

Labor Market Effects of Immigration: Evidence from Neighborhood Data

Thomas K. Bauer

RWI, Ruhr-University Bochum, IZA

Regina Flake

Ruhr Graduate School in Economics

Mathias G. Sinning

Australian National University, RWI, IZA, CReAM

March 2012

Abstract

This paper combines individual-level data from the German Socio-Economic Panel (SOEP) with economic and demographic postcode-level data from administrative records to analyze the effects of immigration on wages and unemployment probabilities of high- and low-skilled natives. Employing an instrumental variable strategy and utilizing the variation in the population share of foreigners across regions and time, we find no support for the hypothesis of adverse labor market effects of immigration. Instead, we find a positive effect of immigration on the employment probabilities of high-skilled natives.

JEL-Classification: F22, J31, J64, R23

Keywords: International Migration; Effects of Immigration

We thank Steven Stillman, Matthias Vorell and two anonymous referees for valuable comments and suggestions and gratefully acknowledge the support of the Australian Group of Eight (Go8) / German Academic Exchange Service (DAAD) joint research co-operation scheme and the Leibniz Gemeinschaft within the project “Neighborhood Effects: The Analysis of Individual Behavior in a Social Context” financed as part of the “Pakt für Forschung und Innovation”. Regina Flake also thanks the Ruhr Graduate School in Economics for financial support. All correspondence to Mathias Sinning, Research School of Economics (RSE), HW Arndt Building 25a, Australian National University, Canberra ACT 0200, Australia, Tel: 612 - 6125 2216, Fax: 612 - 6125 1816, E-mail: mathias.sinning@anu.edu.au.

1 Introduction

The abolition of the restrictions on free labor mobility between the new Eastern European members of the European Union (EU) and Germany in May 2011 raises severe concerns among policy makers and the public about potential negative labor market effects for natives in reaction to an expected increased inflow of workers from these countries. The introduction of sector-specific minimum wages since 1997 is a direct preparative to avoid potential downward pressure on natives' wages when Eastern European workers will eventually take advantage of the new freedom to work in Germany. The public discussion, however, typically disregards the existing empirical evidence on the labor market effects of migration. Although simple theoretical models suggest that an increase in labor supply due to immigration may result in lower wages and/or higher unemployment of natives if they are perfect substitutes to the immigrants, empirical studies typically conclude that immigration has economically irrelevant or no effects on wages and employment of natives (Friedberg and Hunt, 1995; LaLonde and Topel, 1996; Borjas, 1999, 2003; Longhi et al., 2005; Zimmermann, 2005).

When studying labor market effects of immigration, the clustering of immigrants in ethnic communities plays a critical role. Immigrant clusters may be explained by the existence of network externalities that are beneficial for newly arriving immigrants. Living together with people who share the same language and have the same cultural background may facilitate the settlement process of immigrants because more established immigrants may help to find accommodation and work, act as a guarantor to reduce credit constraints, and reduce the stress of being exposed to a foreign culture. At the same time, ethnic clustering may also be disadvantageous, especially if networks reduce incentives to study the language of the host country (Epstein and Gang, 2010). In either case, clustering of immigrants who share the same culture may have important implications for social and economic interactions between foreign- and native-born populations.

Simple theoretical models typically neglect the fact that cultural diversity in-

duced by the inflow of migrants may have positive or negative externalities on the productivity and hence on the wages and employment probabilities of native workers (Alesina and La Ferrara, 2005; Ottaviano and Peri, 2006; Südekum et al., 2009). On the one hand, cultural diversity implies a greater diversity of skills and problem solving abilities in the labor force, which may increase efficiency in the workplace and promote innovation and creativity. On the other hand, cultural diversity may increase transaction costs at the workplace and thereby reduce productivity. However, most studies considering cultural diversity find a positive effect on the productivity of natives (Ottaviano and Peri, 2006; Südekum et al., 2009).

Within this strand of the literature, studies have used regional variation in the population share of immigrants to estimate the labor market effects of immigration and addressed the problem of non-random location choices of immigrants by using instrumental variables or natural experiments (Bartel, 1989; Card, 1990; Altonji and Card, 1991; Hunt, 1992; Munshi, 2003; Card, 2005). While this literature has focused predominantly on immigration to the U.S., less is known about the consequences of immigration into major European immigration countries. Empirical evidence for the U.S., however, cannot be transferred to European countries, because source countries and policies used to shape the structure of immigration differs considerably between the U.S. and Europe. In addition, labor market conditions in the U.S. are very different from those of many European countries. In particular, it appears likely that employment rather than wage effects of immigration are more important in European labor markets because of relatively stronger unions and more rigid wage floors.

A few studies have examined the labor market effects of immigration to Germany during the 1980s and 1990s (Bauer et al., 2005). On balance, this literature has found very small or no effects of immigration on natives. Due to data limitations, most of these studies have either considered variations in the foreigner share across industries (DeNew and Zimmermann, 1994a,b; Bauer, 1997; Winter-Ebmer and Zimmermann, 1999) or used data aggregated at the regional level (Hatzius, 1994; Pischke and

Velling, 1997; D’Amuri et al., 2010; Glitz, 2011) to estimate the labor market effects of immigration. This paper also utilizes regional variation in the population share of foreigners to estimate individual labor market outcomes taking advantage of a new data source that allows us to combine individual-level data from the German Socio-Economic Panel (SOEP) with economic and demographic postcode-level data from administrative records for the years 2000 to 2005.

We use the regional share of old buildings at the beginning of the 1960s as an instrument for the regional share of foreigners to avoid potentially biased estimates due to the non-random location choice of migrants. Since many old buildings were destroyed during and after the Second World War (WWII), especially in industrial regions that have become the home of millions of (so-called) “guest workers” since the 1960s, the share of old buildings constitutes an excellent instrument for the purpose of our analysis.

Our empirical findings indicate that immigration to Germany had no adverse effects on labor market outcomes of German natives during the early 2000s. Specifically, we find no effect of immigration on wages of both low- and high-skilled German workers. Since minimum wages or social security levels could have prevented wages of native-born workers from falling, immigration could have had adverse employment effects. However, we find no effect of immigration on the employment probability of low-skilled natives and even observe a positive effect of immigration on the employment probability of high-skilled natives, suggesting that immigrants constitute complements for high-skilled native-born workers in the German labor market.

2 Data

Our empirical analysis employs a unique confidential dataset, which combines two data sources: longitudinal individual data from the German Socio-Economic Panel (SOEP) and process-generated data from the federal employment office, provided by the research data centre of the federal employment agency at the Institute for

Employment Research.¹ The latter is taken from the official employment and unemployment registers and provides aggregate information on the employment status, age, gender, educational level, and nationality of the individuals in a postcode area.

We use the administrative data to calculate the regional share of foreigners in the labor force for the period from 2000 to 2005.² We are particularly interested in estimating the effect of changes in the regional share of foreigners on labor market outcomes of German natives. We further construct the unemployment rate, the share of untrained workers, the share of workers with a university degree and the respective shares of workers aged 20 to 30 and 50 to 65 years, which constitute relevant control variables in our analysis.

Since administrative boundaries like postcode areas, community or county boundaries do not necessarily coincide with labor market activities, we consider local labor markets defined by Kropp and Schwengler (2008) as an appropriate regional level of aggregation. The delineation of the labor markets are based on the structure of commuter flows between counties in 2005 using graph theory. These local labor markets capture actual commuter linkages much better than administrative boundaries. In our sample this leads to an aggregation of the 1,682 postcode regions into 103 local labor markets with an average population of 690,000 inhabitants.

The SOEP is a longitudinal study of private households, which started in 1984 and samples more than 20,000 persons each year, including Germans, foreigners and recent immigrants. The study contains information on socioeconomic and demographic characteristics, household composition, labor market biographies, etc. We use this data source to construct our outcome measures and relevant socioeconomic characteristics. Wages and unemployment status constitute the dependent variables of our analysis. Socioeconomic characteristics include the potential labor market experience of the individuals and its square, a dummy variable for the marriage sta-

¹The combined “German Neighborhood SOEP” is a joint project of the Research Data Centre (FDZ) at the Institute for Employment Research (IAB), the DIW and the Rheinisch-Westfälisches Institut für Wirtschaftsforschung (RWI) financed by the Leibniz-Gemeinschaft. See Bauer et al. (2011) for a detailed description of the dataset.

²Unfortunately, we do not observe ethnicity and educational composition of foreigners.

tus, dummy variables indicating the educational level (no degree, technical degree, intermediate degree, secondary degree, upper secondary degree, other degree), and a dummy variable indicating part-time employment.

Since access to the administrative records is currently only available for the years 2000 to 2005, our analysis is restricted to this period. We further restrict our sample to West Germany (including East and West Berlin) because the share of the immigrant population residing in East Germany outside of Berlin is very small. Our analysis further focuses on native-born men aged 16 to 65 years in the labor force, i.e. regularly full- or part-time employed and currently registered unemployed persons. Our sample does not include self-employed, persons serving in the armed forces, individuals undertaking vocational training and marginally employed. After excluding observations with missing values on one of the relevant variables, the pooled sample includes 13,755 person-year-observations of 4,043 individuals.³

Table 1 shows some descriptive statistics for the total sample used in our empirical analysis. We differentiate between low-skilled and high-skilled individuals based on their school-leaving degrees, with low-skilled being defined as persons who dropped out of school, hold a secondary school degree or a non-specified other degree, and high-skilled being defined as persons holding at least an intermediate school degree, a degree from technical school or an upper secondary school degree. The average age of the individuals in our sample is 42 years. While low-skilled persons have on average 10 years of education, the respective number for high-skilled persons is 14 years. The share of currently registered unemployed persons accounts for 5.4% among high-skilled persons and is almost three times larger among low-skilled persons (14.1%). We generate the hourly wages by dividing the monthly gross labor income by the working hours in the respective month. The average wages of low- and high-skilled

³The SOEP data used in this paper were extracted using the Add-On package PanelWhiz v2.0 (Nov 2007) for Stata. PanelWhiz was written by Dr. John Haisken-DeNew (john@panelwhiz. eu). The PanelWhiz generated DO file to retrieve the SOEP data used here and any PanelWhiz Plugins are available upon request. Any data or computational errors in this paper are our own. Haisken-DeNew and Hahn (2010) describe PanelWhiz in detail.

workers are 14.77 € and 17.75 €, respectively.

The share of foreigners in the labor force, i.e. the share of employed and unemployed foreigners of the working population in the labor market, is around 11.5%, 11.2% for low-skilled and 11.8% for high-skilled individuals. The average unemployment rate in the local labor markets is 8.4%. The average share of 20 to 30 year old workers is 22% and the share of 50 to 65 year old workers is 23%. There are no differences in the demographic composition of the neighborhoods of low- and high-skilled workers, while the educational composition differs slightly. Low-skilled persons live on average in regions with a larger share of untrained workers (16.1% compared to 15.7%) and a lower share of workers with a university degree (8.1% compared to 8.7%) than high-skilled persons. Table 1 also reveals that low-skilled individuals live in more densely populated regions.

3 Identification Strategy

Our empirical analysis is based on a linear regression model that relates the labor market outcome y_{ijt} of individual i ($i = 1, \dots, N$) residing in region j ($j = 1, \dots, J$) at time t ($t = 1, \dots, T$) to a vector of individual-specific characteristics X_{it} (such as educational attainment and potential labor market experience), neighborhood characteristics Z_{jt} (such as the local unemployment rate and the population density) and a variable I_{jt} measuring the share of foreigners in the labor force of the region:

$$y_{ijt} = \beta_0 + X_{it}\beta_1 + Z_{jt}\beta_2 + \beta_3 I_{jt} + \theta_j + \lambda_t + \varepsilon_{ijt}. \quad (1)$$

The model contains regional fixed effects θ_j which capture interregional differentials in the local labor markets that do not change over time. The model further includes time fixed effects λ_t , which pick up average changes in y over time that do not vary across regions. After including region and time fixed effects, the parameter β_3 captures changes in the outcome variable that are due to changes in the share of

foreigners in that region.⁴

We may only obtain an unbiased OLS estimate of the parameter β_3 if $E(\varepsilon_{ijt}|I_{jt}) = 0$, which is unlikely because location choices of immigrants depend on unobserved wage determinants captured by ε . For example, when estimating equation (1) by OLS, we may find an insignificant or positive effect of immigration on natives' wages even if the true effect is negative, because the estimate of β_3 is upward biased due to immigrants migrating predominantly to high-wage regions.

In the literature, the endogeneity of the location choice of migrants is often addressed by either using quasi-experimental evidence from placement policies (Borjas, 2000; Edin et al., 2003) or by employing instrumental variable (IV) strategies using the lagged share of migrants as an instrument for the current share of migrants (Hatzius, 1994; Altonji and Card, 1991; Danzer and Yaman, 2010). The rationale behind the latter is that migrants tend to settle where already former migrants have settled and that the (observed and unobserved) factors which have attracted former migrants do not influence the labor market outcomes of migrants nowadays.⁵

As we do not have data on the past share of foreigners on an adequately disaggregated level, we use an alternative instrument which however follows the same rationale. We use the following reduced form equation:

$$I_{jt} = \gamma_0 + X_{it}\gamma_1 + Z_{jt}\gamma_2 + \gamma_3 IV_{jt} + \theta_j + \lambda_t + \eta_{ijt}, \quad (2)$$

where IV_{jt} is the 1961 average share of old buildings constructed before 1870 in region j (Statistisches Bundesamt Wiesbaden, 1961). Even though the share of old buildings in 1961 is time-invariant, the data structure induces a temporal variation of the instrument, which permits the inclusion of region fixed effects. Our instrument

⁴This model is comparable to the empirical approaches employed by Card and Krueger (1992) and Friedberg (2001).

⁵There are many potential beneficial network externalities which may lead to cultural clustering of immigrants (Gross and Schmidt, 2003; Epstein and Gang, 2010). Co-ethnics may provide new immigrants with information on labor and housing markets, potential employers may already be familiar with the foreign culture and therefore better able to evaluate potential foreign employees, and there may be a better provision of ethnic goods (food, newspaper, etc.) which may reduce the need for assimilation to the foreign culture.

varies over time because we use county level data to generate the average share of old buildings at a higher level of aggregation (see Section 2). Since we use an unbalanced panel, our sample covers different counties in different years. We calculate the average regional share of old buildings based on the counties that are observed in our sample in the respective year. Therefore, the average share of old buildings in a region varies over time because it depends on the availability of county level data.

Our identification strategy will deliver consistent estimates of the effect of immigration on labor market outcomes if (i) the instrument is correlated with the share of foreigners in the labor force and (ii) if the only channel through which the instrument affects recent labor market outcomes is its effect on the regional distribution of foreigners. The 1961 share of buildings constructed before 1870 seems to explain the regional distribution of foreigners in Germany because it is highly correlated with the past share of foreigners in the respective region. Many old buildings were destroyed during the WWII, especially in industrial regions. The post-war years were characterized by reconstruction. This process was accompanied by further destruction of old buildings because some cities restructured whole districts such as city centres.

During the 1950s and 1960s, the so-called “German economic miracle” had a great impact on the development of German cities. Economic recovery and strong population growth led to industrial expansion and the construction of many new buildings (Bundesamt für Bauwesen und Raumordnung, 2000). To meet the shortage of low-skilled labor in these regions, the German government started to recruit foreign workers. Immigration to Germany was dominated by guest workers from Southern Europe until the early 1970s.⁶ The large influx of immigrants into industrial regions determined location choices of subsequent immigrant cohorts, even though the ethnic composition of the immigrant population as well as the sectoral structure of the region have changed substantially over time (see Bauer et al., 2005). Since labor migrants typically moved into regions where most of the buildings were destroyed during and after WWII, we expect a negative correlation between the regional share

⁶See Bauer et al. (2005) for a detailed description of the German guest worker policy.

of foreigners and the share of old buildings.

Figure 1 describes the relationship between our instrument and the share of foreigners in the neighborhood. Since industrial regions exhibit a higher population density than non-industrial regions, it is necessary to weight the observed values accordingly.⁷ We use the population density within a local labor market to weight our observations. The population density presented in Figure 1 is described by the size of a circle for each region. We find that the share of old buildings is generally higher in regions with low population densities, i.e. the circles are very small for higher values of the instrument. Moreover, since many old buildings were destroyed in industrial regions where most of the guest workers settled down, we observe a negative relationship between the share of foreigners in the labor force and the share of old buildings, in particular for the subsample of low-skilled persons.⁸

Although we cannot test our exclusion restriction, it seems unlikely that the share of old buildings had an effect on the determinants of recent labor market outcomes other than the regional distribution of immigrants. A violation of the exclusion restriction would require that local labor market conditions remained relatively constant over time.⁹ In addition, the imprecision of our instrument resulting from variations in observed counties within regions generates additional randomness, which makes a systematic relation between recent labor market outcomes and the instrument even more unlikely.

When analyzing the effects of aggregate variables on micro units, we have to account for the possibility of a within-group correlation of random disturbances.

⁷The population density is defined as the population size of a region divided by its area measured in km².

⁸The coefficients of the underlying regressions are negative and significant in the full sample as well as in the subsample of low-skilled persons.

⁹Using data from the regional file of the IAB employment sample for the years 1975 to 2000, we observe that while the sectoral structure of employment changed in West-German regions, the share of foreigners stayed relatively constant. Specifically, average employment in the industry (service) sector steadily declined (increased) from 65% to 54% (30% to 43%), while the share of foreigners remained constant around 9-10%. We observe a particularly strong sectoral change in North-Rhine Westphalia, where the share of persons employed in the service sector almost doubled. Dietz (1988) reports similar results for the period 1974 to 1986.

Since individuals residing in the same local labor market share the same observable characteristics on an aggregate level, they may also share unobservable characteristics that lead to correlated errors. As a result, the standard errors of our parameter estimates may be biased downward. Moulton (1990) provides a detailed description of this problem. In our empirical analysis, we estimate cluster-robust standard errors at the regional level.

4 Results

Table 2 presents the estimates of the basic linear wage and unemployment regression with neighborhood characteristics. Our main variable of interest is the share of foreigners in the local labor market. The coefficients of the individual socioeconomic characteristics of the wage regression presented in Table 2 have the expected signs. We observe positive but decreasing returns to potential labor market experience, married men receive higher wages, and part-time employed persons have significantly lower wages. While having no school degree or any other degree does not significantly affect the wages of employed persons compared to having a secondary school degree, persons with a technical, an intermediate or an upper secondary degree have significantly higher wages.

Turning to the regional characteristics, our results indicate that the regional share of foreigners has no significant impact on wages of native-born workers. The coefficient is positive but not significantly different from zero. Moreover, neither the unemployment rate nor the educational and demographic composition of the labor force in the local labor market have a significant effect on wages.

Table 2 also includes the estimates of the unemployment regressions. Again, the coefficients of the socioeconomic characteristics have the expected signs. Potential labor market experience, being married and having a school-leaving degree above a secondary school degree reduce the probability of being unemployed significantly. Persons who dropped out of school and those who do not have a school degree exhibit significantly higher unemployment probabilities than persons with a secondary de-

gree. The coefficient of the share of foreigners is negative and significant, suggesting that immigration increases the employment probabilities of natives. This result could indicate that German natives and foreigners are complements in the labor market. Again, the remaining regional characteristics do not have a significant impact on the unemployment probability of natives.

To study the robustness of our results, we present the estimates of alternative model specifications in Table 3. The coefficients on the share of foreigners of the full sample in columns (3) and (6) of Table 3 are identical to those presented in Table 2. The numbers presented in columns (1) and (4) of the upper panel of Table 3 reveal that the regional share of foreigners has a positive impact on wages and a negative impact on unemployment probabilities if we do not control for socioeconomic and neighborhood characteristics. While the coefficient remains significant in the wage regression of low-skilled natives (column (1) of middle panel), the coefficient on the regional share of foreigners is not significant in the subsamples of the unemployment regression (column (4) of middle and lower panel). Controlling for additional socioeconomic characteristics reduces the magnitude of the coefficients in almost all specifications (columns (2) and (5)). Furthermore, the coefficient turns insignificant in the wage regression. The coefficient in column (3) of the upper panel remains insignificant in the wage regression after controlling for neighborhood characteristics (see also Table 2). In the unemployment regression, the corresponding coefficient (column (6) of upper panel) remains basically unchanged and significant at the 5%-level. However, the coefficient of the share of foreigners is not significant in the two subsamples. Overall, the results highlight the importance of controlling for both socioeconomic and neighborhood characteristics when using regional variation to analyze labor market effects of immigration.

There are several possible explanations for the positive effect of immigration on the employment probability of native-born workers. First, this positive effect may either be the result of high-skilled native-born workers and foreigners being complements or of positive externalities (like knowledge spillovers) in the labor market.

Several studies support the hypothesis that cultural diversity increases the productivity of natives (e.g. Ottaviano and Peri, 2006). Second, cultural diversity induced by the inflow of foreigners in a region may have a positive impact on firm formation and thereby increase employment. Audretsch et al. (2010) show that the entrepreneurial activity is in particular stimulated in regions with a high level of human capital. This would explain why the employment effect is more pronounced among high-skilled natives. Finally, the positive effect may be the result of foreigners' self-selection into booming labor markets. In the latter case, the coefficient of the share of foreigners would be upward biased in the wage regression and downward biased in the unemployment regression. To deal with this potential endogeneity problem, we employ the IV approach described in the previous section, using the share of buildings in 1961 that were built before 1870 as an instrument for the regional share of foreigners.

Table 4 includes the estimates of the first stage regression of the IV model for different specifications. The numbers provide evidence for a significantly negative effect of the share of old buildings on the share of foreigners in the labor force. The effect of the instrument is remarkably stable across model specifications. The first stage F-statistic of the excluded instruments lies always above 37 for the subsample of low-skilled workers and above 76 for the subsample of high-skilled workers, indicating that our IV estimates do not suffer from a weak instrument problem.

The estimated labor market effects of immigration presented in Table 5 suggest that accounting for non-random location choices of migrants results in insignificant wage effects of immigration. The coefficients have increased in magnitude but are not significantly different from zero. This result is stable across model specifications and holds for both low- and high-skilled workers. In the unemployment regression, the coefficients have become even more negative and are still significant. The unemployment effect of immigration on high-skilled natives may be interpreted as follows: According to the Federal Statistical Office, almost 7 million foreigners were living in West Germany in 2005. 79% of them were in the labor force age and the labor force participation rate was 66% (Bundesagentur für Arbeit, 2011). Net migration to West

Germany was +87,690. Assuming the same age distribution and labor force participation rate among newly arrived foreigners as among foreigners already residing in Germany, this corresponds to an increase in the labor force by 45,502 foreigners. Given a constant German population, the share of foreigners would have increased by 1.1%. As a result, the unemployment probability of high-skilled natives would have declined by 5.5%.

5 Conclusions

This paper analyzes the impact of immigration on individual labor market outcomes of German natives. We allow the impact of immigration to differ between low- and high-skilled natives and identify the impact of immigration using the variation of the share of foreigners between regions and over time. We further address the issue of endogeneity of the location choice of immigrants by instrumenting the share of foreigners in the region with the share of old buildings at the beginning of the 1960s.

In basic OLS regressions, we do not find a significant relationship between immigration and wages of native workers, while the share of foreigners is positively related to employment. When controlling for non-random sorting of foreigners into certain labor markets, the unemployment effect increases. Our results indicate that high-skilled natives may benefit from immigration, while the unemployment effect on low-skilled natives is not significant. Furthermore, our results support the initial assumption that wage reactions are less likely in Germany due to relatively stronger unions and more rigid wage floors. The findings are in line with earlier studies for Germany which found small or no effects of immigration on labor market outcomes of German natives.

References

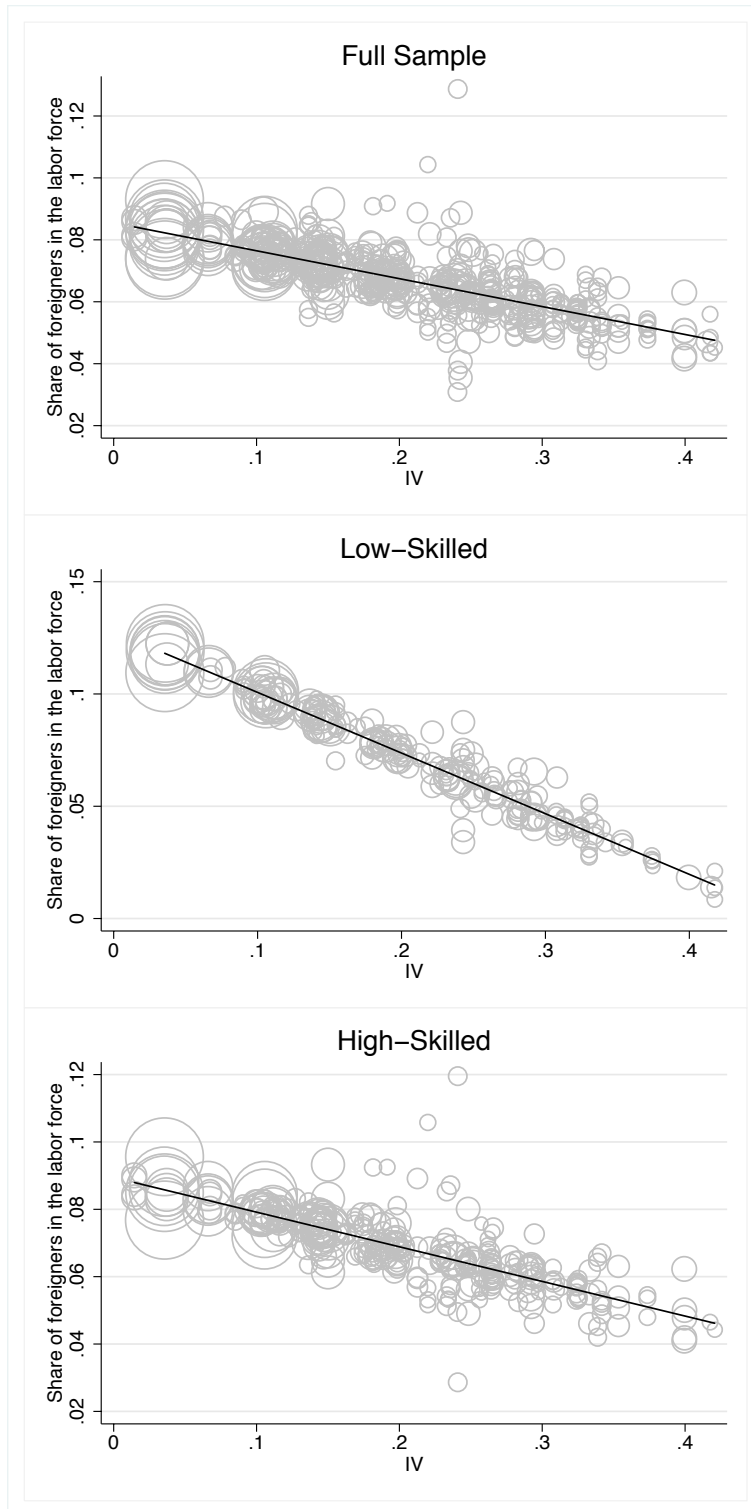
- Alesina, A., La Ferrara, E., 2005. Ethnic Diversity and Economic Performance, *Journal of Economic Literature*, 43(3): 762-800.
- Altonji, J. G., Card, D. 1991. The Effects of Immigration on the Labor Market Outcomes of Less-Skilled Natives, in J. M. Abowd and R. B. Freeman (eds.), *Immigration, Trade and the Labor Market*, University of Chicago Press, Chicago.
- Audretsch, D., Dohse, D., Niebuhr, A., 2010. Cultural diversity and entrepreneurship: a regional analysis for Germany, *The Annals of Regional Science*, 45(1): 55-85.
- Bauer, T.K. 1997. Do Immigrants Reduce Natives' Wages? *Münchener Wirtschaftswissenschaftliche Beiträge*, 97-05, Munich.
- Bauer, T. K., Dietz, B., Zimmermann, K. F., Zwintz, E., 2005. German Migration: Development, Assimilation, and Labor Market Effects, in K. F. Zimmermann (ed.), *European Migration: What do we know?*, Oxford University Press, Oxford, 197-261.
- Bauer, T. K., M. Fertig, M. Vorell, 2011. The Effect of Neighborhood Characteristics on Individual Employment Probability. Mimeo, RWI.
- Bartel, A. 1989. Where Do the New U.S. Immigrants Live? *Journal of Labor Economics*, 7(4), 371-391.
- Borjas, G. J., 1999. The Economic Analysis of Immigration, in O. Ashenfelter and D. Card (eds.), *Handbook of Labor Economics*. North Holland, 1697-1760.
- Borjas, G. J., 2000. Ethnic Enclaves and Assimilation, *Swedish Economic Policy Review*, 7, 89-122.
- Borjas, G. J., 2003. The Labor Demand Curve is Downward Sloping: Reexamining the Impact of Immigration on the Labor Market. *Quarterly Journal of Economics*, 118(4), 1335-1374.
- Bundesagentur für Arbeit. 2011. Analyse des Arbeitsmarkts für Ausländer, August 2011.
- Bundesamt für Bauwesen und Raumordnung. 2000. Stadtentwicklung und Städtebau in Deutschland - Ein Überblick, Band 5.
- Card, D., 1990. The Impact of the Mariel Boatlift on the Miami Labor Market. *Industrial and Labor Relations Review*, 43(2), 245-257.
- Card, D., Krueger, A.B., 1992. Does School Quality Matter? Returns to Education and the Characteristics of Public Schools in the United States. *Journal of Political Economy*, 100, 1-40.
- Card, D., 2005. Is the New Immigration Really So Bad? *The Economic Journal*, 115, F300-F323.

- D'Amuri, F., Ottaviano, G.I.P., Peri, G. 2010. The Labor Market Impact of Immigration in Western Germany in the 1990's. *European Economic Review*, 54(4), 550-570.
- Danzer, A.M., Yaman, F., 2010. Ethnic Concentration and Language Fluency of Immigrants in Germany, IZA Discussion Paper No. 4742.
- DeNew, J.P., Zimmermann, K.F. 1994a. Native Wage Impacts of Foreign Labor: A Random Effects Panel Analysis. *Journal of Population Economics*, 7, 177-192.
- DeNew, J.P., Zimmermann, K.F. 1994b. Blue Collar Labour Vulnerability: Wage Impacts of Migration. In: G. Steinmann and R.E. Ulrich (eds.), *The Economic Consequences of Immigration to Germany* (Heidelberg: Physica-Verlag), 81-99.
- Dietz, F. 1988. Strukturwandel auf dem Arbeitsmarkt, *Mitteilungen aus der Arbeitsmarkt- und Berufsforschung*.
- Edin, P.-A., Fredriksson, P., Åslund, O., 2003. Ethnic Enclaves and the Economic Success of Immigrants - Evidence from a Natural Experiment, *Quarterly Journal of Economics*, 118(1), 329-357.
- Epstein, G.S., Gang, I.N., 2010. Migration and Culture, in: Epstein, G.S., Gang, I.N. (eds.), *Migration and Culture, Frontiers of Economics and Globalization*, Vol.8, Emerald.
- Friedberg, R. M., Hunt, J., 1995. The Impact of Immigrants on Host Country Wages, Employment and Growth. *The Journal of Economic Perspectives*, 9(2), 23-44.
- Friedberg, R. M., 2001. The Impact of Mass Migration on the Israeli Labor Market. *Quarterly Journal of Economics*, 116(4): 1373-1408.
- Glitz, A. 2011. The Labour Market Impact of Immigration: A Quasi-Experiment Exploiting Immigrant Location Rules in Germany. *Journal of Labor Economics*. Forthcoming.
- Gross, D.M., Schmitt, N., 2003. The Role of Cultural Clustering in Attracting New Immigrants. *Journal of Regional Science*. 43(2): 295-318.
- Haisken-DeNew, J.P., and Hahn, M., 2010. PanelWhiz: Efficient Data Extraction of Complex Panel Data Sets - An Example Using the German SOEP. *Journal of Applied Social Science Studies*, 130(4): 643-654.
- Hatzius, J. 1994. The Unemployment and Earnings Effects of German Immigration. *Oxford Applied Economics Discussion Paper Series*, 165, Oxford.
- Hunt, J., 1992. The Impact of the 1962 Repatriates from Algeria on the French Labor Market. *Industrial and Labor Relations Review*, 45(3), 556-572.
- Kropp, P., Schwengler, B., 2008. Abgrenzung von Wirtschaftsräumen auf Grundlage von Pendlerverflechtungen. *IAB-Discussion Paper No. 41/2008*.

- LaLonde, R. J., Topel, R. H., 1996. Economic Impact of International Migration and the Economic Performance of Immigrants, in: M. R. Rosenzweig and O. Stark (eds.), *Handbook of Population and Family Economics*, North Holland.
- Longhi, S., Nijkamp, P., Poot, J., 2005. A Meta-Analytic Assessment of the Effect of Immigration on Wages. *Journal of Economic Surveys*, 19(3), 451-477.
- Moulton, B. R., 1990. An Illustration of a Pitfall in Estimating the Effects of Aggregate Variables on Micro Units. *Review of Economics and Statistics*, 72, 334-338.
- Munshi, K., 2003. Networks in the Modern Economy: Mexican Migrants in the U.S. Labor Market. *Quarterly Journal of Economics*, 118, 549-599.
- Ottaviano, G.I.P, Peri, G., 2006. The economic value of cultural diversity: evidence from US cities. *Journal of Economic Geography*, 6(1): 9-44.
- Pischke, J.-S., Velling, J. 1997. Employment Effects of Immigration to Germany: An Analysis based on Local Labor Markets. *Review of Economics and Statistics*, 79, 594-604.
- Statistisches Bundesamt Wiesbaden. 1961. Gebäudezählung vom 6. Juni 1961, Heft 3, Hauptergebnisse nach Kreisen. Stuttgart und Mainz.
- Südekum, J., Wolf, K., Blien, U., 2009. Cultural Diversity and Local Labour Markets. *IZA Discussion Paper No.4619*.
- Winter-Ebmer, R., Zimmermann, K.F. 1999. East-West Trade and Migration: The Astro-German Case. In: R Faini, R. De Melo and K.F. Zimmermann (eds.), *Trade and Factor Mobility* (Cambridge: Cambridge University Press), 296-327.
- Zimmermann, K. F., 2005. *European Migration: What Do We Know?* Oxford University Press: Oxford/New York.

Figures and Tables

FIGURE 1: Relationship between IV and share of foreigners in the labor force



NOTE.—Relationship has been adjusted by the inclusion of regional fixed effects.

TABLE 1: Summary Statistics

| | Full Sample | | Low-Skilled | | High-Skilled | |
|---|-------------|-------|-------------|-------|--------------|-------|
| | Mean | SD | Mean | SD | Mean | SD |
| SAMPLE OF EMPLOYED | | | | | | |
| Hourly gross wage | 16.48 | 7.02 | 14.77 | 5.10 | 17.75 | 7.92 |
| Observations | 12,637 | | 4,810 | | 7,827 | |
| SAMPLE OF EMPLOYED AND NON-EMPLOYED | | | | | | |
| SOCIOECONOMIC CHARACTERISTICS | | | | | | |
| Age | 42.1 | 10.5 | 44.2 | 10.8 | 40.4 | 10.0 |
| Married (%) | 58.1 | 49.3 | 63.3 | 48.2 | 53.9 | 49.9 |
| Length of education in years | 12.2 | 2.6 | 10.3 | 0.9 | 13.7 | 2.4 |
| Dropout, No School Degree (%) | 2.1 | 14.4 | 4.7 | 21.2 | | |
| Secondary School Degree (%) | 41.8 | 49.3 | 93.1 | 25.4 | | |
| Other Degree (%) | 1.0 | 9.8 | 2.2 | 14.6 | | |
| Technical School Degree (%) | 7.6 | 26.5 | | | 13.8 | 34.5 |
| Intermediate School Degree (%) | 27.9 | 44.9 | | | 50.7 | 50.0 |
| Upper Secondary Degree (%) | 19.6 | 39.7 | | | 35.6 | 47.9 |
| Currently registered unemployed (%) | 9.3 | 29.1 | 14.1 | 34.8 | 5.4 | 22.7 |
| Full-time employed (%) | 87.6 | 33.0 | 84.4 | 36.3 | 90.2 | 29.7 |
| Part-time employed (%) | 3.1 | 17.2 | 1.5 | 12.1 | 4.3 | 20.4 |
| Potential labor market experience | 24.0 | 11.0 | 28.0 | 10.6 | 20.7 | 10.2 |
| NEIGHBORHOOD CHARACTERISTICS | | | | | | |
| Share of foreigners in the labor force (%) | 11.5 | 3.6 | 11.2 | 3.6 | 11.8 | 3.6 |
| Unemployment rate (%) | 8.4 | 3.1 | 8.4 | 2.8 | 8.4 | 3.4 |
| Share of untrained workers (%) | 15.9 | 2.4 | 16.1 | 2.5 | 15.7 | 2.4 |
| Share of workers with university degree (%) | 8.5 | 2.4 | 8.1 | 2.4 | 8.7 | 2.5 |
| Share of 20-30 year old workers (%) | 21.6 | 1.4 | 21.6 | 1.4 | 21.6 | 1.4 |
| Share of 50-65 year old workers (%) | 22.8 | 1.3 | 22.7 | 1.3 | 22.9 | 1.2 |
| Population density | 479.6 | 449.3 | 497.6 | 481.6 | 465.0 | 420.7 |
| Observations | 13,755 | | 5,525 | | 8,230 | |

NOTE.—Weighted numbers based on weights provided by the SOEP.

TABLE 2: Wage and Unemployment Regressions (OLS)

| | DEPENDENT VARIABLE | | | |
|--|--------------------|-------|--------------|-------|
| | Wage | | Unemployment | |
| | Coef. | SE | Coef. | SE |
| Socioeconomic characteristics | | | | |
| Married | 0.099*** | 0.011 | -0.054*** | 0.013 |
| Dropout, No School Degree | -0.034 | 0.047 | 0.121** | 0.046 |
| Other Degree | 0.042 | 0.049 | -0.008 | 0.042 |
| Technical School Degree | 0.203*** | 0.021 | -0.064*** | 0.013 |
| Intermediate School Degree | 0.091*** | 0.015 | -0.055*** | 0.009 |
| Upper Secondary Degree | 0.270*** | 0.021 | -0.089*** | 0.009 |
| Potential labor market experience | 0.036*** | 0.003 | -0.013*** | 0.002 |
| Pot. labor market experience ² × 10 ⁻² | -0.054*** | 0.005 | 0.029*** | 0.003 |
| Part-time employed | -0.151*** | 0.028 | | |
| Neighborhood characteristics | | | | |
| Share of foreigners in the labor force | 0.499 | 0.635 | -1.261** | 0.549 |
| Unemployment rate | 0.412 | 0.295 | 0.336 | 0.298 |
| Share of untrained workers | 0.892 | 0.554 | 0.542 | 0.469 |
| Share of workers with university degree | 0.282 | 0.746 | -0.204 | 0.696 |
| Share of 20-30 year old workers | -0.140 | 0.714 | -1.174 | 0.877 |
| Share of 50-65 year old workers | 0.206 | 0.914 | -0.491 | 0.653 |
| Population density (in 1,000) | 0.105 | 0.978 | -0.475 | 0.392 |
| Constant | 1.840*** | 0.675 | 0.907** | 0.410 |
| Occupation fixed effects | Yes | | No | |
| Year and region fixed effects | Yes | | Yes | |
| R ² | 0.348 | | 0.057 | |
| F | 148.398 | | 19.446 | |
| N | 12,637 | | 13,755 | |

NOTE.—Robust standard errors were adjusted for repeated observations within regions.

Secondary school degree is base category.

* p<0.10, ** p<0.05, *** p<0.01

TABLE 3: OLS Estimates

| | DEPENDENT VARIABLE | | | | | |
|--|--------------------|-------------------|------------------|----------------------|----------------------|---------------------|
| | Wage | | | Unemployment | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| FULL SAMPLE | | | | | | |
| Share of foreigners in the labor force | 1.499** (0.572) | 0.958 (0.585) | 0.499 (0.635) | -1.413*** (0.450) | -1.203*** (0.449) | -1.261** (0.549) |
| Year and region fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Socioeconomic characteristics | No | Yes | Yes | No | Yes | Yes |
| Neighborhood characteristics | No | No | Yes | No | No | Yes |
| R ² | 0.023 | 0.348 | 0.348 | 0.002 | 0.056 | 0.057 |
| Observations | 12,637 | | | 13,755 | | |
| LOW-SKILLED | | | | | | |
| Share of foreigners in the labor force | 2.109** (0.853) | 1.271* (0.763) | 0.871 (0.883) | -1.349 (0.921) | -1.158 (0.913) | -0.949 (0.859) |
| Year and region fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Socioeconomic characteristics | No | Yes | Yes | No | Yes | Yes |
| Neighborhood characteristics | No | No | Yes | No | No | Yes |
| R ² | 0.021 | 0.213 | 0.213 | 0.005 | 0.057 | 0.059 |
| Observations | 4,810 | | | 5,525 | | |
| HIGH-SKILLED | | | | | | |
| Share of foreigners in the labor force | 0.744 (0.825) | 0.951 (0.753) | 0.249 (0.754) | -1.098 (0.730) | -1.022 (0.709) | -1.050 (0.753) |
| Year and region fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Socioeconomic characteristics | No | Yes | Yes | No | Yes | Yes |
| Neighborhood characteristics | No | No | Yes | No | No | Yes |
| R ² | 0.021 | 0.357 | 0.357 | 0.001 | 0.034 | 0.034 |
| Observations | 7,827 | | | 8,230 | | |

NOTE.—See note to Table 2.

* p<0.10, ** p<0.05, *** p<0.01

TABLE 4: IV Estimates: First Stage

| | MODEL | | | | | |
|---|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | Wage | | | Unemployment | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| FULL SAMPLE | | | | | | |
| Share of buildings built before 1870 (1961) | -0.075*** (0.009) | -0.075*** (0.009) | -0.126*** (0.016) | -0.075*** (0.009) | -0.075*** (0.009) | -0.127*** (0.015) |
| Year and region fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Socioeconomic characteristics | No | Yes | Yes | No | Yes | Yes |
| Neighborhood characteristics | No | No | Yes | No | No | Yes |
| Shea R ² | 0.048 | 0.048 | 0.145 | 0.051 | 0.051 | 0.156 |
| R ² | 0.214 | 0.214 | 0.496 | 0.214 | 0.215 | 0.503 |
| F (excluded instrument) | 67.138 | 67.571 | 64.535 | 75.146 | 75.604 | 68.812 |
| Observations | | 12,637 | | | 13,755 | |
| LOW-SKILLED | | | | | | |
| Share of buildings built before 1870 (1961) | -0.081*** (0.013) | -0.080*** (0.013) | -0.127*** (0.019) | -0.079*** (0.011) | -0.078*** (0.011) | -0.128*** (0.019) |
| Year and region fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Socioeconomic characteristics | No | Yes | Yes | No | Yes | Yes |
| Neighborhood characteristics | No | No | Yes | No | No | Yes |
| R ² | 0.182 | 0.183 | 0.496 | 0.187 | 0.188 | 0.506 |
| Shea R ² | 0.035 | 0.035 | 0.113 | 0.037 | 0.036 | 0.123 |
| F (excluded instrument) | 38.835 | 37.608 | 42.698 | 47.759 | 47.924 | 46.060 |
| Observations | | 4,810 | | | 5,525 | |
| HIGH-SKILLED | | | | | | |
| Share of buildings built before 1870 (1961) | -0.074*** (0.008) | -0.074*** (0.008) | -0.125*** (0.014) | -0.074*** (0.008) | -0.074*** (0.008) | -0.126*** (0.014) |
| Year and region fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Socioeconomic characteristics | No | Yes | Yes | No | Yes | Yes |
| Neighborhood characteristics | No | No | Yes | No | No | Yes |
| R ² | 0.240 | 0.241 | 0.501 | 0.239 | 0.239 | 0.507 |
| Shea R ² | 0.059 | 0.059 | 0.160 | 0.063 | 0.063 | 0.172 |
| F (excluded instrument) | 76.051 | 76.704 | 77.883 | 81.919 | 82.282 | 84.062 |
| Observations | | 7,827 | | | 8,230 | |

NOTE.—See note to Table 2.

* p<0.10, ** p<0.05, *** p<0.01

TABLE 5: IV Estimates: Labor Market Effects of Immigration

| | DEPENDENT VARIABLE | | | | | |
|--|--------------------|------------------|------------------|----------------------|----------------------|----------------------|
| | Wage | | | Unemployment | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| FULL SAMPLE | | | | | | |
| Share of foreigners in the labor force | 1.963 (1.196) | 1.593 (1.060) | 1.553 (1.046) | -4.244*** (0.862) | -3.778*** (0.876) | -3.866*** (1.174) |
| Year and region fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Socioeconomic characteristics | No | Yes | Yes | No | Yes | Yes |
| Neighborhood characteristics | No | No | Yes | No | No | Yes |
| R ² | 0.023 | 0.348 | 0.348 | -0.000 | 0.055 | 0.056 |
| Observations | 12,633 | | | 13,750 | | |
| LOW-SKILLED | | | | | | |
| Share of foreigners in the labor force | 1.012 (2.014) | 0.390 (1.816) | 1.927 (1.499) | 1.710 (2.990) | 2.516 (2.998) | -1.119 (1.608) |
| Year and region fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Socioeconomic characteristics | No | Yes | Yes | No | Yes | Yes |
| Neighborhood characteristics | No | No | Yes | No | No | Yes |
| R ² | 0.021 | 0.213 | 0.213 | 0.004 | 0.055 | 0.059 |
| Observations | 4,809 | | | 5,519 | | |
| HIGH-SKILLED | | | | | | |
| Share of foreigners in the labor force | 1.774 (1.691) | 1.543 (1.407) | 0.984 (1.485) | -7.367*** (1.263) | -6.889*** (1.218) | -4.916*** (1.276) |
| Year and region fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Socioeconomic characteristics | No | Yes | Yes | No | Yes | Yes |
| Neighborhood characteristics | No | No | Yes | No | No | Yes |
| R ² | 0.021 | 0.357 | 0.357 | -0.012 | 0.022 | 0.030 |
| Observations | 7,822 | | | 8,226 | | |

NOTE.—See note to Table 2.

* p<0.10, ** p<0.05, *** p<0.01