www.reminder-project.eu



# REMINDER

ROLE OF EUROPEAN MOBILITY AND ITS IMPACTS IN NARRATIVES, DEBATES AND EU REFORMS

# Immigration and Unemployment Benefits: Evidence from Germany

### **WORKING PAPER**

Authors: Esther Arenas-Arroyo Osea Giuntella Carlos Vargas-Silva

Published: July 2019





### Immigration and Unemployment Benefits: Evidence from Germany

Authors: Esther Arenas-Arroyo (University of Oxford), Osea Giuntella (University of Pittsburg) and Carlos Vargas-Silva (University of Oxford)

Published: December 2018 Paper prepared as part of the REMINDER project www.reminder-project.eu

Correspondence address:

Carlos Vargas Silva: Centre on Migration, Policy, and Society, University of Oxford, United Kingdom. Email: carlos.vargas.silva@compas.ox.ac.uk



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 727072

#### Abstract

There is a large literature on the labour market impacts of immigration, but the evidence remains mixed and inconclusive. Additional evidence on different case studies is necessary, in order to clarify when and why the impact of immigration on the labour market outcomes of natives is positive or negative. In this report, we contribute to this body of literature by exploring the impact of immigration on the likelihood of natives claiming unemployment benefits in Germany, which is by some standards the main migrant receiving country in Europe. The results suggest that an increase in the share of the local population accounted for by migrants has a negative impact on the likelihood that native Germans will claim unemployment benefits, but the effect is small and not always statistically significant. The impacts are also similar across genders. The report discusses possible theoretical explanations for these results.



#### 1. Introduction

Immigration is a key political issue in many European countries and a substantial portion of the public in these countries favours restricting future migrant flows (Blinder and Markaki, 2018a). One major public concern about immigration is its potential impact on local labour markets and on the public finances of the host country (Blinder and Markaki, 2018b). There is interest in the likelihood of unemployment and benefit dependency of the migrant population, and in the effects of the arrival of these migrants on the job opportunities of the native-born population.

This report explores labour market and immigration data from Germany for two purposes. First, the report provides insights on the labour market impacts of immigration in this country. The focus is on the impact of immigration on the likelihood of unemployment benefits claims on the part of German natives. Second, the report serves as a pre-amble for related research that will be part of Work Package 3 of the REMINDER project.

Germany is an interesting case study to explore the economic impacts of immigration. As shown in Figure 1, Germany has the largest stock of migrants among European countries. The number of migrants in Germany, currently about 12.1 million, has also increased substantially in recent years. These migrants currently account for close to 15% of the country's population, and 40% of them (4.9 million) come from other EU countries. Germany has also received over one million asylum seekers in recent years, which has made immigration a key political topic in the country. Also, Germany has the largest economy among euro countries, accounting for 28% of the euro area economy (International Monetary Fund, 2017).



REMINDER

2

Several recent studies have looked at the labour market impacts of immigration to Germany. Among others, D'Amuri at al. (2010), using data for the 1987–2001 period, found that immigration had little adverse effects on natives' employment or wages. However, their results suggest that immigration had a sizeable adverse employment effect on previous migrants, as well as a small adverse effect on their wages. Glitz (2012), using data for the 1987–2001 period, found that immigration resulted in a short-run displacement effect of around 3.1 unemployed resident workers for every 10 migrants that find a job and no conclusive evidence regarding the impact on wages. Bonin (2005) using data from 1975 to 1997, found that a 10% increase in the share of migrants in the workforce reduces wages of native men by less than 1%, but does not increase unemployment. These three studies, and most other studies for Germany, rely on administrative data for the analysis.<sup>1</sup>



Figure 1 – Stock of foreign-born population in different European countries

<sup>&</sup>lt;sup>1</sup> For an earlier study on this topic in Germany see Pischke and Velling (1997). Also, see Parekh and Vargas-Silva (2018) for a summary of studies in this topic in Europe.



In this study, we rely on longitudinal data from the German Socio-Economic Panel (Sozio-oekonomisches Panel or SOEP) so as to facilitate comparison with other outputs from the REMINDER project, in particular the analysis in Work Package 3, which explores the link between reasons for immigration and the labour market outcomes of migrants. As explained below, the SOEP provides rich demographic, social, economic and housing information on individuals and the households to which they belong.

Our main interest in this report is on estimating the impact of immigration on the likelihood that German natives will claim unemployment benefits. In Germany, individuals can claim unemployment benefit if they have worked at least 12 months in the past 2 years. Claimants can receive an amount equal to at least 60% of their net salary. This is meant to be a short-term benefit. In that regard, the analysis largely reflects the impacts of immigration on the unemployment likelihood of native Germans.

Our results suggest that the presence of migrants has a negative impact on the likelihood that natives will claim unemployment benefits, but the effect is small and not always statistically significant.

#### 2. Conceptual Background

There is a large literature, both theoretical and empirical, which explores the labour market impacts of migration. The most popular conceptual background is that developed by Borjas (1995). In this model, migrants and natives are perfect substitutes. This means that an increase in the migrant workforce represents an increase in a homogenous population of workers.



Figure 2 illustrates the consequences of immigration in this model. Before the arrival of the migrants, native workers earn  $W_L$  and the country's workforce (*L*) is only made up of the number of natives who are working (*N*). Immigration increases the supply of homogeneous workers (from *Suppy* to *Supply*<sup>\*</sup>), decreases the wage from  $W_L$  to  $W_L^*$ , and increases the workforce to  $L^*$ . However, because the wage is now lower, there is (voluntary) unemployment among native workers. This unemployment is given by the difference between  $N^*$  and *L*.

The theoretical prediction of the model presented above is very clear: immigration should create unemployment among native workers who are substitutes for migrants. Hence, for instance, we should observe increasing unemployment of low-skilled native workers in those regions of the country that experienced substantial inflows of low-skilled migrants.



*Figure 2 – The labour market impact of immigration (textbook model)* 



Subsequent research has challenged these ideas, indicating several channels by which immigration can improve the labour market outcomes of natives. As explained by Peri (2016), two key aspects can affect the employment effect of immigration. First, immigration affects the supply and demand for labour. Migrants are not only workers but also consumers, and their presence can increase the demand for labour. This means that the employment effects of immigration can be smaller than explained above. Second, migrants and natives are not close substitutes for one another even within skill levels. This dynamic results from the fact that manual skills transfer relatively easily across countries (e.g. the skills necessary to be a carpenter in Poland and the UK are similar), but this is not the case for communication skills due to language differences. As a result, low-skill migrants have a relative advantage in manual-intensive jobs, while low-skilled natives have an advantage in communication-intensive roles. Immigration reduces the relative reward to manual tasks and leads to a re-allocation of natives to more communication-intensive tasks, promoting competition and pushing natives to perform more efficiently.

There are also possible impacts across skill groups, with a key role for gender differences. For instance, research for the United States suggests that immigration of lowskilled women can led to an increase in the supply of higher-skilled women in the labour force (Cortes and Tessada, 2011). The explanation for this link is that the increase in the number of migrant women decreases the cost of childcare, and joining the labour force becomes more profitable for many native females.

In order to shed more light on these issues, in the empirical section we explore the impact of immigration on the outcomes of German natives, including exploring gender differences in these impacts.



6

#### 3. Data and methodology

#### 3.1 Data

The German Institute for Economic Research and Kantar conduct the SOEP annual surveys. The dataset includes annual information on approximately 12,000 households and more than 20,000 individuals, in many cases since 1984. The longitudinal nature of the survey allows us to follow the same individual over time, regardless of whether they move from the original location. This is important as native mobility typically biases studies looking at the impacts of immigration (Borjas, 2003). For a detailed description of the survey, see Haisken-DeNew & Frick (2005).

In order to link the individuals with the characteristics of their areas of residence (including the number of residents who were born abroad), we merge the SOEP with population data drawn from the INKAR (Indikatoren und Karten zur Raumentwicklung) administrative records. The INKAR dataset is provided by the German Federal Office for Building and Regional Planning and contains a wide range of regional economic and demographic figures. There are 96 regional policy regions (ROR), which are defined in the data based on their economic inter-linkages.

We limit the sample to "natives" between 16 and 65 years of age. Natives are individuals with German nationality who were born in Germany. We limit the analysis to the period 1999-2015, as the INKAR dataset is only available since 1996, and we use a threeyear lag measure of immigration in the estimations. Overall, our sample contains 235,802 observations of 34,911 individuals.

Our main interest is on estimating the impact of immigration on the likelihood that natives will claim unemployment benefits. For this purpose, we create a dummy variable



that takes the value of 1 if the individual received unemployment benefits during the previous 12 months and 0 otherwise and use it as the main dependent variable. Because the question refers to the past 12 months, we adjust the rest of the variables in our analysis accordingly. As reported in Table 1, close to 5% of the respondents in our sample claimed unemployment benefits during the previous 12 months. This share is higher for those in East Germany (close to 9%) and lower for those in West Germany (close to 3%).

Most of the analysis in the report is based on data for the whole of Germany. However, we also present results separately for West and East Germany. There are two reasons for this. First, the SOEP sample is substantially larger in West Germany than in East Germany (survey started in West Germany before the re-unification). Second, as shown in Figure 3, by far the largest concentration of migrants in the country is in West Germany.

Our main independent variable of interest is the migrant share of the population in a ROR. As also reported in Table 1, migrants account for about 8% of the population in the local areas. The regressions also include a series of controls variables such as age (quadratic), marital status, number of children and measures of educational attainment.



Figure 3 – Spatial Distribution of the foreign born as share of population in 1996



Table 1: Descriptive Statistics (means)

	Germany	West Germany	East Germany
Unemployment Benefit	0.049	0.034	0.086
Migrant Share	8.005	9.86	2.973
Age	42.405	42.38	42.813
Female	0.539	0.53	0.523
Married	0.599	0.607	0.570
More than High School	0.223	0.243	0.180
High School	0.653	0.627	0.721
Less than High School	0.123	0.129	0.100
Number of Children	0.74	1.042	0.633
Observations	235,802	172,295	63,507

Notes: Data from SOEP and INKAR.



#### 3.2 Methodology

Our main aim is to evaluate how natives' likelihood of claiming unemployment benefits might be affected by the presence of migrants. To that end, we exploit the temporal variation in the share of immigrants living in a ROR between 1999 and 2015, using the following benchmark model:

(1) 
$$y_{i,r,t} = \alpha_i + \beta S_{rt-k} + X'_{i,r,t} \gamma + \gamma_r + \theta_t + \gamma_r \theta_t + \varepsilon_{i,r,t}$$

where  $y_{i,r,t}$  is the benefits dummy variable explained above for individual *i*, living in ROR *r*, at time *t*. *S*<sub>*rt-k*</sub> is the share of the population represented by migrants in ROR *r* at time *t-k*. *X* is the vector of time-varying controls discussed above. Equation (1) also includes ROR fixed effects ( $\gamma_r$ ) and year fixed effects ( $\theta_t$ ) to control for unobserved time-invariant ROR characteristics. Additionally, we include ROR-specific time trends in our most complete model specification. Standard errors are clustered at the ROR level.

As previous research has showed (see for example Giuntella & Mazzonna 2015), there is no reason to expect that immigration should have direct and immediate effects on incumbent residents' labour market outcomes. Hence, we used lagged values of the immigration share to predict its effects on unemployment benefits. Following Giuntella & Mazzonna (2015), we focus on the average immigration share from the previous three years (from *t*-1 to *t*-3).

One key concern with the estimation presented in (1) is the likelihood of selfselection of migrants into different RORs, since migrants are likely to choose areas with better economic conditions. To assess the degree to which our estimates might be biased due to the non-random location of migrants, we use the "shift-share" instrument. Following Card (2001), we exploit the fact that immigrants tend to locate in areas that have higher densities of immigrants from their own country of origin, and we distribute the annual



national inflow of immigrants from a given source country across the RORs using the 1996 distribution of immigrants from a given country of origin. Note that the classification of RORs changed in 1996 and, therefore, we cannot use earlier years as a base to construct our shift-share instrument.

In this case, we estimate:

(2) 
$$\hat{F}_{crt} = s_{cr,1996} F_{ct}$$

where  $F_{ct}$  is the total population of immigrants from country *c* residing in Germany in year *t* and  $s_{cr,1996}$  is the share of that population residing in ROR *r* as of year 1996. Then,  $\hat{F}_{crt}$  is the imputed population from country *c* in ROR *r* in year *t*. Hence, the imputed total share of migrants is defined as:

(3) 
$$\hat{S}_{rt} = \sum_{c} \hat{F}_{crt} / P_{r,1996}$$

where  $P_{r,1996}$  is the total population in ROR r as of 1996. The predicted number of new migrants from a given country c in year t that choose to locate in ROR r is obtained by redistributing the national inflow of immigrants from country c based on the distribution of migrants from country c across RORs as of 1996. Summing across all countries of origin, we obtain a measure of the predicted total migrant inflow in ROR r in year t. The variation of  $\hat{S}_{rt}$  is only driven by the changes in the imputed foreign population (the denominator is held fixed at its 1996 value), and is used as an instrument for the actual share of immigrants in ROR r at time t. Using the distribution of migrants in 1996, we reduce the risk of endogeneity because annual immigration inflows across RORs might be driven by time-varying characteristics of the ROR that are associated with labour market outcomes.

Shift-share instruments have been criticized in recent literature (e.g. Goldsmith-Pinkham et al. 2018; Jaeger et al. 2018), but have been used by hundreds of academic papers and remain the main tool to deal with the endogeneous location of migrants.



#### 4. Results

Table 2 shows the results from estimating equation (1) for the full sample of individuals. Before discussing the results, it is important to highlight that the F statistics from the first stage regressions are well above the traditional threshold of 10. The results from the fixed effects estimations, including the ROR-specific time trends, suggest that a 10-percentage point increase in the share of the population accounted for by migrants in a given area decreases the likelihood of natives in that area claiming unemployment benefits by 0.04%. This suggests that, while the impact is statistically significant, it is small. The results from the two-state least squares using a shift-share instrument, suggesting somewhat large effects. In this case, a 10-percentage point increase in the migrant share of the population in a given area decreases the likelihood of natives claiming unemployment benefits by 0.32%. While this is a larger effect, it is still relatively small overall.

	Fixed-effe	ects	2SLS-fixed-effects		
% migrant share	-0.016***	-0.004*	-0.097*	-0.032*	
	(0.002)	(0.002)	(0.052)	(0.018)	
F test first stage			21.25	278.61	
Observations	235,802	235,802	235,802	235,802	
Number of individuals	34,911	34,911	34,911	34,911	
Individual F.E.	Yes	Yes	Yes	Yes	
Year F.E.	Yes	Yes	Yes	Yes	
ROR-F.E.	Yes	Yes	Yes	Yes	
ROR-Trend	No	Yes	No	Yes	
Mean of Dep.Var.		0.049			

Table 2: Effect of immigration on natives' unemployment benefits

**Notes**: All estimates include controls for age (quadratic), educational attainment, marital status, number of children, ROR Fixed effects, year fixed effects. Standard errors are robust and clustered at the ROR level. \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.



As explained above, we also present results separately for West and East Germany. These results are reported in Table 3. The results suggest that it still the case that migration has a negative effect on the likelihood of claiming unemployment benefits in West Germany, but the coefficients are no longer statistically significant for the two stage least squares estimation. On the other hand, the results for East Germany suggest that the presence of migrants has a positive impact on the likelihood of natives claiming unemployment benefit and the coefficient is significant for the estimation in which we do not include the ROR trend. However, the F statistic for the first stage regression is below the threshold of 10 for that estimation and, therefore, the results should be interpreted with caution.

	West Germany				East Germany			
	Fixed-e	ffects	2SLS-fixe	d-effects	Fixed-effects		2SLS-fixed-effects	
% migrant share	-0.005***	-0.002	-0.023	-0.014	0.015	0.004	0.177**	0.027
	(0.002)	(0.002)	(0.033)	(0.022)	(0.009)	(0.010)	(0.080)	(0.040)
F test first stage			40.88	163.54			9.59	475.52
Observations	172,176	172,176	172,176	172,176	63,393	63,393	63,393	63,393
Number of individuals	26,527	26,527	26,527	26,527	8,827	8,827	8,827	8,827
Individual F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ROR-F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ROR-Trend	No	Yes	No	Yes	No	Yes	No	Yes
Mean of Dep.Var.	0.035 0.04				.086			

Table 3: Effect of immigration on unemployment benefit: Separate results for West Germanyand East Germany

**Notes**: All estimates include controls for age (quadratic), educational attainment, marital status, number of children, ROR Fixed effects, year fixed effects. Standard errors are robust and clustered at the ROR level. \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.



We also explore the results if we limit the sample to those who just have high-school education (e.g. abitur). This is by far the largest educational group, accounting for close to 65% of the sample. Those with further education are unlikely to compete directly in the labour market with most migrants. It would also be interesting to conduct an estimation with those who have less than high school education, but this group is relatively small (12% of the sample). The results suggest that limiting the analysis to those with only high school education does not change the results significantly (Table 4). The coefficients are slightly larger than in Table 2, indicating that a 10-percentage point increase in the migrant share of the population decreases the likelihood that natives will claim benefits by 0.64%.

High School								
	Fixed-e	ffects	2SLS-fixe	ed-effects				
% migrant share	-0.021***	-0.004	-0.089	-0.064**				
	(0.003)	(0.003)	(0.056)	(0.030)				
F test first stage			19.72	135.27				
Observations	153,794	153,794	153,794	153,794				
Number of Individuals	24,622	24,622	24,622	24,622				
Individual F.E.	Yes	Yes	Yes	Yes				
Year F.E.	Yes	Yes	Yes	Yes				
ROR-F.E.	Yes	Yes	Yes	Yes				
ROR-Trend	No	Yes	No	Yes				
Mean of Dep.Var.	0.056							

Table 4: Effect of immigration on unemployment benefits-By Education Level:

**Notes**: All estimates include controls for age (quadratic), educational attainment, marital status, number of children, ROR Fixed effects, year fixed effects. Standard errors are robust and cluster at ROR level. \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

Finally, we explore whether we can find any gender differences in the impacts of migration on the natives' likelihood of claiming unemployment benefits. The results are



broadly similar across genders, and suggest that the presence of migrants has a negative impact on the likelihood of natives claiming benefits, but the coefficients small and mostly statistically insignificant.

-	Men				Women			
	Fixed-e	ffects	2SLS-fixe	ed-effects	Fixed-effects		2SLS-fixed-effects	
% migrant share	-0.021***	-0.004	-0.075	-0.045	-0.012***	-0.005	-0.141	-0.019
	(0.003)	(0.004)	(0.055)	(0.028)	(0.002)	(0.003)	(0.115)	(0.024)
F test first stage			18.58	121.69			4.99	156.51
Observations	111,400	111,400	111,400	111,400	124,402	124,402	124,402	124,402
Number of individuals	16,614	16,614	16,614	16,614	18,297	18,297	18,297	18,297
Individual E E	Voc	Vas	Vos	Vec	νος	Vas	Vec	Vec
Voor E E	Voc	Voc	Voc	Voc	Yes	Voc	Voc	Voc
fear F.E.	res	res	res	res	res	res	res	res
ROR-F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ROR-Trend	No	Yes	No	Yes	No	Yes	No	Yes
Mean of Dep.Var.	0.054 0.043							

Table 5: Effect of immigration on unemployment benefits: Separate results by gender

**Notes**: All estimates include controls for age (quadratic), educational attainment, marital status, number of children, ROR Fixed effects, year fixed effects. Standard errors are robust and cluster at ROR level. \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

#### 5. Conclusion

In this report, we used longitudinal data to explore the impact of migration in Germany on the likelihood of natives claiming unemployment benefits. The analysis suggests that the presence of migrants has a negative impact on the likelihood that natives will claim unemployment benefits, but the effect is small and not always statistically significant. Therefore, we can largely discard the possibility of immigration resulting in more unemployment benefit claims on the part of natives.

These results are largely in line with previous research for Germany and other European countries (Parekh and Vargas-Silva, 2018). The results are interesting because, as



Blinder and Markaki (2018b) find in related REMINDER research, the perceived economic impact of immigration is a major driver of opposition to immigration, while Germany is one of the countries in which there is least support for restrictions on immigration (data for 2002 and 2014).



#### References

Blinder, S. and Markaki, Y., 2018a. 'Public Attitudes Toward EU Mobility and Non-EU Immigration: A Distinction with Little Difference'. Working Paper, REMINDER Project, August 2018. <u>https://www.reminder-project.eu/wp-content/uploads/2018/08/D10.2-Final-June-</u> 2018-with-cover.pdf

Blinder, S. and Markaki, Y., 2018b. 'Europeans' Attitudes To Immigration From Within And Outside Europe: A Role For Perceived Welfare Impacts?'. Working Paper, REMINDER Project, July 2018. <u>https://www.reminder-project.eu/wp-content/uploads/2018/07/D10.1-</u> <u>Final\_July-2018\_with-cover.pdf</u>

Bonin, H., 2005. 'Wage and employment effects of immigration to Germany: Evidence from a skill group approach'. *Institute for the Study of Labor Discussion Paper* No. 1875

Borjas, G.J., 1995. 'The economic benefits from immigration'. *Journal of Economic Perspectives*, *9*(2), pp.3-22.

Borjas, G.J., 2003. 'The labor demand curve is downward sloping: Reexamining the impact of immigration on the labor market'. *The Quarterly Journal of Economics*, *118*(4), pp.1335-1374.

Card, D., 2001. 'Immigrant Inflows, Native Outflows, and the Local Labor Market Impacts of Higher Immigration'. *Journal of Labor Economics*, 19(1), pp. 22–64.

Cortes, P. and Tessada, J., 2011. 'Low-Skilled Immigration and the Labor Supply of Highly Skilled Women', *American Economic Journal: Applied Economics*, 3(July), pp. 88–123.

D'Amuri, F., Ottaviano, G.I. and Peri, G., 2010. 'The labor market impact of immigration in Western Germany in the 1990s'. *European Economic Review*, *54*(4), pp.550-570.

Giuntella, O. and Mazzonna, F., 2015. 'Do immigrants improve the health of natives?', *Journal of Health Economics*. Elsevier B.V., 43, pp. 140–153.

Glitz, A., 2012. 'The labor market impact of immigration: A quasi-experiment exploiting immigrant location rules in Germany'. *Journal of Labor Economics*, *30*(1), pp.175-213.

Goldsmith-Pinkham, P., Sorkin, I. and Swift, H., 2018. 'Bartik Instruments: What, When, Why, and How (No. w24408)'. *National Bureau of Economic Research*.

Haisken-DeNew, J. P. and Frick, J. R., 2005. 'Desktop Companion to the German Socio-Economic Panel (SOEP)', *DIW, Berlin, Germany.* 

International Monetary Fund, 2017. 'Germany: Spend More At Home'. *IMF Country Focus*. Available at: <u>https://www.imf.org/en/News/Articles/2017/07/05/na070717-germany-spend-more-at-home</u>



Jaeger, D.A., Ruist, J. and Stuhler, J., 2018. 'Shift-share instruments and the impact of immigration (No. w24285)'. *National Bureau of Economic Research*.

Parekh, Ravi and Vargas-Silva, Carlos. 2018. 'The Labour Market Impacts of Immigration in Europe' in *The Routledge Handbook of the Politics of Migration in Europe*, Ed. A. Weinar, S. Bonjour and L. Zhyznomirska, Routledge.

Peri, Giovanni, 2016. 'Immigrants, Productivity, and Labor Markets'. *Journal of Economic Perspectives*, 30 (4): 3-30.

Pischke, J.S and Velling, J., 1997. 'Employment Effects of Immigration to Germany: An Analysis Based on Local Labor Markets'. *The Review of Economics and Statistics*. 79:4, 594-604.





## REMINDER

ROLE OF EUROPEAN MOBILITY AND ITS IMPACTS IN NARRATIVES, DEBATES AND EU REFORMS

The REMINDER project is exploring the economic, social, institutional and policy factors that have shaped the impacts of free movement in the EU and public debates about it.

The project is coordinated from COMPAS and includes participation from 14 consortium partners in 9 countries across Europe





This project has received funding from the European Union's Horizon 2020 research & innovation programme under grant agreement no 727072

