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**Article — Published Version**

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Review of Regional Research

**Provided in Cooperation with:**

Springer Nature

*Suggested Citation:* Rickmeier, Katrin (2025) : Mobility after job loss in Germany: the effects of regional economic opportunities and economic worries on mobility intentions and behaviour, Review of Regional Research, ISSN 1613-9836, Springer, Berlin, Heidelberg, Vol. 45, Iss. 2, pp. 271-297,  
<https://doi.org/10.1007/s10037-025-00232-4>

This Version is available at:

<https://hdl.handle.net/10419/323280>

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# Mobility after job loss in Germany: the effects of regional economic opportunities and economic worries on mobility intentions and behaviour

Katrin Rickmeier<sup>1</sup> 

Accepted: 5 February 2025 / Published online: 3 March 2025  
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**Abstract** This study examines the impact of local economic opportunity structures on mobility intentions and mobility behaviour subsequent to involuntary job loss in Germany. Previous research has demonstrated that job loss leads to an increased propensity for regional mobility; however, the role of the regional economy as a push factor and its influence on the decision to relocate remains unclear. The focus of the study at hand is on the opportunities provided by locational factors and an examination of the broader context in which regional mobility after job loss occurs. Logistic regression models are set up using data from the German Socio-Economic Panel study, which is complemented by a unique combination of spatial structure indicators. The results demonstrate that job loss has no effect on the mobility intentions of displaced workers. However, it increases the propensity to relocate within Germany. Furthermore, a favourable economic situation in the home region makes mobility intentions of displaced workers less likely. This is indicated by a negative effect of the local GDP and a positive effect of the occupation-specific local unemployment rate. A mediation analysis does not confirm a hypothesised omitted variable bias of economic worries in the effect of regional economic characteristics on the mobility intentions of displaced workers.

**Keywords** Internal migration · Job loss · Regional opportunity structures · Unemployment

**JEL codes** J61 · J64 · R12 · R23

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## 1 Introduction

Unemployed workers show an increased likelihood of regional mobility, especially shortly after a job loss (Fackler and Rippe 2017; Gregg et al. 2004; Huttunen et al. 2018; Maczulskij et al. 2018). Several studies have shown that displaced workers benefit from regional mobility in terms of better chances of re-employment and income gains (e.g., Boman 2011; Goetz 2014; Gregg et al. 2004; Hane-Weijman 2021; Maczulskij et al. 2018), which indicates that relocation is in fact a rewarding exit strategy for unemployed individuals. However, the research on the relationship between residence and economic fortunes is plagued by an inability to separate causality. While residence is likely to change when there is a change in labour market outcomes, like losing a job, residence determines economic opportunity and hence changes in residence affect changes in economic opportunity (Gregg et al. 2004).

Against this background, a variety of studies discuss the role of regional characteristics, especially economic conditions, in explaining the mobility behaviour of unemployed. Several studies document the effect of contextual factors in individual regional mobility of workers after the experience of involuntary job loss (Fackler and Rippe 2017; Gregg et al. 2004; Huttunen et al. 2018; Maczulskij et al. 2018). However, it can be argued that regional opportunity structures play an important role in earlier stages of mobility, especially in the formation of mobility intentions, which has not been studied for unemployed workers so far.

Understanding these intentions is crucial as they are often shaped by the immediate economic pressure that follows job loss. Naturally, job loss affects the economic situation of the respective worker strongly. On average, displaced workers face a long period of unemployment and they experience income losses (Lehmann et al. 2011; Schwerdt et al. 2010), which last longer than the effects of unemployment in general (Fallick et al. 2021). Job loss can pose a serious threat to the economic stability of the respective worker's household (Gush et al. 2015) and evokes economic worries (Hacker et al. 2013). When workers lose their jobs, the urgency to find new employment is heightened by the financial strain, making the availability of regional opportunities a key determinant of whether they choose to stay or relocate. The local economy not only affects the chances of re-employment for workers, but it might also influence their subjective evaluation of their own economic stability in their home region, which in turn impacts their mobility decisions.

The study at hand aims to contribute to the understanding of the interplay between regional economic opportunity structures, economic worries and the mobility of displaced workers. It investigates workers who recently experienced involuntary job loss—a group, which is particularly vulnerable and exposed to local economic opportunities. Following a multi-stage approach to mobility, the study focuses on the role of regional and regional-occupational economic characteristics in:

1. the formation of individual mobility intentions and
2. individual mobility behaviour of workers who experienced involuntary job loss.

For a deeper understanding of the causal mechanisms in place, the study at hand additionally:

3. explores the mediating effect of economic worries in (1) and (2).

This approach contributes to the existing research on the determinants of mobility of displaced workers in two ways. Firstly, by differentiating mobility intentions and behaviour, this study acknowledges the possibility of a mismatch between the two and aims to shed light on the processes that precede actual mobility. Secondly, investigating economic worries as a mediating variable provides a more comprehensive understanding of how financial uncertainties intersect with the relocation decision-making process of displaced workers.

The data for the empirical models is provided by the German Socio-Economic Panel (wave 36), where regional predictors are incorporated via the linkage of SOEP-Geocodes with regional indicators from the Indicators and Maps for Spatial and Urban Development (INKAR) database and the German Federal Employment Agency. This unique combination of data sources enables rich statistical analyses for the purposes of this study.

The paper is organized as follows. Sect. 2 discusses related theory and prior research on migration, especially in a regional context and of unemployed and displaced workers in particular. In Sect. 3, the data sources of this study are described briefly, followed by a description of the measures used and an outline of the analytical strategy. The results of the statistical analyses are presented in Sect. 4. Section 5 is closing the paper with a summary and discussion of the findings.

## 2 Theory and prior research

In the long tradition of migration research, this study connects to the line of micro-level research, which is based on the notion of individual actors who make rational decisions to maximise their benefits. In neoclassic microeconomics, migration is understood as an investment in human capital where returns are expected in the labour market in the form of future income increases (Kalter 1997; Wagner 1989). In principle, the expected net gain from migration is calculated from the probability of employment and the level of income at the destination minus the probability of employment and the level of income at the place of origin (the opportunity costs, i.e. the income foregone by choosing migration), minus the other costs of migration (Massey et al. 1993). If this net profit is positive, migration is the right choice for the rational agent. However, in a German context, where residential mobility is lower than in many other OECD countries (Causa and Pichelmann 2020), it has to be kept in mind that immobility is a strong and persistent behavioural strategy for the large majority of people. This can be explained by the accumulation of location-specific insider advantages, which would be lost in the case of migration and thus decrease the individual utility of moving (Fischer et al. 2000). This individualistic view of migration can be supplemented by macro-level factors. Lee (1966) combines factors in the region of origin (push), factors in the destination region (pull), intervening

obstacles and individual factors in his ‘theory of migration’. It is not the structural factors as such that are relevant for migration, but the perception of these (Kalter 1997). A comparison of the factors at the place of origin and the destination leads to a migration decision.

According to Kalter (1997), mobility is a three-step process consisting of the emergence of the idea of migration, the development of migration plans and the actual relocation. The presence of the idea of migration only means that a possible change of residence is in the perceived action set and is accordingly subjected to a more extensive evaluation process. The development of a migration plan however implies that the action alternative ‘migration’—after a correspondingly detailed calculation—represents the preferred option, i.e. is definitely preferred over the status quo. Although the existence of a migration plan is a very good indicator of the actual realisation of a migration, it is still only a limited indicator (Kalter 1997). This multi-stage mobility theory emphasizes the role of regional characteristics particularly within the initial stages of the decision-making process, namely those concerning the mobility dispositions or intentions. From this perspective, regional opportunities and the satisfaction with them determine the overall utility that actors assign to their current location (Coulter et al. 2011). Perceiving opportunity differentials between the current place of residence and other places for the achievement of personal goals enhances the likelihood of considering a move (Kley 2011). However, the actual mobility decision is additionally dependent on intervening factors and economic restrictions (Kan 1999; Lu 1999). Financial, social and psychological resources have been shown to be important determinants of realizing a move (Kley 2011).

By focussing attention on the broader context in which regional mobility takes place after the loss of a job, the characteristics of the area of residence can be understood as the framework conditions and prerequisites for certain actions, thereby constituting opportunity structures. This aligns with the concept of the ‘geography of opportunity’, a term originally coined by Galster and Killen (1995), which emphasises that opportunities are distributed spatially and not always in a balanced way. The concept has more recently been adopted and further developed, for example, in the context of rural areas (Bernard et al. 2022). A study by Fackler and Rippe (2017) found that workers who lose their job while living in urban areas are 28% less likely to relocate than those living in rural areas. This effect of urbanity may be related to local amenities or better employment opportunities in urban areas.

The concept of regional resilience to displacement is particularly relevant in this context. According to Nyström (2018), resilient regions are characterised by the ability to re-utilize the competencies of displaced workers in other firms or industrial sectors. She identified five areas of determinants of regional resilience to displacement: the characteristics of regional closures, the characteristics of employees in the region, the characteristics of the regional industry, the characteristics of the regional economy, and the region’s attractiveness. These factors collectively determine a region’s ability to re-employ displaced workers, thereby influencing the workers’ decision to stay or relocate. Andersson et al. (2020) found that there are significant spatial disparities in the involvement of displaced workers in regional economic change following establishment closures. Their findings indicate that metropolitan

regions serve as hubs of creative change, whereas smaller and peripheral regions tend to experience less creative outcomes of economic transformation.

Relocating to an area which performs better for example in terms of poverty, can improve the opportunities in life (Chetty and Hendren 2018). In recent years, a considerable amount of research has documented and analysed growing regional inequalities in Europe and North America (e.g., Bathelt et al. 2024; Iammarino et al. 2019; Kemeny and Storper 2020). Especially regional economic inequalities have become a threat to economic progress, social cohesion and political stability in Europe, where poor development prospects in so-called left-behind places fuel discontent and a belief that these places have no future (Dijkstra et al. 2020; Rodríguez-Pose 2018). Poor local economic conditions foster outmigration and are most relevant for the subset of people most seriously affected by them, which are unemployed individuals (DaVanzo 1978). Unemployed and other persons looking for work are more responsive to economic determinants of migration. Recent arrivals to an area who cannot find acceptable jobs are especially prone to migrate again and with longer duration of unemployment, displaced workers are increasingly pressured to take on jobs in a different region (Eriksson et al. 2018). This results in a higher likelihood of internal migration for unemployed persons and others looking for jobs. In these cases, moving can be seen as a means to escape economic disadvantages. Nevertheless, previous research could also document that workers leaving closing establishments are less likely to leave their home region (Andersson et al. 2020).

Some studies of migration do consider contextual characteristics while modelling mobility intentions. The willingness to move is higher for individuals living in regions with poor job prospects and lower for those living in regions with higher local average wages (Drinkwater and Ingram 2009). Unemployed workers in particular show lower willingness to move when living in regions with more local job vacancies (Ahn et al. 1999). Considering the exogenous nature of the shock of an involuntary job loss and the particular vulnerability of the group of workers experiencing it, it is of great interest to investigate the willingness to move and the actual mobility behaviour of these individuals.

## 2.1 Relevant aspects of the regional economic opportunity structure

The variation of the mobility dispositions between German regions can be explained to a sizable degree by different economic conditions (Kern 2014). While the overall economic situation in a region affects the economic opportunities of individuals, it is especially occupation- and industry-specific economic dynamics which are relevant for the individual re-employment chances and the evaluation of those. Three key indicators which reflect the regional economic opportunity structure are briefly discussed in the following.

### 2.1.1 GDP

As a measure of the productivity of a region's economy, the Gross Domestic Product reflects the strength of the local economy. A higher GDP typically signals more robust business activity, greater investment, and increased demand for labour, creating

better job prospects. For displaced workers, high concentrations of the pre-displacement industry reduce the time to re-employment and thereby in turn reduce their earnings losses (Neffke et al. 2018). Greater chances for re-employment also enhance the financial security of the individual worker. In contrast, regions with lower GDP may experience economic stagnation, prompting workers to consider relocating to areas with stronger economic performance and growth potential. Kern (2014) found lower mobility intentions in regions with an improvement of the regional economic situation in terms of an increase of the GDP.

### 2.1.2 Unemployment rate

High unemployment generally increases the interregional mobility of the working-age population and especially outmigration. This also holds for unemployed workers, who are more likely to move away from areas with higher unemployment rates (Langella and Manning 2022). While workers, who experience job loss on average relocate to regions with lower unemployment rates than their original place of living (Fackler and Rippe 2017), some of them do stay in regions with high unemployment rates (Maczulskij et al. 2018). For the case of Germany, Fackler and Rippe (2017) found that the county unemployment rate does not significantly affect moving propensities of workers who experienced involuntary job loss. A higher unemployment rate can even hinder regional mobility of unemployed workers. Opposing the neoclassic theory, Windzio (2004) calls this phenomenon the unemployment trap. He explains this by the unfavourable conditions that come along with high unemployment and from which especially the unemployed themselves suffer. They then tend to immobility.

### 2.1.3 Open positions

A direct measure of regional economic opportunities in terms of re-employment chances is the number of local job vacancies. The number of job vacancies in a region, both total and occupation-specific, significantly influences economic opportunities by depicting employment prospects and income potential for workers. For workers who have experienced job loss, higher vacancy rates in their field can ease re-employment, improving their financial stability and reducing stress. An unfavourable labour demand situation compared to other regions shifts job search efforts towards other regions and increases the likelihood of mobility among unemployed (Arntz 2005). Low vacancy rates, especially in the individual occupation, may push workers to consider relocation to areas with better job availability. In regions with a higher availability of vacancies, workers are less likely to relocate, while areas with fewer opportunities may see outmigration as people seek jobs elsewhere. For Germany, Kley (2013) found that perceived career opportunities trigger migration decision-making, but not migration behaviour. These findings support the view that perceived opportunity differentials trigger mobility differently in the different stages of the mobility process.

While regions can be conceptualised as opportunity structures for their inhabitants, the availability of rich opportunities is a necessary, but not a sufficient condition

to motivate newly unemployed workers to relocate. Previous research has identified a variety of regional characteristics that play a role in relocation decisions. Economic factors are likely to be the most relevant for newly unemployed individuals in search of economic stability. Displaced workers hold industry- and occupation-specific expertise and thus, their re-employment can be expected to be affected more by the state of the industry- and occupation-specific local economy than the state of the general local economy. Considering mobility as a process, the literature suggests that regional characteristics have the most notable impact on mobility in the earlier stages, when individuals first consider the possibility of relocation. In light of the aforementioned theoretical considerations and empirical findings, the following hypothesis is proposed:

**H1** Poorer regional economic opportunities serve to act as a deterrent, thereby reinforcing the mobility intentions and mobility behaviour of those workers who have recently experienced a job loss.

## 2.2 The mediating role of economic worries

Unemployed have a higher socioeconomic risk and uncertainty than an average worker. Their future employment chances are more risk-prone and become more skewed in terms of how they are distributed. Displaced workers in particular face long periods of unemployment and experience income losses (Lehmann et al. 2011; Schwerdt et al. 2010), which last longer than the effects of unemployment in general (Fallick et al. 2021). Job loss can pose a serious threat to the economic stability of the respective worker's household (Gush et al. 2015) and in case of re-employment, displaced workers are more likely to be employed in part-time and in lower quality jobs (Brand 2006; Farber 2005). As a critical life-course event, the experience of unemployment and involuntary job loss in particular, is an important predictor of economic worries about one's private economic situation (Hacker et al. 2013). According to Boehnke et al. (1998), economic worries can be understood as cognitions that a state of self or in-group in the domain of economics will become or remain discrepant from its desired state. Economic worries can be conceived as individual articulations of imagined futures in the context of unemployment. These worries are future-oriented in the sense that individuals articulate positive or negative feelings, i.e., hopes or fears, towards social and economic developments in their situation, which are more or less unforeseeable from the worker's point of view. In this, the workers evaluate their resources, opportunities and place of living (Glatzer 2015). Workers value their economic security and construct expectations and actions based on their own experiences and their perceptions of their surroundings. These views clearly shape how people think about their economic lives (Hacker et al. 2013). Poor economic conditions thus foster the economic worries of workers who experienced job loss. This is in turn expected to reinforce outmigration as an individual means to balance out the potential location-specific economic disadvantages.

In the domain of economic worries, two domains have to be differentiated: worries about the general economic situation of the country and individual economic worries about the private economic situation (Lehmann et al. 2011). As this study is

concerned with individual migration decisions and internal migration only, worries about the private economic situation are the relevant dimension of economic worries. Thus, economic worries will hereafter be used synonymously with economic worries about the private economic situation.

Considering the theoretical and empirical findings, the effect of regional opportunity structures is expected to be mediated by subjective economic worries. Thus, the following second hypothesis is put forward:

**H2** Economic worries mediate the effect of local economic opportunities on the mobility intentions and behaviour of workers who experienced job loss. Poorer local economic opportunities lead to greater worries about the personal economic situation, which in turn makes it more likely that the respective worker moves out of the region.

### 3 Data and analytical strategy

#### 3.1 Data

The primary data source for the study at hand is the German Socio-Economic Panel (SOEP), a representative national survey of people living in private households in Germany (Liebig et al. 2021). The SOEP has been conducted annually since 1984 and the data contain detailed information on socio-demographic characteristics of the respondents and their household as well as on various other aspects (Goebel et al. 2019). Among others, the SOEP contains information on the participants' employment situation and history, their place of residence and opinions on various topics.

The SOEP survey data is supplemented with regional indicators from the Indicators, Maps and Graphics on Spatial and Urban Monitoring (INKAR) database provided by the German Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR Bonn 2021). The selected regional aggregate level is NUTS-3, which corresponds to the German administrative units "Kreise" and "kreisfreie Städte" (county level). The spatial linkage of individual level survey data and regional indicators as well as the tracking of regional mobility is requiring the use of sensitive information on SOEP respondent's place of living. The individual level information from the SOEP and the regional indicators from the INKAR data are merged at the NUTS-3 level. The availability of individual level data on such low regional aggregate level is a major advantage of the SOEP data.

Additionally, the data is linked with information on the local-occupational level from the Federal Employment Agency (BA). The selected regional aggregate level is NUTS-3 as well while information on the occupation is linked using the last reported occupation (German classification of occupations 2010 (KldB 2010) (Wiemer et al. 2010)) and industry (German classification of industries (WZ 2008) based on NACE (Statistisches Bundesamt 2008)) of the respondents. The chosen aggregation level for occupation are 38 (2-digit) occupational groups and 6 industry groups, which

are used to link occupational and industry characteristics on the local level to the individual data.

The combined data from SOEP, INKAR and BA is covering the years 2010–2019. Earlier years are not included in the sample as the selected regional indicators are only fully available from 2010 onwards. Furthermore, the sample is restricted to SOEP respondents who are between 18 and 60 years old at the time of job loss. Older workers are excluded from the sample as their mobility behaviour is likely to be shaped by different motifs as those of the core labour force in light of their upcoming retirement.

### 3.2 Measures

Concerning the operationalisation of job loss, the SOEP provides information on whether an individual experienced a change in their occupation since the previous interview, which took place a year earlier. If respondents report a termination, a follow-up question asks to specify the circumstances of the job termination. Following the literature, only those workers who have self-reported to have lost their job involuntarily are considered. Since involuntary job loss is a relatively exogenous labour market shock, it enables a robust estimation of the association between displacement and migration. An involuntary job loss is defined as either losing a job due to firm closure or being dismissed by the employer for other reasons. Separations of workers and employers due to termination by the employee, termination agreements and expiry of a fixed-term contract cannot unambiguously be regarded as involuntary or voluntary terminations. Such incidences are thus not considered as involuntary job loss. In addition, separations due to reaching the age limit, retirement, parental leave, abandonment of self-employment, relocation and non-extension of the work-permit are not regarded as involuntary job losses. Henceforth, the term job loss refers to an involuntary job loss in the above-mentioned definition. As a comparison group, non-displaced workers are defined as workers who are continuously employed working full-time.

Mobility intentions are surveyed in SOEP by asking the respondents whether they could imagine moving from their place of residence for example for family or professional reasons. Thus study uses a dummy variable, which takes on the value 0 if respondents rule out a relocation and 1 if they can definitely or under certain circumstances imagine moving. Mobility intentions are surveyed every five years in the SOEP. For the analysis of mobility intentions of workers who had previously lost their job, those who moved between the job loss and the surveying of mobility intentions are excluded from the sample. Actual mobility behaviour is defined as a relocation to a different NUTS-3 region. Since the SOEP surveys their respondents once per year, a relocation at time  $t$  took place sometime between the survey in year  $t$  and the one in  $t-1$ . It has to be taken into account that local moves within county borders are not identified using this definition of relocation. Therefore, it cannot be ruled out that the reference group includes local movers in addition to stayers.

### 3.2.1 Independent variables

Concerning the independent variables, economic worries, regional and regional-occupational variables are added to the models as well as controls. Regarding economic worries, respondents of the SOEP are asked yearly whether they worry about their own economic situation. This results in a categorical variable which can take on the values 0 “not at all”, 1 “a little” and 2 “a lot”.

Indicators of the regional economic opportunities are constructed both on the region level and the region-occupational level on a yearly basis. On the region level, information about the regional GDP is sourced from the INKAR database and linked to the SOEP data on the NUTS-3 level. GDP is measured as the region’s GDP in 1000€ per employee. Furthermore, the regional unemployment rate and number of vacancies are computed based on the data provided by the BA. The number of vacancies is computed as the number of open positions per 100 potential employees, which comprise of employed and unemployed individuals. All three indicators are additionally computed specifically for the worker’s field of work. As an indicator of the relative strength of their industry, the GDP share of the worker’s industry is added. Based on a worker’s last reported NACE code the GDP share of their specific industry in their region is linked with their individual level data. Moreover, the regional-occupational unemployment rate and number of vacancies are linked to the individual level data using the worker’s last reported occupation. They are both computed like the general unemployment rate and number of vacancies, but using the number of employed and unemployed individuals in their specific occupation. As detailed regional employee data is only available from 2016 onwards, the number of employees was extrapolated per region for the years 2010 to 2015 using linear prediction.

### 3.2.2 Controls

The models control for a number of individual level variables. They control for sex using a male/female dummy, since unemployment is known to have different effects on women and men (Eckhard 2022; Song 2018); for age and age squared, since people of different ages are known to have different migration patterns and the relation between age and moving is not necessarily linear (Bauer et al. 2019); for indirect and direct migration background since immigrants are known to be affected differently by job loss than natives (Bratsberg et al. 2018; Shen and Kogan 2020); for education, since mobility of displaced workers is found to increase with educational attainment (Fackler and Rippe 2017); for home ownership, since owning one’s place of living was found to decrease the likelihood to move by 66% (Fackler and Rippe 2017; Maczulskij et al. 2018); and for tenure, logarithmised income and the two-digit KldB2010-classification code of the last reported job as previous employment characteristics have shown to determine mobility decisions of displaced workers (Fackler and Rippe 2017; Huttunen et al. 2018).

The previous empirical research on regional mobility identified another important group of determinants, which are local social ties. The characteristics of the displaced worker’s household are highly relevant to how they respond to unstable economic

circumstances as they determine their capacity to deal with economic risks (Hacker et al. 2013). Furthermore, a household's social ties with people living nearby may deter residential mobility, because the resources stemming from it are location-specific (Kan 2007). Family ties in the home region like living in a multi-person household, close to parents and siblings and being married significantly reduce the probability to relocate for displaced workers (Alesina et al. 2015; Fackler and Rippe 2017; Huttunen et al. 2018; Maczulskij et al. 2018). Moreover, local social ties at the place of residence significantly reduce geographic mobility, whereas social capital at the place of destination makes emigration more likely (David et al. 2010; Haug 2008). Taking these findings into account, this study includes dummy variables for having children younger than six or at the school age of six to 18 years old as well as the physical distance to the individual's parents in the models. The latter is a binary variable, which takes on the value one if at least one parent lives in the same household or city and zero if both parents live elsewhere.

On the region level, the models control for population density, as a higher degree of agglomeration goes along with an improvement in the chances and the expected quality of matches between employers and job seekers (e.g., Duranton and Puga 2004). Among other indicators of regional structure, urbanity has been shown to affect migration decisions of unemployed (Fackler and Rippe 2017) and is linked to a region's ability to absorb displaced workers (Nyström 2018). Fackler and Rippe (2017) found that living in East Germany lowers the probability to relocate after job loss. In order to rule out the possibility that the observed contextual effects are reflecting differences in terms of the average mobility dispositions between the structurally highly different eastern and western states of Germany, an East/West dummy variable is added. All region level indicators are taken from the year of displacement.

### 3.3 Analytical strategy

As a first step of the analysis of the mobility of recently displaced workers in Germany, the effect of involuntary job loss on mobility intentions and behaviour is examined. As both dependent variables are dichotomous, logistic regression model are used for each dependent variable based on pooled panel data.

$$M_{iort} = \beta_0 + \beta_1 JL_{it} + \beta_2 I_{iort} + \beta_3 RE_{rt} + \beta_4 IRE_{ort} + \mu_r + \mu_t + \epsilon_{iort} \quad (1)$$

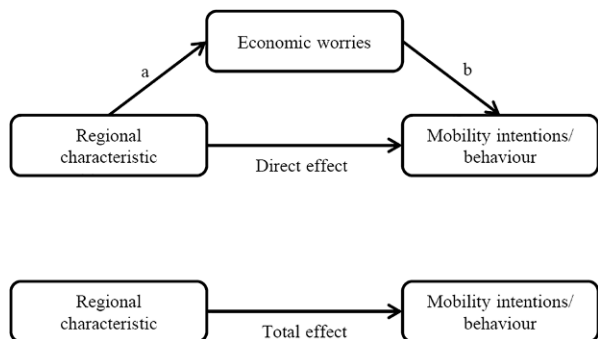
The independent variable  $M_{it}$  is a binary variable indicating either mobility intention (Model 1) or mobility behaviour (Model 2) at time  $t$ .  $JL_{it}$  is a binary variable indicating whether individual  $i$  experienced an involuntary job loss between  $t-5$  and  $t$ .  $I_{it}$  is a matrix of observable worker characteristics.  $RE_{rt}$  and  $IRE_{ort}$  are characteristics of the economy in the individual's home region at time  $t$ , where the first is region and time specific and the latter additionally depending on the individual's occupation.  $\mu_r$  and  $\mu_t$  are region- and time-fixed effects, respectively and  $\epsilon_{iort}$  constitutes the error term.

For the estimation of effects of regional economic opportunity structures on mobility intentions and mobility behaviour of workers who experienced job loss, dif-

**Table 1** Sample means of selected pre-displacement characteristics. (Sources: SOEP v36, INKAR, BA)

|                                    | Non-Displaced            |                        | Displaced                |                          |
|------------------------------------|--------------------------|------------------------|--------------------------|--------------------------|
|                                    | Stayers                  | Movers                 | Stayers                  | Movers                   |
| <i>Individual characteristics</i>  |                          |                        |                          |                          |
| Female                             | 0.52 (0.50)              | 0.52 (0.50)            | 0.29 (0.45)              | 0.35 (0.48)              |
| Age                                | 44.16 (9.63)             | 36.22 (9.67)           | 42.89 (10.13)            | 37.39 (10.28)            |
| Migration background               | 0.23 (0.42)              | 0.28 (0.45)            | 0.36 (0.48)              | 0.28 (0.45)              |
| Years of education                 | 12.85 (2.71)             | 13.90 (2.92)           | 11.59 (2.30)             | 12.10 (2.67)             |
| Children (age < 6)                 | 0.17 (0.38)              | 0.23 (0.42)            | 0.20 (0.40)              | 0.23 (0.42)              |
| Children (age 6–18)                | 0.49 (0.50)              | 0.28 (0.45)            | 0.48 (0.50)              | 0.25 (0.44)              |
| Parent close by                    | 0.36 (0.48)              | 0.23 (0.42)            | 0.38 (0.48)              | 0.23 (0.42)              |
| Homeowner                          | 0.54 (0.50)              | 0.25 (0.43)            | 0.36 (0.48)              | 0.08 (0.27)              |
| Income                             | 2927.73 €<br>(3115.40 €) | 3178. €<br>(5015.03 €) | 2426.13 €<br>(1460.25 €) | 2327.49 €<br>(1198.87 €) |
| Tenure                             | 10.69 (9.79)             | 5.03 (6.74)            | 4.71 (6.96)              | 2.67 (4.51)              |
| Occupational match                 | 0.62 (0.48)              | 0.68 (0.47)            | 0.50 (0.50)              | 0.51 (0.50)              |
| Economic worries                   | 1.87 (0.61)              | 1.81 (0.63)            | 1.97 (0.65)              | 1.94 (0.68)              |
| <i>Home region characteristics</i> |                          |                        |                          |                          |
| GDP per employee                   | 69.15 (13.68)            | 70.15 (13.67)          | 68.29 (13.56)            | 69.31 (15.68)            |
| Unemployment rate                  | 5.87 (2.66)              | 5.67 (2.53)            | 6.22 (2.78)              | 5.64 (2.51)              |
| Vacancies per 100 emp              | 0.96 (0.36)              | 0.94 (0.37)            | 0.97 (0.35)              | 0.93 (0.37)              |
| GDP share (industry)               | 0.23 (0.09)              | 0.23 (0.09)            | 0.22 (0.10)              | 0.22 (0.10)              |
| Unemployment rate (occ.)           | 3.57 (3.67)              | 3.09 (2.77)            | 4.94 (4.35)              | 4.54 (4.43)              |
| Vacancies per 100 emp. (occ.)      | 1.02 (1.07)              | 0.97 (1.04)            | 1.44 (1.21)              | 1.28 (1.39)              |
| Population density                 | 746.07 (986.95)          | 787.46<br>(962.52)     | 753.84<br>(1043.01)      | 774.47 (969.51)          |
| East Germany                       | 0.20 (0.40)              | 0.16 (0.36)            | 0.24 (0.43)              | 0.10 (0.30)              |
| N                                  | 78,025                   | 1461                   | 1045                     | 99                       |

Mean, standard deviation in parentheses

**Fig. 1** General mediation setup

ferent models are set up. Again, there are different models for mobility intentions (Model 3) and mobility behaviour (Model 4), specified by:

$$M_{iort} = \beta_0 + \beta_1 I_{iot} + \beta_2 RE_{rt} + \beta_3 IRE_{ort} + \mu_r + \mu_t + \epsilon_{iort} \quad (2)$$

What distinguishes specification (2) from (1) is the absence of the vector  $JL_{it}$  indicating a job loss of the individual  $i$ . All other terms are the same as in specification (1). The binary job loss variable is missing in Eq. (2) as the models building on this specification are estimated of a sample consisting only of individuals who experienced job loss. These models are therefore carried out to specifically investigate the predictors of mobility of displaced workers.

A correlation matrix for all variables used in the models can be found in Table 6 in the appendix. As the correlation coefficients are all below 0.4, multicollinearity problems are not expected in this setup.

In order to test the hypothesised mediating effect of economic worries on the relationship between local economic opportunities and mobility intentions and behaviour of displaced workers, mediation analysis is carried out. Mediation analysis is concerned with the evaluation of causal mechanisms by which an intervention (or treatment) influences an outcome variable. Its aim is to break down the overall intervention effect into an indirect effect, which acts via one or more observable variables, so-called mediators, and a direct effect, which does not act via the mediator(s) (Huber 2023). Figure 1 shows the general setup of the mediation this study is concerned with. Regional characteristics enter the model as independent variables, the mobility is the dependent variable while economic worries act as the mediator. The effect of regional characteristics on the mobility of displaced workers without the mediator is called the total effect. When adding the mediator economic worries, there is a direct effect of regional characteristics on mobility. Additionally, the model estimates the effect of regional characteristics on economic worries (a) and the effect of economic worries on the mobility (b). Finally, the mediation effect (Average Causal Mediation Effect (ACME)) is the total effect minus the direct effect, which is the effect of regional characteristics on mobility, acting through economic worries.

The mediation analysis is executed using the package mediation in R (Tingley et al. 2019). The algorithms used to estimate the ACME and other quantities of interest are described in (Imai et al. 2010). The algorithms used in this package accommodate a greater range of statistical models than linear regressions, which is necessary for the case of this study, where logistic regressions are carried out.

## 4 Results

### 4.1 Descriptive evidence

Table 1 presents the sample means of selected characteristics for the displaced and non-displaced workers according to migration status. The proportion of workers who have relocated to another region is 1.8% for non-displaced workers and 8.7% for displaced workers. Consequently, an unconditional relationship indicates approxi-

mately a 400% increase in the probability of moving after the experience of a job loss.

During the observation period of 2010–2019, the number of individuals moving between counties in Germany ranged from 0.5–1% of the total population (Statistische Ämter des Bundes und der Länder 2024). This indicates that the available sample overrepresents internal migrants in comparison to the total population, which is likely attributable to the sample restrictions. However, this study's results must be interpreted with consideration of the potential bias in the observed moving behaviour.

Table 1 shows that stayers and movers differ in many key characteristics, regardless of whether they experienced a job loss. Movers are on average younger and better educated than stayers. Unsurprisingly, stayers are more likely to be tied to their place of residence by homeownership and local social ties. They are more likely to have children at school age and to live close to at least one parent. Furthermore, movers live in more densely populated regions than stayers. These numbers are in line with previous findings on the impact of individual characteristics and local social ties on mobility decisions and therefore provide additional motivation to control for these variables in the proposed models.

The displaced workers had shorter tenure at their previous employer than non-displaced workers. They also had less income and a worse occupational match quality than continuously employed workers. Moreover, the table shows that workers who experienced job loss are more worried about their own economic situation than those that did not. This hints towards a relationship of economic worries and job loss, which is in line with the considered previous literature and theory and will be tested at the next stage of the analysis.

## 4.2 The effect of job loss on mobility intentions and behaviour

Models 1 and 2 estimate the effects of job loss on the mobility intentions and mobility behaviour of individuals, respectively. Tables 2 (Model 1) and 3 (Model 2) report the odds ratios from the logit model as noted down in (Eq. (1) in Sect. 3.3). The results from Model 1 show that job loss has a statistically significant positive effect, increasing the odds of having mobility intentions by around 13%. However, the effect of job loss becomes insignificant as soon as controls are added. The effect of job loss on mobility behaviour is significant and positive and robust when controlling for different sets of individual and regional level variables. Experiencing a job loss increases the odds of migration by about 40%.

Furthermore, the results show that different individual and region characteristics predict mobility intentions and mobility behaviour. This indicates that different mechanisms are in place in the formation of mobility intentions and the realisation of a move. While having children below the age of six does not affect mobility, having children at school age significantly decreases the odds of mobility intentions and behaviour. This effect is likely driven by the additional costs of moving for parents associated with moving children and change of schools in the case of older children. Living close to one's parents has a similar effect and reduces the odds of mobility intentions by about 35% and the odds of mobility behaviour by about 52%. Like

**Table 2** Logistic regressions of mobility intentions. (Sources: SOEP v36, INKAR, BA)

|                                    | M 1.1  | M 1.2    | M 1.3    | M 1.4    | M 1.5    | M 1.6    |
|------------------------------------|--------|----------|----------|----------|----------|----------|
|                                    | OR     | OR       | OR       | OR       | OR       | OR       |
| Job loss                           | 1.131* | 1.026    | 0.908    | 0.919    | 0.899    | 0.899    |
| <i>Individual characteristics</i>  |        |          |          |          |          |          |
| Female (vs. male)                  | –      | 0.975    | 0.907    | 0.851*   | 0.872    | 0.866    |
| Age                                | –      | 0.948*   | 0.947    | 0.966    | 0.962    | 0.971    |
| Age <sup>2</sup>                   | –      | 1.000    | 1.001    | 1.000    | 1.000    | 1.000    |
| Migration background               | –      | 0.822**  | 0.770**  | 0.739**  | 0.704*** | 0.688*** |
| Years of education                 | –      | 1.150*** | 1.101*** | 1.100*** | 1.105*** | 1.105*** |
| Homeownership                      | –      | 0.497*** | 0.491*** | 0.504*** | 0.501*** | 0.506*** |
| Income                             | –      | –        | 1.415*** | 1.394*** | 1.356*** | 1.328*** |
| Occupational match                 | –      | –        | 0.982    | 0.994    | 0.979    | 0.992    |
| Tenure                             | –      | –        | 0.985*** | 0.986*** | 0.985*** | 0.984*** |
| Children (age <6)                  | –      | –        | –        | 0.841    | 0.843    | 0.841    |
| Children (age 6–18)                | –      | –        | –        | 0.834**  | 0.853*   | 0.842*   |
| Parent close by                    | –      | –        | –        | 0.650*** | 0.654*** | 0.646*** |
| <i>Home region characteristics</i> |        |          |          |          |          |          |
| Population density                 | –      | –        | –        | –        | 1.000    | 1.000    |
| East Germany                       | –      | –        | –        | –        | 0.687*** | 0.738*** |
| GDP per employee                   | –      | –        | –        | –        | 0.993    | –        |
| Unemployment rate                  | –      | –        | –        | –        | 1.013    | –        |
| Vacancies per 100 employees        | –      | –        | –        | –        | 0.964    | –        |
| GDP share (industry)               | –      | –        | –        | –        | –        | 1.584    |
| Unemployment rate (occ.)           | –      | –        | –        | –        | –        | 1.020    |
| Vacancies per 100 emp. (occ.)      | –      | –        | –        | –        | –        | 1.003    |
| N                                  | 10,673 | 10,542   | 5913     | 5913     | 5893     | 5535     |
| McFadden's R <sup>2</sup>          | 0.000  | 0.043    | 0.056    | 0.064    | 0.066    | 0.065    |

Models 1.3–1.6 additionally control for occupation, standard errors are clustered on the region level

Significance levels: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

**Table 3** Logistic regressions of mobility (Model 2). (Sources: SOEP v36, INKAR, BA)

|                                    | M 2.1    |  | M 2.2    |  | M 2.3    |  | M 2.4    |  | M 2.5    |  | M 2.6    |  |
|------------------------------------|----------|--|----------|--|----------|--|----------|--|----------|--|----------|--|
|                                    | OR       |  | OR       |  | OR       |  | OR       |  | OR       |  | OR       |  |
| Job loss                           | 1.315*** |  | 1.567*** |  | 1.397*** |  | 1.435*** |  | 1.443*** |  | 1.406*** |  |
| <i>Individual characteristics</i>  |          |  |          |  |          |  |          |  |          |  |          |  |
| Female (vs. male)                  | –        |  | 0.982    |  | 1.005    |  | 1.000    |  | 0.985    |  | 0.987    |  |
| Age                                | –        |  | 0.923*** |  | 0.891*** |  | 0.924**  |  | 0.938*   |  | 0.945*   |  |
| Age <sup>2</sup>                   | –        |  | 1.000    |  | 1.001*   |  | 1.000    |  | 1.000    |  | 1.000    |  |
| Migration background               | –        |  | 1.074    |  | 0.961    |  | 0.886    |  | 0.931    |  | 0.922    |  |
| Years of education                 | –        |  | 1.126*** |  | 1.100*** |  | 1.084*** |  | 1.103*** |  | 1.105*** |  |
| Homeownership                      | –        |  | 0.293*** |  | 0.414*** |  | 0.481*** |  | 0.424*** |  | 0.425*** |  |
| Income                             | –        |  | –        |  | 1.456*** |  | 1.382*** |  | 1.380*** |  | 1.391*** |  |
| Occupational match                 | –        |  | –        |  | 0.923    |  | 0.938    |  | 0.946    |  | 0.957    |  |
| Tenure                             | –        |  | –        |  | 0.936*** |  | 0.939*** |  | 0.938*** |  | 0.938*** |  |
| Children (age < 6)                 | –        |  | –        |  | –        |  | 0.972    |  | 0.934    |  | 0.966    |  |
| Children (age 6–18)                | –        |  | –        |  | –        |  | 0.596*** |  | 0.576*** |  | 0.571*** |  |
| Parent close by                    | –        |  | –        |  | –        |  | 0.475*** |  | 0.479*** |  | 0.478*** |  |
| <i>Home region characteristics</i> |          |  |          |  |          |  |          |  |          |  |          |  |
| Population density                 | –        |  | –        |  | –        |  | –        |  | 1.000*** |  | –        |  |
| East Germany                       | –        |  | –        |  | –        |  | –        |  | 0.830    |  | –        |  |
| GDP per employee                   | –        |  | –        |  | –        |  | –        |  | 1.000    |  | –        |  |
| Unemployment rate                  | –        |  | –        |  | –        |  | –        |  | 0.987    |  | –        |  |
| Vacancies per 100 employees        | –        |  | –        |  | –        |  | –        |  | 0.922    |  | –        |  |
| GDP share (industry)               | –        |  | –        |  | –        |  | –        |  | –        |  | 0.699    |  |
| Unemployment rate (occ.)           | –        |  | –        |  | –        |  | –        |  | –        |  | 0.978    |  |
| Vacancies per 100 emp. (occ.)      | –        |  | –        |  | –        |  | –        |  | –        |  | 1.001    |  |
| N                                  | 240,002  |  | 216,781  |  | 101,518  |  | 101,518  |  | 101,258  |  | 94,411   |  |
| McFadden's R <sup>2</sup>          | 0.000    |  | 0.081    |  | 0.109    |  | 0.123    |  | 0.130    |  | 0.132    |  |

Models 2.2–2.6 additionally control for occupation, standard errors are clustered on the region level

Significance levels: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

education, income has a positive effect on mobility intentions and behaviour while a higher tenure is associated with a decrease in the odds of mobility. For region characteristics, the results show that none of the indicators of the region and region-occupation-specific economy significantly affect mobility intentions and behaviour. However, living in East Germany decreases the odds of having mobility intentions by about 30% and a higher population density has a very small positive effect on the odds of relocation.

### 4.3 Predictors of mobility intentions and behaviour after job loss

Table 4 reports the odds ratios from the logit model as noted down in Eq. (2) in Sect. 3.3. It estimates the effects of individual and region characteristics on the mobility intentions of workers who experienced job loss. Models 3.1 and 3.3 estimate the effects of the general regional economic conditions and the occupation- and industry-specific regional economic conditions, respectively. Models 3.2 and 3.4 are building on 3.1 and 3.3 in that they additionally control for economic worries. This setup helps to identify mediating effects of economic worries.

**Table 4** Logistic regressions of mobility intentions after job loss. (Sources: SOEP v36, INKAR, BA)

|                                    | M 3.1    | M 3.2    | M 3.3    | M 3.4    |
|------------------------------------|----------|----------|----------|----------|
|                                    | OR       | OR       | OR       | OR       |
| <i>Individual characteristics</i>  |          |          |          |          |
| Female (vs. male)                  | 1.328*   | 1.291*   | 1.382*   | 1.341*   |
| Age                                | 0.739*** | 0.736*** | 0.729*** | 0.726*** |
| Age <sup>2</sup>                   | 1.003*** | 1.003*** | 1.003*** | 1.003*** |
| Migration background               | 1.287*   | 1.269    | 1.268    | 1.253    |
| Years of education                 | 0.933**  | 0.940**  | 0.940**  | 0.946*   |
| Children (age < 6)                 | 1.676*** | 1.682*** | 1.645*** | 1.654*** |
| Children (age 6–18)                | 1.485*** | 1.453*** | 1.482*** | 1.451**  |
| Parent close by                    | 0.748**  | 0.743**  | 0.721**  | 0.717**  |
| Homeownership                      | 0.354*** | 0.351*** | 0.362*** | 0.359*** |
| Economic worries                   | –        | 1.230**  | –        | 1.196*   |
| <i>Home region characteristics</i> |          |          |          |          |
| GDP per employee                   | 0.991*   | 0.991*   | –        | –        |
| Unemployment rate                  | 1.038    | 1.035    | –        | –        |
| Vacancies per 100 emp              | 0.892    | 0.890    | –        | –        |
| GDP share (industry)               | –        | –        | 0.475    | 0.473    |
| Unemployment rate (occ.)           | –        | –        | 1.054**  | 1.054**  |
| Vacancies per 100 emp. (occ.)      | –        | –        | 1.043    | 1.046    |
| Population density                 | 1.000    | 1.000    | 1.000    | 1.000    |
| East Germany                       | 0.984    | 0.987    | 1.045    | 1.042    |
| <i>N</i>                           | 6310     | 6288     | 5916     | 5894     |
| <i>McFadden's R</i> <sup>2</sup>   | 0.143    | 0.146    | 0.144    | 0.146    |

The models are additionally controlled for pre-displacement occupation, standard errors are clustered on the region level

Significance levels: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

**Table 5** Logistic regressions of mobility after job loss. (Sources: SOEP v36, INKAR, BA)

|                                    | M 4.1<br>OR | M 4.2<br>OR | M 4.3<br>OR | M 4.4<br>OR |
|------------------------------------|-------------|-------------|-------------|-------------|
| <i>Individual characteristics</i>  |             |             |             |             |
| Female (vs. male)                  | 0.867       | 0.926       | 0.988       | 1.072       |
| Age                                | 0.947       | 0.892       | 0.935       | 0.882       |
| Age <sup>2</sup>                   | 1.000       | 1.001       | 1.000       | 1.000       |
| Migration background               | 0.612       | 0.588       | 0.638       | 0.605       |
| Years of education                 | 1.106       | 1.142*      | 1.107       | 1.136*      |
| Children (age < 6)                 | 1.029       | 1.015       | 1.054       | 1.065       |
| Children (age 6–18)                | 0.539*      | 0.550*      | 0.507**     | 0.531*      |
| Parent close by                    | 0.412***    | 0.413***    | 0.389***    | 0.387***    |
| Homeownership                      | 0.179***    | 0.145***    | 0.185***    | 0.154***    |
| Economic worries                   | –           | 1.037       | –           | 1.020       |
| <i>Home region characteristics</i> |             |             |             |             |
| GDP per employee                   | 0.985       | 0.983       | –           | –           |
| Unemployment rate                  | 0.958       | 0.953       | –           | –           |
| Vacancies per 100 emp              | 0.800       | 0.982       | –           | –           |
| GDP share (industry)               | –           | –           | 0.882       | 0.483       |
| Unemployment rate (occ.)           | –           | –           | 1.062       | 1.065       |
| Vacancies per 100 emp. (occ.)      | –           | –           | 0.985       | 1.052       |
| Population density                 | 1.000       | 1.000       | 1.000**     | 1.000***    |
| East Germany                       | 0.397**     | 0.371**     | 0.281***    | 0.264***    |
| <i>N</i>                           | 1549        | 1438        | 1451        | 1355        |
| <i>McFadden's R</i> <sup>2</sup>   | 0.185       | 0.207       | 0.190       | 0.208       |

The models are additionally controlled for pre-displacement occupation, standard errors are clustered on the region level

Significance levels: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

The results of Models 3.1 and 3.2 reveal a significant negative effect of the general regional GDP on mobility intentions after job loss. Additionally, the results for Models 3.3 and 3.4 show that the occupation-specific regional unemployment rate has a positive effect on the mobility intentions of displaced workers. When controlling for economic worries, the effects of the general GDP and the occupation-specific unemployment rate remain significant and the same in size and direction. Economic worries show a significant positive effect on the mobility intentions in both, Models 3.2 and 3.4. The effects of the region level control variables population density and the East Germany dummy are insignificant.

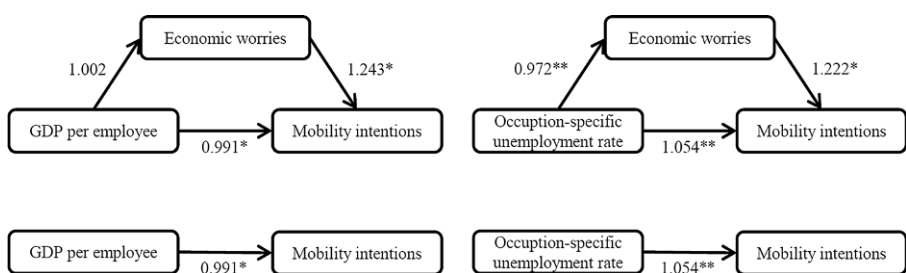
Additionally, the results show a non-linear effect of age and a significant effect of education. Having children at kindergarten or school age has a positive effect on the mobility intentions of displaced workers. One possible explanation for this could be that displaced workers consider the situation in their region to be poor and not fit for the future of their children and therefore have a greater desire to move than displaced workers without children. However, this effect remains when controlling for economic worries and indicators of the regional economy. Future research might want to address this counterintuitive effect of parenthood on mobility intentions

among displaced workers. In line with the literature on family ties, the models show that living close to at least one parent decreases the odds of mobility intentions. Being a homeowner has an even stronger negative effect on mobility intentions.

Table 5 follows a similar setup as Table 4, but reports the estimated effects of individual and region characteristics on the mobility behaviour of workers who experienced job loss. The results from the models M 4.1–M 4.4 show no significant effects of the indicators of the home region's economic opportunities. In contrast to the models for mobility intentions, the models for mobility behaviour do show significant effects of population density and living in East Germany. Living in East Germany decreases the odds of relocating after job loss while the population density has a very small positive effect in the model containing occupation- and industry-specific indicators of the regional economy. The results also show that economic worries do not significantly affect the mobility behaviour of displaced workers. While the individual worker's characteristics show no consistent significant effects on the odds of relocating, the proximity to one's parents and homeownership are not only affecting mobility intentions, but also mobility behaviour. Having children younger than six years does not significantly affect the mobility behaviour, but having children at school age reduces the odds of migration by about 50%.

#### 4.4 Mediating effects of economic worries

In order to investigate the underlying mechanism of the effect of characteristics of the regional economy on displaced workers' mobility, a mediating effect of economic worries was hypothesised. The regression outputs show that the home region's GDP and the local occupation-specific unemployment range have significant effects on the mobility intentions of the respective workers. The effects of these two variables are significant in the models not including economic worries and remain significant when economic worries are taken into account. Since the coefficients remain significant, there is no full mediation. In addition, the effect sizes remain the same when economic worries are controlled for, which suggests that there is also no partial mediation of economic worries in this setup.



**Fig. 2** Results mediation analyses (The regressions of economic worries on the regional characteristic are controlled for sex, age, age<sup>2</sup>, migration background, years of education, children (age < 6), children (age 6–18), homeownership, population density, and an East/West Germany dummy. Significance levels: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ ). (Sources: SOEP v36, INKAR, BA)

Figure 2 presents the results of the mediation analyses. It shows the total effects and the average direct effects, which were already estimated by the regression models in Sect. 4.3. Additionally, it displays the estimated effects of the GDP and the occupation-specific unemployment rate on economic worries.

For the case of the GDP the results show a significant total effect and a significant direct effect of the GDP on mobility intentions. However, there is no statistically significant effect of the GDP on economic worries and the estimated ACME amounts to  $-2.18\text{e-}05$  and is not significant either. These results indicate that the statistically significant effect of the GDP on mobility intentions, which also holds when controlling for economic worries, is not mediated by economic worries. For the occupation-specific unemployment rate the mediation analysis reveals a statistically significant negative effect of occupation-specific unemployment on economic worries. However, in this case too, the estimated ACME is close to zero ( $1.09\text{e-}04$ ) and not significant. Taken together, the mediation analysis shows that the effects of the GDP and the occupation-specific unemployment rate are primarily direct rather than being mediated by economic worries. Economic worries do not play a significant role in explaining the relationship between the regional economic characteristics and mobility intentions.

## 5 Discussion

This study has investigated the factors which determine mobility intentions and mobility behaviour of workers who experienced job loss to gain a better understanding of the regional economic context in which regional mobility of these workers takes place. Using data from the German SOEP survey and the INKAR and BA databases, the analysis reveals two main findings. First, the models show that job loss has no effect on the mobility intentions of workers, but increases the odds of regional mobility. The models of mobility intentions of workers who experience job loss show a negative effect of the general regional GDP and a positive effect of the occupation-specific regional unemployment rate. These results are supporting the hypothesised effect that poorer economic opportunities foster the outmigration intentions of workers who have experienced job loss. However, only these two indicators show significant effects, which is only partial evidence for the influence of the regional economy on mobility intentions. There are no effects of regional economic conditions on the mobility behaviour of displaced workers.

Furthermore, residing in close proximity to at least one parent, as well as homeownership, decrease the odds of possessing mobility intentions and actual mobility. This finding suggests that especially familial proximity and homeownership act as local ties for the workers of interest. Living in East Germany has been observed to decrease the odds of relocation, though it does not impact the expression of mobility intentions.

Finally, the results of the mediation analyses show that economic worries do not mediate the effect of regional economic characteristics on mobility intentions. The direct relationship between regional economic characteristics and mobility intentions of workers who experienced job loss is more robust than initially expected. These

results contradict the second hypothesis, which therefore has to be rejected. Future research might consider whether there are other mediators apart from subjective worries about the worker's own financial situation, which might help to shed light on the causal mechanisms of the estimated effects of the GDP and the occupation-specific unemployment rate.

The study at hand demonstrates that a job loss increases the propensity to relocate within Germany, which is in line with previous research on mobility of unemployed (Fackler and Rippe 2017; Gregg et al. 2004; Huttunen et al. 2018; Maczulskij et al. 2018). Moreover, it identified two indicators of regional economic opportunities that influence the mobility intentions of individuals who have experienced job loss in Germany. Namely, the local GDP and the local occupation-specific unemployment rate. The finding that the experience of a job loss has no effect on the mobility intentions of workers, but increases the probability of a relocation, suggests the presence of two distinct mechanisms through which job loss impacts mobility. The results indicate that a job loss does not inherently motivate workers to relocate; however, it increases the likelihood of relocation. This hints towards somewhat forced mobility of workers who experience job loss in Germany and is in line with the finding of earlier research that mobility often does not follow a linear process where desires and expectations are formed sequentially prior to moving (Lu 1999; Coulter et al. 2011). At the same time, a favourable economic situation in their home region, as indicated by a high GDP, makes it less likely that displaced workers form mobility intentions. This finding aligns with previous literature on the subject and indicates that workers who have experienced job loss are sensitive to the economic situation in their place of residence and are in favour of a strong economy, which is more likely to offer re-employment opportunities (Kan 1999; Lu 1999; Kley 2011). In line with this is the finding that a higher occupation-specific unemployment rate fosters the outmigration of displaced workers. The local unemployment rate is an even better indicator of a worker's re-employment opportunities than the general regional GDP, since it reflects the number of competitors for matching job openings, as well as the general constitution of one's profession in the region. While this study demonstrates the impact of specific regional characteristics on the formation of mobility intentions, it also documents the irrelevance of the chosen locational factors in mobility behaviour. This finding is consistent with the conclusions of earlier research (Kley 2011) and underscores the importance of other factors in determining mobility, such as access to the relevant financial, social, and psychological resources (Coulter et al. 2011; Kley 2011), and life course events (de Groot et al. 2011).

## 6 Appendix

Table 6 Correlation matrix

|                         | Female | Age    | Migration<br>back-<br>ground | Years of<br>educa-<br>tion | Children<br>(age < 6) | Children<br>(age 6–18) | Parent<br>close by | Home-<br>ownership | Income | Occupational<br>match | tenure |
|-------------------------|--------|--------|------------------------------|----------------------------|-----------------------|------------------------|--------------------|--------------------|--------|-----------------------|--------|
| Female                  | 1      | –      | –                            | –                          | –                     | –                      | –                  | –                  | –      | –                     | –      |
| Age                     | 0.006  | 1      | –                            | –                          | –                     | –                      | –                  | –                  | –      | –                     | –      |
| Migration<br>background | –0.034 | –0.195 | 1                            | –                          | –                     | –                      | –                  | –                  | –      | –                     | –      |
| Years of<br>education   | 0.028  | 0.135  | –0.370                       | 1                          | –                     | –                      | –                  | –                  | –      | –                     | –      |
| Children<br>(age < 6)   | –0.001 | –0.206 | 0.144                        | –0.028                     | 1                     | –                      | –                  | –                  | –      | –                     | –      |
| Children<br>(age 6–18)  | 0.053  | 0.195  | 0.043                        | –0.032                     | 0.117                 | 1                      | –                  | –                  | –      | –                     | –      |
| Parent close<br>by      | –0.019 | –0.281 | –0.113                       | –0.010                     | –0.094                | –0.128                 | 1                  | –                  | –      | –                     | –      |
| Homeownership           | –0.026 | 0.198  | –0.230                       | 0.202                      | –0.093                | 0.059                  | 0.056              | 1                  | –      | –                     | –      |
| Income                  | –0.321 | 0.288  | –0.131                       | 0.366                      | 0.030                 | 0.037                  | –0.105             | 0.155              | 1      | –                     | –      |
| Occupational<br>match   | 0.006  | –0.060 | –0.120                       | 0.290                      | 0.041                 | –0.016                 | 0.038              | 0.104              | 0.284  | 1                     | –      |
| Tenure                  | –0.067 | 0.527  | –0.218                       | 0.080                      | –0.135                | 0.017                  | –0.046             | 0.262              | 0.365  | 0.142                 | 1      |
| Economic<br>worries     | 0.044  | 0.087  | –0.013                       | –0.110                     | 0.013                 | 0.031                  | –0.014             | –0.024             | –0.048 | –0.047                | 0.027  |
| Job loss                | –0.049 | 0.015  | –0.002                       | –0.020                     | –0.001                | –0.000                 | –0.001             | –0.023             | 0.005  | –0.021                | –0.078 |
| Mobility                | 0.005  | –0.085 | 0.004                        | 0.031                      | 0.010                 | –0.056                 | –0.033             | –0.082             | 0.001  | 0.013                 | –0.079 |
| GDP per<br>employee     | –0.006 | –0.021 | 0.194                        | 0.041                      | –0.011                | –0.007                 | –0.046             | –0.083             | 0.112  | 0.029                 | –0.025 |
| GDP share<br>(industry) | 0.009  | –0.004 | 0.011                        | 0.083                      | 0.013                 | –0.018                 | –0.009             | 0.006              | 0.097  | 0.007                 | 0.043  |

Table 6 (Continued)

|                                      |        |        |        |        |        |        |        |        |        |        |        |
|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| <b>Unemployment rate</b>             | 0.012  | -0.009 | -0.069 | 0.051  | 0.013  | -0.045 | 0.041  | -0.146 | -0.066 | -0.002 | -0.029 |
| <b>Unemployment rate (occ.)</b>      | -0.168 | -0.030 | 0.059  | -0.209 | 0.004  | -0.013 | 0.027  | -0.141 | -0.143 | -0.146 | -0.068 |
| <b>Vacancies per 100 employees</b>   | -0.012 | -0.015 | 0.034  | -0.006 | -0.022 | -0.036 | 0.019  | -0.085 | 0.001  | -0.028 | -0.033 |
| <b>Vacancies per 100 emp. (occ.)</b> | -0.296 | -0.047 | 0.080  | -0.151 | 0.009  | -0.023 | 0.020  | -0.062 | 0.060  | -0.020 | -0.033 |
| <b>Population density</b>            | 0.002  | -0.036 | 0.115  | 0.106  | 0.012  | -0.057 | -0.020 | -0.220 | 0.062  | 0.034  | -0.057 |
| <b>East Germany</b>                  | 0.000  | 0.039  | -0.195 | 0.049  | -0.008 | -0.029 | 0.035  | -0.033 | -0.041 | -0.022 | 0.006  |
| <b>Female</b>                        | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| <b>Age</b>                           | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| <b>Migration background</b>          | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| <b>Years of education</b>            | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| <b>Children (age &lt; 6)</b>         | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| <b>Children (age 6–18)</b>           | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |



**Funding** Open Access funding enabled and organized by Projekt DEAL.

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