other things, at reducing
6 unemployment by restricting passive unemployment measures, emphasizing local labour
7 market policies and re-structuring public employment services. This paper uses extensive
8 individual administrative and regional aggregate data to explore the extent to which these
9 factors are likely to contribute to the shortening of unemployment duration. For this purpose,
10 we estimate a semi-parametric duration model with three competing exit states. Our results
11 suggest that changes in the unemployment compensation system rather than local
12 employment policies and administrative restructuring efforts may shorten unemployment
13 duration. In addition, determinants of the length of unemployment vary across exit states.
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29 Keywords: competing-risk, labour market policy, individual and regional data
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31 JEL: J64, J61, J68
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1 Introduction

Throughout the last two decades Germany has experienced persistently high, and even rising, levels of unemployment. At the same time, the share of long-term unemployed who remain unemployed even after one year of job search has also gone up. According to Machin and Manning (1999), the share of long-term unemployment in Germany was almost 50% in 1995. This is much higher than in the US, but reflects a labour market situation that is not uncommon in many European countries. In this context, improved knowledge of how individual characteristics as well as the regional and institutional context shape labour market outcomes of unemployed jobseekers is of central concern to policy makers aiming to design policies that will contribute to a shortening of the average unemployment duration. However, most research on the determinants of unemployment duration has been confined to an analysis of individual level determinants (see for Germany: Steiner, 1990; Hunt, 1995; Hujer and Schneider, 1996; Steiner, 2001) and the role of individual employment histories in determining the duration of unemployment (Lüdemann, Wilke and Zhang, 2006; Fitzenberger and Wilke, 2007). Much less attention has been paid to the regional determinants of the unemployment duration. Most studies only test for additional region-specific effects (Folmer and van Dijke, 1988; Brown and Sessions, 1997; Fahrmeir et al., 2003) and conclude that the regional context is a significant determinant of the individual unemployment duration even after controlling for major individual-specific factors. Other studies only assess the impact of the local unemployment rate or the vacancy-to-unemployment ratio on individual unemployment duration (Lindeboom et al., 1994; Petrongolo, 2001; Haurin and Sridhar, 2003) and typically find the expected prolonging effect of deficient local labour demand on the duration of unemployment. Both of these approaches remain rather incomplete with respect to improving our understanding of the regional factors that prolong or shorten unemployment. We do not know much either about how the institutional context affects

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3 individual labour market outcomes. Though there has been a strong interest in the prolonging
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5 effect of passive labour market policies such as unemployment benefit entitlements on the
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7 duration of individual unemployment (e.g. Carling et al., 1996; Roed and Zhang, 2003; Cockx
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9 and Dejemeppe, 2005; Lalive, van Ours and Zweimüller, 2006; Kyrrä and Wilke, 2007), we
10
11 do not know much about the corresponding impact of other institutional aspects such as local
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13 active labour market policies and local job placement activities. This research gap is
14
15 particularly surprising in the German context because, among other things, recent labour
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17 market reforms emphasize the role of regionally targeted policy mixes and the organizational
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19 structure of public employment services. In particular, German policy makers as well as the
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21 public consider a high ratio of job counsellors to unemployed jobseekers as a key to reduce
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23 the duration of unemployment.
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29 The objective of this study is therefore to conduct a comprehensive analysis of unemployment
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31 duration in Germany. We identify the determinants of the length of unemployment not only
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33 among individual characteristics, but also consider the regional and institutional context in
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35 which individuals seek employment. For this purpose, our analysis uses a rich set of
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37 indicators that capture passive and active labour market policies as well as local economic
38
39 conditions and job counselling activities. Moreover, we use a new generation of German
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41 administrative individual data that allows three main exit states to be identified each of which
42
43 may be affected quite differently by the regional and institutional context: exits to local
44
45 regular employment, exits to non-local employment via migration and exits to subsidised
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47 employment. Previously available data sources did not allow exits to subsidised employment
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49 to be distinguished from exits to regular employment. As a consequence, estimated effects of
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51 covariates on the duration of unemployment may have been biased if there are heterogeneous
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53 effects of covariates on different exit types. In the case of subsidised and regular employment,
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55 biases are quite likely because labour market programs typically aim at cushioning
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57 unfavourable local labour market conditions. Thus, unfavourable labour market conditions
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3 may have an opposing effect on exits to regular and subsidised employment. Similarly, a
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5 higher migration hazard may be a response to deficient local labour demand that lowers the
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7 hazard of finding a local job (Arntz, 2005). The paper thus contributes to the literature by
8
9 disentangling the relevance of individual, regional and institutional factors for exiting
10
11 unemployment durations to three important exit states. Since the period covered by our data,
12
13 2000-2004, falls mainly into the pre-reform institutional setup, we cannot evaluate the success
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15 of recent reform efforts. Instead, our regression type analysis aims at exploring the main
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17 individual, regional and institutional determinants of unemployment duration in Germany. By
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19 doing so, we provide evidence about the extent to which recent reforms concerning passive
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21 labour market measures, regional employment policies and the organization of public
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23 employment services are likely to contribute to a reduction of unemployment duration.
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29 Our findings in Section 6 confirm that for both individual and regional covariates, the impact
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31 differs significantly depending on the type of exit. While deficient local labour demand
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33 significantly decreases the likelihood of exiting to regular employment in the local area, the
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35 likelihood of migration and the likelihood of entering subsidised employment significantly
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37 increase. The estimates from Table 4 and 5 indicate, however, that individual-level
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39 characteristics have a much stronger impact on the duration of unemployment than regional
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41 factors. Thus, regional policies may only be a supplementary means of reducing the duration
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43 of unemployment. Similarly, local active labour market programs and a higher provision of
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45 counselling resources only marginally affect labour market outcomes of unemployed
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47 jobseekers and even yield negative labour market outcomes which would be in line with
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49 recent results for the Netherlands (Van den Berg and Van den Klaauw, 2006). Among the
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51 regional and institutional factors from Tables 4 and 5, our findings indicate that passive
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53 labour market policies may have the strongest impact on the duration of unemployment in
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55 Germany. This is suggested by near zero exit rates of older individuals with long entitlements
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57 to unemployment benefits who tend to use these benefits as a means of early retirement as
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3 well as by major differences in labour market outcomes of unemployed with different income
4 replacement rates.
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8 The structure of our paper is as follows. Section 2 gives a detailed description of the
9 unemployment compensation and welfare system and briefly discusses recent labour market
10 reforms. A third section provides some theoretical underpinning on how job search across
11 multiple labour markets may be affected by regional and institutional factors. Section 4
12 presents the individual and regional data used in the analysis and discusses the choice of
13 covariates. We then explain the methodological approach before presenting the results in
14 section 6. Section 7 concludes and discusses the results in light of the recent reforms.
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26 **2 Institutional context in Germany**

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32 Until 2004, the German unemployment compensation system consisted of two main
33 components: unemployment benefits (UB) and unemployment assistance (UA).
34 Unemployment benefits which were paid for a period of up to 32 months, depending on an
35 individual's age and employment history, were equal to 60 % (67%) of the last net income for
36 unemployed individuals without (with) dependent children. Tax-funded and means-tested
37 unemployment assistance was paid indefinitely to individuals who had exhausted their
38 entitlement to unemployment benefit and continued to provide income replacement rates of
39 53% (57%) for individuals without (with) dependent children. This combination of generous
40 replacement rates for long-term unemployed and indefinite entitlement length was rather
41 exceptional among the OECD countries. As a consequence, replacement rates for long-term
42 unemployed in Germany were and still are higher than in many other OECD countries,
43 especially for older unemployed with extended periods of entitlement to UB and for
44 unemployed with low former earnings who receive complementary tax funded social benefits.
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60 This meant that income replacement rates higher than 70 % or even over 100 % were

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3 common practice for the latter group. From a search-theoretical perspective, high replacement
4 rates raise reservation wages and thus prolong unemployment as the potential net gain from
5 working compared to not working is small (Mortensen, 1990; Rogerson et al., 2005). The
6 institutional design in Germany thus results in work disincentives that are considered to be
7 partly responsible for the high share of long-term unemployment in Germany and the
8 considerably higher share of long term unemployment among older people (Fitzenberger and
9 Wilke, 2004) and the low wage unemployed (Fitzenberger and Wilke, 2007). Moreover, the
10 institutional design has also been associated with a lack of jobs for low-skilled workers in
11 Germany as the social benefit level implies a relatively high minimum wage that is above the
12 productivity level of many low-skilled unemployed. The subsequent empirical analysis of
13 unemployment periods between 2000 and 2004 thus draws specific attention to the
14 unemployment experiences of individuals with low earning capacities.

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At the end of the 1990s, unemployment rates had reached levels of close to 10% in western
and close to 19% in eastern Germany. Since the unemployment compensation and welfare
system in Germany was increasingly made responsible for this development, several labour
market reforms, the so called Hartz reforms, were introduced between 2002 and 2005 to
reduce disincentives of the existing institutional framework. In particular the Hartz I-III
reforms mainly aim at activating the unemployed and increasing the efficiency of job
placement services and active labour market measures while the Hartz IV reform decoupled
unemployment compensation for long-term unemployed from the former wage income and
merged social benefits and unemployment assistance to create the new social benefit¹
(Arbeitslosengeld II). See Jacobi and Kluge (2006) for an extensive overview of the reforms.

While the Hartz IV reform was not implemented before 2005 and is thus not relevant for our
analysis, the Hartz I-III reforms already started in 2003. As one major objective, this reform
shifts resources from labour market programs aimed at the secondary labour market such as
work creation schemes to measures that aim at integrating individuals into the regular labour

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3 market (e.g. training, subsidies for regular employment and self-employment). In order to
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5 improve the efficiency of allocated resources, programs are targeted more strictly to specific
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7 groups of unemployed. After profiling jobseekers according to their chances of finding
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9 regular employment, specific reintegration measures are restricted to those who have a fair
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11 chance of being reintegrated into the labour market, while work creation schemes are targeted
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13 to jobseekers with less promising prospects. In order to activate the unemployed to make as
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15 much effort as possible to regain employment, the reforms introduced stricter sanction rules in
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17 the case of insufficient search efforts, but also offered a new set of programs such as subsidies
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19 for people wishing to set up businesses (*Ich-AG*) and subsidies for employers hiring
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21 individuals with low productivity levels.
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27 Another key objective of the Hartz I-III reforms was the restructuring and modernization of
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29 the federal employment agency (FEA) in order to increase the effectiveness of its placement
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31 services. For this purpose, its regional employment agencies introduced a client-oriented New
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33 Customer Service Centre (*Kundenzentrum*). An entry zone for customer requests and
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35 questions in addition to scheduled appointments for job counselling now prevent long waiting
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37 times and increases efficiency. Moreover, computer-based assessments now help in analyzing
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39 the needs of each customer and thus support tailor-made solutions. These modernization
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41 measures also aimed at reducing the workload of each counsellor in order to improve the
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43 quality of job counselling. This new emphasis on job counselling has been facilitated by an
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45 increase in the number of job placement counsellors since 2002 of almost 30% and a
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47 consequent improvement in the counsellor/customer ratio, i.e. the number of unemployed
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49 assisted per placement counsellor.
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55 Another important aspect of the reform concerns the organization of placement services. In
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57 contrast to the former hierarchical organization, far greater responsibility has now been
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59 assigned to local employment agencies. Each local employment agency now has to achieve
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stipulated quantitative goals which are tailored to the specific situation of its regional labour

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3 market. For such controlling purposes and the design of regionally tailored policy mixes, the
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5 federal employment agency asked its research institute, the IAB (*Institut für Arbeitsmarkt-*
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7 *und Berufsforschung*) to identify employment agencies with comparable regional conditions.
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10 The resulting 12 strategic types of employment agencies range from regional employment
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12 agencies with unfavourable labour market conditions in eastern Germany to agencies with
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14 favourable and dynamic labour market conditions (Blien et al., 2004). The restructuring of the
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16 federal employment agency has therefore resulted in an emphasis on job counselling and
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18 efficient placement services as well as an emphasis on labour market policies which are
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20 targeted to the regional labour market. These internal changes of the FEA were mainly
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22 executed by leading international consulting companies who received hundred of millions of
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24 euros for their input. An empirical analysis of the institutional features is therefore of high
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26 policy interest. Since the period covered by our data falls mainly into the pre-reform
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28 institutional setup of the FEA, we cannot evaluate the success of the restructuring effort. It is,
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30 however, possible to obtain empirical evidence about whether one may expect these changes
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32 to bring about a strong reduction in unemployment duration. In this respect, our analysis is
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34 aimed at examining the extent to which institutional and regional factors affect the labour
35
36 market outcomes of jobseekers in Germany once individual factors have been taken into
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38 account. For this purpose, we use a broad number of covariates that capture the regional
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40 context and some institutional features such as the counsellor/customer ratio. Moreover, we
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42 look at exits from unemployment not only to regular but also to subsidised employment and
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44 take account of the particularities of the German unemployment compensation and welfare
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46 system by distinguishing between groups of different earning capacities.
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57 **3 Some theoretical underpinning**

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Before turning to the empirical approach of our analysis, this section briefly discusses how

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3 labour market conditions may affect labour market outcomes after unemployment. In this
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5 context it is worth considering a framework in which a jobseeker looks for employment in a
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7 number of distinct labour markets. In the case of simultaneous job-search across these labour
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9 markets², the probability of exiting to any of those labour markets can be broken down into
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11 the job offer probability and the probability of accepting a job offer in this labour market, both
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13 of which depend on exogenous market conditions and the endogenous search strategy adopted
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15 by the unemployed job searcher. In particular, jobseekers choose reservation wages for each
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17 of the distinct markets such that the value of employment at the offered wage is equivalent to
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19 the value of continuing unemployed job search. Moreover, search effort is allocated across the
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21 markets so that the marginal value of additional search in each market is equal to the marginal
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23 cost of searching the market. While reservation wages affect the job acceptance probability,
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25 the allocation of search effort across distinct markets influences the job offer probability.
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27 Intuitively, an individual's search strategy should favour finding employment in those labour
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29 markets that offer the best work conditions. In the case of job search across multiple
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31 industries, Fallick (1992) has shown that improving conditions in one labour market, i.e.
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33 increasing job offer probability, raises reservation wages in all markets while at the same time
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35 shifting search effort towards the improving market and reducing search effort in all others.
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37 As a consequence, changing exogenous conditions affect the hazard of exiting to a specific
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39 market not only directly due to, for example, higher job offer probabilities, but also affect
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41 these hazards indirectly via the endogenous search strategy of the unemployed job searcher. A
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43 similar notion has also been applied to job-search across sectors (Thomas, 1998) and regions
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45 (Damm and Rosholm, 2003; Arntz, 2005).

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47 In our framework, we allow for a local and a non-local labour market and introduce a labour
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49 market for subsidised jobs. Exits to non-local employment are likely to constitute only a
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51 relatively small but still noticeable share of all exits as migration levels in Germany are low
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53 compared with the US, Australia and Canada, but among the highest compared with other
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3 European countries (OECD, 2005). We refer to subsidised jobs whenever an individual exits
4 to employment in the context of an active labour market program. Such programs mainly
5 encompass subsidised jobs in the secondary labour market, subsidies for regular employment
6 and subsidies for self-employment (see data section for details). The reforms of recent years
7 have brought about a shift from subsidised jobs in the secondary labour market to the latter
8 two program types (BA, 2004). In 2002, more than 200,000 jobseekers entered subsidised
9 jobs in the secondary labour market and more than 350,000 jobseekers received a subsidy for
10 regular employment or self-employment (BA, 2002). Compared with other European
11 countries, subsidised employment in Germany is an important part of labour market policy.
12 While spending on active labour market policies in Germany has been around average
13 compared with other European countries, the proportion spent on subsidised employment has
14 been above average in recent years (Martin and Grubb, 2001). Exits to subsidised
15 employment are thus likely to constitute a substantial part of all exits from unemployment.

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18 Applying the above job search framework across multiple labour markets to our particular
19 setting, jobseekers are simultaneously looking for employment in the market for regular³
20 local, regular non-local and subsidised employment. Thus, jobseekers choose the search
21 strategy, i.e. reservation wages and the search effort for each of these markets according to the
22 attractiveness of each of these markets in terms of job availability, offered wages and work
23 conditions. In many cases, labour market conditions that favour an exit to local regular
24 employment may have an opposing effect on non-local exits (Arntz, 2005). Similarly,
25 subsidised employment is often a means of cushioning unfavourable local labour market
26 conditions. Distinguishing between these three exit states should therefore be quite helpful in
27 understanding how the regional and institutional context affects labour market outcomes of
28 jobseekers in Germany. For this purpose, the empirical analysis considers a number of
29 indicators that capture the exogenous conditions of the local labour market that are discussed
30 in detail in the next section. By affecting search strategies, such conditions not only affect the

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3 duration of unemployment, they also affect the probability of making a transition to either
4 local employment, non-local employment or subsidised employment. Other behaviourally
5 distinct and alternative destination states after unemployment that due to data limitations are
6 not considered here include exits to self-employment or out of the labour force entirely. Our
7 analysis should therefore be considered as a starting point for improving our understanding of
8 the impact of labour market conditions on the labour market outcomes of unemployment.
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20 **4 Data**

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24 This section describes how we select the sample and covariates for our analysis. We use
25 individual data merged from several administrative registers which is then combined with
26 regional data from various sources.
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37 Individual data

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39 The Sample of the Integrated Employment Biographies V.1 (IEBS) of the Research Data
40 Centre (Forschungsdatenzentrum) of the FEA is a new data set which was released in 2005.
41 See Hummel et al. (2005) for a detailed description of the data. It is a 2.2 % sample
42 containing about 1.4 million individuals in the period 1992-2004. It comprises high quality
43 information about employment periods that have been subject to social insurance payments
44 and thus excludes civil servants and self-employed individuals. The sample also contains
45 information on the receipt of unemployment compensation from the FEA. For the period
46 2000-2004, the data set also provides information about participation in active labour market
47 programs. One of the major drawbacks of the data is that it only partially identifies the true
48 unemployment period. This is because there are unobserved periods in the employment
49 trajectories whenever an individual is neither a socially insured employee nor receives
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3 unemployment compensation, nor participates in any active labour market program. As a
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5 consequence, some parts of the individual employment trajectory may not be observed so that
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7 various proxies for the true unemployment period can be computed based on different criteria
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9 which define the labour market status of being unemployed, see e.g. Fitzenberger and Wilke
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11 (2004) and Lee and Wilke (2005) for this problem. In the analysis of this paper we use the
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13 following proxy for the true unemployment duration:
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18 Unemployment with permanent income transfers (UPIT) is a lower bound of the true
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20 unemployment period that defines unemployment as a continued period of transfer
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22 receipt. Gaps between transfer receipt and the beginning of a new employment period
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24 need to be less than four weeks. Thus, UPIT excludes periods of unemployment without
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26 receipt of UB or UA from the FEA.
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30 Unfortunately, there is no exact way of telling whether this unemployment proxy more
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32 closely resembles the true length of unemployment than competing proxies. Moreover, the
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34 data does not contain all necessary information to identify unemployed social benefit
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36 recipients, a group that we are specifically interested in as discussed in section 2. Entitlements
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38 to complementary social benefits depend on pre-unemployment earnings but also on the
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40 number of dependent children as well as financial resources (e.g. spouse income, private
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42 savings). Since we do not observe enough information in the IEBS about the household
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44 context nor about its financial resources, no exact identification of unemployed social benefit
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46 recipients is possible. Individuals with relatively low pre-unemployment wages, however, are
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48 more likely to receive additional social benefits. We therefore compare unemployment
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50 periods of social benefit recipients which are contained in the Social Benefit Statistics⁴
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52 (Sozialhilfestatistik, SHStat) with unemployment spells in the IEBS for individuals of
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54 different pre-unemployment earnings in order to choose an income threshold below which
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56 unemployed in the IEBS are similar to unemployed social benefit recipients. Moreover, we
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3 conduct this comparison not only for the above UPIT proxy of unemployment in the IEBS,
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5 but also for a wider proxy which also adds nonemployment periods to the unemployment
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7 duration. A comparison of the corresponding distributions of unemployment duration
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9 suggests that the UPIT proxy for individuals with pre-unemployment gross earnings of less
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11 than 60 euros per day better represents the group of unemployed social benefit recipients than
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13 the competing unemployment proxy or other income thresholds. A daily gross wage of 60
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15 euros closely corresponds to the lowest wage quintile for full-time employees in western
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17 Germany and to the lowest two wage quintiles for full-time employees in eastern Germany.
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19 Applying the same income threshold for both parts of Germany may thus appear somewhat
20
21 crude. Robustness checks using, for example, unemployed in the lowest wage quintile for
22
23 both parts of Germany, did not significantly change the results. We therefore decided to apply
24
25 the UPIT definition in the subsequent empirical analysis and stick to the chosen threshold of
26
27 60 euros daily gross earnings to distinguish individuals of low-earning capacities from
28
29 individuals with higher earning capacities. Individuals above this threshold are less likely to
30
31 receive additional social benefits and should thus have different unemployment experiences
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33 than their low-earning counterparts.
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41 For all UPIT unemployment spells, we observe the exit state if the spell is not right-censored
42
43 due to the end of the observation period and if the unemployed continuously receives income
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45 transfers from the FEA. As discussed in the theoretical section, we distinguish between local
46
47 regular employment, non-local regular employment (migration) and subsidised employment.
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49 We define migration as movements between non-adjacent labour market regions
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51 (*Arbeitsmarktregionen*). The 227 labour market regions (LMRs) in Germany comprise typical
52
53 daily commuting ranges such that for the majority of individuals the workplace is located
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55 within the LMR. Finding employment in a non-adjacent LMR therefore usually necessitates
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57 residential mobility. We refer to subsidised employment whenever an individual exits to
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59 socially insured employment or self-employment in the context of an active labour market
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3 program. Such programs mainly encompass subsidised jobs in the secondary labour market
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5 (ABM, SAM), subsidies for regular employment (*Eingliederungszuschüsse*,
6
7 *Beschäftigungshilfen*) and subsidies for self-employment (*Ich-AG*, *Überbrückungsgeld*), but
8
9 also contain more extensive training programs (*FbW*) if these programs count as socially
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11 insured employment. Table 1 describes the composition of all exits to subsidised employment
12
13 observed in the IEBS for UPIT spells starting between 2000 and 2002. For the analysis, we
14
15 decided to pool all forms of subsidised employment because robustness checks for
16
17 distinguishing between certain types of programs did not yield noteworthy differences
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19 compared to pooling all programs.
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24 We restrict our analysis to unemployment periods starting in the period 2000-2002. This is
25
26 because information on periods of subsidised employment is not available before 2000. Since
27
28 we are able to observe information about unemployment up to 2004 while exits to
29
30 employment are only observable up to the end of 2003, we decided to exclude spells starting
31
32 in 2003. This reduces the amount of right censoring in the data and ensures a minimum
33
34 observation period of one year. Table 2 shows the sample sizes and exit types when applying
35
36 the UPIT definition and distinguishing individuals by their earning capacities. We also
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38 distinguish by gender and marital status as these characteristics are important determinants of
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40 individual labour market outcomes.
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48 TABLE 1

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53 Table 2 shows that individuals with low pre-unemployment wages are more likely to exit to
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55 subsidised employment and less likely to migrate than jobseekers with higher pre-
56
57 unemployment earnings. Moreover, the median unemployment duration is significantly
58
59 longer for low wage earners, a finding that is in line with the expectations that the institutional
60
framework creates disincentives for individuals with low earning capacities to take up a job.

1
2
3 Table 2 also indicates differences by gender and marital status. Singles are geographically
4 more mobile than their married counterparts, a finding that is consistent with the migration
5 literature regarding higher migration costs for married people with children (see Ghatak et al.,
6 1996). Differences between female and male singles, however, are very small. Since
7 estimation results for both sub-groups proved to be very similar, we decided to pool male and
8 female singles in the subsequent analysis. By contrast, results for married individuals strongly
9 differ by gender. Married women have by far the longest median unemployment duration and
10 the lowest exit rates. This probably reflects the looser labour force attachment of married
11 women. Moreover, the extremely low migration rates among married women may reflect the
12 fact that women are more likely to be tied to the local area if the male breadwinner is
13 employed locally. Due to these particularities of labour market decision of married women,
14 we decided to restrict the analysis to married males and single people only and differentiate
15 these groups by their earning capacities.

16
17 Individual-level covariates for the econometric analysis that are contained in the IEBS are
18 age, education and a number of indicators of an individual's employment history such as
19 previous unemployment experiences, previous participation in active labour market programs
20 and previous commuting status. These covariates are chosen to capture differences in job-
21 finding chances and migration costs that are relevant for the labour market outcomes of
22 jobseekers. In addition, the analysis also includes the maximum length of unemployment
23 benefit receipt at the beginning of unemployment. As previously discussed, entitlements to
24 unemployment benefits increase with age and job tenure within some claim period. Since
25 actual entitlements are not observed for many individuals in the IEBS, the missing
26 information has been imputed based on known information concerning age and tenure in the
27 previous job. Summary statistics of the samples can be found in Appendix A.

TABLE 2

Regional aggregate data

We use a broad number of regional indicators which are mainly provided by the two largest German data producers: the Federal Employment Agency and the Federal Statistical Office (FSO). The FEA data is coded at the level of employment agency districts and contains information about labour market tightness (e.g. vacancies, jobseekers, degree of long term unemployment), the extent and structure of local labour market programs and the organization of the local employment agency (e.g. number of staff). The FSO data contains county level information about the population structure (e.g. age, education), the type of region (urban vs. rural), its infrastructure and industrial structure. There are 180 employment agency districts and 440 counties in Germany, the exact delineation of which are shown in Arntz and Wilke (2007). We decided not to aggregate the regional data to labour market regions because for some indicators we only have spatially intensive data such as percentages that cannot be easily aggregated.

The FSO and the FEA data provided us with more than 100 regional indicators, a full list of which is included in Arntz et al. (2006). For the purposes of econometric analysis, there are far too many regional covariates as there is a high degree of correlation among several of these regional indicators. Thus, as a first step we used a combination of cluster and factor analysis to identify indicators that contain very similar information. In a next step, we decided to compress the regional information further by grouping the remaining regional indicators according to economically reasonable groups that cover major regional factors that are likely to affect unemployment durations and the labour market state after unemployment as discussed in the theoretical framework. In particular, we create five groups and select up to five indicators as their representatives such that the correlation among the representatives is minimized. As a consequence, the chosen representatives proxy for their group of interest in the econometric analysis so that estimated coefficients reflect effects of the group they represent. Table 3 shows a description and summary statistics of all regional indicators. There

1
2
3 is a large regional variation in most of the indicators that describe the regional labour market
4
5 situation. In fact, regional disparities in unemployment rates, for example, are among the
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7 largest in Europe (OECD, 2005). Thus, there should be enough regional variation to identify
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9 the effect of regional covariates on labour market outcomes. For the subsequent econometric
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11 analysis, we standardized all continuous regional variables to ease comparability of estimation
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13 results.
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17 The first group of indicators characterizes local labour demand and supply conditions, i.e.
18
19 local job availability. The local unemployment rate may be considered as an indicator of
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21 deficient local labour demand. In addition, the change in the unemployment rate compared to
22
23 the previous year conveys information about the development of the local imbalance of labour
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25 supply and demand. In regions with an excess supply of labour, the probability of receiving a
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27 job-offer should be reduced. As a reaction, reservation wages in all labour markets decrease
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29 since jobseekers become less choosy and search effort shifts from the local to alternative
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31 markets. This implies a decrease in the number of local jobs found and an increasing hazard
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33 of finding a non-local or a subsidised job. An excess supply of labour may also increase the
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35 availability of subsidised employment because corresponding labour market programs are
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37 often used to cushion unfavourable labour market conditions.
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44 Another important determinant of unemployment duration might be local economic
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46 performance since well-performing regions should offer a higher expected lifetime income
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48 and should thus attract search effort to the local market while non-local and subsidised
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50 employment should become less attractive. Well-performing and economically growing
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52 regions should be characterized by a high and growing GDP per head as well as by a high
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54 level of newly established businesses. The analysis thus includes corresponding indicators.
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57
58 Apart from economic conditions of the locality, its social structure may also shape individual
59
60 labour market behaviour. In particular, individuals may have "...lower incentives to work
where peers are also unemployed ... and a view of joblessness as unproblematic within a

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2
3 context of lowered aspirations, ..." (Ritchie et al., 2005:3). In Germany, discouraging social
4 contexts might be found in old industrial regions which have experienced massive
5 deindustrialisation in recent decades and a subsequent rise in long-term unemployment. We
6
7 thus decided to include indicators such as the level of long-term unemployment and the
8
9 average schooling level in the region to control for different social contexts.
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14 In addition, we use information about the institutional organization of the local employment
15 agency. As discussed in section 2, there has been an increase in the number of job placement
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17 counsellors of around 30% during the period of observations. This politically motivated
18
19 increase in the counsellor/customer ratio, i.e. the ratio between placement officers per
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21 jobseeker, provides some variation to identify the effect of an increasing level of job
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23 counselling. We hypothesize that a higher counsellor/customer ratio positively affects both
24
25 local and the non-local job-finding probability, but that exits to subsidised employment might
26
27 be reduced if subsidised employment to some extent substitutes for job counselling. We also
28
29 include indicators of the local availability of labour market programs. As discussed in section
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31 2, there have been changes in the structure of labour market programs with a shift from
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33 measures aiming at the secondary labour market to programs that aim at integrating
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35 individuals into the regular labour market. We therefore include the share of unemployed
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37 participating in programs with a focus on the regular labour market such as training measures
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39 (*FbW*), programs targeted to young unemployed (*JUMP*) and subsidies for regular
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41 employment or self-employment (*Übergangsgeld*, *Eingliederungszuschuss*,
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43 *Beschäftigungshilfe*) and also include the share of unemployed participating in programs with
44
45 a focus on the secondary market such as work creation schemes (*ABM*, *SAM*).⁵ While exits to
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47 subsidised employment should be positively affected by the level of offered programs, the
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49 hazard of leaving the region may be negatively affected if such programs offer a substitute for
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51 leaving the region. Westerlund (1997, 1998), for example, finds evidence that an increasing
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53 number of participants in ALMP in the local region reduces flows of out migration in
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3 Sweden. One explanation of such findings may be that participants in such programs reduce
4 search efforts, especially in non-local labour markets, and thus experience lower mobility
5 levels (Fredriksson and Johansson, 2003; Lindgren and Westerlund, 2003). In addition, an
6 extensive local availability of ALMP may also reduce migration levels among unemployed
7 who are not participating in such program if the availability of such programs distracts search
8 effort from the non-local to the subsidised labour market. Arntz (2005) finds evidence for
9 such mobility-reducing effects on female jobseekers in western Germany. We therefore
10 include the level of offered programs in order to investigate possible locking-in effects.
11

12 Finally, we include several structural indicators to characterize the type of region. In
13 particular, we include a population density related classification to distinguish between rural
14 and urban regions. Moreover, we use driving distance to the next higher level city as a proxy
15 for the degree of remoteness of a region. Both of these characteristics affect the availability
16 and the accessibility of employment and may thus change an individual's search behaviour.
17 We also control for three other regional characteristics. Regions with a high level of seasonal
18 work, proxied for by the flow in and out of unemployment, may be characterized by a large
19 share of short unemployment spells. Secondly, the local existence of third level institutions
20 may affect the composition of the available workforce. The availability of a highly flexible
21 workforce such as students may affect the competition for certain jobs and thus affect the flow
22 out of unemployment. Finally, we include the local availability of child care support in order
23 to analyse whether the public infrastructure affects unemployment experiences of jobseekers
24 with children. The availability of kindergarten or nursery school might reduce the opportunity
25 cost of local employment and thus accelerate exits to local employment.
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5 Methodological issues

Let $F(t)$ be the unemployment duration distribution, where t is the duration of unemployment. The hazard rate, $h(t) = \{\partial F(t) / \partial t\} / (1 - F(t))$, is an intuitive way of formalizing transitions from unemployment to employment. In our econometric analysis we use a hazard rate model to investigate the effect of various covariates $x = \{x_1, x_2\}$ on the distribution of unemployment, where x_1 denotes the set of individual characteristics such as demographics, socio-economics, work history variables and firm-level variables, while x_2 contains all remaining regional indicators. In particular, we estimate a competing-risk Cox-proportional hazard model⁶, $h_j(t | x) = \lambda_j(t) \exp(\alpha_j x_1 + \beta_j x_2)$, where j denotes the exits to local regular employment, subsidised employment and non-local employment, i.e. migration, and λ_j is the destination-specific baseline hazard rate.

There are several major sources of biases that have to be addressed when using this approach. First of all, there may be biases from unobserved individual heterogeneity. As suggested by Meyer (1990), however, unobserved individual heterogeneity may not have much of an effect if there is a flexible baseline hazard that partly absorbs this heterogeneity. Secondly, there may be a simultaneity issue of the regional covariates if an exit directly affects the covariates used in the analysis. This may be the case if an exit to local employment reduces the unemployment rate or if an exit to subsidised employment increases the offer rate for active labour market programs. For this reason, all regional covariates have been calculated as the average value for the 12 months preceding the start of unemployment. Estimation results may, however, still be biased if regional characteristics that are correlated to the observed covariates are omitted. In the literature, this problem has been addressed by stratification (see Ridder and Tunali, 1999). When stratifying according to regional labour markets, separate

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2
3 baseline hazards are estimated for each regional labour market. This approach resembles the
4 well-known fixed effects approach and thus controls for unobserved heterogeneity at the level
5 of regional labour markets. Unfortunately, our data is limited to a relatively short time span.
6 Thus, a stratified estimation approach turns out to be infeasible since, in this case,
7 identification rests on time variation. We are nonetheless fairly confident that biases from
8 omitted regional characteristics may be negligible due to the rich account of regional
9 covariates used in the analysis.

10 As has been discussed by Thomas (1996), in a competing-risk duration analysis, the estimated
11 parameter vector (α_j, β_j) may not be interpreted as the effect on the duration until exit to
12 state j . Instead, the effect on this duration depends on parameter vectors for all states. In
13 particular, define the conditional cumulative probability of exiting to state j until t as
14 $\Pi_j(t|x) = \int_0^t h_j(t|x)(1-G(t|x))dt$ with $h_j(s)$ as the exit hazard to state j and $(1-G(s))$ as
15 the overall survival probability that takes account of all exit options. In our empirical analysis
16 we evaluate the estimates at $x_l \in \{\bar{x}_l, 0\}$, where we choose the average values of all
17 individual level variables ($x_1 = \bar{x}_1$) and we choose zero for the regional variables ($x_2 = 0$).⁷

18 We estimate the probability of exiting to state j as the duration elapses one year, i.e.
19 $\Pi_j(365|x)$. We compute the marginal effects $\partial\Pi_j(365|x)/\partial x_k$ as the marginal change of
20 the cumulative probability of exiting to state j during the first year if one regressor x_k
21 changes. This outcome is of particular political interest because long-term unemployment
22 starts after one year of unemployment. Thus, our marginal effects correspond to the change in
23 probability of becoming long-term unemployed that is due to a marginal increase of
24 covariate k .⁸ Based on 500 samples, we estimate the standard error of the conditional
25 marginal effect bootstrap distribution. Assuming that standard errors are distributed normally,
26 we then determine the significance level of the estimated marginal effects.

6 Results

Tables 4 and 5 present the estimated conditional marginal effects for single people and married men of low and higher earning capacities. We generally find that the individual work-history seems to be the driving force behind the duration of unemployment, a result that is similar to Lüdemann et al. (2006) and Fitzenberger and Wilke (2007) who use data without information on subsidised employment and on migration. Our results also indicate some convergence of the conditional distribution of unemployment duration in western and eastern Germany during the years 2000-2004. Compared to the impact of individual characteristics, regional disparities only marginally affect the length of unemployment periods in Germany as has also been suggested by Arntz (2005) who uses data without information on subsidised employment. Thus, although some regional factors significantly affect both the unemployment duration and the likelihood of ending up in a specific destination state, our results suggest that the recent emphasis on regional policies, regionally tailored policy mixes and the organization of public employment services is unlikely to bring about a substantial reduction in the length of unemployment in Germany. Rather, there is some evidence that certain regional policies such as the local provision of active labour market programs may even yield negative labour market outcomes. In what follows we present a detailed discussion of the estimation results for the individual-specific covariates before turning to the regional covariates. In line with the finding that regional covariates have only a limited impact on individual labour market outcomes, we also find only few general and robust result patterns across the four sub-groups. A detailed discussion of each single effect thus seems an infeasible approach for the regional covariates. Instead, we only focus on the most important results for each group of regional covariates and point to the most interesting and robust differences across the sub-samples.

Socio-demographics

Several socio-economic variables significantly affect the duration of unemployment⁹, but only few of them have a strong effect. Among the most important for all exit states of single people and married men alike is age. Generally, the probability of finding regular employment in either the local or the non-local area decreases with age. For low-earning individuals aged 46-56, the reduced probability of finding regular employment is partially compensated by a higher probability of entering subsidised employment. Those aged 56 and above experience lower exit probabilities to all exit types and thus stay unemployed significantly longer than their younger counterparts. Once having controlled for different levels of pre-unemployment wages, the effect of educational attainment on the duration of unemployment is rather limited. Instead, the educational degree rather has some impact on the observed exit state after unemployment. In particular, a university degree markedly reduces the probability of finding local regular employment, but increases the likelihood of entering subsidised employment or migration if they are single. The resulting probability of leaving unemployment to any of these exit states within one year thus tends to be slightly lower only than for their unskilled counterparts. Lower pre-unemployment earnings associated with higher income replacement rates rather than the observed educational degree thus seem to be able to explain the high share of long term unemployment among the unskilled in Germany. This finding also confirms our approach of stratifying the sample with respect to the pre-unemployment wage level.

Work history variables

Characteristics associated with the work history have the strongest influence on the unemployment duration distribution and effects are typically similar for all samples. In

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3 particular, long entitlement periods for unemployment benefits (UB) are associated with a
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5 much lower likelihood of finding regular employment either in the local or the non-local
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7 region, especially among individuals with higher pre-unemployment wages. One reason for
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9 why UB entitlements have a weaker effect on individuals with low pre-unemployment wages
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11 may be that these individuals often receive complementary social benefits. In this case,
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13 prolonging unemployment benefits does not result in additional transfer payments as the
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15 income replacement rate is the same irrespective of whether receiving UB or unemployment
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17 assistance (UA). For those with higher pre-unemployment earnings, longer UB entitlements
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19 may instead be quite beneficial as income replacement rates for this group should be higher
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21 for UB than for UA. In line with our findings, the disincentive effect from longer UB
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23 entitlements should be stronger for individuals with higher pre-unemployment earnings.
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25 Another interesting finding concerns extremely long UB entitlements of more than 2 years
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27 which apply only to older unemployed who already have much lower exit probabilities than
28
29 their younger counterparts. These individuals basically never leave unemployment again but
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31 use their long entitlements to unemployment benefits as a means of early retirement.
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33 We also obtain strong results if an unemployed person was already subsidised by the local
34
35 employment agency before the start of the current unemployment period. If these individuals
36
37 slip back into unemployment they have a very low transition probability to either local or
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39 non-local regular employment. Instead, a high percentage of these individuals ends up in
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41 another subsidised employment period. With the new generation of individual administrative
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43 data we are therefore able to identify what is typically called a "career of labour market
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45 measures".¹⁰ Our results therefore suggest that both passive and active labour market
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47 measures are strongly associated with negative individual labour market outcomes. We do
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49 not, however, read this as a pure causal relationship because these results may partially be
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51 driven by unobserved factors such as a selection of immobile unemployed into subsidised
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53 employment or long entitlements to UB.
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3 Furthermore, we identify several factors that increase exit probabilities among the
4 unemployed. Individuals who have previously been recalled by their former employer, have
5 much shorter unemployment periods due to faster local exits. Moreover, this group is less
6 likely to be subsidised or to migrate, and this suggests that recalls are related to seasonal
7 unemployment and temporary lay-offs. Being in minor employment¹¹ at the beginning of the
8 unemployment period considerably increases local job finding and reduces the likelihood of
9 migration in many cases. Working in a minor employment signals some labour force
10 attachment, but may also increase the attachment to the local area. Individuals who commuted
11 to their last job have lower local but higher non-local employment probabilities. This may
12 capture both a higher propensity to migrate as well as a higher propensity to commute very
13 long distances.
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32 TABLE 4

33 34 35 36 37 Supply and demand conditions

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40 As expected, a deficient local labour demand as reflected in high and increasing
41 unemployment levels tends to reduce the probability of finding employment locally within
42 one year among all groups. Among single people with higher pre-unemployment wages, this
43 detrimental effect on the duration of unemployment is partially offset by higher migration
44 levels while their married counterparts increasingly enter subsidised employment in regions
45 with an excess supply of labour. For individuals with low pre-unemployment wages, such
46 counteracting effects are even smaller or absent so that this group appears to be more reliant
47 on local labour market conditions. Similar to the findings by Arntz (2005), the results thus
48 indicate some heterogeneity among different groups of unemployed individuals with respect
49 to the responsiveness to regional labour demand conditions. Moreover, the fact that
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3 significantly higher migration levels can only be found for well-earning singles in response to
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5 deteriorating unemployment rates during the previous five years suggests that such
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7 counteracting forces tend to be slow, a result that is in line with slow adjustment processes
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9 after region-specific shocks (Decressin and Fatàs, 1995; Möller, 1995). Thus, deteriorating
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11 local labour demand conditions seem to result in a growing share of long-term unemployed.
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20 Economic performance

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23 The indicators that proxy for the local economic performance do not show any robust pattern
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25 across the different groups of unemployed. The only exception is the strong and positive
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27 effect of the setting up of new local businesses on the likelihood of finding local employment
28
29 within one year for individuals with low earning capacities. One reason for this positive effect
30
31 may be that new firms tend to offer precarious jobs which are a more relevant type of
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33 employment for individuals on the fringe of the labour market. Apart from this noteworthy
34
35 effect, the effects of other local indicators of economic performance are negligible. We
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37 therefore conclude that local economic performance does not seem to be an important
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39 determinant of labour market outcomes for jobseekers in Germany, one explanation of which
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41 may be that due to central wage bargaining regional productivity levels as reflected in local
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43 GDP do not translate into behaviourally relevant interregional wage differences.
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51 TABLE 5

52 53 54 55 56 57 58 Social structure

59 Indicators of the local social structure mainly confirm the theoretical notion that the social
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3 context affects job search behaviour. As expected, a high share of long-term unemployment
4 significantly prolongs the duration of unemployment as the strong decrease in local exits is
5 only marginally offset by increasing exits to non-local and subsidised employment. A low
6 average schooling level comes with similar but less strong effects. We conclude that a
7 discouraging social context indeed prolongs unemployment, but that there is no evidence that
8 overall search effort is reduced. At least for some individuals, migration and exits to
9 subsidised employment offer an alternative to continued unemployment.
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25 Institutional organization

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27 According to our findings, the recent emphasis on job counselling that is, among other things,
28 reflected in the increasing number of job counsellors per unemployed jobseeker, is unlikely to
29 substantially contribute to a shortening of unemployment duration. This is because a higher
30 counsellor/customer ratio does not significantly accelerate exits from unemployment but
31 rather affects the labour market state after unemployment. In particular, individuals with
32 higher pre-unemployment earnings are more likely to migrate and to exit to subsidised
33 employment while there are less local exits in regions with a higher ratio of job counsellors to
34 unemployed jobseekers. This may suggest that additional human resources in job counselling
35 speed up exits to migration and subsidised employment at the cost of local placement without
36 resulting in a positive net effect on the duration of unemployment. Similarly, we also find that
37 an extensive local availability of labour market programs accelerates exits to subsidised
38 employment at the expense of exits to regular employment.¹² Among single people, we
39 mainly observe less local exits, while among married men with higher earning capacities,
40 subsidised employment rather substitutes for non-local employment. There therefore seems to
41 be a small regional locking-in effect of active labour market policies for married men, but not
42 for single people that complements the findings from Arntz (2005) concerning a regional
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3 locking-in effect for women in western Germany.
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10 Structural indicators

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12 The type of region as well as the driving time to the next large city captures major differences
13 in the availability of employment opportunities within a commuting range. As the type of
14 available jobs may differ depending on the type of region, this may explain the heterogeneous
15 result pattern across sub-samples. Rural regions, for example, tend to increase the local job
16 finding chances of individuals with higher earning capacities, but have the opposite effect on
17 low wage earners. This may be due to a lack of unskilled service jobs in rural areas.
18 Subsidised employment partially cushions these differences with increasing exit probabilities
19 in rural regions among low earning married men and decreasing exit probabilities for
20 individuals with higher pre-unemployment earnings. Moreover, apart from single people with
21 high earning capacities, all other groups show higher local exit probabilities in remotely
22 located regions. This may suggest that relatively immobile groups of unemployed lower their
23 reservation wage in regions with a lack of accessible jobs and thus experience faster exits to
24 local employment.
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43 The presence of a university reduces local job-finding among all groups and increases
44 migration probabilities among all but married men with low earning capacities. These results
45 are in line with the idea that students may exert additional congestion effects on the local
46 labour market as students seek a minor job during their studies and often start their job search
47 after graduation in the local area. Finally, somewhat unexpectedly, a higher level of day care
48 places per child weakly accelerates local exits among married men, but not among single
49 parents although single parents are somewhat less likely to leave a region with an extensive
50 child care infrastructure. Thus, there is no evidence that the availability of public
51 infrastructure strongly affects the duration of unemployment.
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3 Western/eastern Germany
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6 Despite strong economic differences between western and eastern Germany, conditional
7 unemployment durations are surprisingly similar. On the one hand, this suggests that our
8 regional labour market characteristics already capture major economic differences between
9 both parts of Germany. Since the effect of these regional characteristics are relatively limited,
10 however, the much higher level of unemployment in eastern Germany and the long average
11 duration of unemployment have to be explained by the huge inflow into unemployment just
12 after reunification and the fact that many of these displaced workers never found regular
13 employment rather than by unemployment experiences of those currently entering
14 unemployment. For those entering unemployment between 2000 and 2002, differences
15 between the conditional unemployment duration in eastern and western Germany are small
16 and in many cases even disappear as we reach the end of the observation period. With regard
17 to subsidised employment this is probably due to a reduction in the formerly extensive public
18 spending on subsidised employment in eastern Germany. The likelihood of exiting to local
19 regular employment, however, remains somewhat lower for most unemployed people in
20 eastern Germany than for unemployed people in western Germany. This is partially
21 compensated for by higher migration rates among the unemployed from eastern Germany
22 which can be explained by the strong pull factors from western Germany.
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50 **7 Conclusions and Implications**

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53 In the light of recent labour market reforms, this paper explores the extent to which the
54 unemployment compensation system, the local organization of job placement and regional
55 policies determine the duration of unemployment in Germany. For this purpose, we perform a
56 comprehensive analysis of unemployment duration using the latest generation of
57 administrative individual data and a broad set of regional aggregate data in the period 2000-
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3 2004. By distinguishing three exit states, local regular employment, non-local regular
4 employment and subsidised employment, we are able to disentangle the effects of individual,
5 regional and institutional characteristics on these destination states. This is highly relevant
6 because such characteristics often have diverging effects on the three destination states. As a
7 consequence, previous estimates may have been biased if non-local and subsidised
8 employment has not been separated from exits to local employment. Unfortunately, our data
9 do not allow to distinguishing further between destination states such as leaving the labour
10 force or retirement. Including such destination states in future research thus is an important
11 extension of our competing risks analysis in order to further reduce remaining biases.
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24 Based on competing-risk Cox proportional hazard estimates, we generally obtain that
25 individual characteristics and in particular an individual's work history strongly affect the
26 duration of unemployment and the chosen destination state while the effect of regional factors
27 such as the unemployment rate is often rather small. This is consistent with German and
28 international evidence concerning the impact of regional labour market conditions on the
29 duration of unemployment until exiting to a local or non-local job (Kettunen, 2002; Yankow,
30 2002; Arntz, 2005). Regional disparities thus appear to be much less important than usually
31 considered by the German public and by German policy makers. Even between western and
32 eastern Germany, the conditional unemployment duration is very similar. Therefore, our
33 results suggest that regional policies may only be a supplementary means of improving labour
34 market outcomes of unemployed individuals.
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50 With regard to public counselling, there is no evidence that increasing counselling efforts
51 have much of a shortening effect on the duration of unemployment. These results may
52 indicate that recent restructuring efforts of public employment services are unlikely to bring
53 about a substantial reduction in unemployment. Nonetheless, restructuring efforts may
54 contribute to the increasing efficiency of public spending, an aspect that we do not analyse in
55 our work. For this reason and given our econometric approach it is difficult to compare our
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3 results directly with international evaluation studies which are available for several countries,
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5 e.g. the UK (Blundell et al., 2004) and the Netherlands (van den Berg and van den Klaauw,
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7 2006).

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10 Entering subsidised employment in the context of an active labour market program (ALMP)
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12 often tends to cushion negative local labour market conditions and thus somewhat counteracts
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14 a prolonged unemployment duration. Moreover, previous ALMP participants are likely to end
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16 up in ALMP again, a result which likely reflects a selection of immobile individuals into what
17
18 we might call ALMP-careers. Our analysis thus does not identify the causal effect of
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20 participating in ALMP on labour market outcomes which may be positive depending on the
21
22 type of program as has been suggested by Lindgren and Westerlund (2003). Our analysis
23
24 suggests, however, that an extensive local supply of ALMP reduces migration rates for
25
26 married men. We thus find evidence for a minor regional locking-in-effect that complements
27
28 the finding from Arntz (2005) concerning a similar effect for female jobseekers in western
29
30 Germany. An evaluation of ALMP with regard to its effect on unemployment durations
31
32 should thus also take account of such negative labour market outcomes that prolong
33
34 unemployment among jobseekers.

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36 We obtain a number of indications that the unemployment compensation and welfare system
37
38 strongly affects individual labour market outcomes:

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40 • Individuals with low pre-unemployment earnings and thus high income replacement
41
42 rates have the lowest exit hazards to both local and non-local regular employment.
- 43
44 • Exits to regular employment decrease with increasing entitlement length to
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46 unemployment benefits, especially among previously well-earning unemployed for
47
48 whom the threat of entitlement loss after exhausting unemployment benefits is largest.
- 49
50 • Older individuals with extremely long UB entitlements basically never leave for
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52 regular employment as they use UB as a means of early retirement.

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54 We therefore conclude that the reduction of UB entitlements and income replacement rates
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3 are likely to drastically shorten unemployment for certain groups. A strong effect of the
4 unemployment compensation system on the duration of unemployment has already been
5 observed in the past. Christensen (2005) shows that social benefit recipients with high
6 reservation wages are unlikely to leave unemployment. Similarly, Fitzenberger and Wilke
7 (2007) find that unemployed people with lower former wages are much less likely to leave
8 unemployment. Müller et al. (2007) evaluate a reform of the unemployment benefit system in
9 1997 which reduced entitlement length for unemployment benefits for older unemployed.
10 They show that this reform was successful in drastically reducing inflow to unemployment
11 and the duration of unemployment in the relevant group of unemployed. On the other hand,
12 less generous unemployment compensation may result in a reduction of job stability and post-
13 unemployment wages if a generous transfer receipt allows for identifying better job matches
14 by enabling longer search periods. Recent findings from Fitzenberger and Wilke (2004) and
15 (2007) do not find empirical evidence for such impacts of the German unemployment
16 benefits. Still, additional future research concerning the impact of regional and institutional
17 factors on the quality of job matches is highly relevant as a complement to this paper.
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Appendix A - Summary Statistics by sub-samples

	Singles		Married Men	
	Low Wage	Higher Wage	Low Wage	Higher Wage
Individual characteristics				
Female	41.7	26.0	n/a	
Age <26	41.4	21.2	4.4	2.5
Age 26-35	27.4	39.1	23.5	24.6
Age 46-56	10.5	12.0	30.6	28.5
Age >56	1.8	2.0	8.0	7.0
Unskilled	52.2	30.5	45.9	32.4
University degree	1.6	7.2	1.5	5.6
Foreign born	6.2	5.3	16.9	12.4
Female foreign born	2.2	1.1	n/a	
Children	21.2	18.0	63.1	66.7
Children & female	11.6	4.8		
Minor job	8.6	1.0	8.8	1.3
Spell starts in winter	32.0	39.1	37.6	45.2
Previous employment history				
Part time	20.3	4.6	n/a	
Lower / upper wage ^z	39.5	22.9	26.6	27.8
Lower/upper wage & female	18.6	6.7	n/a	

Construction	4.3	2.8	6.5	4.3
Trade and Food Ind.	14.7	26.2	25.8	35.7
Services/Public sector	44.2	33.8	38.2	29.0
Recall	12.2	20.2	19.9	28.3
Unemployment	61.9	64.9	74.9	66.8
Large firm	7.0	10.3	5.1	7.0
BE 6-12 mths	43.4	49.2	31.5	39.7
BE 12-18 mths	1.1	2.0	3.4	4.5
BE 18-24 mths	0.9	2.2	3.3	5.7
BE >24 mths	0.9	2.2	3.7	7.0
ALMP measure	9.4	1.5	12.5	1.3
Commuter	20.8	27.7	20.8	29.2
Number of unemployment spells	74,724	28,168	28,018	23,620

Note: All covariates are dummy variables. BE=Benefit entitlements; ALMP= Active labour market programs; Minor Job = Job < 15 hrs/week while unemployed at the beginning of unemployment

²: Refers to individuals with daily pre-unemployment wages in the lowest (highest) wage quartile for the low (higher) wage sample.

Table 1: Composition of exits to subsidised employment, IEBS, 2000-2002

Subsidy for ...	Number	%
... employment in secondary market	10,391	31.0
... regular employment	9,643	28.7
... self-employment	9,001	26.8
... training measure	2,146	6.4
... other programs ^a	2,379	7.1
Total subsidised employment	33,560	100.0

^a This category refers to a mix of programs that can be autonomously designed by each employment agency. As an example, these measures include subsidies for entering vocational training or a premium for extending working hours of an existing job (BA, 2002).

Table 2: Unemployment duration and exit types by gender, marital status and pre-unemployment wages, IEBS, 2000-2002

	Low wage ^a		Higher wage ^a	
	Men	Women	Men	Women
Singles				
% exit to				
local employment	48.1 (70.3)	51.3 (74.0)	57.9 (74.5)	53.5 (70.5)
non-local employment	6.4 (9.4)	5.6 (8.1)	9.1 (11.7)	10.3 (13.6)
subsidised employment	13.9 (20.3)	12.4 (17.9)	10.7 (13.8)	12.1 (15.9)
all exits	68.4 (100.0)	69.3 (100.0)	77.7 (100.0)	75.9 (100.0)
Unemployment spells				
Median duration (days)	138	146	107	123
Number of spells	43,528	31,206	20,849	7,319
Married				
% exit to				
local employment	47.5 (64.9)	44.6 (60.9)	58.7 (73.3)	45.9 (72.6)
non-local employment	5.8 (7.9)	2.8 (3.4)	8.0 (10.0)	4.6 (7.3)
subsidised employment	19.9 (27.2)	14.7 (20.1)	13.4 (16.7)	12.7 (20.1)
all exits	73.2 (100.0)	62.1 (100.0)	80.1 (100.0)	63.2 (100.0)
Unemployment spells				
Median duration (days)	176	238	116	194
Number of spells	28,018	31,088	23,620	5,483

^a Low wages refers to individuals with pre-unemployment daily gross wages of less than 60 euros, while higher wages denote pre-unemployment earnings above this threshold.

Table 3: Description and summary statistics of regional covariates, 2000-2003

No.	Group	Indicator	Source ^a	Mean	SD
I	Demand / supply	Unemployment rate	A	10.7	5.0
		Change of unemployment rate (pp)	A	0.04	0.71
II	Economic performance	GDP per employee (euros)	B	49818.5	8891.4
		Change of GDP per employee 1995-2000 (%)	B	2.4	1.6
		New businesses set up per 1,000 residents	C	13.8	2.7
III	Social structure	Share of long term U ^b (%)	A	33.7	6.7
		Avg. years of schooling	B	14.6	0.13
IV	Institutional organization	Placement counsellor/100 unemployed	A	0.24	0.05
		Share of unemployed in ALMP ^b with focus on			
		- Regular labour market - ALMP _R (%)	A	17.6	3.9
		- Secondary labour market - ALMP _S (%)	A	5.9	5.8
V	Structural indicators	Driving time to next large city (min.)	B	104.8	53.8
		Child care places per child	B	0.62	0.12

University present	B	0.36	0.48
Type of the region (reference: sub-urban):			
- rural	B	0.29	0.45
- urban	B	0.39	0.49
Flow of U per 1,000 employees	A	32.2	11.1

^a A: FEA (Bundesagentur für Arbeit); B: FSO (Statistisches Bundesamt); C: Institut für Mittelstandsforschung, Bonn.

^b ALMP=Active labour market programs; U=Unemployment.

Table 4: Marginal effects in percentage points on the conditional cumulative probability of exiting to local, subsidised or non-local employment, Singles

Variable	Low wage			Higher wage		
	local	subsidised	non-local	local	subsidised	non-local
Individual characteristics						
Female	7.6***	-0.8*	0.6*	2.9**	-0.5	2.1***
Age <26	16.7***	-0.9***	1.2***	11.7***	-2.2***	0.0
Age 26-35	3.7***	0.4*	1.1***	4.2***	0.7*	1.0***
Age 46-56	-9.6***	1.5***	-0.9***	-4.5***	0.2	-0.2
Age >56	-22.2***	-0.8	-1.7***	-12.2***	-5.4***	-0.1
Unskilled	-3.0***	0.5***	0.2	-2.8***	0.0	1.4***
University degree	-2.6	3.0***	3.6***	-9.8***	3.2***	1.6***
Foreign born	-1.4	-1.0**	0.6	-3.8***	-1.3	-1.3***
Female foreign born	-2.1	-1.9**	-1.4***	-1.1	1.5	-1.4
Children	-2.1***	0.7***	-0.1	-1.8*	0.4	0.4
Children & female	-4.7***	-0.2	-2.2***	-1.7	1.1	-2.6***
Minor job	9.2***	0.0	-0.4*	3.9	1.5	-3.4***
Spell starts in winter	4.7***	0.8***	0.2	7.1***	-1.0***	0.2
Previous employment history						
Part time	-5.3***	-0.9***	0.0	5.0***	-1.2*	2.4***
Lower/upper wage ^z	-2.7***	1.1***	-0.5***	-5.2***	1.6***	4.5***
Lower/upper wage ^z & female	0.8	-0.2	0.6**	2.2	0.7	-0.8**
Construction	8.5***	-1.2***	-0.8***	10.3***	-1.9*	-2.2***
Trade and Food Ind.	7.7***	-0.6**	-0.1	3.8***	0.8	-2.0***

Services/Public sector	3.8***	-0.5***	0.6***	-3.4***	1.7***	-0.5**
Previously recalled	15.7***	-1.7***	-0.4**	14.8***	-4.6***	0.4
Previously unemployed	1.3***	1.0***	-0.4***	1.9***	-0.4	0.0
Large firm	-2.7***	-1.2***	0.2	-5.9***	-1.6***	0.7**
BE 6-12 mths	3.7***	0.3	0.1	-2.7***	2.2***	-1.2***
BE 12-18 mths	-1.0	0.5	0.2	-9.7***	2.5**	-1.5***
BE 18-24 mths	-3.7	0.9	-1.1*	-15.1***	4.0***	-2.9***
BE \$>24\$ mths	-21.0***	-1.7**	-1.9***	-28.2***	1.6	-4.7***
ALMP measure	-31.1***	7.2***	-2.0***	-25.2***	12.7***	-1.8***
Commuter	-4.6***	0.3*	5.6***	-11.8***	0.7*	8.0***
Regional characteristics						
Unemployment rate (UR)	-2.3**	0.6	0.0	-0.5	-1.8**	1.0
Change in UR 1995-2000	-1.5***	0.5***	0.2	-3.3***	0.7**	0.7***
GDP per head	-0.5	-0.2	0.2	-0.7	0.3	0.4**
Change of GDP 1995-2000	0.7***	0.1	-0.2***	0.3	-0.5***	-0.2**
Rate of business set ups	1.1***	-0.2*	0.0	-0.2	0.2	0.3*
Share of long-term U	-1.9***	-0.4**	0.2	-3.2***	0.7**	0.9***
Avg. yrs of schooling	1.8***	-0.2	-0.5***	0.6	-0.3	-0.4**
Placement counsellor per U	0.2	-0.4**	0.4***	-1.2**	-0.2	1.6***
Share of U in ALMP_R	0.1	0.5***	-0.1	-0.1	0.6*	-0.1
Share of U in ALMP_S	-1.4***	0.9***	0.1	-1.5**	1.1***	0.0
Driving time to higher level city	0.8***	-0.2	-0.2*	-0.2	0.1	0.2
Child care places & child	0.3	-0.3*	-0.4***	0.4	0.4	-0.1
University present	-2.6***	0.1	0.4***	-1.8***	-0.3	1.0***
Seasonal unemployment	-0.2	0.2	0.1	-2.5*	1.8*	0.0

1							
2							
3	Rural region	-1.8***	0.0	0.2	1.6*	-1.4***	0.2
4							
5	Urban region	-0.1	1.0***	-0.9***	1.6**	-0.6	-0.4
6							
7							
8	West & 2000	8.6***	0.5	1.4***	9.9***	-1.1*	1.0**
9							
10	West & 2000 & female	0.4	0.0	0.0	1.3	-0.3	-1.0**
11							
12	West & 2001	2.5***	1.2**	0.3	0.1	0.5	0.8
13							
14							
15	West & 2001 & female	2.0*	0.2	0.5	1.7	-0.8	0.0
16							
17	East & 2000	-3.8***	2.0**	3.7***	-7.8***	2.3	11.3***
18							
19	East & 2000 & female	-6.5***	0.0	-0.7**	1.6	-2.1*	-2.7***
20							
21							
22	East & 2001	-2.0	0.5	3.6***	-5.4***	1.7	6.8***
23							
24	East & 2001 & female	-6.0***	0.3	-1.0***	-1.8	-1.3	-1.5**
25							
26							
27	East & 2002	0.1	0.0	2.6***	-2.3	1.5	3.1***
28							
29	East & 2002 & female	-6.6***	0.0	-1.1***	-0.2	0.5	-1.5***
30							
31							
32							

Note: Low wages refers to individuals with pre-unemployment daily gross wages of less than 60 euros. BE=Benefit entitlements; ALMP=Active labour market program with focus on regular (R) or secondary (S) employment; U=Unemployment

z: Refers to individuals with daily pre-unemployment wages in the lowest (highest) wage quartile for the low (higher) wage sample.

Significance levels: *: 10% **:5% ***:1%

Table 5: Marginal effects in percentage points on the conditional cumulative probability of exiting to local, subsidised or non-local employment, Married Men

Variable	Low wage			Higher wage		
	local	subsidised	non-local	local	subsidised	non-local
Individual characteristics						
Age <26	10.2***	0.0	0.8*	1.9	0.1	-0.2
Age 26-35	2.1***	0.5	0.5**	2.3***	-0.3	-0.1
Age 46-56	-8.3***	2.8***	-0.8***	-5.7***	0.0	0.0
Age >56	-22.1***	0.5	-2.2***	-20.6***	-5.6***	-1.2***
Unskilled	-3.4***	1.1***	0.0	-1.5**	-1.5***	0.1
University degree	-7.0***	3.6***	0.1	-10.0***	2.5***	0.4
Foreign born	-2.0***	-1.5***	0.3	-5.7***	-2.8***	0.8**
Children	-0.5	0.2	-0.1	-0.6	0.0	-0.2
Minor job	13.9***	-0.4	-0.6	9.0***	1.0	-2.9***
Spell starts in winter	10.0***	0.4	0.2	11.3***	-2.7***	0.1
Previous employment history						
Part time	-4.6***	-0.9**	-0.4		n/a	
Lower/upper wage ^z	-8.2***	0.8**	-0.5***	-5.7***	2.8***	2.7***
Construction	16.6***	-1.8***	-0.3	16.0***	-3.4***	-2.8***
Trade and Food Ind.	12.0***	-1.0**	0.2	6.5***	-0.2	-1.0***
Services/Public sector	6.9***	-0.6*	0.8***	-0.4	1.9***	-0.1
Previously recalled	12.3***	-2.1***	-0.3	16.1***	-5.5***	-0.5*
Previously unemployed	1.8**	1.2***	0.1	1.6*	-0.4	0.3
Large firm	-7.1***	0.5	-0.4	-4.5***	-1.9***	-0.2

1							
2							
3	BE 6-12 mths	1.2*	0.7**	-0.3*	-1.3*	1.7***	-0.6***
4							
5	BE 12-18 mths	1.2	-0.5	-0.2	-6.9***	3.1***	-1.3***
6							
7	BE 18-24 mths	-1.2	1.1	-0.3	-9.0***	2.3***	-1.4***
8							
9	BE \$>24\$ mths	-8.9***	-3.1***	-1.4***	-27.3***	0.2	-3.1***
10							
11	ALMP measure	-28.4***	7.2***	-1.8***	-29.2***	15.2***	-1.8***
12							
13	Commuter	-3.9***	-0.4	5.2***	-13.4***	0.4	8.9***
14							
15	Regional characteristics						
16							
17							
18	Unemployment rate (UR)	0.1	-1.3**	0.2	-4.5**	1.0	-0.1
19							
20	Change in UR 1995-2000	-1.3***	0.1	-0.1	-4.3***	0.8**	0.1
21							
22	GDP per head	0.5	0.0	-0.2	-0.6	-0.3	0.2
23							
24	Change of GDP 1995-2000	0.5	-0.1	0.1	0.4	0.4	-0.2
25							
26	Rate of business set ups	1.3 ***	-0.2	0.0	-0.3	0.2	-0.1
27							
28	Share of long-term U	-3.7***	0.5*	-0.2	-3.0***	0.3	0.7***
29							
30	Avg. yrs of schooling	-1.1**	-0.6**	-0.4***	0.9	-0.1	-0.2
31							
32	Placement counsellor per U	-1.8***	0.2	0.3*	-2.6***	0.6*	1.4 ***
33							
34	Share of U in ALMP_R	0.5	0.1	-0.3***	0.3	0.3	-0.5***
35							
36	Share of U in ALMP_S	0.0	0.4*	-0.1	0.6	0.8**	-0.6***
37							
38	Driving time to higher level city	1.1***	0.0	-0.2*	0.6	-0.2	-0.2**
39							
40	Child care places & child	0.8*	-0.9***	0.2*	0.9	-0.4	0.0
41							
42	University present	-2.3***	0.2	0.4*	-2.2***	-0.5	0.0
43							
44	Saisonal unemployment	-3.2***	3.1***	0.0	-2.5	0.4	1.5 **
45							
46	Rural region	-0.4	0.2	0.4	2.9***	-1.3**	-0.4*
47							
48	Urban region	1.4	0.1	-0.4**	-0.2	-0.4	-0.6***
49							
50	West & 2000	13.5***	-1.1*	1.1***	6.9***	-1.6***	0.9**
51							
52	West & 2001	4.4***	-1.3**	0.3	-1.9*	-0.3	0.4
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54							
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East & 2000	-3.3	6.3***	1.5*	-5.9**	-0.8	8.6***
East & 2001	-0.8	3.4**	1.4*	-4.9**	-0.1	7.3***
East & 2002	2.8	3.2***	1.5**	-2.9	1.0	4.1***

Note: Low wages refers to individuals with pre-unemployment daily gross wages of less than 60 euros. BE=Benefit entitlements; ALMP=Active labour market program with focus on regular (R) or secondary (S) employment;

U=Unemployment

^z: Refers to individuals with daily pre-unemployment wages in the lowest (highest) wage quartile for the low (higher) wage sample.

Significance levels : *: 10% **: 5% ***: 1%

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¹ The ALG II provides almost the same level of benefits as former social benefits, while it is below the UA for individuals with high pre-unemployment earnings. The unemployment insurance based UB was basically left untouched.

² Alternatively, one may assume some sort of sequential search strategy (Salop, 1973; McCall and McCall, 1987). Accordingly, an unemployed job seeker searches sequentially according to the expected returns from searching a particular market segment.

³ Regular employment can be further differentiated by the number of hours worked or the type of job contract (temporary versus unlimited). However, the data we use does not contain the relevant information such that we pool all types of regular employment.

⁴ The use of the SHStat was confined to the research project *Evaluation of the experimentation clause § 6c SGB II* which was funded by the German Ministry of Labour and Social Affairs. No scientific use file exists for this unique data set such that apart from the comparison of both data sets, no further analysis could be conducted. For more details on the comparison of the data sets see Arntz et al. (2006).

⁵ Further differentiating the program types is problematic as we often found a high degree of correlation between similar program types.

⁶ The assumption of proportional hazard rates can be incorrect as Fitzenberger and Wilke (2006 and 2007) have shown with similar data. A more flexible approach which allows the

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effect of the regressors on the conditional distribution of unemployment duration to vary over the quantiles and thus even crossing of the conditional hazard rates, may provide more detailed insights, but is left to future research.

⁷ This corresponds to the sample mean value of the continuous regional variables and to the reference category of the regional dummy variables.

⁸ Since $\Pi_j(t|x)$ has the properties of a distribution function, one may define the conditional marginal quantile effect at quantile q as $\partial \hat{t}_j(q|x) / \partial x_k = \partial \Pi_j^{-1}(q|x) / \partial x_k$ as an alternative marginal effect. Since a certain share of our unemployed population has zero probability for an exit to regular employment, we are faced with the mover - stayer problem (Abbring, 2002; Addison and Portugal 2003) which results in the defectiveness of the unemployment duration distribution. As a result, $\Pi_j^{-1}(q|x)$ does not exist for the upper quantiles so that we decided to report the marginal effect on the cumulative probability $\Pi_j(365|x)$ only. Moreover, our estimation results may be biased due to the defectiveness of the data, but as the degree of defectiveness is limited in our data, this problem may be of minor importance.

⁹ When the effect is similar for all destinations we simply use the notion *unemployment* or *unemployment duration*.

¹⁰ We also made estimations in which we distinguished between several types of employment subsidies offered by the employment agencies. Surprisingly, the results patterns are similar even for subsidized artificial jobs and temporary subsidies of regular employment which have a very purpose. For this we decided to report the pooled results only.

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¹¹ Minor employment is an employment on a salary of less than 400 euros per month and with exemption from social security contributions.

¹² One might retort that the counsellor/customer ratio is endogenous because the number of customers should be higher in regions with long average unemployment duration. However, we use lagged value, i.e. the average counsellor/customer ratio during the 12 month preceding the start of the unemployment spell, which should preclude a direct simultaneity issue. Moreover, we use a number of indicators that capture regional labour market conditions such that the remaining variation in the customer/counsellor ratio is likely to mainly reflect the exogenous variation due to the politically ratio during the study period.motivated improvement of the customer/counsellor.