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Distance is crucially important, at least for neighbors: Foreign employment at the district level

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Distance is crucial, at least for neighbors

– Foreign employment at the district level –

Preliminary draft, please do not quote

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Abstract: We study the regional representation of foreign workers from each EU-27 country in German regions. For most of the German neighboring countries, we find that distance significantly matters for the workplace location in Germany. The striking exception is Poland. For non-neighboring countries, distance only matters for countries which are geographically close to Germany. Distance has also a negative effect on the net-migrations flows of foreign workers from geographically close countries. We confirm the state-specific effects of distance using a random effects approach. Approaches with different estimation techniques at different time points back up our findings.

Keywords: migration costs, distance, foreign employment

JEL Code: F22, J15, J61, O15

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1. Introduction

In August 2014 2,563,286 foreign employees worked in Germany (German Federal Employment Agency, 2015a). But foreign employment is not uniformly distributed. Economic weak and rural regions might attract far less foreign workers than prosperous metropolitan regions. In this paper we investigate the regional patterns of foreign employment in Germany and its determinants.

As a first contribution, we provide descriptive evidence for the spatial distribution of foreign workers from each of the EU-27 countries in Germany. This extends the literature, since most studies only focus on migration from source countries to different destination countries (Geis *et al.*, 2011; Pedersen *et al.*, 2008), but neglect the spatial distribution in the host country. To capture over- and under-representation of foreign workers at the district level, we calculate representation quotients. Using administrative panel data, we find an over-representation for workers from neighboring countries of Germany in districts near to the respective border. The exception is Poland. There is no clear pattern observable for Polish Workers. We also find an over-representation for geographically close non-neighboring countries (Hungary, Italy, Romania, Slovakia, and Slovenia), whereas we do not find an over-representation for countries that are further away.

As a second contribution, we estimate the effect of the distance on the representation of foreign employees from different source countries at the district level in Germany. Our approach is based on a gravity model of immigration (Lewer and Van den Berg, 2008) and follows the idea of distance as one of the main migration costs (Clark *et al.*, 2007; Mayda, 2010). Estimating a very sophisticated model Clark *et al.* (2007) show a highly significant negative impact of distance on migration to the US. They use panel data for 81 countries of origin and a rich set of control variables including immigration policy. Using migration flows from 14 OECD countries and controlling for income, geographic, cultural and demographic factors Mayda (2010) also finds a significant negative effect of distance on migration. An example for the negative impact of distance on international student mobility is Bessey (2012).

Geis *et al.* (2011) and Isphording and Otten (2014) back up the negative distance effect but stress also the importance of a similar cultural environment. Geis *et al.* (2011) show a positive effect of the cultural distance whereas Isphording and Otten (2014) find positive effect of the linguistic distance. Ruyssen *et al.* (2014) argue that network effects are crucial for explaining migration. Pedersen *et al.* (2008) also argue that networks might have a counterfactual effect on the effect of distance. Using immigration flows into the OECD countries they find evidence for the importance of networks as wells as for the negative effect of geographical distance.

Also within a country distance has a negative effect on relocation. Arntz (2010) show this while studying interregional job matches in Germany. With a dynamic model Etzo (2011)

shows the negative effect of distance with interregional migration flows in Italy. Although long-distance interregional migration is mainly driven by economic factors and short-term interregional migration is mainly driven by quality of life factor, distances seems to be relevant for both (Biagi *et al.*, 2011; Niedomysl, 2011). Amenities as important factor for regional migration have mainly been studied for the US (Partridge, 2010) but recent studies find also evidence for Europe (Rodríguez-Pose and Ketterer, 2012). Buch *et al.* (2014) show the importance of local labor market conditions and amenities using the example of German cities.

Using very precise distance measures and estimating a random effects model, we find support for the descriptive evidence. We control for a variety of other pull factor of migration like labor market conditions (e.g. gross domestic product per employee, unemployment rate), amenities (e.g. European accessibility, green areas) and cultural factor (e.g. cultural diversity). We see the quite different results as an indicator for the different perception of migration costs due to distance in the different source countries.

The remainder of the paper is organized as follows. The next section briefly we show descriptive evidence and describe our data and empirical strategy. In section 3 we provide our estimation results with robustness checks. The final section concludes.

2. Data and Empirical Strategy

2.1. Spatial distribution of foreign employment

The literature clearly tells us well-grounded insights on the migration interdependence between countries and the determinants of emerging migration patterns. However, these insights do not tell us much about the distribution of foreign workers within the host country. When it comes to draw distributions of regional foreign employment, one has to distinguish between two dimensions. First, the distribution of a specific nationality between regional entities. And second, the distribution of different nationalities for a specific region. In this paper we will concentrate on the first dimension.

A distribution is typically either characterized by the absolute number of values or in terms of relative frequencies. We will interpret the concept of a distribution in a rather modified way. Instead of presenting absolute or relative frequencies, we show the representation of foreign workers at the regional level. To measure the representation of workers with a specific nationality j for the German region i at time t , we use representation quotient RQ_{ijt} (Lehmann and Nagl, 2012):

$$RQ_{ijt} = \frac{\text{Foreign worker quotient } (FWQ_{ijt})}{\text{Employment quotient } (EMPQ_{it})}, \quad (1)$$

with

$$FWQ_{ijt} = \frac{\text{Number of workers from country } j \text{ in district } i \text{ at time } t}{\text{Number of all workers from country } j \text{ in Germany at time } t} \quad (2)$$

and

$$EMPQ_{it} = \frac{\text{Number of employees in district } i \text{ at time } t}{\text{Number of all employees in Germany at time } t} . \quad (3)$$

Let us first stick to the two components of the representation quotient. The first component is the foreign worker quotient (FWQ_{ijt}), displayed in Equation (2). It shows the share of employees with nationality j in a specific region i , compared to all foreign workers with that nationality in Germany. The sum of FWQ_{ijt} over i is one. However, simply using these shares would not correctly indicate the size of the regional entity or its corresponding labor market. To account for this, we divide the foreign worker quotient by our second component: the employment quotient ($EMPQ_{it}$) from Equation (3). Note that the $EMPQ_{it}$ is invariant to the nationality. It instead tells us about the percentage of employed persons in Germany that work in a specific region. As for the foreign worker quotient, the sum of $EMPQ_{it}$ over i is one.

Turning to the representation quotient (RQ_{ijt}) from Equation (1), we see that the share of foreign employees in a specific region is weighted by the relative size of the local labor market. To make the RQ_{ijt} comparable between nations, we apply region-constant weights. However, as we can see from the equations, the shares and weights vary over time. But in which range lies the RQ_{ijt} ? The lower bound is zero, thus, nobody with nationality j works in region i at that specific point in time. The upper bound tends to infinity. An $RQ_{ijt} = 1$ indicates that workers with nationality j in region i are as represented as in Germany, thus, the regional representation quotient equals the German average. Consequently, a $RQ_{ijt} > 1$ indicates an over-representation and a $RQ_{ijt} < 1$ an under-representation compared to the German average. Additionally, the German average can also be interpreted as a random assignment of foreign workers with nationality j over the whole territory of Germany.

To calculate the representation quotients, we rely on a special evaluation of German employment statistics (see German Federal Employment Agency, 2013). This special evaluation contains the population of employees subject to social security insurance. Thus, we know the whole number of employees with a certain nationality for each region in Germany. This feature of the data makes them powerful to study the determinants of regional migration patterns. We have annual data from 2001 to 2012 that are gained from a census at the cutoff date December, 31 each year. Our cross-section dimension comprises all 402 German districts and cities.¹ Up to date, we distinguish between workers from 26 European countries.² Eight of these countries are direct neighbors to Germany and share a common border. Table

¹Please note that all the data in the paper are given for the latest territorial boundaries in Germany.

²These countries are: Austria, Belgium, Bulgaria, Czech Republic, Cyprus, Denmark, Estonia, Finland, France, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

Table 1: Descriptive statistics – representation quotients

Variable	Obs.	Mean	SD	Min	Max
RQ_{ALL}	4,824	0.785	0.535	0.032	2.433
<i>Neighboring countries to Germany</i>					
RQ_{AT}	4,824	0.941	2.584	0.000	36.31
RQ_{BE}	4,824	0.680	1.902	0.000	33.57
RQ_{CZ}	4,824	1.411	5.310	0.000	112.6
RQ_{DK}	4,824	0.896	3.863	0.000	70.37
RQ_{FR}	4,824	0.878	2.959	0.000	27.92
RQ_{LU}	4,824	0.958	2.300	0.000	32.99
RQ_{NL}	4,824	0.777	1.790	0.000	26.24
RQ_{PL}	4,824	0.874	0.535	0.000	6.669
<i>Non-neighboring countries to Germany</i>					
RQ_{BG}	4,824	0.740	0.797	0.000	15.26
RQ_{CY}	4,824	0.976	2.429	0.000	30.94
RQ_{EE}	4,824	0.956	1.155	0.000	12.31
RQ_{EL}	4,824	0.687	0.914	0.000	6.588
RQ_{ES}	4,824	0.685	0.777	0.000	7.499
RQ_{FI}	4,824	0.647	0.717	0.000	6.850
RQ_{HU}	4,824	0.934	0.943	0.000	13.28
RQ_{IE}	4,824	0.683	0.821	0.000	8.215
RQ_{IT}	4,824	0.790	0.999	0.000	6.598
RQ_{LT}	4,824	0.891	0.845	0.000	14.23
RQ_{LV}	4,824	0.867	1.016	0.000	33.13
RQ_{MT}	4,824	1.211	3.555	0.000	54.13
RQ_{PT}	4,824	0.788	1.152	0.000	10.05
RQ_{RO}	4,824	0.981	0.988	0.000	8.638
RQ_{SE}	4,824	0.669	0.763	0.000	7.753
RQ_{SI}	4,824	0.752	1.121	0.000	16.74
RQ_{SK}	4,824	1.039	1.732	0.000	29.31
RQ_{UK}	4,824	0.702	0.827	0.000	5.414

Note: Representation quotients are calculated over all regional entities and the complete time period under investigation. Country abbreviations are taken from official sources. RQ_{ALL} is based on foreign workers from all nationalities and not only on the selected in this study. Countries are ordered alphabetically. For a detailed description of the representation quotients see Table 5 in Appendix A. *Source:* German Federal Employment Agency (2013).

1 shows the descriptive statistics of the representation quotients for each nationality. The table is divided into neighboring and non-neighboring countries to Germany. In addition, we present the representation quotient for the sum of all foreign workers (RQ_{ALL}). In this step, we merge the time- and cross-section-dimension together.

We observe a large variation in the representation quotients between the different nationalities. In addition to the standard deviation, there is a huge spread in the maximums of RQ. It runs from 5.4 for the United Kingdom to 112.6 for the Czech Republic. Especially the last number tells us that there is a region where workers from the Czech Republic are almost 113 times over-represented compared to the German average. On the contrary, regions exist where nobody with a specific nationality works at all. This let us conclude that there must be some spatial patterns that can be described with region-specific characteristics.

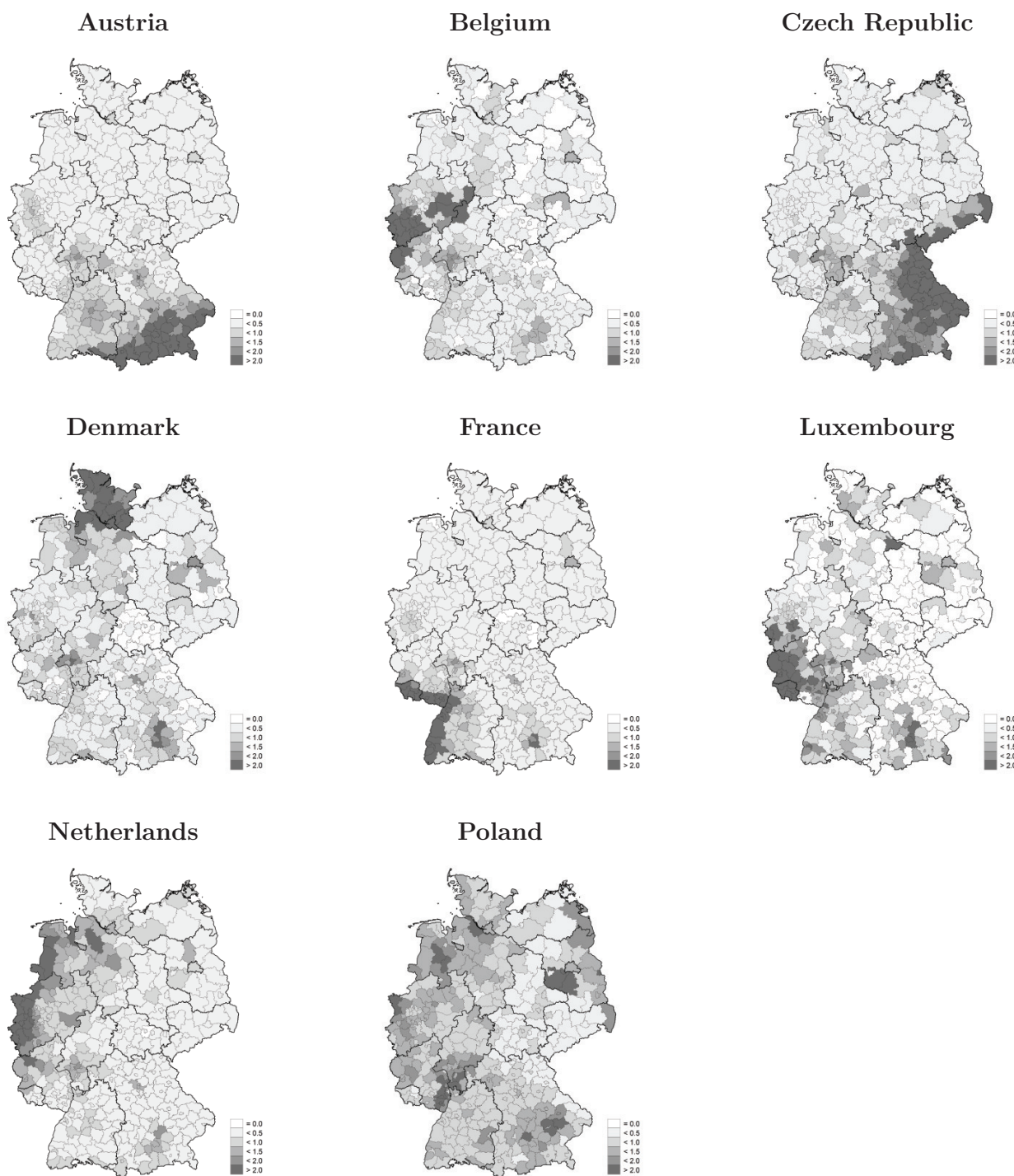
The simplest way of detecting regional patterns is to draw meaningful maps. Therefore, we come up with the following three figures. In Figure 1 we present the representation quotients for the neighboring countries to Germany in the year 2012. Figure 2 shows the equivalent pictures for the non-neighboring countries. The countries are ordered alphabetically in all three figures. To achieve comparability between the countries, we use the same classification. We group the RQ in six categories: (i) $RQ = 0$, (ii) $RQ < 0.5$, (iii) $RQ < 1$, (iv) $RQ < 1.5$,

(v) $RQ < 2$ and (vi) $RQ > 2$. The colors for these six categories run from white (no foreign worker in a specific region) to dark gray (a high over-representation). All regions with light colors indicate an under-representation of foreign workers. The opposite holds for regions with dark colors.

We start by describing the visual evidence for the neighboring countries. Figure 1 reveals remarkable patterns for the German neighbor countries. First, as one would expect there are hot spots where foreign people work. It is not surprising that, for example, Frankfurt am Main or Munich are preferred work places by people from abroad. A high wage level and a broad range of amenities are two out of several reasons that make these cities attractive. Second, with the exception of Germany's Eastern Europe neighbors Poland and the Czech republic, we observe an East-West-gap in the representation quotients. Obviously not many employees from Germany's western or southern neighbor countries work in Eastern German regions. An exception is the German capital Berlin, which is not surprising, since Berlin counts as a magnet for people from abroad. The third and almost most interesting pattern we observe is that foreign workers closely locate to the border of their home country. For these German border regions, we find the highest country-specific representation quotients in the sample. This pattern holds for all neighboring countries to Germany with one exception: Poland. Whereas the workers from the remaining seven neighbors are represented in a rather small area behind their specific border, Polish employees are more or less located everywhere in Germany. However, also for some Polish workers it obviously is essential to locate close to their home country. But we also find an over-representation in the southern and western part of Germany. From Figure 1 we hypothesize that, next to important economic or social reasons, the distance to the home countries seems to be an essential reason for the location decision of foreign workers from Germany's neighboring countries.

But what about the workers from non-neighboring countries? Is there any visual pattern that emerges? The answer is not clear-cut. Next to obvious country-specific patterns we also find remarkable similarities for non-neighbor countries. As for workers from neighboring countries the large German cities are also preferred locations for employees from countries that do not share a common border with Germany.

Figure 1: RQ 2012 – neighboring countries to Germany



Source: Geographical data ©GeoBasis-DE / BKG 2014. Own graphical representation.

In order to describe the emerging patterns in a meaningful way, we carry out an analysis according to the geographic direction of the non-neighboring countries. The countries located to the north of Germany (Finland, Ireland, Sweden and the United Kingdom) have in common that workers from those are over-represented in large cities as Hamburg, Berlin or Munich. However, with the exception of Ireland, we also see in Figure 2 that British,

Figure 2: RQ 2012 – non-neighboring countries to Germany

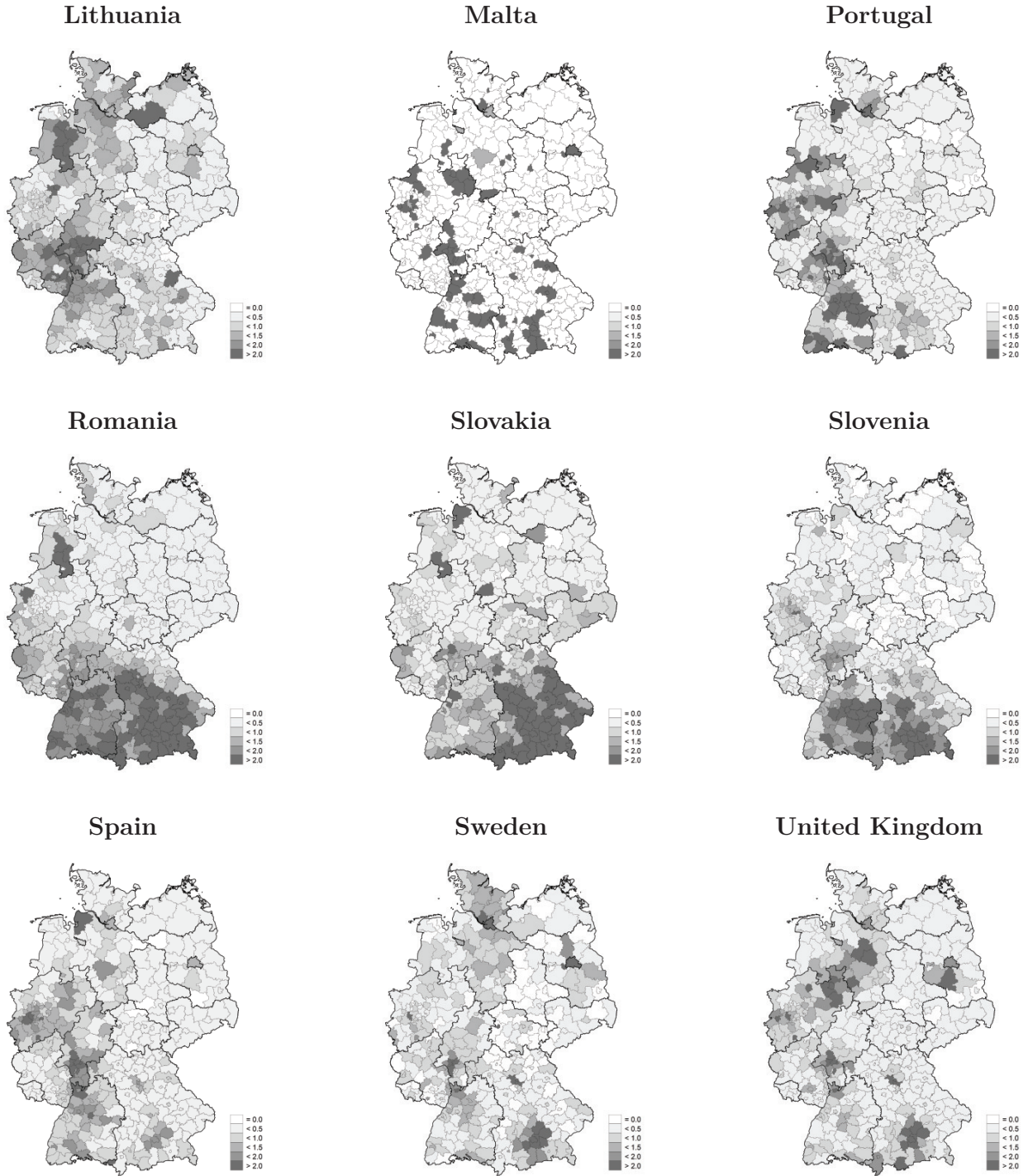


Source: Geographical data ©GeoBasis-DE / BKG 2014. Own graphical representation.

Finnish or Swedish workers may have a preference to stay in the northern part of Germany. This finding may either be described by regional determinants or even by the distance to their home countries.

Now let us turn to the countries located to the south-west of Germany (Portugal and Spain). For those countries we find a very clear picture. There seems to be a border for

Figure 2: RQ 2012 – non-neighboring countries to Germany (continued)



Source: Geographical data ©GeoBasis-DE / BKG 2014. Own graphical representation.

Spanish and Portuguese workers they do not cross. They are mostly over-represented in regions of four Western German federal states. As we find for the neighboring countries to Germany, there is also a clear West-East-pattern for workers from Portugal or Spain. In Eastern German regions there seems to be almost no Spanish or Portuguese worker.

The countries to the south of Germany, namely Italy and Malta, differ enormous in their

regional representation. Whereas Italian workers are mostly located in the two southern German federal states Baden-Württemberg and the Free State of Bavaria, employees from Malta are more or less randomly distributed over the whole German territory. Overall, the number of workers from Malta is very small. The next two countries, Cyprus and Greece, are located to the south-east of Germany. As for Italy and Malta before, we find two heterogeneous patterns for Greece and Cypriot workers. Whereas employees from Greece are located in the south-west of Germany, Cypriot workers are more or less randomly distributed over Germany. However, we also find high representation quotients in Eastern Germany, which is not the case for almost all the other nationalities. As for Malta before, the number of workers from Cyprus is very small.

Our last group of countries comprises the ones from Eastern Europe. Remarkable similarities can be found for workers from Bulgaria, Hungary, Romania, Slovakia and Slovenia. They have in common that they are exclusively over-represented in the southern part of Germany. Next to some economic and social reasons we expect that distance may matter for workers from these countries. Turning to the former Soviet Union countries that are located to the east of Germany (Estonia, Latvia and Lithuania), we cannot derive a common pattern for this whole Group. Whereas Estonian workers are located almost everywhere in Germany, Latvians are mostly over-represented in the north-west of Germany and Lithuanians can be found in the whole western part of Germany.

2.2. Determinants that explain regional representation quotients

The former section shows that country-specific spatial distributions of employment exist. We now want to find out which factors describe these emerging patterns. In order to do so, we use the RQ_{ijt} as the dependent variable in our estimation approach. From the visual evidence, distance to the specific home country obviously seems to matter. Thus, with a higher distance to their home country, the representation of foreign workers vanishes. We therefore expect a negative sign of our distance variable. However, this should mainly hold for the neighboring countries to Germany and only to a minor extent for non-neighbors. But it might be the case that the proximity to the home country is important until a specific distance is reached. Thus, we leave it as an empirical matter whether distance matters for workers of a specific nationality or not.

We measure distance for neighboring and non-neighboring countries in separate ways. For neighboring countries, distance is calculated as the way (in kilometer) from the center of a specific district or city to the nearest municipality that borders the specific neighboring country. In the case of non-neighboring countries we define distance as the number of kilometers from the center of the respective district or city to the geographical center of the non-neighboring country. In this paper we mainly focus on distance as the variable of interest. The distance variable has one big advantage: it is by definition exogenous. Table

2 presents the descriptive statistics to our distance variables. As in Table 1 we divide the statistics into neighboring and non-neighboring countries.

Table 2: Descriptive statistics – distances

Variable	Obs.	Mean	SD	Min	Max
<i>Neighboring countries to Germany</i>					
DIST _{AT}	4,824	319.1	177.5	0.540	734.0
DIST _{BE}	4,824	299.5	144.5	9.010	619.0
DIST _{CZ}	4,824	240.9	124.6	6.610	524.0
DIST _{DK}	4,824	485.2	183.7	4.720	821.6
DIST _{FR}	4,824	266.0	160.1	0.790	680.3
DIST _{LU}	4,824	308.3	148.5	9.160	663.2
DIST _{NL}	4,824	272.2	149.0	2.010	602.2
DIST _{PL}	4,824	361.6	142.1	0.380	635.0
<i>Non-neighboring countries to Germany</i>					
DIST _{BG}	4,824	1,490	157.7	1,132	1,797
DIST _{CY}	4,824	2,568	160.0	2,203	2,883
DIST _{EE}	4,824	1,355	169.0	903.3	1,707
DIST _{EL}	4,824	1,762	171.6	1,369	2,126
DIST _{ES}	4,824	1,253	183.0	871.0	1,706
DIST _{FI}	4,824	1,717	181.0	1,247	2,083
DIST _{HU}	4,824	777.9	150.0	433.1	1,063
DIST _{IE}	4,824	351.6	157.3	6.610	689.3
DIST _{IT}	4,824	876.9	190.9	505.3	1,323
DIST _{LT}	4,824	1,113	157.2	700.2	1,438
DIST _{LV}	4,824	1,215	162.4	784.2	1,553
DIST _{MT}	4,824	1,684	190.5	1,317	2,133
DIST _{PT}	4,824	1,266	191.1	914.7	1,714
DIST _{RO}	4,824	1,283	148.2	952.3	1,557
DIST _{SE}	4,824	1,373	188.1	921.7	1,732
DIST _{SI}	4,824	650.5	175.0	241.2	1,039
DIST _{SK}	4,824	758.0	142.0	429.8	1,017
DIST _{UK}	4,824	645.2	158.5	321.1	1,001

Note: Distances are calculated over all regional entities and the complete time period under investigation. Abbreviations for the countries are taken from official sources. Countries are ordered alphabetically. For a detailed description of the distances see Table 5 in Appendix A. *Source:* Own calculations.

Since distance is time-invariant, we are mainly interested in explaining the variation between regional entities in Germany. Thus, we want to analyze whether workers with a specific nationality are more represented in districts closer to their specific home country.

In order to estimate the effect of distance on the representation of foreign workers correct, we apply the following random-effects model,

$$RQ_{ijt} = c + \beta_1 DIST_{ij} + \sum_{k=2}^K \beta_k \mathbf{X}_{kijt} + a_i + T_t + \varepsilon_{ijt}, \quad (4)$$

where the representation quotient is described by our distance variable ($DIST_{ij}$) and a bunch of control variables incorporated in the vector \mathbf{X}_k . As in all linear panel models, a_i describe time-invariant regional characteristics. To capture business cycle fluctuations or macroeconomic shocks, we also introduce time dummies (T_t) in our empirical model. ε_{ijt} is the idiosyncratic error term.

But why should the random-effects model be appropriate in our case? First, as already mentioned, distance is time-invariant. Thus applying a standard fixed-effects model would simply eliminate the distance variable. Second, we are rather interested in the variation between the German districts than in the variation of the districts over time. Third, it

is hardly imaginable that there are unobserved regional characteristics that explain the representation quotient and are simultaneously correlated with the control variables. We run several methodological robustness checks to ensure our results.

We categorize the control variables into three major groups: (i) labor market conditions, (ii) amenities and (iii) cultural factors. The choice of variables is based on the topic-related literature. Labor market conditions are intuitive factors that attract foreign workers. The regional unemployment rate, for example, serves as an indicator on how tight the regional labor market is. We expect the higher the unemployment rate, the lower is the representation of foreign workers. Furthermore we add employment growth as an indicator for the development of the regional labor market. Since there are no information on real wages available for regional entities, we use the real gross domestic product per employee as a suitable proxy variable. To capture the sectoral structure of the German regions, we introduce the shares of manufacturing, construction, basic and advanced services in total gross value added.³ The second category are local amenities. Not only economic reasons but also, for example, the local infrastructure is a crucial factor for the location decision. We therefore use standard measures of amenities – e.g. the European accessibility, the number of hospital beds per inhabitant or the crime rate – in our regression analysis that were found to have explanatory power. The third group comprises cultural factors. In this group we have three variables: the cultural diversity in a specific region, the population density and the total share of foreigners. The measure for cultural diversity is simply an inverse Herfindahl-Hirshman-Index based on the shares of 207 nationalities. This index should capture the variety of nationalities in a specific region. The other two variables are self-explanatory. We expect that location decision of foreign workers crucially depend on these factors. Table 5 in the appendix shows a comprehensive summary on the variables, their description, the source where the data come from and the periods for which the variables are available.

To give a first impression on the variation of the variables, Table 3 presents the descriptive statistics of our whole bunch of controls. We observe a large variation in local labor market conditions. To use the unemployment rate (UR) again, the span between the regions lies within 1.2% and 25.4%. Especially in Eastern German regions we still observe regional clusters with very high unemployment rates. There is also a wide band in regional productivity levels, measured as real GDP per employee. Mainly large cities such as Hamburg and Munich or regions with a capital intensive production show high macroeconomic productivity levels. In order to capture the region-specific economic structure, we include the share of manufacturing, construction, basic services and advanced services in total gross value added. There are several agglomerations where we observe clusters in regional economic activity. Whereas the Ruhr area is mainly characterized by an industrial-stamped economic structure,

³As basic services we classify the sectors retail sale, wholesale trade, transport, hotels and restaurants as well as communicating. Advanced services comprise the sectors financial intermediation, insurance services, research and development as well as real estate.

Berlin, for example, has a high share in basic and advanced services.

Table 3: Descriptive statistics – control variables

Variable	Obs.	Mean	SD	Min	Max
<i>Labor market conditions</i>					
Real GDP per employee	4,824	53,952	9,527	34,784	119,236
Unemployment rate	4,824	8.720	4.448	1.200	25.40
Employment growth	4,824	0.003	0.023	-0.135	0.156
Participation rate	4,824	77.49	3.785	59.30	87.70
Share high qualified employees	4,824	4.159	3.370	0.600	35.70
Apprenticeship training positions	4,812	99.57	5.346	77.80	126
Courses in adult evening classes	4,823	73.63	43.73	0.000	497.2
Share manufacturing	4,824	23.47	10.72	0.700	73.30
Share construction	4,824	5.299	2.161	0.800	19.80
Share advanced services	4,824	24.58	5.599	7.900	57.90
Share basic services	4,824	18.02	4.810	5.900	48.60
Marginal employment	4,824	18.64	5.561	5.800	40.10
Balance of commuters	4,824	-11.79	32.58	-146.2	67.50
<i>Amenities</i>					
European accessibility	4,824	255.1	31.40	186.0	476.0
Hospital beds per capita	3,612	64.69	38.30	0.000	235.1
Green area	4,824	32.88	13.55	6.700	66.20
Net rent without running costs	3,618	5.575	1.145	3.720	12.53
Crime rate	4,020	6,734	2,836	2,297	29,352
Overnight stays	4,824	4.689	5.701	0.000	44.20
Flat size	4,824	43.44	4.496	34.00	68.80
Population size	4,824	203,9	228,2	33,94	3.5e+06
<i>Cultural factors</i>					
Cultural diversity	4,824	0.093	0.059	0.021	0.387
Population density	4,824	519.9	670.3	37.10	4,468
Share of foreigners	4,824	7.184	4.555	0.600	30.30

Note: Descriptive statistics are calculated over all regional entities and the complete time period under investigation. Country abbreviations are taken from official sources. For a detailed description of the data set and the corresponding sources see Table 5 in Appendix A.

Turning to amenities, we can, for example, rely on a large variation in European accessibility. It is not surprising that cities like Frankfurt am Main and Munich with their international airports have the least travel time to European agglomerations. On the opposite, peripheral regions exhibit a rather bad European accessibility. Mainly regions in the north or east of Germany are affected. As a disamenity we include the local crime rate, measured as the number of cases per 100,000 inhabitants. We observe a large span in local crime rates, ranging from almost 2,300 cases to more than 29,300 cases per 100,000 inhabitants. And a clear urban-rural pattern exists, meaning that crime rates are higher in agglomerations compared to rural areas.

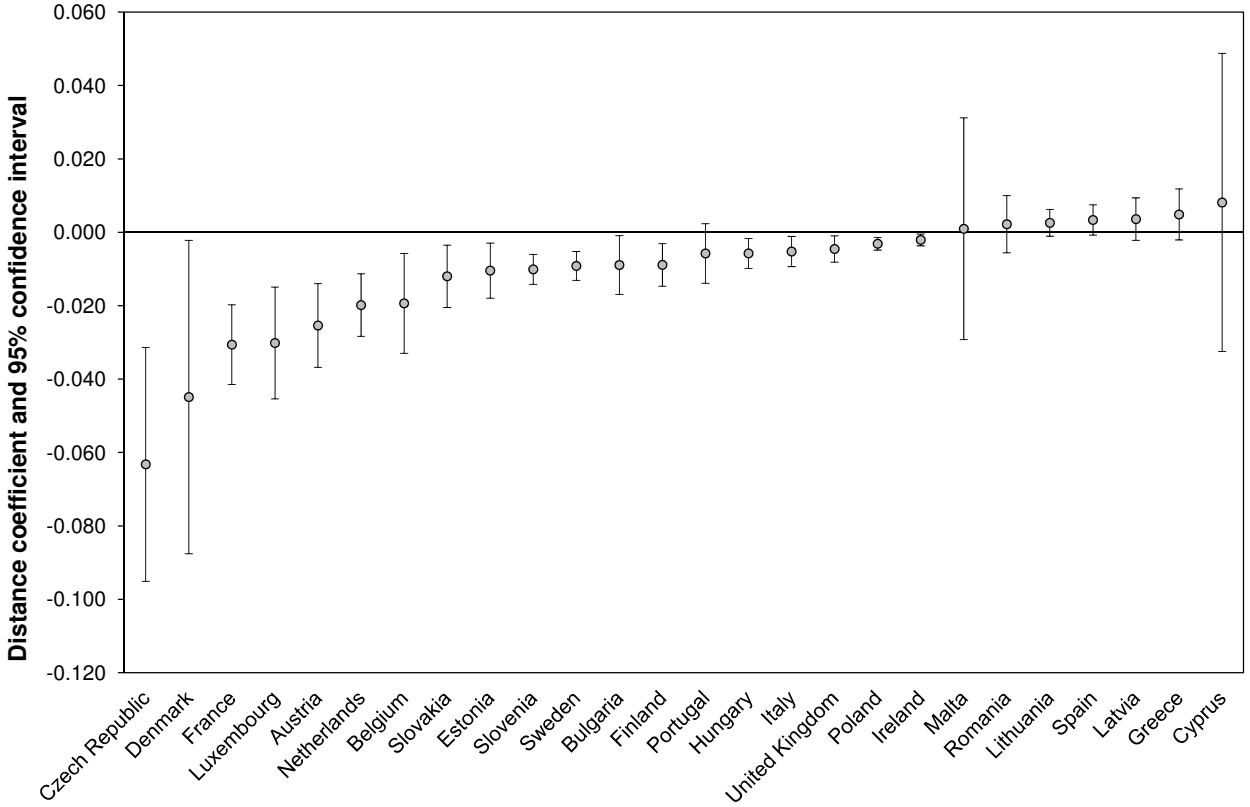
The share of foreigners, as an example for a cultural factor, is also not uniformly distributed over the German territory. On average 7.2% of all regional inhabitants are foreigners. But the share of foreigners lies in a range from 0.6% in an Eastern German region to 30.3% in Offenbach, a city located next to Frankfurt am Main. Generally, Eastern German regions, with the exceptions of big Eastern German cities, show lower shares of foreigners compared to Western Germany.

3. Results

3.1. Baseline Results for the Distance Variable

Since our sample consists of 26 European states, we decide to present our baseline estimation results in a graphical way. The detailed estimation results for each country can be found in the Appendix B. In Figure 3 we show the estimated distance coefficients from the complemented random effects model of Equation (4) together with the specific 95% confidence interval.⁴ The countries are presented in ascending order, starting with the highest negative coefficient for the Czech Republic.

Figure 3: Distance coefficient estimates RQ – complemented random effects model



Note: The coefficients are estimated in a random effects model with all control variables, year dummies and the one-period-lagged net flow.

The results from Figure 3 are clear-cut. Distance matters for the spatial representation of foreign workers. Thus, workers are over-represented in those districts that are closely located to their home country. And this result does not exclusively hold for neighboring countries. However, the largest negative coefficients can be found for the German neighbors. But there is one exception: Poland. Polish worker are also closely located at the border to their home country, but the results are not that strong as for the other neighbors. The

⁴Please note that the following results hold for each specification of the random effects model. Thus, we will exclusively focus on the results from the complemented model.

distance coefficient for the Polish representation quotients is quite small, thus, explaining the small band of Polish workers at the Eastern German border and a large over-representation in the Western part of Germany.

Turning to the non-neighboring countries we also find a significant influence of the geographical distance. As for the descriptive statistics we start by discussing the results for the countries located to the north of Germany. After controlling for a large part of variation with our control variables, we can state from the random effects model that distance matters for workers from Finland, Ireland, Sweden and the United Kingdom. However, the coefficients are small compared to other countries. For Italy as the country located to straight to the south of Germany we also find a significant negative effect of distance. Next to other factors, the estimation result clearly underpins the findings from Figure 2. Italian workers are mostly located in Baden-Württemberg or the Free State of Bavaria. These are the two German federal states in the south of Germany. The next group comprises the countries from Eastern Europe. We find a significant negative effect for Bulgaria, Estonia, Hungary, Slovakia and Slovenia. With the exception of Estonia, these results confirm the visual evidence from Figure 2. Workers from these countries are over-represented in the south of Germany.

There are some countries for which we find no effect at all. For Portuguese workers we find a negative effect, but the coefficient fails to be statistically significant different from zero in each specification. We observe positive coefficients for workers from Malta, Romania, Lithuania, Spain, Latvia, Greece and Cyprus. However, all these coefficients do not reach a meaningful confidence level. For these countries other factors matter for the location decision which we describe in the following section.

3.2. Baseline Results for the other Determinants

Distance is not the only determinant that describes the local representation of foreign employment. Table 4 presents the results shown in Appendix B in a rather simplified way. The columns represent each single European country in the sample, abbreviated with its official code. Each row contains the country-specific estimation outcome of a control variable. If a cell is hold in gray, then the effect is statistically significant at a confidence level up to 10%. The sign of the corresponding coefficient is indicated either with a (+) or a (−) in the specific cell. The control variables are arranged as for the descriptive statistics.

Table 4: Regional determinants for the representation of foreign employment

Determinant	AT	BE	BG	CY	CZ	DK	EE	EL	ES	FI	FR	HU	IE	IT	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK	UK
Net flow _{t-1}		(+)	(+)	(+)		(+)	(+)			(+)		(+)	(+)		(+)	(+)	(+)	(+)		(+)	(+)	(+)	(+)	(+)	(+)	
Real GDP per employee				(+)						(+)	(-)	(+)	(+)	(-)			(+)	(-)		(-)	(-)					
Unemployment rate	(-)			(+)	(-)			(-)	(-)	(+)	(-)	(+)	(-)	(-)			(-)	(-)	(-)	(+)	(+)	(+)	(+)	(+)	(-)	
Employment growth										(-)	(+)	(+)	(-)				(+)	(-)		(+)	(+)					
Participation rate								(+)	(+)			(+)	(-)	(+)			(-)	(-)	(+)	(+)	(+)	(-)				
High qualified employees											(+)	(-)		(+)	(-)		(-)	(-)	(+)	(+)	(+)	(-)				
Training positions		(+)															(-)		(+)	(+)	(+)	(+)			(+)	
Courses evening classes											(+)					(+)	(-)			(+)	(+)				(+)	
Share manufacturing			(+)							(+)		(+)	(+)	(-)			(-)			(+)	(+)	(+)			(+)	
Share construction				(+)				(+)		(+)			(+)	(-)		(-)				(+)	(+)	(+)			(+)	
Share advanced services													(+)	(-)		(-)				(+)	(+)				(+)	
Share basic services							(+)	(-)		(+)			(+)	(-)		(-)				(+)	(+)	(+)			(+)	
Marginal employment	(+)	(+)	(-)			(-)		(-)	(+)		(+)	(-)	(+)	(-)					(+)	(+)	(+)				(+)	
Balance of commuters									(+)		(+)		(-)		(-)					(-)	(-)	(-)				
European accessibility													(-)		(-)					(-)	(-)					
Hospital beds per capita			(+)		(+)					(+)			(+)	(+)	(+)	(+)	(+)	(+)	(-)	(-)	(+)				(+)	
Green area	(+)						(+)	(+)	(+)	(+)		(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
Net rent			(+)									(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
Crime rate												(+)	(+)				(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
Overnight stays		(-)										(+)	(+)		(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
Flat size												(+)	(+)		(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
Population size					(+)							(-)	(-)	(+)	(+)	(+)	(+)	(+)							(+)	
Cultural diversity			(-)				(-)	(+)	(+)	(-)		(-)	(-)	(+)	(-)	(-)					(+)	(+)	(+)	(+)	(+)	
Population density	(+)				(-)			(+)	(+)	(+)		(+)	(+)	(+)	(+)	(-)	(+)	(+)		(+)	(+)	(+)	(+)	(+)	(+)	
Share of foreigners		(+)	(+)									(+)	(+)	(+)	(+)	(+)	(+)	(+)		(+)	(+)	(+)	(+)	(+)	(+)	

Note: A gray-colored box indicates that the coefficient of the specific determinant is at least statistically significant at the 10% confidence level. If a specific cell is hold in white, then the coefficient is not statistically different from zero. The sign of the determinant is indicated with (+) or (-). The coefficient estimates can be found in Appendix B. The horizontal lines separate the different variable groups from each other. All variables are arranged as for the descriptive statistics.

What are the main determinants for the local representation of foreign workers? First, we observe large variation in the determinants between the countries. Second, whereas for some countries such as Poland a large number of determinants matter for the local representation, for countries like Denmark, other determinants than distance play only a minor role. Third, we find no clear-cut pattern whether labor market conditions, amenities or cultural factors dominate the representation of foreign workers.

However, there are variables that consistently describe local representation patterns. The net flow of foreign workers from the previous period (Net flow_{t-1}) is positively correlated with the current representation quotient for almost all countries in the sample. Thus, the higher the net flow in the previous year, the higher is the representation of a specific nationality today. This result is pretty intuitive, but including the lagged net flow controls for the path dependency in our representation quotients.

Turning to labor market conditions, the regional unemployment rate is the strongest variable to describe the local representation of foreign workers. For more than a half of our countries in the sample, the unemployment rate has a negative impact on the regional representation of foreign workers. This is clearly the sign that we expect. Foreign workers would not locate in places with a higher unemployment rate compared to those regions, everything equal, with worse labor market conditions. This is also one reason why Eastern German regions do not attract that much foreign workers since they show higher unemployment rates than their Western German counterparts.

The regional qualification of workers seems to matter only for a minor share of countries. Whereas, for example, Finish or French worker are more represented in those regions where the share of high qualified employees is higher, the opposite holds for workers from Eastern Europe countries. Either these results stem from the fact that workers from Eastern Europe are mainly low or medium qualified or high qualified people are linked as substitutes to lower qualification levels. We cannot plenary answer this question since our data set contains no personal information of each foreign worker. But the results for the local economic structure give some hints on the qualification level of foreign workers. Especially the share of construction correlates with the representation of foreign employment. Mainly workers from Eastern Europe are over-represented in those regions where the share of construction in total gross value added is higher. Thus, foreign construction workers from Eastern Europe work for German firms because they can gain a higher wage compared to their home country.

After discussing the labor market conditions, we turn to the local amenities. First, it is very surprising that the European accessibility and the local crime rate are almost not correlated with the regional representation of foreign workers. The fundamental amenities are the share of green area in total area and the net rent. The first result is very intuitive since green area can be seen as a first nature amenity (see Buch *et al.*, 2014). Thus, the higher the share of green area is, the more attractive is a region as the place of residence. The second result appears to be counter-intuitive at first glance. Low net rents can be seen as

proxies for low living costs in a specific region. Thus, these regions are attractive for people moving to these places, as argued by Chen and Rosenthal. However, referring to Buettner and Ebertz (2009), the result turns out to be not that surprising. They argue that prices reflect the regions value regarding the quality of life. This argument supports the positive coefficient of net rents in our analysis. As it was brought forward by Buch *et al.* (2014), the results for such variables are ambiguous and rather an empirical question.

Our last group are cultural factors. As we can see from Table 4, cultural factors are main determinants for most nationalities. With the exception of Italian workers, cultural diversity correlates negatively with the regional representation quotient. But the interpretation is not straightforward. Since we measure cultural diversity with an inverse or normalized Herfindahl-Hirschman-Index (HHI), a higher value of the HHI indicates a lower diversification level. Thus, workers from different countries locate in those regions where a higher degree of diversification is present. This result is also underpinned by the positive coefficient for the total share of foreigners in a specific region.

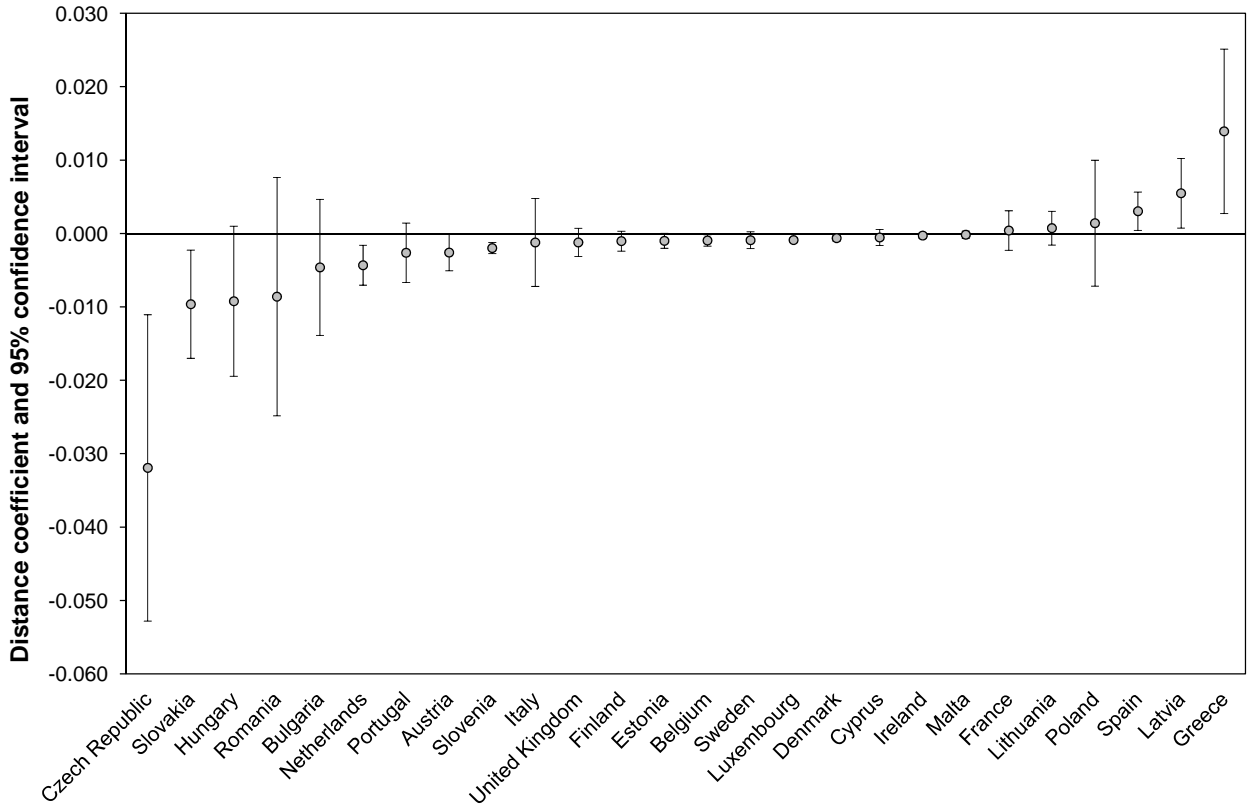
3.3. Baseline Results for Net Flows

Instead of analyzing regional representation quotients of foreign employment, it stands to reason, to ask whether distance influences also the flow of foreign workers. We preliminary do this with the same model from Equation (4), by substituting the RQ with the net flow in foreign employment. However, to control for network effects we also include the one-period-lagged representation quotient to describe the current net flow. Figure 4 shows, in the sense of Figure 3, the coefficient estimates for the distance variable together with the corresponding 95% confidence intervals. The figure reveals pretty interesting insights. Not only the representation of foreign workers at the regional level is influenced by distance, but also the year-on-year net movement of foreign employment. Thus, it is not only that local networks are important, distance is also crucial for new employment.

But let us first discuss the results for the neighboring states to Germany. We find negative significant effects of distance for the net flows of workers from the Czech Republic, the Netherlands, Austria, Luxembourg and Denmark. Insignificant effects appear for the net flows from France and Poland. These results are insofar interesting as that for these two nationalities the representation quotient explains a large part of the net flows. Thus, it is not the distance that drives regional net flows but rather existing networks on-site. But we will elaborate more on this in a later version of the paper.

We also find negative distance effects for net flows of workers from Slovakia, Slovenia and Estonia. For the other countries mostly network effects in terms of the lagged representation quotient are crucial for the location decision. Positive distance effects can be found for workers from Spain, Latvia and Greece.

Figure 4: Distance coefficient estimates net flows – complemented random effects model



Note: The coefficients are estimated in a random effects model with all control variables, year dummies and the one-period-lagged RQ.

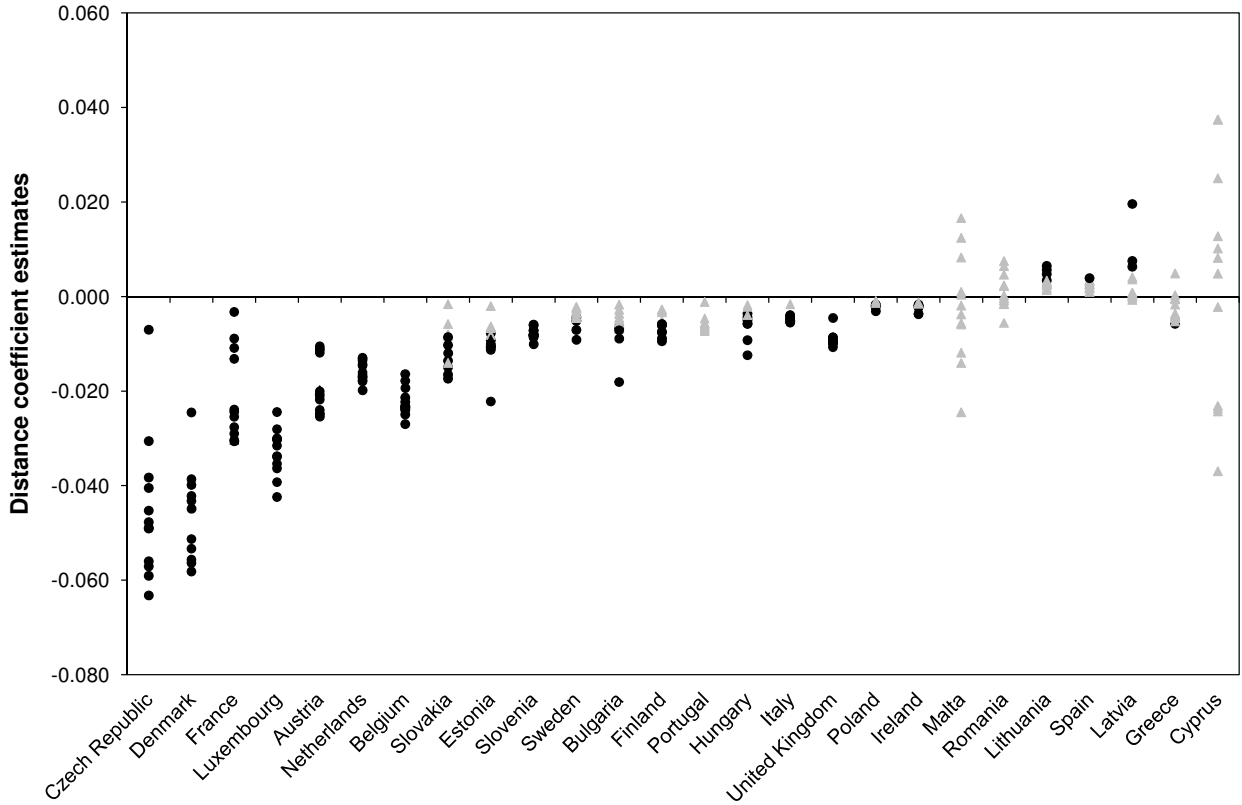
3.4. Robustness Checks

In order to back up our estimation results, we run several robustness checks. In this version of the paper, we will only present two robustness check. A deeper discussion will follow in a later version.

One critical point can be brought forward concerning the data structure. It could be argued that the variation in representation quotients is driven by single years. Another critical point is the estimation technique. In order to come up against these points, we re-estimate the complete model by three more approaches: (i) between effects estimator, (ii) pooled OLS and (iii) cross-section regressions for each year. All 12 distance coefficient estimates for each country are plotted in Figure 5. The countries are plotted in ascending order in terms of the coefficient estimates from the random effects model. Therefore Figure 5 is perfectly comparable with Figure 3. Estimates for the distance coefficients that are at least significant at the 10% confidence level are presented by a black circle. A gray triangle indicates non-significant coefficient estimates.

With the exception of Poland, the results for the other neighboring states are robust to any specification. Thus, distance is a crucial factor for the localization decision of workers from neighboring countries within Germany.

Figure 5: Distance coefficient estimates RQ – different estimation approaches



Note: The coefficients are estimated with different approaches. These are: random effects model, between effects estimator, pooled OLS and cross-section estimations for each year in the sample. The underlying model comprises all control variables, year dummies where applicable and the one-period-lagged net flow. Black circles present coefficient estimates that are at least significant at the 10% confidence level. Non-significant coefficient estimates are hold in gray triangles.

For non-neighboring countries such as Slovakia, Estonia, Slovenia, Finland, Hungary, Italy and the United Kingdom we also find results robust to the different estimation techniques. For Sweden, Bulgaria and Ireland the results keep their sign and almost their magnitude, but lose statistical significance. This could either be due to the fact that the standard errors are not precisely estimated or that the effect is not present at all. We will elaborate more on this in a latter version of the paper. No effect of distance can be detected for Malta, Romania, Greece and Cyprus which was also the case in the baseline estimation. The positive effects for Lithuania and Latvia appear in a large number of estimations but the results are not clear-cut. But also these results have to be more investigated in the future.

4. Conclusion

Using German administrative data from 2002 to 2012 we find a negative impact of distance on the representation of workers from most geographically close countries in German regions. The exception is Poland. The result holds for net-migrations flows of workers from geographically close countries as well. Of course the location choices of foreign workers also depend

on the local labor market conditions, Amenities and cultural factors. The importance of these factors varies between the countries of origin. Unfortunately, a final conclusion is not yet possible and will follow in a latter version of the paper.

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A. Data Set Description

Table 5: Data descriptions and sources

Variable	Description	Source	Period
<i>Representation quotient</i>	Share of foreign workers to total employment (no unit)	German Federal Employment Agency (2013)	2001-2012
<i>Net flow of workers</i>	Annual difference of foreign workers (persons per 10,000 employees)	German Federal Employment Agency (2013)	2001-2012
<i>Distance – neighbors</i>	Geographical distance from the center of the district to the nearest bordering municipality (in km)	own calculations	2001-2012
<i>Distance – non-neighbors</i>	Geographical distance from the center of the district to the geographical center of the country (in km)	own calculations	2001-2012
<i>Real GDP per employee</i>	Gross domestic product in real terms divided by the number of employees (in €)	Working Group Regional Accounts (2014)	2001-2012
<i>Unemployment rate</i>	Number of unemployed persons divided by the labor force (in %)	German Federal Institute for Research on Building, Urban Affairs and Spatial Development (2015)	2001-2012
<i>Participation rate</i>	Number of employed persons divided by the working age population (in %)	German Federal Institute for Research on Building, Urban Affairs and Spatial Development (2015)	2001-2012
<i>Share high qualified employees</i>	Number of high qualified employees divided by total employment (in %)	German Federal Institute for Research on Building, Urban Affairs and Spatial Development (2015)	2001-2012
<i>Apprenticeship training positions</i>	Number of new articles of apprenticeship plus vacant positions divided by the number of new articles of apprenticeship plus non-imparted applicants (per 100 applicants)	German Federal Institute for Research on Building, Urban Affairs and Spatial Development (2015)	2001-2012
<i>Courses in adult evening classes</i>	Number of courses in adult evening classes divided by the number of inhabitants (per 10,000 persons)	German Federal Institute for Research on Building, Urban Affairs and Spatial Development (2015)	2001-2012
<i>Share manufacturing</i>	Gross value added in manufacturing divided by total gross value added (in %)	Working Group Regional Accounts (2014)	2001-2012
<i>Share construction</i>	Gross value added in construction divided by total gross value added (in %)	Working Group Regional Accounts (2014)	2001-2012
<i>Share advanced services</i>	Gross value added in advanced services divided by total gross value added (in %)	Working Group Regional Accounts (2014)	2001-2012
<i>Share basic services</i>	Gross value added in basic services divided by total gross value added (in %)	Working Group Regional Accounts (2014)	2001-2012
<i>Marginal employment</i>	Number of marginal employed persons divided by total employment (in %)	German Federal Employment Agency (2015c)	2001-2012
<i>Balance of commuters</i>	Difference of in-commuter and out-commuter divided by total employment (per 100 employees)	German Federal Employment Agency (2015b)	2001-2012
<i>Employment growth</i>	Growth rate of employed persons subject to social security (in %)	German Federal Employment Agency (2013)	2001-2012
<i>Population size</i>	Number of inhabitants (in persons)	German Federal Statistical Office (2015c)	2001-2012
<i>Crime rate</i>	Number of cases divided by the number of inhabitants (per 100,000 persons)	German Federal Criminal Police Office (2014)	2003-2012

Continued on next page...

Table 5: Data descriptions and sources – continued

Variable	Description	Source	Period
<i>Hospital beds per capita</i>	Number of hospital beds divided by the number of inhabitants (per 10,000 persons)	German Federal Institute for Research on Building, Urban Affairs and Spatial Development (2015)	2004-2012
<i>Green area</i>	Share of green area (recreation area, woodland area and water expanse) in total area (in %)	German Federal Statistical Office (2015b)	2001-2012
<i>Overnight stays</i>	Number of overnight stays in tourist enterprises divided by the number of inhabitants (in persons)	German Federal Institute for Research on Building, Urban Affairs and Spatial Development (2015)	2001-2012
<i>Flat size</i>	Living space divided by the number of inhabitants (in m ² per person)	German Federal Institute for Research on Building, Urban Affairs and Spatial Development (2015)	2001-2012
<i>European accessibility</i>	Average travel time per car and plane to 41 European agglomerations (in min.)	German Federal Institute for Research on Building, Urban Affairs and Spatial Development (2015)	2001-2012
<i>Net rent without running costs</i>	Rents of newly and afresh apartments (in € per m ²)	German Federal Institute for Research on Building, Urban Affairs and Spatial Development (2011)	2004-2012
<i>Population density</i>	Total population divided by total area (in inhabitants per m ²)	German Federal Institute for Research on Building, Urban Affairs and Spatial Development (2015)	2001-2012
<i>Cultural diversity</i>	Inverse Herfindahl-Hirschman-Index based on foreigner shares from 207 nationalities	German Federal Statistical Office (2015a)	2001-2012
<i>Share of foreigners</i>	Total number of foreigners divided by the number of inhabitants (in %)	German Federal Statistical Office (2015a)	2001-2012

B. Detailed Estimation Results

Table 6: Detailed estimation results RQ – countries (I)

Variable	AT	BE	BG	CY	CZ	DK
Distance	-0.0254*** (0.0058)	-0.0193*** (0.0069)	-0.0089** (0.0041)	0.0081 (0.0207)	-0.0632*** (0.0163)	-0.0449** (0.0218)
Distance squared	3.043e-05*** (7.363e-06)	2.637e-05*** (1.004e-05)	2.852e-06** (1.396e-06)	-1.317e-06 (4.137e-06)	1.020e-04*** (2.875e-05)	4.224e-05** (2.090e-05)
Net flow _{t-1}	-0.0178 (0.0115)	0.0386* (0.0202)	0.0997*** (0.0039)	2.1293*** (0.4268)	-0.0658 (0.0711)	0.2482** (0.1021)
Real GDP per employee	-0.2314 (0.1676)	-0.0606 (0.0980)	0.0694 (0.1637)	1.3821** (0.5494)	-0.0730 (0.6018)	0.0422 (0.2041)
Unemployment rate	-0.0157** (0.0067)	0.0028 (0.0053)	0.0082 (0.0060)	0.0096 (0.0279)	-0.0255* (0.0136)	-0.0106 (0.0100)
Employment growth	0.1208 (0.2270)	-0.1007 (0.2530)	0.7212 (0.5189)	-2.7047 (2.6228)	0.0339 (0.6514)	-0.2545 (0.4262)
Participation rate	-0.0078 (0.0079)	0.0055 (0.0042)	-0.0067 (0.0054)	-0.0146 (0.0241)	-0.0026 (0.0204)	-0.0149 (0.0203)
High qualified employees	-2.585e-04 (0.0189)	9.240e-04 (0.0106)	-0.0117 (0.0125)	0.0320 (0.0542)	0.0356 (0.0530)	0.0081 (0.0147)
Training positions	-0.0032 (0.0027)	0.0025* (0.0014)	0.0020 (0.0020)	0.0116 (0.0121)	0.0214 (0.0170)	0.0193* (0.0103)
Courses evening classes	-3.323e-04 (2.812e-04)	3.517e-04 (3.530e-04)	-5.322e-04 (4.622e-04)	0.0023 (0.0027)	-0.0041 (0.0039)	-9.370e-04 (0.0013)
Share manufacturing	-0.0020 (0.0021)	-6.933e-04 (0.0021)	-0.0051 (0.0031)	0.0115 (0.0124)	-0.0309 (0.0274)	0.0183 (0.0186)
Share construction	-0.0013 (0.0090)	0.0049 (0.0075)	0.0293* (0.0154)	0.0392 (0.0535)	-0.0479 (0.0717)	-0.0050 (0.0232)
Share advanced services	-0.0019 (0.0027)	4.394e-04 (0.0029)	0.0017 (0.0050)	0.0312* (0.0183)	-0.0069 (0.0180)	0.0226** (0.0108)
Share basic services	-0.0088 (0.0066)	-0.0065 (0.0050)	0.0076 (0.0059)	-0.0256 (0.0208)	-0.0173 (0.0207)	0.0196 (0.0156)
Marginal employment	-0.0025 (0.0048)	0.0145** (0.0065)	-0.0220** (0.0090)	0.0635 (0.0474)	-0.0295 (0.0301)	-0.0365** (0.0183)
Balance of commuters	0.0060*** (0.0023)	0.0044** (0.0020)	-0.0015 (0.0013)	-0.0045 (0.0074)	0.0102 (0.0104)	-3.727e-04 (0.0046)
European accessibility	-1.473e-04 (2.188e-04)	1.256e-04 (2.188e-04)	-5.926e-04 (3.888e-04)	-0.0016 (0.0017)	-0.0023 (0.0014)	3.339e-04 (3.939e-04)
Hospital beds per capita	-0.0011 (7.705e-04)	-0.0011 (0.0012)	0.0026** (0.0012)	0.0015 (0.0031)	-0.0067 (0.0049)	-1.880e-04 (7.816e-04)
Green area	0.0120** (0.0061)	-0.0011 (0.0044)	0.0031 (0.0020)	0.0091 (0.0059)	0.0446** (0.0219)	0.0162 (0.0158)
Net rent	-5.018e-04 (0.0392)	0.0309 (0.0277)	0.2091*** (0.0355)	0.1570 (0.1176)	-0.1414 (0.1610)	-0.1220 (0.1209)
Crime rate	-0.0042 (0.0744)	-0.0848 (0.0628)	0.0245 (0.0999)	0.2784 (0.3193)	0.2538 (0.2341)	0.0714 (0.1873)
Overnight stays	-0.0076 (0.0141)	-0.0144** (0.0073)	0.0017 (0.0049)	6.322e-04 (0.0137)	0.0422 (0.0436)	-0.0043 (0.0105)
Flat size	0.0084 (0.0120)	0.0071 (0.0071)	0.0340*** (0.0089)	0.0347 (0.0327)	0.0171 (0.0218)	0.0136 (0.0198)
Population size	-8.373e-08 (2.036e-07)	7.954e-07 (5.486e-07)	2.989e-08 (1.179e-07)	-4.252e-08 (2.296e-07)	7.766e-07* (4.009e-07)	-1.142e-06 (1.311e-06)
Cultural diversity	0.2047 (0.5871)	-0.0455 (0.7844)	-2.1593*** (0.3626)	-1.7536 (1.5622)	-6.8237 (5.2735)	-2.4690 (1.8314)
Population density	0.3989** (0.1667)	-0.0514 (0.2033)	0.0645 (0.0489)	0.1996 (0.1524)	-0.7901** (0.3488)	0.8767 (0.7274)
Share of foreigners	-0.0019 (0.0110)	0.0334** (0.0152)	0.0626*** (0.0105)	0.0084 (0.0381)	0.1058 (0.0823)	0.0284 (0.0224)
East	0.3576 (0.2243)	-0.0377 (0.1278)	-4.568e-04 (0.1190)	0.7553* (0.4418)	-3.8505*** (1.0978)	0.2868 (0.7016)
City	-0.7700* (0.4111)	-0.3791 (0.5099)	-0.2091* (0.1082)	0.3521 (0.4557)	0.2233 (0.8152)	-1.0947 (0.8707)
c	6.2457** (2.8975)	3.7352* (2.0759)	3.5178 (4.2471)	-35.0790 (28.1460)	12.2970* (7.4304)	3.8451 (4.4783)
Time dummies	YES	YES	YES	YES	YES	YES
Overall R^2	0.3086	0.2154	0.5523	0.1032	0.3133	0.2250
Between R^2	0.3104	0.2168	0.6387	0.1493	0.3337	0.2262
Within R^2	0.0557	0.0434	0.2671	0.0396	0.0495	0.1245
Obs.	3,599	3,599	3,599	3,599	3,599	3,599

Note: This table shows the complete results for Austria, Belgium, Bulgaria, Cyprus, the Czech Republic and Denmark. The dependent variable is the representation quotient. The results are obtained from a random-effects model with all control variables, time dummies and the one-year-lagged net flow of workers. The horizontal lines separate the different variable groups from each other. All control variables are arranged as for the descriptive statistics. Standard errors are clustered at the cross-section level and shown in parentheses. ***, **, * indicate statistical significance at the 1%, 5% and 10% level.

Table 7: Detailed estimation results RQ – countries (II)

Variable	EE	EL	ES	FI	FR	HU
Distance	-0.0104*** (0.0038)	0.0049 (0.0035)	0.0034 (0.0021)	-0.0089*** (0.0030)	-0.0306*** (0.0056)	-0.0057*** (0.0021)
Distance squared	3.719e-06*** (1.420e-06)	-1.539e-06 (1.012e-06)	-1.135e-06 (7.941e-07)	2.335e-06*** (8.639e-07)	4.093e-05*** (7.730e-06)	1.890e-06 (1.373e-06)
Net flow _{t-1}	0.6319*** (0.0864)	0.0021 (0.0016)	0.0029 (0.0035)	0.1706*** (0.0306)	-0.0057 (0.0052)	0.0796*** (0.0094)
Real GDP per employee	-0.3953 (0.2975)	-0.0326 (0.0611)	-0.0820 (0.1011)	0.2988* (0.1545)	-0.2869** (0.1175)	0.4071** (0.1878)
Unemployment rate	-0.0112 (0.0159)	-0.0075*** (0.0026)	-0.0066** (0.0029)	-0.0100* (0.0060)	-0.0110** (0.0051)	0.0083 (0.0076)
Employment growth	0.4721 (1.0780)	-0.0885 (0.1379)	0.1374 (0.2115)	-0.3925 (0.3461)	0.4452* (0.2473)	1.6437** (0.6586)
Participation rate	0.0090 (0.0132)	0.0035** (0.0018)	0.0092*** (0.0030)	0.0057 (0.0051)	-0.0054 (0.0049)	-0.0056 (0.0070)
High qualified employees	-0.0116 (0.0149)	-7.123e-04 (0.0052)	0.0169** (0.0076)	0.0369** (0.0178)	0.0284** (0.0127)	-0.0700*** (0.0179)
Training positions	0.0053 (0.0071)	5.843e-04 (7.169e-04)	4.859e-04 (9.913e-04)	0.0028 (0.0020)	0.0015 (0.0017)	0.0026 (0.0022)
Courses evening classes	1.159e-04 (7.756e-04)	3.015e-04 (1.984e-04)	-2.626e-04 (2.911e-04)	6.225e-06 (4.572e-04)	-3.440e-04 (2.896e-04)	5.116e-04 (5.304e-04)
Share manufacturing	0.0057 (0.0070)	0.0014 (0.0014)	0.0022 (0.0020)	1.701e-04 (0.0032)	0.0060** (0.0029)	0.0029 (0.0041)
Share construction	-0.0170 (0.0181)	-0.0034 (0.0036)	0.0061 (0.0051)	-0.0038 (0.0100)	0.0078 (0.0066)	0.0462** (0.0183)
Share advanced services	-9.438e-05 (0.0109)	0.00310** (0.0015)	-0.0027 (0.0030)	0.0108* (0.0061)	7.906e-04 (0.0032)	-9.400e-04 (0.0063)
Share basic services	0.0254** (0.0099)	-0.0030 (0.0020)	5.480e-04 (0.0037)	0.0145** (0.0064)	-0.0063 (0.0051)	0.0046 (0.0054)
Marginal employment	0.0094 (0.0125)	-0.0048* (0.0028)	-0.0040 (0.0044)	-0.0068 (0.0056)	0.0065 (0.0046)	0.0120 (0.0083)
Balance of commuters	-0.0018 (0.0022)	-2.875e-04 (0.0010)	0.0034*** (0.0013)	5.677e-04 (0.0012)	0.0103*** (0.0029)	0.0013 (0.0021)
European accessibility	9.092e-04 (8.589e-04)	1.533e-04 (1.234e-04)	-4.002e-04 (2.467e-04)	2.624e-05 (5.948e-04)	4.419e-04* (2.575e-04)	-1.052e-04 (6.336e-04)
Hospital beds per capita	0.0016 (0.0016)	-7.425e-04 (5.277e-04)	-7.885e-05 (4.603e-04)	-7.289e-04 (6.046e-04)	6.623e-04 (6.060e-04)	-8.619e-04 (9.908e-04)
Green area	0.0016 (0.0032)	0.0020 (0.0027)	0.0080*** (0.0021)	0.0041** (0.0020)	-7.453e-05 (0.0075)	0.0011 (0.0026)
Net rent	0.1734*** (0.0524)	0.0393*** (0.0151)	0.0736*** (0.0196)	0.1254*** (0.0336)	-0.0396 (0.0330)	0.3543*** (0.0508)
Crime rate	0.3026** (0.1350)	-0.0382 (0.0327)	-0.0071 (0.0498)	0.0476 (0.0716)	-0.0191 (0.0481)	-0.0107 (0.0755)
Overnight stays	1.469e-04 (0.0075)	-0.0013 (0.0024)	0.0042 (0.0029)	-0.0033 (0.0033)	0.0015 (0.0050)	0.0101* (0.0055)
Flat size	0.0164 (0.0134)	0.0034 (0.0028)	-0.0016 (0.0041)	3.191e-04 (0.0068)	0.0025 (0.0051)	0.0111 (0.0103)
Population size	1.368e-07 (1.304e-07)	1.271e-07 (2.587e-07)	6.610e-08 (1.881e-07)	1.444e-07 (9.355e-08)	1.448e-07 (3.656e-07)	-3.553e-07*** (1.098e-07)
Cultural diversity	-1.4191* (0.7315)	-0.0782 (0.2008)	0.2798 (0.3177)	-0.9188*** (0.3472)	-0.3260 (0.3548)	-1.4916*** (0.4473)
Population density	-0.0222 (0.0879)	0.5254*** (0.0860)	0.5055*** (0.0745)	0.1006* (0.0606)	0.3200 (0.3129)	0.0976* (0.0510)
Share of foreigners	0.0154 (0.0160)	0.0164*** (0.0056)	0.0195** (0.0099)	0.0222** (0.0090)	-0.0320 (0.0200)	0.0529*** (0.0145)
East	-0.4683** (0.2294)	-0.2776*** (0.0718)	-0.3911*** (0.0793)	-0.4079*** (0.1172)	0.1257 (0.1904)	0.1420 (0.1408)
City	0.1761 (0.1762)	-0.8229*** (0.2125)	-1.0170*** (0.1459)	-0.2248* (0.1332)	-1.0098 (0.8532)	-0.1426 (0.0974)
c	5.7917 (4.6355)	-5.8845* (3.1412)	-4.7212** (1.8766)	2.6046 (3.4718)	7.0777** (2.8111)	-3.7950 (2.5453)
Time dummies	YES	YES	YES	YES	YES	YES
Overall R^2	0.1998	0.3788	0.4606	0.5440	0.3173	0.5919
Between R^2	0.3215	0.3813	0.4692	0.6084	0.3170	0.6787
Within R^2	0.0596	0.0344	0.0714	0.0519	0.0512	0.2133
Obs.	3,599	3,599	3,599	3,599	3,599	3,599

Note: This table shows the complete results for Estonia, Greece, Spain, Finland, France and Hungary. The dependent variable is the representation quotient. The results are obtained from a random-effects model with all control variables, time dummies and the one-year-lagged net flow of workers. The horizontal lines separate the different variable groups from each other. All control variables are arranged as for the descriptive statistics. Standard errors are clustered at the cross-section level and shown in parentheses. ***, **, * indicate statistical significance at the 1%, 5% and 10% level.

Table 8: Detailed estimation results RQ – countries (III)

Variable	IE	IT	LT	LU	LV	MT
Distance	-0.0020** (8.296e-04)	-0.0052** (0.0021)	0.0026 (0.0019)	-0.0301*** (0.0078)	0.0036 (0.0030)	9.701e-04 (0.0154)
Distance squared	3.067e-06** (1.307e-06)	2.070e-06* (1.106e-06)	-1.470e-06* (8.655e-07)	3.853e-05*** (1.016e-05)	-1.798e-06 (1.203e-06)	-6.032e-07 (4.383e-06)
Net flow _{t-1}	0.1326*** (0.0252)	3.641e-04 (6.419e-04)	0.2228*** (0.0363)	0.4065*** (0.0654)	0.5094*** (0.0413)	4.6938*** (1.0486)
Real GDP per employee	0.4678*** (0.1701)	-0.0947* (0.0546)	0.3147 (0.2151)	-0.2355 (0.3369)	0.6361*** (0.2304)	0.8392 (0.9100)
Unemployment rate	-0.0255*** (0.0063)	-0.0051*** (0.0017)	-0.0021 (0.0091)	0.0088 (0.0190)	-0.0320*** (0.0100)	-0.0879** (0.0385)
Employment growth	-0.6517* (0.3593)	0.0152 (0.1095)	0.2411 (0.5725)	1.1340 (1.2359)	1.4980* (0.8885)	-4.3302 (3.1064)
Participation rate	0.0022 (0.0056)	-7.633e-04 (0.0012)	-5.068e-04 (0.0066)	0.0175 (0.0224)	0.0086 (0.0072)	-0.0012 (0.0372)
High qualified employees	0.0145 (0.0101)	-0.0122 (0.0092)	-0.0248** (0.0099)	-0.0019 (0.0350)	-0.0430*** (0.0141)	-0.0582 (0.0673)
Training positions	-7.497e-04 (0.0017)	6.286e-04* (3.569e-04)	0.0023 (0.0029)	0.0050 (0.0044)	-3.430e-04 (0.0033)	0.0070 (0.0130)
Courses evening classes	4.750e-04 (4.017e-04)	1.531e-05 (1.375e-04)	-8.630e-04 (8.356e-04)	0.0017* (0.0010)	-8.857e-04 (7.174e-04)	0.0066 (0.0044)
Share manufacturing	-5.739e-04 (0.0033)	6.521e-04 (8.852e-04)	-0.0049 (0.0042)	-0.0052 (0.0083)	-0.0103** (0.0045)	0.0026 (0.0162)
Share construction	0.0094 (0.0114)	-0.0022 (0.0026)	-0.0032 (0.0162)	0.0103 (0.0197)	0.0075 (0.0170)	0.0163 (0.0659)
Share advanced services	0.0213*** (0.0058)	-0.0031** (0.0015)	-0.0014 (0.0058)	-0.0019 (0.0135)	-0.0047 (0.0063)	0.0013 (0.0323)
Share basic services	0.0155*** (0.0058)	-0.0055*** (0.0019)	0.0165*** (0.0053)	-0.0302** (0.0149)	0.0022 (0.0071)	0.0559 (0.0365)
Marginal employment	-0.0175*** (0.0068)	-0.0020 (0.0020)	0.0134 (0.0114)	0.0692 (0.0551)	0.0141 (0.0092)	0.0443 (0.0331)
Balance of commuters	-0.0034 (0.0022)	0.0025*** (6.395e-04)	5.474e-04 (0.0027)	0.0122 (0.0076)	0.0018 (0.0018)	-0.0018 (0.0154)
European accessibility	-7.879e-04* (4.344e-04)	-3.418e-05 (9.536e-05)	-0.0012** (4.935e-04)	6.377e-04 (6.997e-04)	2.046e-04 (6.136e-04)	-0.0019 (0.0021)
Hospital beds per capita	0.0015 (0.0011)	2.454e-04 (2.309e-04)	4.744e-04 (8.080e-04)	3.714e-04 (0.0017)	0.0012 (7.905e-04)	-0.0035 (0.0040)
Green area	0.0030 (0.0025)	0.0074*** (0.0020)	-1.595e-04 (0.0025)	-0.0056 (0.0069)	-6.236e-04 (0.0020)	-0.0032 (0.0085)
Net rent	0.1476*** (0.0322)	0.0304* (0.0182)	0.0728** (0.0329)	0.2867* (0.1729)	0.1889*** (0.0464)	0.2734 (0.2087)
Crime rate	0.0475 (0.1021)	0.0226 (0.0221)	0.0303 (0.0864)	-0.0847 (0.2070)	0.2553** (0.0996)	-0.2912 (0.5356)
Overnight stays	0.0043 (0.0064)	2.563e-04 (0.0020)	-0.0059 (0.0058)	-0.0101 (0.0162)	0.0030 (0.0039)	-0.0059 (0.0221)
Flat size	0.0056 (0.0078)	0.0022 (0.0021)	0.0324*** (0.0090)	0.0575 (0.0390)	0.0287** (0.0117)	-0.0027 (0.0500)
Population size	9.897e-08 (1.070e-07)	-1.489e-07 (1.314e-07)	-1.923e-07* (1.048e-07)	2.350e-07 (2.775e-07)	5.080e-08 (9.333e-08)	-5.015e-07 (4.452e-07)
Cultural diversity	-1.1395*** (0.4072)	0.3203** (0.1553)	-1.5508*** (0.4263)	-1.2736 (1.5396)	0.0534 (1.3610)	-0.0218 (2.0021)
Population density	0.0694 (0.0692)	0.6237*** (0.0769)	0.0541 (0.0604)	-0.6703** (0.3393)	-0.0136 (0.0747)	0.5665 (0.4547)
Share of foreigners	0.0297*** (0.0094)	-0.0014 (0.0037)	0.0764*** (0.0154)	0.0722 (0.0454)	0.0441*** (0.0170)	-0.0604 (0.0699)
East	0.0176 (0.1301)	-0.2618*** (0.0792)	0.1463 (0.1433)	0.5163 (0.8198)	0.2816 (0.2562)	0.6836 (0.6920)
City	-0.1332 (0.1271)	-1.0081*** (0.2023)	-0.2431 (0.1511)	0.9905* (0.5872)	0.0986 (0.1037)	0.5985 (0.7009)
c	-6.8483*** (2.1502)	1.1558 (1.1205)	-6.6861** (2.7596)	4.9900 (6.1540)	-13.4130*** (3.7011)	-11.1110 (17.6220)
Time dummies	YES	YES	YES	YES	YES	YES
Overall R^2	0.5467	0.4457	0.3159	0.3370	0.4061	0.1001
Between R^2	0.5946	0.4477	0.4030	0.3537	0.5520	0.1190
Within R^2	0.0369	0.0496	0.0815	0.0688	0.3068	0.0658
Obs.	3,599	3,599	3,599	3,599	3,599	3,599

Note: This table shows the complete results for Ireland, Italy, Lithuania, Luxembourg, Latvia and Malta. The dependent variable is the representation quotient. The results are obtained from a random-effects model with all control variables, time dummies and the one-year-lagged net flow of workers. The horizontal lines separate the different variable groups from each other. All control variables are arranged as for the descriptive statistics. Standard errors are clustered at the cross-section level and shown in parentheses. ***, **, * indicate statistical significance at the 1%, 5% and 10% level.

Table 9: Detailed estimation results RQ – countries (IV)

Variable	NL	PL	PT	RO
Distance	-0.0198*** (0.0043)	-0.0031*** (8.784e-04)	-0.0057 (0.0041)	0.0022 (0.0040)
Distance squared	2.688e-05*** (6.328e-06)	3.858e-06*** (1.144e-06)	2.310e-06 (1.629e-06)	-1.984e-06 (1.576e-06)
Net flow _{t-1}	-0.0045 (0.0124)	0.0157*** (0.0018)	0.0091*** (0.0015)	0.0401*** (0.0083)
Real GDP per employee	0.0852 (0.2803)	0.1631 (0.1022)	-0.0015 (0.0926)	0.1621 (0.1846)
Unemployment rate	-0.0147** (0.0070)	-0.0074* (0.0043)	-0.0081** (0.0033)	-0.0214*** (0.0066)
Employment growth	-0.5662** (0.2276)	1.0030*** (0.3750)	-0.0595 (0.1635)	0.4557 (0.4169)
Participation rate	-0.0055 (0.0052)	0.0081** (0.0035)	0.0029 (0.0028)	-0.0020 (0.0070)
High qualified employees	1.204e-04 (0.0066)	-0.0232*** (0.0076)	9.969e-05 (0.0063)	-0.0729*** (0.0120)
Training positions	0.0054** (0.0022)	0.0015 (0.0014)	0.0022** (8.525e-04)	-5.622e-04 (0.0023)
Courses evening classes	9.560e-04*** (3.468e-04)	-5.284e-04* (2.926e-04)	2.649e-04 (2.280e-04)	0.0018*** (6.108e-04)
Share manufacturing	4.785e-04 (0.0026)	0.0023 (0.0024)	7.145e-04 (0.0018)	0.0045 (0.0037)
Share construction	0.0047 (0.0121)	0.0184** (0.0086)	0.0046 (0.0051)	0.0510** (0.0236)
Share advanced services	-0.0034 (0.0047)	0.0033 (0.0032)	0.0014 (0.0026)	0.0035 (0.0053)
Share basic services	0.0145 (0.0168)	0.0071* (0.0036)	0.0015 (0.0037)	-0.0038 (0.0059)
Marginal employment	0.0011 (0.0010)	0.0128*** (0.0049)	0.0080* (0.0046)	0.0051 (0.0080)
Balance of commuters	0.0034** (0.0017)	-0.0039** (0.0019)	0.0022 (0.0015)	-9.228e-04 (0.0018)
European accessibility	-5.518e-06 (2.536e-04)	-5.221e-04* (2.902e-04)	-2.562e-04 (2.214e-04)	-0.0016*** (5.869e-04)
Hospital beds per capita	4.416e-04 (4.118e-04)	7.397e-04 (4.628e-04)	-6.357e-04 (4.278e-04)	-7.639e-05 (8.858e-04)
Green area	-0.0100** (0.0050)	-0.0027** (0.0014)	0.0116** (0.0048)	-0.0029 (0.0020)
Net rent	0.0442* (0.0246)	0.0702*** (0.0201)	0.0232 (0.0203)	0.1778*** (0.0322)
Crime rate	-0.1272 (0.0856)	0.1725*** (0.0542)	-0.0294 (0.0420)	0.0600 (0.0962)
Overnight stays	0.0220*** (0.0061)	-8.661e-05 (0.0028)	8.463e-04 (0.0035)	0.0070 (0.0044)
Flat size	0.0102 (0.0062)	0.0169** (0.0068)	-0.0045 (0.0047)	0.0374*** (0.0078)
Population size	3.062e-07 (2.375e-07)	8.366e-08 (7.349e-08)	-3.725e-09 (2.350e-07)	-4.379e-07*** (7.910e-08)
Cultural diversity	-0.2442 (0.9243)	0.4112 (0.3424)	-0.4704 (0.3563)	-0.9525* (0.5019)
Population density	0.1504 (0.1287)	0.0885 (0.0588)	0.5020*** (0.1096)	0.1628** (0.0808)
Share of foreigners	0.0154 (0.0147)	0.0380*** (0.0060)	0.0184** (0.0078)	0.0988*** (0.0102)
East	0.5572*** (0.2117)	-0.2063*** (0.0797)	-0.3466*** (0.1239)	-0.0404 (0.1279)
City	-0.7671*** (0.2877)	-0.0284 (0.0952)	-0.9481*** (0.2063)	-0.1635 (0.1409)
c	2.0504 (3.1133)	-5.0856*** (1.2751)	1.0974 (2.7358)	-4.6142 (4.1128)
Time dummies	YES	YES	YES	YES
Overall R^2	0.3225	0.5123	0.2106	0.6444
Between R^2	0.3246	0.5588	0.2133	0.7001
Within R^2	0.0550	0.2406	0.0470	0.1703
Obs.	3,599	3,599	3,599	3,599

Note: This table shows the complete results for the Netherlands, Poland, Portugal and Romania. The dependent variable is the representation quotient. The results are obtained from a random-effects model with all control variables, time dummies and the one-year-lagged net flow of workers. The horizontal lines separate the different variable groups from each other. All control variables are arranged as for the descriptive statistics. Standard errors are clustered at the cross-section level and shown in parentheses. ***, **, * indicate statistical significance at the 1%, 5% and 10% level.

Table 10: Detailed estimation results RQ – countries (V)

Variable	SE	SI	SK	UK
Distance	-0.0091*** (0.0020)	-0.0101*** (0.0021)	-0.0120*** (0.0043)	-0.0045** (0.0018)
Distance squared	3.138e-06*** (7.509e-07)	6.012e-06*** (1.468e-06)	5.216e-06* (2.831e-06)	2.746e-06** (1.367e-06)
Net flow _{t-1}	0.1887*** (0.0181)	0.0991*** (0.0176)	0.1562*** (0.0265)	0.0258*** (0.0049)
Real GDP per employee	0.3915* (0.2038)	-0.0458 (0.1639)	0.7257** (0.3122)	0.0199 (0.1224)
Unemployment rate	-0.0318*** (0.0078)	-0.0032 (0.0069)	-0.0124 (0.0113)	-0.0106** (0.0049)
Employment growth	-0.7964 (0.4968)	-0.5258 (0.4007)	0.4432 (0.5233)	0.1225 (0.1911)
Participation rate	-0.0039 (0.0082)	0.0035 (0.0045)	-0.0028 (0.0093)	0.0043 (0.0035)
High qualified employees	0.0339*** (0.0123)	0.0011 (0.0173)	-0.1333*** (0.0366)	0.0104 (0.0127)
Training positions	0.0026 (0.0020)	-0.0024 (0.0021)	0.0067** (0.0031)	0.0026* (0.0014)
Courses evening classes	1.559e-04 (5.067e-04)	3.040e-04 (5.106e-04)	2.601e-04 (0.0010)	2.557e-04 (2.712e-04)
Share manufacturing	-0.0064 (0.0042)	0.0018 (0.0028)	-0.0025 (0.0062)	0.0053* (0.0027)
Share construction	0.0032 (0.0104)	-0.0054 (0.0086)	0.0498** (0.0241)	0.0098** (0.0049)
Share advanced services	0.0058 (0.0048)	7.994e-04 (0.0039)	0.0126 (0.0106)	0.0071 (0.0044)
Share basic services	0.0130* (0.0073)	-0.0028 (0.0051)	0.0024 (0.0089)	0.0110 (0.0073)
Marginal employment	-0.0181 (0.0114)	-0.0173** (0.0084)	0.0110 (0.0133)	-0.0039 (0.0048)
Balance of commuters	-8.378e-05 (0.0024)	-0.0025 (0.0017)	0.0073*** (0.0028)	0.0027 (0.0018)
European accessibility	-2.782e-04 (4.625e-04)	-5.454e-04** (2.596e-04)	7.406e-04 (6.851e-04)	-1.737e-04 (3.096e-04)
Hospital beds per capita	-0.0015* (8.041e-04)	4.724e-04 (6.286e-04)	-2.414e-04 (0.0022)	2.321e-04 (5.107e-04)
Green area	0.0027 (0.0022)	0.0010 (0.0030)	0.0068 (0.0047)	0.0013 (0.0024)
Net rent	0.1052** (0.0422)	-0.0040 (0.0481)	0.6223*** (0.1264)	0.0727*** (0.0230)
Crime rate	-0.0050 (0.1113)	0.0021 (0.0675)	-0.1359 (0.1105)	3.180e-04 (0.0371)
Overnight stays	-0.0086* (0.0046)	0.0047 (0.0053)	0.0401* (0.0206)	-9.479e-04 (0.0037)
Flat size	0.0069 (0.0090)	-0.0071 (0.0071)	0.0051 (0.0132)	-0.0039 (0.0047)
Population size	1.257e-07 (1.265e-07)	-3.949e-09 (1.235e-07)	-4.935e-07** (2.000e-07)	2.265e-07** (9.396e-08)
Cultural diversity	-1.7266*** (0.4170)	-0.9310** (0.4296)	0.7300 (0.8603)	-0.0259 (0.3025)
Population density	0.1403* (0.0731)	0.3471*** (0.0874)	-0.0374 (0.1075)	0.1472 (0.0932)
Share of foreigners	0.0185 (0.0116)	0.0569*** (0.0152)	0.0147 (0.0228)	0.0119 (0.0134)
East	-0.2542 (0.1605)	-0.2644*** (0.1221)	-0.2012 (0.2297)	-0.2247*** (0.1007)
City	-0.2909** (0.1354)	-0.7380*** (0.2151)	0.1454 (0.2036)	-0.4312** (0.1863)
c	1.5748 (3.1662)	3.7494 (2.5690)	-4.5630 (3.6656)	0.0623 (1.5207)
Time dummies	YES	YES	YES	YES
Overall R^2	0.5322	0.4339	0.5071	0.2969
Between R^2	0.5921	0.4518	0.5540	0.3022
Within R^2	0.0811	0.0732	0.1081	0.0808
Obs.	3,599	3,599	3,599	3,599

Note: This table shows the complete results for Sweden, Slovenia, Slovakia and the United Kingdom. The dependent variable is the representation quotient. The results are obtained from a random-effects model with all control variables, time dummies and the one-year-lagged net flow of workers. The horizontal lines separate the different variable groups from each other. All control variables are arranged as for the descriptive statistics. Standard errors are clustered at the cross-section level and shown in parentheses. ***, **, * indicate statistical significance at the 1%, 5% and 10% level.