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Immigration and new firm formation: Evidence from a quasi-experimental setting in Germany

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Immigration and New Firm Formation – Evidence from a Quasi-experimental Setting in Germany

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Vera Jahn and Max Friedrich Steinhardt¹

Immigration and New Firm Formation – Evidence from a Quasi-experimental Setting in Germany

Abstract

This paper analyzes in how far immigration affects firm formation at the regional level. For this purpose, we exploit a placement policy in Germany in the 1990s for immigrants of German origin from Eastern Europe and the former Soviet Union. Our panel regressions suggest that immigration had a positive impact on regional firm formation. The most likely mechanisms driving this result are labor supply-side effects and positive implications of cultural diversity. Overall, our paper demonstrates that immigration induced changes in local labor supply can partially be absorbed by the creation of firms.

JEL Classification: F22, L26, R11

Keywords: Immigration; placement policy; economic impact; firms

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1. Introduction

Immigration is an enduring issue, challenge and opportunity for developed countries in the Northern hemisphere. The related academic and public discourse centers on questions about the impact of immigration on wages and employment of natives (e.g. Borjas 1994, Steinhardt 2011, Foged and Peri 2016), the fiscal implications of immigration (e.g. Storesletten 2000, Dustmann and Frattini 2014, de la Rica et al. 2015) and lately increasingly about the political effects of immigrant and refugee inflows (e.g. Otto and Steinhardt 2014, Barone et al. 2016, Dustmann et al. 2018). A thus far underexplored question is in how far immigration affects business creation in the host country at the regional level.

One of the few studies addressing the link between immigration and firm creation is the one by Olney (2013). He finds that a large influx of unskilled immigrants in the US in urban regions leads to an increase in the number of establishments. In line with this, Dustmann and Glitz (2015) document for Germany that the creation of new establishments is a factor for the absorption of local supply shocks through immigration. Both studies make use of an instrumental variable approach based on historical settlement of immigrants to deal with endogenous location decision of immigrants. In a recent paper for Italy, Bettin et al. (2018) analyze the link between firm entry and predominantly low-skilled migration and find that the stock of foreign population is positively correlated with regional self-employment.

This paper investigates the impact of immigration on the creation of firms. In particular, we analyze how inflows of immigrants into German regions in the past have affected firm formation. We tackle the challenge of endogenous location decisions of immigrants by exploiting a unique placement policy in post-unification Germany which was implemented for so-called *Aussiedler*. These were immigrants of German origin, therefore also called ethnic Germans, who originated from Eastern Europe and the former Soviet Union. The aim of the placement policy was to share the fiscal, economic and social burden equitably across German regions. We use these quasi-experimental regional inflows in a panel model to estimate how regional immigration of ethnic Germans affected firm formations.

We find that a rising inflow of ethnic Germans positively affects overall regional net firm formation, defined as the difference between the total number of business registrations and the total number of business deregistrations. Our finding is robust to a number of changes in the specification and main variables and holds after controlling for

state-specific time trends. The magnitude of the effect is far from negligible and economically significant. In terms of mechanism, our results are likely driven by labor supply-side effects and positive implications of cultural diversity, while firm formations by ethnic Germans are unlikely to play an important role in our estimates.

The paper is organized as followed: Section 2 summarizes the relevant literature, while Section 3 provides background information about the immigration of ethnic Germans. Section 4 describes the estimation strategy and data used. In Section 5, the results of the empirical analysis are presented. Section 6 concludes the paper.

2. Related Literature

New firm formation is generally regarded as an individual choice. If the expected profits from starting and running a business exceed the wage from a dependent work, individuals are more inclined to become an entrepreneur (Evans and Leighton 1989, Blanchflower and Oswald 1998). Besides the financial aspect, personal characteristics like age, gender, education and individual employment histories tend to play a role (Levine and Rubinstein 2017). However, the decision making process of an individual about starting a business also depends on the local context. Hence, there are good reasons to explore new firm formation from a broader perspective. Minniti (2005) argues that a potential entrepreneur cannot fully overlook his decision making process whether to found a new business or not since the business environment usually is non-transparent. In order to cope with ambiguity, the potential entrepreneur makes use of cues and information provided by business owners in his local surrounding. Additionally, business creation often aims at commercially exploiting new ideas. These new ideas can be created endogenously or exogenously. On the one hand, the potential entrepreneur generates new knowledge by himself. On the other hand, investments in research and development by incumbent firms and research institutions may also lead to new ideas. When incumbent firms do not commercialize new knowledge themselves (e.g. by bringing new product innovations to the market or by reducing production costs through process innovations), they create entrepreneurial opportunities for others. The spillover of knowledge, e.g. from incumbent firms to potential entrepreneurs, tend to be geographically bounded (Qian 2013, Cheng and Li 2012). The knowledge spillover theory of entrepreneurship, introduced by Acs et al. (2009), thus explicitly considers entrepreneurial activities within the regional context.

A number of empirical studies have focused on the link between cultural diversity and firm formation (e.g.

Rodríguez-Pose and Hardy (2015), Audretsch et al. (2010), Sobel et al. (2010) and Qian (2013)). Immigrants bring various experiences from different cultural environments into the host country. Due to their diverse backgrounds they likely interpret and evaluate new knowledge differently than natives. While incumbent firms and research institutions may not see the potential benefits of new ideas, others might see them as potentially valuable. Thus, culturally diverse populations facilitate the spillover of knowledge and thereby foster entrepreneurial opportunities (Audretsch et al. 2010, Rodríguez-Pose and Hardy 2015, Qian 2013, Cheng and Li 2012). Moreover, diverse cultural and educational backgrounds from immigrants expand the knowledge base in the host country, increase absorptive capacity and thereby enhance the ability to recognize and exploit new knowledge. Besides facilitating the spillover of knowledge, cultural diversity might also positively influence the creation of new ideas. Abilities and knowledge stemming from diverse environments in terms of culture and education are likely to enhance a population's problem-solving potential and thereby stimulate the creation of new ideas (Alesina and La Ferrara 2005, Peroni et al. 2016, Berliant and Fujita 2008). Immigrants could also promote innovation activities in the host country by providing complementary skills like entrepreneurship to local inventors (Hunt and Gauthier-Loiselle 2010). Additionally, skills and abilities of immigrants that complement those of natives can improve natives' productivity (Ottaviano and Peri 2006).

In line with these arguments, Audretsch et al. (2010), Qian (2013), Rodríguez-Pose and Hardy (2015), and Sobel et al. (2010) find a significantly positive relation between cultural diversity and entrepreneurship in different countries. Audretsch et al. (2010) analyze the link between cultural diversity and start-ups per inhabitants for German functional regions (Raumordnungsregionen) and detect a significantly positive relationship. This result holds true for technology oriented start-ups in general, technology oriented services as well as for high tech start-ups. Qian (2013) also finds a significantly positive relation between diversity and new firm formation rates for U.S. metropolitan statistical areas. He regresses the number of new single-unit establishments divided by the labor force in 2002/03 on a diversity index from 2000. Using time lags, he partially addresses possible endogeneity. In a study for England and Wales, Rodríguez-Pose and Hardy (2015) detect a positive link between cultural diversity and entrepreneurship. The result holds true for cultural diversity indices in terms of ethnicity and regarding birthplace. Moreover, estimates from an instrument variable approach indicates a causal influence of cultural diversity on regional start-up activities. As instrument variable Rodríguez-Pose and Hardy (2015) use the composition of diversity within regions ten years before and create

a predicted index of diversity using the growth in each ethnic group or birthplace on the national level. Sobel et al. (2010) study the effect of cultural diversity on entrepreneurship for U.S. states using ordinary least squares estimation methods. They discover a significantly positive impact of cultural diversity but with diminishing returns. They argue cultural diversity is regarded as cultural capital, subject to diminishing returns like all other productive inputs too. Cheng and Li (2012) however only find a positive link between cultural diversity and new firm formation in some U.S. industries (e.g. wholesale and retail as well as hospitality sector). In other industries like education, and agriculture and mining the effect is statistically insignificant.

Besides cultural diversity, the relevant literature poses further arguments why immigration might have an impact on business creation on the regional level. Immigration might have a positive demand-side effect on entrepreneurship since it likely increases culture-specific demands for products and services. Satisfying these demands offer market opportunities for new businesses whenever incumbent firms fail to exploit them (Mazzolari and Neumark 2012, Rodríguez-Pose and Hardy 2015, Cheng and Li 2012, Qian 2013). Olney (2013) analyzes the impact of immigration on the number of establishments in U.S. Metropolitan Statistical Areas, using historical settlement patterns of immigrants as instrument variable strategy. He finds a positive but insignificant effect of low-skilled immigration on the local number of establishments due to an immigrant-induced increase in consumption.

Moreover, immigrants could have multiple positive supply-side effects on new firm formation. These supply-side effects can be differentiated into two broad categories. First, immigration enhances labor supply. In instances in which the skill distribution of immigrants differs from the one of the native population, immigration additionally changes the skill composition of labor supply. The excess supply of often low-skilled immigrants can be absorbed into the local labor market by expanding production. This might in the end lead to new firm formation. Olney (2013) finds empirical evidence for US urban regions that firms increase the number of establishments as a result of a large influx of low-skilled immigrants into the local labor market. Dustmann and Glitz (2015) confirm the result for the German market, finding the creation of establishments to play an important role in the absorption of local supply shocks through immigration. Second, immigrants could start new businesses on their own. Immigrants might be inherent risk-takers and can thus be viewed as more likely to become entrepreneurs (Rodríguez-Pose and Hardy 2015, Constant et al. 2007). Immigrants from countries with a relatively large sector of the self-employed likely

have experiences in self-employment. This sector-specific human capital might increase the chance of starting a new business in the host country (Hammarstedt 2001, Vinogradov and Kolvereid 2007). Furthermore, immigrants have entrepreneurial opportunities in trading goods with their home countries (Sobel et al. 2010) due to joint business networks, similar languages and cultural ties (Fairlie and Lofstrom 2015). They may exploit their knowledge of their home country's economy and institutions to reduce import and export costs with respect to their home countries (Bratti et al. 2018). Bratti et al. (2018) find a significantly positive impact of immigration on exports in manufacturing in Italian provinces. In another study on Italian regions, Bettin et al. (2018) find a significant positive relationship between regional entrepreneurship and the stock of foreign-born individuals. Sector specific estimates suggest that immigrants mainly contribute to the creation of firms that typically require small start-up capital.

Besides these pull factors, immigrants might also be pushed into self-employment in the host country. Due to disadvantages like language problems and discrimination in finding a salaried work, immigrants might favor founding a firm on their own (Peroni et al. 2016, Constant et al. 2007, Hammarstedt 2001).

Besides numerous theoretical arguments and empirical findings highlighting the positive impact of immigration on new firm formation, there might also be some negative aspects. In diverse populations communication problems might arise due to different languages, cultures and social norms (Rodríguez-Pose and Hardy 2015), diminishing the creation and spillover of knowledge. Furthermore, individuals from different backgrounds might favour communicating with members of their own ethnic group. Hence, subgroups within the population might arise that are less likely to create new knowledge together (Lee 2015).

We contribute to the empirical literature by exploiting a quasi-natural experiment of immigration in Germany. Thus, we can interpret our estimates on the relationship between immigration and regional business creation as causal effects.

3. Ethnic German Immigration

During the dissolution of the Soviet Union, Germany experienced massive inflows of ethnic Germans from Eastern Europe and the territory of Post Soviet states. These immigrants, also known as Aussiedler, were descendants of Germans who had migrated to Poland, Romania, Russia and other Eastern European and Asian states in former

centuries were they lived as ethnic minorities (Bade 1993, Jahn and Steinhardt 2016). During the last months of World War II, large numbers of these ethnic Germans fled or were expelled from Russian and Eastern European territories and moved to Germany. In 1950, approximately 4 million ethnic Germans were still residing in Eastern Europe and Soviet States (Bade 1993). The majority of them continued to live outside the borders of post-war Germany until the 1990s, as remigration to Germany was strongly regulated in the communist regimes. With the start of perestroika, travel restrictions were reduced substantially, causing an enormous inflow of Aussiedler to Germany, with a peak of nearly 400,000 inflows in 1990 (Jahn and Steinhardt 2016).

The legal treatment of ethnic Germans differed substantially from those of other immigrants without German heritage. While the latter have to deal with a complex system of immigration and integration policies, legal affairs of ethnic Germans were regulated by the Federal Law on Refugees and Exiles (Bundesvertriebenengesetz) which was invented already in 1953. According to this, each ethnic German was not only obliged to apply for a visa to enter Germany, but also was entitled to acquire the German citizenship without further preconditions after the issuance of visa. Until the mid-1990s, ethnic German immigrants did not have to prove any German language skills in institutional language tests in the country of origin for visa application. This rule also was applied to spouses, children and grandchildren of ethnic Germans. In other words, ethnic Germans were allowed to enter Germany without restrictions and were treated as German citizens right after entry.

In reaction to the massive inflows in the late eighties, the German government implemented a number of policy changes to reduce and regulate the inflow of ethnic Germans from abroad. Major changes were the introduction of annual immigration quotas in 1993 ¹, the implementation of travel restrictions on ethnic Germans living outside the territory of the former Soviet Union in 1993 and a placement policy in 1989 (Worbs et al. 2013). The latter is the basis for our identification strategy and will be explained in detail in the following section.

Until the fall of the inner German border in 1989, approximately 60% of Aussiedler who entered Germany came from Poland. The second largest source country was Romania which accounted for approximately 13% of inflows. In the following years, the composition changed substantially and ethnic Germans from Post Soviet states became the largest group by far. One reason for this change was the introduction of entry restriction for ethnic Germans

¹A yearly quota of about 225,000 ethnic German immigrants was introduced in 1993 and further reduced to about 100,000 individuals by 2000 (Piopiunik and Ruhose 2017).

from countries that not belonged to the former Soviet Union. From 1993 onward, about 95% of arriving Aussiedler emigrated from Post Soviet states (Worbs et al. 2013).

The German language skills of ethnic Germans who arrived before the implementation of institutional language tests in 1996 were rather heterogeneous. Language skills not only differed by source country, but also across generations. Existing studies suggest that ethnic German immigrants from the former Soviet Union tended to have lower German language proficiency than ethnic Germans from Poland and Romania. Older cohorts of immigrants often had better German language skills than their descendants (Worbs et al. 2013). In particular, children and grandchildren of ethnic Germans who had been socialized in the former Soviet Union and had only loose relationships to German culture often lacked basic language skills (Federal Agency for Civic Education 2005). This share of ethnic Germans with loose relations to German culture and tradition steadily increased during the 1990s. In 1993, 23% of ethnic German arrivals were descendants or spouses of ethnic Germans, as defined by the Federal Law on Refugees and Exiles, while the corresponding share was nearly 70% in 2000 (Haug and Sauer 2006). With respect to educational skills, the composition of ethnic German immigrants generally followed a u-shaped pattern. The large majority of immigrants was lower skilled, while the share of skilled migrants was larger than of those with medium skills (Glitz 2012, Jahn and Steinhardt 2016).

4. Estimation Strategy and Data

Any study attempting to investigate the economic impact of immigration at the regional level has to deal with the econometric challenge of endogenous location decision of immigrants. The latter refers to situations in which immigrants are not randomly allocated across regions in the host country, but decide to move to certain regions based on their individual preferences and regional conditions. A typical example would be labor immigrants who self-select into regions with high levels of wage and low unemployment. As a consequence, any simple regression of migration on firm formation is likely to produce biased coefficients, whereas the direction of the bias depends on the pattern of self-selection. A common approach to avoid such bias is to rely on exogenous variations in migrant concentrations induced by policies (e.g. Card 1990) or natural phenomena (e.g. McIntosh 2008). In this paper, we follow the first approach by exploiting the aforementioned placement policy for ethnic German immigrants. This policy, which

we will describe in detail, has been first exploited by Glitz (2012) to study the labor market effects of immigration in Germany. In recent years, this quasi-experimental setting has been among others used to study the impact of immigration on crime (Piopiunik and Ruhose 2017) and innovation (Jahn and Steinhardt 2016).

The placement policy for ethnic Germans was enacted in 1989 in response to the massive inflow of ethnic Germans. The law, titled Assigned Place of Residence Act (*Wohnortzuweisungsgesetz*), ended the free choice of residence of arriving Aussiedler and allocated them across German regions.² The law aimed at spreading the financial burden of immigration across regions and facilitate integration of ethnic Germans. Initially the allocation was not legally binding. As a result, many Aussiedler left their assigned regions and predominantly moved to urban regions (Mammen and Swiaczny 2001). In March 1995, seven regions from Lower Saxony which received overproportional large inflows of Aussiedler jointly released the so-called Gifhorn Declaration in which they demanded a more even distribution of Aussiedler across regions. As a consequence, six out of ten Western German federal states changed the Assigned Place of Residence Act in 1996 by introducing penalties for all those ethnic Germans who leave the assigned region.

The placement of ethnic Germans through the law followed a three-step procedure. In the first stage, Aussiedler were allocated across federal states through a quota, the Koenigsteiner Distribution Key (Koenigsteiner Schluessel), based on the state tax revenues and population size. In the second stage, federal states specified quotas to allocate ethnic Germans across their counties (NUTS-3-regions). These quotas differed across states but were mainly based on population size and space (Glitz 2012). In the third and final stage, local government authorities used the quotas to assign ethnic Germans to certain regions. The most important factor for individual decisions were existing family ties, whereas existing child-care facilities for single parents and the presence of healthcare facilities were of minor importance. Moreover, allocation within federal states was neither based on the skill level of migrants nor on local economic conditions.

Data on ethnic German immigrants we use in this paper comes from Glitz (2012) who collected and used it to explore the effect of immigration on the labor market.³ As data on Aussiedler inflows to East German regions are highly fragmented, we focus on West German regions (excluding Berlin) throughout the paper. Figure 1 shows the

²Exceptions were made for ethnic immigrants who could prove to have sufficient housing space or a source of permanent income to make a living (Glitz 2012).

³For the years 2002 to 2005 we use data provided by Piopiunik and Ruhose (2017).

inflow of ethnic Germans to German counties for our estimation period (1996-2005). As expected given the placement policy, the level of inflows differed substantially across German regions. Whereas less populated regions in the North show relatively small inflows of Ethnic Germans, densely populated regions like in North Rhine-Westphalia received a larger number of Aussiedler. Average inflows of Ethnic Germans from 1996 to 2005 range from 23.2 newly arrived Aussiedler per year in Offenbach am Main to 2,058.5 Aussiedler allocated to Hamburg.

With respect to firm formation, we focus on net business creation defined as the difference between the total number of business registrations and the total number of business deregistrations. According to the German law, business registrations must be made in cases of company formations, regional business relocations, changes in the legal form, or changes in firm ownership (either by purchase or inheritance). Moreover, a business registration is required when a new shareholder steps in. Accordingly, a business needs to be deregistered when the owner closes it down, sells, leases or passes it on to someone else. Furthermore, a deregistration is compulsory when a shareholder exits, the legal form of the business changes or the firm moves away to another region. Using net business creation, we focus on newly founded firms. Thus, we exclude firms that are registered but have been deregistered before. A firm that is passed on to another person, for instance, needs to be deregistered by the old owner and registered by the new one. Since this is not a business creation in the traditional sense, we do not take it into account. Note that our empirical analysis is therefore based on the firm level in a legally defined sense rather than on the level of business establishments or plants as in Dustmann and Glitz (2015) and Olney (2013).

Figure 2 shows net business creation on the regional level from 1997 to 2006. The number of newly founded firms vary substantially across German counties, without a clear regional pattern. Average net business creation ranges from -11.3 per year in the urban region of Heilbronn to 5,303.1 in Hamburg. Negative values of net business creation means the number of firm deregistrations exceeds the number of registrations in the referring region. Data on business formation on the county level comes from the Federal Statistical Office (Destatis). The same holds true for other regional measures such as population and space, whereas regional unemployment data is provided by the Federal Employment Agency. To account for the share of foreigners, the share of high-skilled employees as a percentage of total employees, the industrial sector structure of regions and monthly income per employee we rely on data from the INKAR database. For a detailed description of variables used see Table A.1 in the Appendix.

To test our identification strategy, we investigate whether the regional allocation of ethnic Germans through the placement policy was related to the level of firm formation. For this purpose, we regress the inflows of Aussiedler in Western German regions in 1997 on the level of new firm formation in these regions one year earlier while controlling for various of regional controls. The cross-sectional estimates in Table 1 show that the inflow of ethnic Germans was not correlated with the regional level of firm formation. In other words, we do not find any evidence that ethnic Germans were within federal states systematically allocated to regions with a high or low level of firm formation. Instead we find, in line with the placement criteria, that inflows were positively correlated with population size. This supports our identification assumption that the inflow of ethnic Germans was exogenous to the level of firm formation on the regional level.

5. Empirical Analysis

To analyze the impact of immigration of ethnic Germans on firm level formation, we estimate the following panel model:

$$Net\ Business\ Creation_{rt} = \alpha + \beta Ethnic\ German_{r,t-1} + \gamma X_{r,t-1} + I_t + R_r + \epsilon_{r,t}, \quad (1)$$

where net business creation per thousand inhabitants in region r in year t is regressed on the number of ethnic German inflows one year earlier. Regional and time fixed effects are captured by the terms I_t and R_r . Moreover, we control for time-varying characteristics of regions with the vector $X_{r,t-1}$ including measures of the working age population, population density, unemployment, the share of foreigners, the share of high-skilled employees as a percentage of total employees, the industrial sector structure of regions, research and development expenditures and monthly income per employee. To account for heteroscedasticity and general forms of serial correlation over time we cluster standard errors at the level of regions.

The corresponding results are presented in Table 2. In column 1 we start out with a parsimonious specification which includes only time and region fixed effects. Doing so, we find a positive and significant coefficient suggesting that a growing inflow of ethnic Germans positively affects regional firm formation. In column 2 we add controls for time-varying characteristics of regions which has been shown to be drivers of regional firm formation. The fact

that our coefficient of interest remains almost unaffected suggests that our results are not driven by unobservable characteristics of regions that are correlated with the controls added (Altonji et al. 2005).

In terms of impact magnitude, our estimates suggest that 300 additional Aussiedler in a given year, which corresponds approximately to the yearly mean of ethnic German inflows in our sample (see Table A.2), induces on average an increase in net business creation per capita by approximately 0.15 (0.0005×300) in a given region, which is about 8% of mean business creation. The impact is therefore far from negligible. This is in line with the findings of Dustmann and Glitz (2015) and Olney (2013). However, our estimates are not comparable to the ones of those studies as we do not focus on business establishments or plants, but instead rely on a measure capturing legal creation of businesses.

Next, we provide a number of robustness checks to test the sensitivity of our findings. As a first test, we add further controls to our model. The corresponding results are reported in Table 3, showing that neither adding the share of students nor the share of inhabitants between 20 and 45 alters our main result. In column 3 we add state-specific time trends to our model, to allow that time trends in business creation and local placement policies could differ across states. Our coefficient of interest moves relatively little and remains statistically significant.

Our second set of stability tests involves changes in the sample and measures of business creation and migration. In column 1 of Table 4, we include those regions from our sample which signed the Gifhorn declaration as they were heavily affected by the inflow of ethnic Germans. Adding those regions to our sample has almost no effect on the size and significance of our migration coefficient. In column 2, we report results from a specification in which we use two-year lags of ethnic German inflows. Once again, we find a positive impact on business formation, with the coefficient of ethnic German inflows being statistically significant. In column 3, we modify our migration measure by using the ethnic German inflow rate instead of the absolute number of inflows. The inflow rate is measured as the number of ethnic German immigrants allocated to region r in year $t-1$ divided by the population of that region in thousand at the end of year $t-2$. Once again, we find that inflows of ethnic Germans positively affect the formation of businesses. Finally, we change the dependent variable by looking at net business creations per thousand inhabitants at working age. The corresponding estimates are presented in column 4. The effect is again highly significant and positive, with the coefficient being slightly, but not significantly larger than the one in our preferred specification.

Our results could be driven by three different mechanisms. The first mechanism is firm formation by ethnic Germans. However, this could explain our findings only if Aussiedler were more active in founding firms than natives as we find a positive relation also when looking on firm formation relative to the local population. There are a number of potential reasons for a high level of entrepreneurial activities among immigrants. First, disadvantages in the labor market, like a limited transferability of human capital (Basilio et al. 2017), can push immigrants into self-employment in order to avoid low paid jobs or unemployment (Clark and Drinkwater 2000, Hammarstedt 2001, Constant et al. 2007). As mentioned earlier, in contrast to other immigrant groups, Aussiedler were legally regarded as native Germans once they entered Germany. It is therefore rather unlikely that ethnic Germans were massively pushed into self-employment. A high level of entrepreneurial activities could also stem from ethnic resources. These include specific skills to provide services or goods to other co-ethnics and social support through ethnic networks (Hammarstedt 2001, Leicht et al. 2005, Fairlie and Lofstrom 2015, Kerr and Mandorff 2016). Some of these resources, such as the skills needed to provide local services to the ethnic community, are particular relevant in ethnic enclaves with high concentrations of co-ethnics. As ethnic Germans were allocated to German regions through the ascribed placement policy in order to ensure a relatively even regional distribution, it is unlikely that the existence and concentration of co-ethnics was a major factor for business decisions. Finally, experiences in the home country could foster entrepreneurship of immigrants in host countries (Hammarstedt 2001). However, Aussiedler were emigrating from socialistic regimes and therefore had little to no experience with self-employment before immigration (Leicht et al. 2005). In line with this, Falck et al. (2015) showed that students educated in the former GDR have significantly lower entrepreneurial intentions than students educated in the capitalistic regime of West Germany. The most important argument against firm formation of ethnic Germans driving our results is that it takes time (often years) to familiarize with institutions in the host country and to found new businesses. Leicht et al. (2005) finds that Aussiedler in Germany on average needed more than 9 years to start a business. However, we find a significantly positive effect of immigration on regional start-up rates with a time lag of one year.

The second mechanism could be additional firm formation by natives as a reaction to changes in the local labor supply - either through a displacement effect or a production adjustment effect. The first refers to a situation in which natives are displaced by ethnic Germans and are pushed into unemployment. While there is little evidence for negative

employment effects of immigration in Europe (de la Rica et al. 2015), Glitz (2012) found a displacement effect for natives due to immigration of ethnic Germans. Using the same quasi-experimental setup as we do in this paper, he finds that for every 10 Aussiedler finding employment, about 3 resident workers lose their dependent work or do not find a job which they otherwise would have found. As unemployment can be a driver of business formation (Parker 2018), our effect could be driven in part by firm formations of natives who lost their jobs as the result of the increased labor market competition through ethnic Germans. Alternatively, native entrepreneurs could create new firms due to shifts in local labor supply. The inflows of ethnic immigrants not only changed the size of the local labor force, but also its skill composition as they were predominantly unskilled. There is evidence that unskilled labor supply shocks resulting from immigration can be absorbed by firm formation (Olney 2013, Dustmann and Glitz 2015).

The third potential mechanism is cultural diversity. Immigration induced changes in the cultural and ethnic composition of populations are likely to enhance a population's problem-solving potential and thereby stimulate the creation of new ideas (Alesina and La Ferrara 2005). Moreover, diverse populations are better able to absorb and facilitate the spillover of knowledge. This can promote innovation and in the end entrepreneurial activity (Audretsch et al. 2010, Cheng and Li 2012). In line with this, we found in an earlier work that the immigration of ethnic Germans had no or even a positive impact on innovations, although the majority of arriving Aussiedler were unskilled (Jahn and Steinhardt 2016). Moreover, cultural diversity increases the knowledge about foreign countries and other cultures and by this create new opportunities for trade (Sobel et al. 2010, Fairlie and Lofstrom 2015, Bratti et al. 2018). The results in Table 5 suggest that the inflow of ethnic Germans could have had such an impact, as we find a significant effect of ethnic German inflows on firm formation in the wholesale and retail trade industry. Overall, our results are likely to be driven by supply-side effects and positive implications of cultural diversity, while entrepreneurial activities of ethnic Germans were unlikely to be a major factor in driving regional firm formation.

6. Conclusion

While the academic and public discourse about the effects of immigration in host countries focuses among others on the implications for employment and wages of natives, the impact on business creation is so far underexplored. This paper contributes to this debate by providing evidence on the link between immigration and new firm formation

at the regional level.

In order to address the well-known problem of endogenous location decisions of immigrants, we exploit a unique placement policy in Germany. In the 1990s, ethnic Germans from the former Soviet Union and Eastern Europe immigrated into Germany. In reaction to a massive influx of those immigrants, the German government implemented an allocation policy with the aim to equally share the fiscal, economic and social burden across German regions. We use this quasi-experimental setting to shed light on the question how regional immigration inflows affect new firm formation.

Our panel estimates show a significantly positive effect of immigration inflows on net business creation in German counties. Our finding is robust to a series of tests and model specifications, including to allow time trends in business creations to differ across federal states. Our results are likely to be driven by positive implications of cultural diversity and immigration induced shifts in the local labor supply. Future research using micro level data could help to study the mechanisms at work in more detail.

With respect to policy, our results are relevant in so far as they show that changes in local labor supply by immigration can be (partially) absorbed by firm formation. The latter is a central element of modern economies' dynamics since young firms create a disproportionate share of new jobs but being relatively volatile with high exit rates at the same time. New start-ups are also an important source of innovation and economic growth and therefore of high interest for policymakers.

References

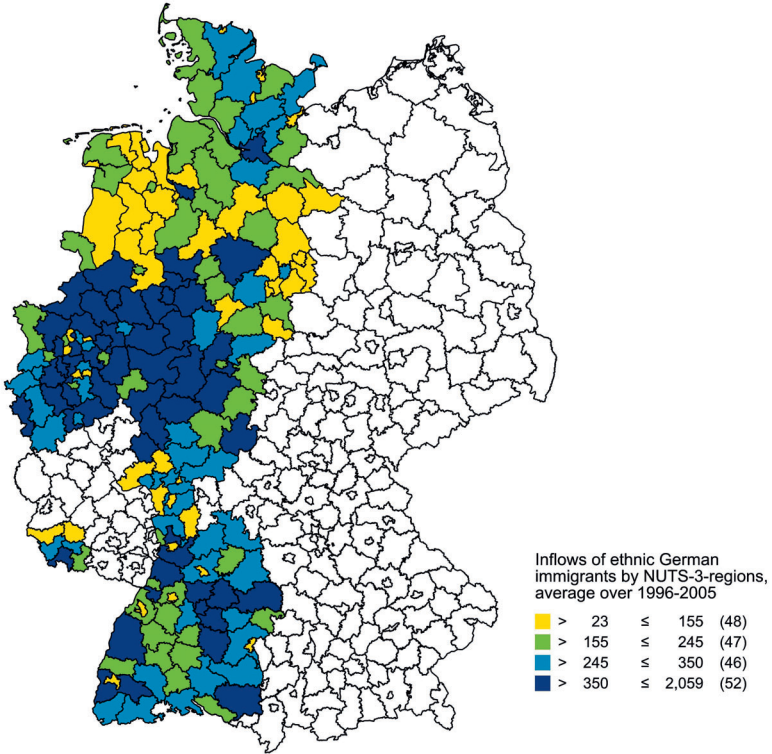
- Acs, Z. J., P. Braunerhjelm, D. B. Audretsch, and B. Carlsson (2009). The knowledge spillover theory of entrepreneurship. *Small Business Economics* 32(1), 15–30.
- Alesina, A. and E. La Ferrara (2005). Ethnic diversity and economic performance. *Journal of Economic Literature* 43(3), 762–800.
- Altonji, J. G., T. E. Elder, and C. R. Taber (2005). Selection on observed and unobserved variables: Assessing the effectiveness of catholic schools. *Journal of Political Economy* 113(1), 151–184.
- Audretsch, D. B., D. Dohse, and A. Niebuhr (2010). Cultural diversity and entrepreneurship: a regional analysis for Germany. *Annals of Regional Science* 45(1), 55–85.
- Bade, K. (Ed.) (1993). *Deutsche im Ausland – Fremde in Deutschland. Migration in Geschichte und Gegenwart*. (3rd ed.). München: Beck.
- Barone, G., A. D’Ignazio, G. de Blasio, and P. Naticchioni (2016). The role of immigration in shaping natives’ voting behavior. *Journal of Public Economics* 136, 186.
- Basilio, L., T. K. Bauer, and A. Kramer (2017). Transferability of human capital and immigrant assimilation: An analysis for Germany. *LABOUR: Review of Labour Economics and Industrial Relations* 31(3), 245–264.
- Berliant, M. and M. Fujita (2008). Knowledge creation as a square dance on the Hilbert cube. *International Economic Review* 49(4), 1251–1295.
- Bettin, G., P. Bianchi, F. Nicolli, L. Ramaciotti, and U. Rizzo (2018). Migration, ethnic concentration and firm entry: evidence from italian regions. *Regional Studies* 0(0), 1–12.
- Blanchflower, D. G. and A. J. Oswald (1998). What makes an entrepreneur? *Journal of Labor Economics* 16(1), 26–60.
- Borjas, G. J. (1994). The economics of immigration. *Journal of Economic Literature* XXXII(2), 1667–1717.
- Braiti, M., L. d. Benedictis, and G. Santoni (2018). Immigrant entrepreneurs, diasporas and exports. *IZA Discussion Paper Series No. 11280*, 1–41.
- Card, D. (1990). The impact of the Mariel boatlift on the Miami labor market. *Industrial and Labor Relations Review* 43(2), 245–257.

- Cheng, S. and H. Li (2012). New firm formation facing cultural and racial diversity. *Papers in Regional Science* 91(4), 759–774.
- Clark, K. and S. Drinkwater (2000). Pushed out or pulled in? Self-employment among ethnic minorities in England and Wales. *Labour Economics* 7(5), 603–628.
- Constant, A., Y. Schachmurove, and K. F. Zimmermann (2007). What makes an entrepreneur and does it pay? Native men, Turks, and other migrants in Germany. *International Migration* 45(4), 71–98.
- de la Rica, S., A. Glitz, and F. Ortega (2015). Immigration in Europe: trends, policies, and empirical evidence. In B. R. Chiswick and P. W. Miller (Eds.), *Handbook of the Economics of International Migration*, Volume 1, Chapter 24, pp. 1303 – 1362. North-Holland.
- Dustmann, C. and T. Frattini (2014). The fiscal effects of immigration to the uk. *Economic Journal* 124(580), F593–F643.
- Dustmann, C. and A. Glitz (2015). How do industries and firms respond to changes in local labor supply. *Journal of Labor Economics* 33(3), 711–50.
- Dustmann, C., K. Vasiljeva, and A. Piil (2018). Refugee migration and electoral outcomes. *Review of Economic Studies forthcoming*.
- Evans, D. S. and L. S. Leighton (1989). Some empirical aspects of entrepreneurship. *The American Economic Review* 79(3), 519–535.
- Fairlie, R. W. and M. Lofstrom (2015). Immigration and entrepreneurship. In B. R. Chiswick and P. W. Miller (Eds.), *Handbook of the Economics of International Migration*, Volume 1, Chapter 17, pp. 877–911. North-Holland.
- Falck, O., R. Gold, and S. Heblich (2015). Lifting the Iron curtain: school-age education and entrepreneurial intentions. *CEifo Working Paper Series No. 5540*, 1–40.
- Foged, M. and G. Peri (2016). Immigrants’ effect on native workers: New analysis on longitudinal data. *American Economic Journal: Applied Economics* 8(2), 1–34.
- Glitz, A. (2012). The labor market impact of immigration: A quasi-experiment exploiting immigrant location rules in Germany. *Journal of Labor Economics* 30(1), 175–213.
- Hammarstedt, M. (2001). Immigrant self-employment in Sweden - its variation and some possible determinants.

- Entrepreneurship & Regional Development* 13, 147–161.
- Haug, S. and L. Sauer (2006). Zuwanderung und räumliche Verteilung von Aussiedlern und Spätaussiedlern in Deutschland. *Zeitschrift für Bevölkerungswissenschaft* 31(3-4), 413–441.
- Hunt, J. and M. Gauthier-Loiselle (2010). How much does immigration boost innovation? *American Economic Journal: Macroeconomics* 2(2), 31–56.
- Jahn, V. and M. F. Steinhardt (2016). Innovation and immigration – insights from a placement policy. *Economics Letters* 146, 116–119.
- Kerr, W. R. and M. Mandorff (2016). Social networks, ethnicity, and entrepreneurship. *Harvard Business School Working Paper Series No. 16-042*, 1–28.
- Lee, N. (2015). Migrant and ethnic diversity, cities and innovation: firm effects or city effects? *Journal of Economic Geography* 15(4), 769–796.
- Leicht, R., A. Humpert, M. Leiss, M. Zimmer-Müller, and M. Lauxen-Ulbrich (2005). Existenzgründungen und berufliche Selbständigkeit unter Aussiedlern (Russlanddeutsche). Technical report, University of Mannheim.
- Levine, R. and Y. Rubinstein (2017). Smart and illicit. Who becomes an entrepreneur and do they earn more? *The Quarterly Journal of Economics* 132(2), 963–1018.
- Mazzolari, F. and D. Neumark (2012). Immigration and product diversity. *Journal of Population Economics* 25(3), 1107–1137.
- McIntosh, M. F. (2008). Measuring the labor market impacts of hurricane Katrina migration: evidence from Houston, Texas. *The American Economic Review* 98(2), 54–57.
- Minniti, M. (2005). Entrepreneurship and network externalities. *Journal of Economic Behavior & Organization* 57, 1–27.
- Olney, W. W. (2013). Immigration and firm expansion. *Journal of Regional Science* 53(1), 142–157.
- Ottaviano, G. I. and G. Peri (2006). The economic value of cultural diversity: evidence from US cities. *Journal of Economic Geography* 6(1), 9–44.
- Otto, A. H. and M. F. Steinhardt (2014). Immigration and election outcomes - Evidence from city districts in Hamburg. *Regional Science and Urban Economics* 45, 67–79.

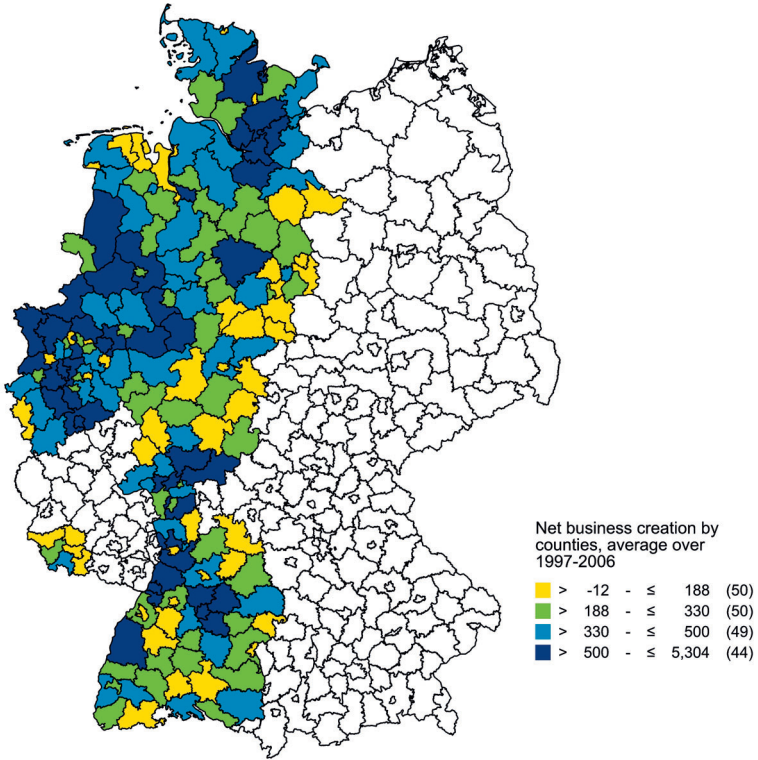
- Parker, S. (2018). *The Economics of Entrepreneurship* (2nd ed.). Cambridge; New York; Port Melbourne: Cambridge University Press.
- Peroni, C., C. A. F. Riillo, and F. Sarracino (2016). Entrepreneurship and immigration: evidence from GEM Luxembourg. *Small Business Economics* 46(4), 639–656.
- Piopiniuk, M. and J. Ruhose (2017). Immigration, regional conditions, and crime. Evidence from an allocation policy in Germany. *European Economic Review* 92, 258–282.
- Qian, H. (2013). Diversity versus tolerance: the social drivers of innovation and entrepreneurship in US cities. *Urban Studies* 50(13), 2718–2735.
- Rodríguez-Pose, A. and D. Hardy (2015). Cultural diversity and entrepreneurship in England and Wales. *Environment and Planning A* 47(2), 392–411.
- Sobel, R. S., N. Dutta, and S. Roy (2010). Does cultural diversity increase the rate of entrepreneurship? *The Review of Austrian Economics* 23(3), 269–286.
- Steinhardt, M. F. (2011). The wage impact of immigration in germany new evidence for skill groups and occupations. *The B.E. Journal of Economic Analysis & Policy* 11(1), Article 31.
- Storesletten, K. (2000). Sustaining fiscal policy through immigration. *Journal of Political Economy* , 108, 300323. 108, 300323.
- Vinogradov, E. and L. Kolvereid (2007). Cultural background, human capital and self-employment rates among immigrants in Norway. *Entrepreneurship & Regional Development* 19(4), 359–376.
- Worbs, S., E. Bund, M. Kohl, and C. B. von Gostomski (2013). (Spät-)Aussiedler in Deutschland - eine Analyse aktueller Daten und Forschungsergebnisse. Technical report, Federal Office for Migration and Refugees.

Figure 1: Inflows of ethnic German immigrants



Source: Data provided by Albrecht Glitz and Jens Ruhose, own illustration.

Figure 2: Net business creation



Source: Destatis and Statistical Offices, own illustration.

Table 1: Placement of ethnic Germans in 1997

Dependent variable: Ethnic German inflows	
Net business creation to working-age population	8.898 (19.97)
Ln population	350.3*** (49.79)
Ln space	45.01 (33.42)
Share of foreigners	-3.523 (6.639)
Unemployment rate	-4.158 (9.287)
Education	-3.925 (10.06)
GVA primary sector	-1.404 (1.763)
GVA tertiary sector	-1.842 (4.390)
RD	-5.687 (25.76)
Income	33.17 (101.8)
Observations	166
Adj. R-squared	0.689

The table reports coefficients from an OLS regression. Federal state fixed effects are included. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 2: Effect of immigration on new firm formation

Dependent variable: Net business creation $_{r,t}$		
	(1)	(2)
Ethnic German inflows $_{r,t-1}$	0.0004** (0.0002)	0.0005*** (0.0002)
Ln population $_{r,t-1}$		60.20 (81.23)
Share of working-age population $_{r,t-1}$		0.218*** (0.0804)
Ln population density $_{r,t-1}$		-57.56 (81.43)
Share of foreigners $_{r,t-1}$		-0.0407 (0.0578)
Unemployment rate $_{r,t-1}$		0.0879** (0.0338)
Education $_{r,t-1}$		0.0230 (0.0488)
GVA primary sector $_{r,t-1}$		-0.00166 (0.00506)
GVA tertiary sector $_{r,t-1}$		0.0108 (0.0202)
RD $_{r,t-1}$		-0.107 (0.115)
Ln GDP per capita $_{r,t-1}$		-1.321* (0.765)
Observations	1,552	1,552
Regions	175	175
Adj. R-squared (within)	0.541	0.551

The table reports coefficients from panel regressions with region and time fixed effects. Standard errors, clustered at the level of regions, in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 3: Robustness checks employing further time-varying controls

Dependent variable: Net business creation $_{r,t}$			
	(1)	(2)	(3)
Ethnic German inflows $_{r,t-1}$	0.000429*** (0.000161)	0.000452*** (0.000166)	0.000273* (0.000158)
Observations	1,552	1,552	1,552
Regions	175	175	175
Adj. R-squared (within)	0.552	0.552	0.691

The table reports coefficients from panel regressions with region and time fixed effects. In column 1, we expand the baseline model (see Table 2, column 2) by including the number of students per thousand inhabitants as additional control variable. In column 2, we extend the baseline model by employing the percentage share of population aged 20 to under 45 years as additional control. In column 1 and 2, we cluster standard errors at the level of regions. In column 3, we add state-specific time trends to the baseline model. Standard errors are now two-way clustered at region and year-by-state-level. Clustered standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4: Robustness checks expanding the sample and using different measurements

Dependent variable:	Net business creation _{<i>r,t</i>}	Net business creation _{<i>r,t</i>}	Net business creation _{<i>r,t</i>}	Net business creation to working-age population _{<i>r,t</i>}
	(1)	(2)	(3)	(4)
Ethnic German inflows _{<i>r,t-1</i>}	0.000449*** (0.000168)			0.000667*** (0.000252)
Ethnic German inflows _{<i>r,t-2</i>}		0.000326** (0.000147)		
Ethnic German inflow rate _{<i>r,t-1</i>}			0.110** (0.0493)	
Observations	1,606	1,553	1,552	1,552
Regions	181	175	175	175
Adj. R-squared (within)	0.556	0.550	0.551	0.564

The table reports coefficients from panel regressions with region and time fixed effects. In column 1, we expand the baseline model (see Table 2, column 2) by including regions that signed the Gifhorn Declaration. In column 2, we estimate long term effects by using two-year lags of all explanatory variables. In column 3, we modify the independent variable employing the ethnic German inflow rate. In column 4, we modify the dependent variable using net business creation to working-age population. For a detailed description of variables see Table A.1. Clustered standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5: Effect of immigration on new firm formation per industry

	Dependent variable: Net business creation per industry _{it} (see legend)									
	A	D	F	G	H	I	J	K	O	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Ethnic German inflows _{it-1}	0.00001 (0.000001)	0.00002 (0.000002)	0.00007** (0.000003)	0.00010* (0.000005)	0.00005*** (0.000002)	0.00002 (0.000002)	0.00000 (0.000002)	0.00014** (0.000006)	0.00006 (0.000004)	
Observations	1,551	1,552	1,552	1,552	1,552	1,552	1,552	1,552	1,552	
Regions	175	175	175	175	175	175	175	175	175	
Adj. R-squared (within)	0.070	0.111	0.493	0.444	0.054	0.101	0.124	0.220	0.385	

The table reports coefficients from panel regressions with region and time fixed effects. As dependent variables we employ net business creation per thousand inhabitants per industry in region r at time t . Industries are categorized according to the following German Classification of Economic Activities from the Federal Statistical Office: (A) Agriculture, hunting and forestry, (D) Manufacturing, (F) Construction, (G) Wholesale and retail trade, and repair of motor vehicles, motorcycles and personal and household goods, (H) Hotels and restaurants, (I) Transport, storage and communication, (J) Financial intermediation, (K) Real estate, renting and business activities, (O) Other community, social and personal service activities. Data about net business creation in industry A in Oldenburg in 1997 is missing. Moreover, net business creation in agriculture, hunting and forestry also includes net business creation in fishing in Lower Saxony until 2002. Standard errors, in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Appendix

Table A.1: Description of employed variables

Variable	Description	Source
Net business creation	Difference between the total number of business registrations and the total number of business deregistrations relative to population in thousand per year per region ^a	Destatis
Net business creation to working-age population	Difference between the total number of business registrations and the total number of business deregistrations relative to working-age population in thousand per year per region ^a	Destatis
Ethnic German inflows	Total number of ethnic German inflows per year per region	Glitz (2012), Piopiunik and Ruhose (2017)
Ethnic German inflow rate	Total number of ethnic German immigrants allocated to a particular region in year t divided by the population of that region in thousand at the end of year t-1	Glitz (2012), Piopiunik and Ruhose (2017)
Population	Population in thousand at December 31 st	Destatis
Share of working-age population	Percentage share of population aged 15 to under 65 in total population at December 31 st	Destatis
Population aged 20 to 45	Percentage share of population aged 20 to under 45 in all inhabitants at December 31 st	Destatis
Population density	Inhabitants per square kilometer	INKAR 2010
Space	Area in square kilometer	Destatis
Share of foreigners	Share of foreigners in the population in percent	INKAR online
Unemployment rate	Unemployment rate of civil employees in percent	Federal Employment Agency
Education	Share of employees with a degree in a university or a university of applied sciences in all employees in percent	INKAR online
GVA primary sector	Gross value added at basic prices in the primary sector in thousand € per worker in the primary sector	INKAR (2010)
GVA tertiary sector	Gross value added at basic prices in the tertiary sector in thousand € per worker in the tertiary sector	INKAR (2010)
RD	Linear combination of total firms' internal investments in R&D and total R&D-employees in firms' research establishments	Stifterverband ^b
Students	Number of students at universities and universities of applied sciences per thousand inhabitants	INKAR (2010)
Income	Monthly income (gross salary and social spendings from employers) in thousand € per employee ^c	INKAR (2010)
GDP per capita	GDP per capita in thousand €	INKAR (2010)

^a A business needs to be registered when someone starts a new business, inherits an existing business (purchase or inheritance), a shareholder steps in, the legal form of the business changes or the business moves into another region. Accordingly, a business needs to be deregistered when someone closes down, sells, leases or passes the business on to someone else, a shareholder exits, the legal form of the business changes or the business moves away to another region.

^b Special analysis on request.

^c Employees include soldiers, public officials, apprentices and marginal part-timers but exclude self-employed workers and freelancers.

Table A.2: Descriptive statistics, 1997-2006

Variable	Obs	Mean	Std. Dev.	Min	Max
Space	166	820.6346	580.0671	51.41	2880.8
Income	166	2.495035	.2468054	1.9778	3.7796
Net business creation _{r,t}	1,556	1.533119	1.046394	-7.939695	5.606417
Net business creation to working-age population _{r,t}	1,556	2.320219	1.585085	-11.71706	8.460317
Ethnic German inflows _{r,t-1}	1,552	279.6057	227.2537	0	1993
Ethnic German inflow rate _{r,t-1}	1,552	1.152164	.6492751	0	4.861439
Population _{r,t-1}	1,556	248.654	156.9284	50.963	1128.543
Share of working-age population _{r,t-1}	1,556	66.44606	1.716392	61.39001	73.07382
Population density _{r,t-1}	1,556	669.3078	762.0598	42.1	3476.3
Share of foreigners _{r,t-1}	1,556	9.251607	4.345403	2.4	26.3
Unemployment rate _{r,t-1}	1,556	10.04299	3.150117	4	25.6
Education _{r,t-1}	1,556	6.544859	2.996166	2.8	20.4
GVA primary sector _{r,t-1}	1,556	25.19203	10.49441	1.9	160.5
GVA tertiary sector _{r,t-1}	1,556	47.50206	5.287427	36.7	72.8
RD _{r,t-1}	1,556	.3551022	.7802679	0	9.460106
GDP per capita _{r,t-1}	1,556	24.80122	8.107809	12.6	74.9
Students _{r,t-1}	1,556	20.27963	39.76276	0	247.4
Population aged 20 to 45 _{r,t-1}	1,556	35.45121	2.435355	28.45264	46.70424

The table reports the number of observations, means, standard deviations, minimum and maximum of variables used. We report space and income for the year 1997 since they are only used in the cross section (see Table 1). In line with the cross section, we thereby exclude Hesse. All other variables are reported for region r and time t . In line with the baseline model (see Table 2, column 2), we thereby exclude Hesse until 2001. Additionally, regions that signed the Gifhorn Declaration and/or hosted Aussiedler registration centers are excluded. Emden is the only region which received in one year no ethnic German immigrant.