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Evidence from a Quasi-Experimental
Social-Interaction Approach**

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ABSTRACT

Do Ethnic Enclaves Impede Immigrants' Integration? Evidence from a Quasi-Experimental Social-Interaction Approach

It is widely debated whether immigrants who live among co-ethnics are less willing to integrate into the host society. Exploiting the quasi-experimental guest worker placement across German regions during the 1960/70s as well as information on immigrants' inter-ethnic contact networks and social activities, we are able to identify the causal effect of ethnic concentration on social integration. The exogenous placement of immigrants "switches off" observable and unobservable differences in the willingness or ability to integrate which have confounded previous studies. Evidence suggests that the presence of co-ethnics increases migrants' interaction cost with natives and thus reduces the likelihood of integration.

JEL Classification: J15, R23, J61

Keywords: immigrants, integration, enclaves, political participation, culture, social interaction, guest workers, natural experiment

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1. Introduction

In a globalized world, people are on the move and carry their specific set of beliefs, identities and culture with them. While migration plays a pivotal role in the global factor mobility, it not only contributes to a more efficient use of human labor: Migrants not only provide human capital, but often also identify with other places and ethnicities, so that cultural encounters may potentially create conflicts. Consequently, it is little surprising that the integration of immigrants is a politically hot topic in many countries. Failed integration bears substantial costs as evidenced in the riots in the suburbs of Paris in 2005 and the riots in certain Muslim communities after the publication of caricatures depicting the prophet Mohammed in a Danish newspaper (2006)¹. Larger cultural distance may well lead to weaker integration outcomes and this has been especially exemplified with the Muslim immigrant populations in Europe (Bisin, Patacchini, Verdier and Zenou, 2008).

As non-integration is costly, this may provide a rationale for immigration controls (Giordani and Ruta, 2011) and some countries try to pre-select migrants with favorable characteristics. However, some European governments have taken drastic measures with respect to immigrants and minorities which were often meant to satisfy the public's sentiments in response to these tensions. For instance, the constitution of Switzerland now bans the construction of minarets, Denmark re-introduced temporary border controls against illegal immigrants, and France and Italy have enacted expulsions of Roma populations to Romania.

Opposed to economists' long-standing interest in the economic success of immigrants (for an early account see Chiswick, 1978), they have only recently begun to investigate the cultural dimension of integration despite its economic implications (for a review see Epstein and Gang, 2010). Recent papers have described whether and how strongly immigrants identify with

the culture of the host country (Dustmann, 1996, and Drever, 2004 for Germany; Manning and Roy, 2010, and Bisin et al., 2008, for the UK). Beside subjective self-identification, some other measures of integration in the literature constitute language (Lazear, 1999; Dustmann, 1994; and Bauer, Epstein and Gang, 2005 to name only a few), citizenship (Danzer and Ulku, 2011), or composite metrics (Constant and Zimmermann, 2008).

However, much less public and academic attention has been directed to the reasons for integration failures: Why are some immigrants not integrated? Public debates often remain one-dimensional arguing predominantly that immigrants are unwilling to familiarize with the host country and culture. While researchers are well aware that both immigrants and natives can foster or hinder cultural and social interaction (Epstein and Gang, 2010), it has proven difficult to empirically assess whether immigrants are limited in their integration prospects or whether they limit themselves. Using a social interaction approach and a unique quasi experiment from Germany we are able to identify some important sources of integration failures that have nothing to do with migrants' willingness to integrate. We therefore focus on the exogenous placement of guest workers from five ethnicities across German regions in the 1950s to early 1970s and ask whether the fraction of co-ethnics in the migrant's vicinity inhibit social interaction with natives. Germany is an interesting laboratory for this question as it holds one of the largest immigrant populations in the world and the group of guest workers and their descendents alone account for more than 5 million citizens or over six percent of the country's overall current population (Statistisches Bundesamt, 2011).

We contribute to the literature in three ways: First, we provide a social interaction explanation for integration and argue that migrants have to bear "interaction costs" in order to communicate with natives. Failure to accommodate with the host country culture can result from

migrants either having low demand or little opportunities for integration. In either case, integration is the result of the interaction with natives. While many papers follow the social interaction approach in the spirit of Lazear (1999), very few papers have attempted to directly measure and estimate social interactions. Second, focusing on what people do for integration rather than how they feel about their identity complements the existing literature. Contact rates with natives and different forms of community involvement are behavioral metrics which have been rarely used in the study of integration compared to self-reported measures such as self-identity, religiosity or language. As in our concept identity formation results from social interaction, we argue that missing interactions can work as an early warning indicator for integration failures. Finally, we identify the causal negative effect of living among many co-ethnics on social interaction and integration. Using the historical, exogenous distribution of guest worker immigrants across German regions we are able solve an old-standing self-selection problem in migration research, namely whether immigrants do not integrate because they live in enclaves or whether they live in enclaves because they do not want to integrate. Our quasi-experimental approach allows “switching off” differences in migrants’ intrinsic willingness or ability to integrate showing that interaction costs with natives are relevant barriers to integration.

Our empirical findings indicate that immigrants who were sent to areas with higher fractions of own-ethnicity co-residents are less likely to interact directly with natives. These findings are statistically significant and robust to the use of an instrumental variables approach. Furthermore, immigrants allocated to ethnic enclaves spend significantly less time in activities that are considered close proxies for political and cultural integration into the host country, such as civic engagement in parties. These results indicate that integration failures can be partly explained by differences in local interaction costs and thus run counter to the widespread belief

of most immigrants being unwilling to integrate. Finally, while our social interaction results are significant, we find hardly any impact of enclaves on self-assessed identification. This result suggests that interaction and identification with natives actually proceed sequentially with our social interaction approach potentially being an early warning system against integration failures.

2. Background

While many societies complain about a lack of integration among their immigrant population, little is known about the reasons for this failure. The public debate often focuses on a perceived lack of migrants' willingness (demand) to integrate; however, there is an often neglected supply side to the "market" for integration: Can immigrants who are willing to integrate succeed? One common prerequisite for successful integration of immigrants into the host society is the interaction with natives. To what degree immigrants interact with natives depends on a cost-benefit rationale that can be easily understood with an example from trade theory: On the search for trade partners, communication is crucial and business prospects increase with the number of available traders. Businessmen can naturally communicate with their ethnic fellows, but face cultural barriers when communicating with others (cp. Kónya, 2007). Similarly, immigrants must invest in learning the local language and habits in order to interact with natives. Hence, interaction with natives is costly and the price increases with the share of non-native speakers in the vicinity of the immigrant. Does the absence of natives reduce the opportunities to integrate?

Several previous studies focus on how the place of residence and the density of natives therein matter for integration. The basic idea is that the familiarization with the destination country is inhibited within ethnic enclaves because they offer fewer incentives but also fewer

opportunities for integration (Chiswick and Miller, 1996). Borjas (1995), for instance, found slow convergence of human capital endowments of immigrant groups towards natives due to the intergenerational transmission of human capital inside ethnic enclaves. Most studies find a negative association between ethnic concentration and language proficiency (Cutler, Glaeser and Vigdor, 2008, Lazear, 1999, for the USA; Warman, 2007, for Canada; Dustmann and Fabbri, 2003, for the UK; and Chiswick and Miller, 1996, for Australia). Although the problem of potential self-selection of immigrants into specific neighborhoods (ghettos) is well understood in the literature, few papers attempt to correct for this potential bias. For instance, Cutler et al. (2008) use an occupational instrument matrix which, however, suffers from the fact that the occupation, location and language decisions might not be independent.

A hypothetic test of supply side imperfections could be performed if we were able to exogenously manipulate the fraction of potential native contact partners while switching off intrinsic differences in the migrants' willingness or ability to integrate, which for instance might be due to differences in education or – more importantly – unobserved characteristics. The quasi-experiment on residential placement that we use in this paper comes as close as possible to this thought experiment and allows us to study the social interaction between immigrants and natives directly. Owing to the exogenous placement of immigrants, initial demand differences for integration should be absent across the placement regions. Any detected differences would be fully attributable to a change in integration behavior as a consequence of the scarcity of the supply of interaction. In order to learn more about the integration in the civil society we also test whether immigrants located in ethnic enclaves are more or less active in various domains of public life.

We test two aspects of the social integration of immigrants into the German society with the following hypotheses:

[1] All else equal, fewer potential contact opportunities with natives in the region of living will cause immigrants to interact less with natives. We will investigate this hypothesis using information on friendship and personal visits with natives.

[2] Fewer opportunities for social interaction will lead migrants to integrate less with natives with respect to civic engagement. Specifically, the level of integration will be lower in domains of public life that are particularly “native”. We use information on the frequency of engagement in various free-time activities which range from political or neighborhood engagement to the consumption of cultural programs, sport etc.

3. Data and Identification Strategy

To establish a causal link between ethnic concentrations and the social integration of immigrants we use the quasi-experiment of the guest-worker immigration to Germany. This large-scale immigration episode took mainly place in the 1960s and 1970s and provides an arguably exogenous initial placement (from the perspective of the immigrant) of incoming guest-workers in Germany.

The Guest-worker Program in West Germany was initiated in 1955 and remained in effect till 1973. Guest-worker treaties were signed with Italy in 1955, Greece and Spain in 1960, Turkey in 1961, and Yugoslavia in 1968. Immigrants from these five countries constitute our sample. Technically, the recruitment was performed by a recruitment commission in the sending country which was jointly set up by the Federal Employment Agency of Germany and the Labor administration of the sending country. German firms requested workers according to their needs

and the commission assigned workers from an application pool to specific firms. Workers signed one-year contracts with their first employers at decentralized labor office branches before arriving in Germany. Permits to live in Germany for the duration of one year were issued, but the permission was conditional on employment with the employer of the contract. Accommodation and travel costs were covered by the employer, so that monetary and administrative costs of the application and the move were essentially zero for the guest-worker. The recruitment was designed to attract workers with very low skills and within certain age limits. In Germany, most guest-workers became employed in manufacturing, notably in the construction, mining, metal and ferrous industries. As of 1966, 72% of the foreign workforce comprised unskilled workers, thus constituting a rather homogenous immigrant population in terms of education and skills.

The earliest available ethnic concentration measures from Germany (1975) are used as instruments for the own-ethnic concentration in the year 1984, the first year of the German Socio-Economic Panel with complete information on the place of residence of the surveyed individuals. The ethnic concentrations for five ethnicities and 103 regions are estimated off the IAB² employee sample, a two percent random sample of the entire employee population in Germany, for January 1, 1975 and January 1, 1984. Ethnicities are categorized according to citizenship³, and the ethnic concentrations are based on the location of employment rather than residence⁴. The ethnic concentrations in 1975 are then used to instrument the concentrations in 1984. To qualify as a valid instrument, we need to assume that first, the ethnic concentrations in 1975 are exogenous to the immigrants, and second, that changes in immigrants' locations between 1975 and 1984 were not selective along unobservable characteristics, in other words, that immigrants who were less inclined to integrate did not systematically move into regions with high ethnic concentrations. The recruitment and placement policies described above provide the

justification for the first assumption. It is also noteworthy that the German economy performed strongly till the recession of 1973, so that economic incentives to move were arguably low due to the tightness of the labor market. While it is impossible to “prove” the second assumption, we have conducted some tests which lend support to it. First, internal mobility in Germany was relatively low during the observation period, especially when compared to the US. Even though the rate of location changes between 1975 and 1984 is slightly higher for immigrants than for natives (17% vs. 14%), a density plot of the change in ethnic concentration for those immigrants who moved between regions exhibits a symmetric shape around zero. Second, a regression of the change in ethnic concentration on observable demographic characteristics such as education and ethnicity yields insignificant results.⁵

Due to the variety of approaches implemented in practice, a note on the regional level of aggregation is warranted: Our approach exploits a very wide concept of ethnic “enclaves” which are measured at the regional level of so-called “Anpassungsschichten”. West Germany consists in our sample of 103 such regions, implying an average region size of about half a million people. In practice, this implies that we work at the level of medium-sized cities and we compute for each region a concentration measures for each ethnicity. This level of aggregation is probably too large since the daily activities of people are typically confined to smaller geographies, but choosing smaller regions might exacerbate measurement error in ethnic concentrations due to very few or no observations of certain nationalities in some of the regions. Our approach is thus comparable to other studies measuring ethnic concentrations at Metropolitan Area levels (Warman, 2007). A part of the ghetto literature in the US has used tract level observations, which however are not available for Germany. Also, the more disaggregated analysis would come at the cost of stronger assumptions regarding the selection process. While we assume that individuals

do not move across metropolitan areas, we are able to allow for the practically relevant sorting across city quarters within cities. Finally, our approach delivers a conservative estimate of the effect of ethnic concentrations as our estimates would be biased towards zero under our maintained hypothesis that high ethnic concentrations are a barrier to integration. To see this, consider two immigrants of the same ethnicity living in the same aggregate region, one integrated, the other not. Both immigrants are assigned the same ethnic concentration, but within the region the integrated immigrant would be more likely to be found in a neighborhood with low ethnic concentration (lower than the regional average), and the non-integrated immigrant would be more likely to live in a neighborhood with high ethnic concentration (higher than the regional average).

Our second data source is the 1984 wave of the German Socio-Economic Panel (GSOEP). The immigrant sample provides us with around 2,200 observations with rich information on individual characteristics, immigration history, and various measures of social interaction and integration. In particular, the main outcome variables of interest are whether or not the respondent had German friends as well as whether he visited or was visited by German natives in the last year, providing a direct test of theories of integration and concentrations based on contact rates. Also available are several integration measures of active community involvement, such as the intensity of civic engagement (parties, associations, neighborhood engagement) and the frequency of visits of cultural activities (high culture such as concerts, theaters as well as popular culture such as cinemas, dances), active sport participation, and interaction with friends in general. The latter integration variables are generated from questions on the frequency of various free time activities with the answer categories being each week, each month, less often, and never. While the social interaction variables have a binary format, the

integration variables are ordered variables which can be estimated with probit or ordered probit models. We will, however, present results from linear regressions because the coefficients are directly interpretable and because we can easily compare their results to the Two-Stage-Least-Squares estimates.

We estimate the following general model using GSOEP data

$$y_{ij} = \beta_0 + \beta_1 E_{jk} + X_i \gamma' + \eta_j + \varepsilon$$

with y being an indicator for social interaction or integration, X being demographic controls and E being the fraction of own-ethnic co-residents in a region k from the IAB sample. The subscript i indicates individual immigrants from ethnicity j . All regressions control for region and ethnicity fixed effects and use heteroskedasticity robust standard errors.

The sample is restricted to individuals of age 16 and older who could be uniquely matched to one nationality and who immigrated at the earliest in the year of their home country signing the guest-worker recruitment treaty with Germany. The first restriction drops 20 cases in which citizens of one sending country indicated to have another country of origin. This need not be a mistake (e.g. a Macedonian from the Former Yugoslavia identifying himself as a Greek), but these individuals cannot be uniquely identified with one unique reference group. The second restriction excludes 71 individuals who certainly did not arrive in Germany within the guest-worker framework and who therefore violate our assumption of exogenous placement. This left us with 2,251 observations. Another 42 observations were dropped for individuals who had at least one missing dependent variable regarding political activities and cultural involvement.

Table 1: Descriptive statistics

	Low ethnic concentration 75	High ethnic concentration 75	
<i>Demographic characteristics</i>			
Male (%)	54.0	55.3	
Age at migration	23.5	22.9	
Years since migration	14.2	14.5	
Education (years)	9.09	9.08	
Schooling abroad (%)	78.4	80.0	
Married (%)	72.1	70.9	
<i>Dependent variables (unconditional)</i>			
German friends (%)	81.9	84.8	
Visits from Germans (%)	78.7	76.0	*
Visits to Germans (%)	72.4	72.4	
Civic engagement: Parties	1.06	1.03	***
Civic engagement: Clubs, associations	1.19	1.14	**
Civic engagement: Local community	2.51	2.53	
Cultural activities: High culture	1.39	1.35	*
Cultural activities: Popular culture	1.68	1.70	
Other activities: Meeting friends	3.35	3.43	***
Other activities: Sport	1.53	1.49	
<i>Variable of interest</i>			
Ethnic concentration 84 (%)	1.51	3.51	***

Note: ***, ** and * indicate 1%, 5% and 10% significance levels for a two-sided test for the demographic variables and for a one-sided test against the alternative hypothesis of a positive difference between low and high concentration samples for the dependent variables. The civic engagement and activity variables range from 1 (never) to 4 (every week). Source: GSOEP 1985; own calculations.

Table 1 contains some summary statistics, where we have divided our sample into immigrants living in regions with high and with low concentrations of immigrants from the same country, where the division in “treatment intensities” is made at the ethnicity-specific median of the year 1975. The upper panel of the table reveals that immigrants in low concentration regions are similar to immigrants in high concentration regions with respect to demographic characteristics (none of the differences is significant at conventional levels). This confirms that

there has been little if any sorting of immigrants across regions. At the bottom of Table 1 are differences in unconditional means of our dependent variables as well as of the variable of interest, the ethnic concentration in the year 1984. It becomes apparent that the ethnic concentration differences of 1975 have survived until the year 1984.

4. The causal effect of ethnic enclaves on the interaction with natives

The following paragraphs provide evidence on the causal effect of living among co-ethnics on the propensity to interact with natives. Columns (1) to (3) of Table 2 show results from three naïve OLS specifications which relate different indicators for inter-ethnic interactions to a set of demographic and household characteristics as well as the variable of main interest—the co-ethnic concentration in the region of an immigrant. These linear probability models test whether there is a correlation between living among immigrants and the propensity to have native friends, to visit natives at home or to host natives at home. We observe that being a male and having more education increase the probability of inter-ethnic interaction. Also, longer stays in Germany are positively associated with contacts to natives, which results from the fact that the exposure to natives has not only a geographic dimension, but also increases over time. The variable of interest – ethnic concentration in 1984 – carries a negative sign and is significant at the 5 percent level with respect to native contacts and the visits to natives. While it also carries a negative sign in the model indicating visits from natives it is not significantly different from zero. The propensity to be in touch with natives decreases on average by three percent for a one percentage point increase in the local own-ethnicity concentration. If a region was to move from average below median ethnic concentration to average above median ethnic concentration, its residents would be 6 to 7 percent less likely be in touch with natives. The limitation of the OLS

models arises because of the potential reverse causation from inter-ethnic contacts and settlement choice: If immigrants who were less willing or able to communicate with natives deliberately moved into ethnic enclaves, these coefficients would not pick up the disincentive effect of living among co-ethnics.

Table 3 provides two-stage least squares (2SLS) estimates for the contacts with natives. In order to solve the endogeneity problem between integration and settlement choice, this instrumental variable approach requires our instrument to be relevant and exogenous. The relevance of the instrument can be read off the bottom of Table 3, where we report the coefficient and robust standard errors of the first stage. The instrument is highly significant with a very strong first stage F statistic. The exogeneity of the instrument stems from the combined fact that guest workers were placed by the labor office and had to stay at their assigned employer for a specific period of time. Even after this period had elapsed, only a small minority of immigrants moved across German regions—in line with a generally low regional mobility in Germany—so that we cannot find any selection according to the demographic characteristics (see Table 1). The 2SLS results clearly support the idea of a significant negative impact of own-ethnic concentration on the propensity to interact with natives. Once the reverse causation of the settlement-interaction-nexus is accounted for, we find significant effects for the general contact and visits-to-natives variables. Models (4) to (6) in Table 2 provide the corresponding reduced form estimates using the ethnic concentration at the end of the placement period as instrument. Although the coefficients of these linear probability models are somewhat smaller in size, the qualitative conclusions are the same.

Table 2: OLS and reduced form estimates of contacts with natives

	(1)	(2)	(3)	(4)	(5)	(6)
		Naive OLS			Reduced form	
Dependent variables	Contacts with natives	Visits to natives	Visits from natives	Contacts with natives	Visits to natives	Visits from natives
Ethnic concentration 84	-0.030** (0.013)	-0.033** (0.015)	-0.010 (0.014)			
Ethnic concentration 75				-0.022** (0.010)	-0.030** (0.012)	-0.018 [†] (0.011)
Male	0.055*** (0.016)	0.052*** (0.019)	0.003 (0.018)	0.055*** (0.016)	0.052*** (0.019)	0.003 (0.018)
Age at migration	-0.004 (0.004)	-0.007** (0.004)	-0.001 (0.004)	-0.005 (0.004)	-0.008** (0.004)	-0.001 (0.004)
Age at migration 2	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
Years since migration	0.007*** (0.002)	0.003 (0.002)	0.003* (0.002)	0.007*** (0.002)	0.003 (0.002)	0.003* (0.002)
Education	0.016*** (0.004)	0.022*** (0.005)	0.021*** (0.005)	0.016*** (0.004)	0.022*** (0.005)	0.021*** (0.005)
Schooling abroad	0.026 (0.025)	0.014 (0.028)	-0.025 (0.027)	0.027 (0.025)	0.015 (0.028)	-0.025 (0.027)
Constant	-0.305*** (0.072)	-0.276*** (0.088)	-0.286*** (0.084)	-0.208*** (0.072)	-0.175** (0.087)	-0.182** (0.083)
Observations	2,201	2,201	2,201	2,201	2,201	2,201
R-squared	0.155	0.149	0.141	0.155	0.150	0.141

Note: Regressions control also for marital status, presence of children in the household, unemployment, ethnicity and region. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1, [†] p<0.11. Source: GSOEP 1985; own calculations.

Table 3: 2SLS estimates of contacts with natives

Dependent variables	(1) Contacts with natives	(2) Visits to natives	(3) Visits from natives
Ethnic concentration 84 (instrumented)	-0.030** (0.014)	-0.043** (0.017)	-0.025 [†] (0.015)
Male	0.055*** (0.015)	0.052*** (0.019)	0.003 (0.017)
Age at migration	-0.004 (0.004)	-0.007** (0.004)	-0.001 (0.004)
Age at migration sq.	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
Years since migration	0.007*** (0.002)	0.003 (0.002)	0.003* (0.002)
Education	0.016*** (0.004)	0.022*** (0.005)	0.021*** (0.005)
Schooling abroad	0.026 (0.025)	0.013 (0.028)	-0.025 (0.027)
Constant	0.715*** (0.089)	0.790*** (0.104)	0.676*** (0.101)
<i>First stage</i>			
Ethnic concentration 75	0.712*** (0.009)	0.712*** (0.009)	0.712*** (0.009)
F statistics	5801	5801	5801
Observations	2,201	2,201	2,201
Second stage R-squared	0.155	0.149	0.140

Note: Regressions control also for marital status, presence of children in the household, unemployment, ethnicity and region. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1, [†] p<0.11. Source: GSOEP 1985; own calculations.

5. The causal effect of ethnic concentration on civic participation and free time activities

The top panel of Table 4 presents the correlation between living among co-ethnics with various forms of civic participation as well as free time activities. Different from the previous dependent variables, the indicators in Table 4 measure the intensity of the engagement in a specific activity with larger values indicating higher frequencies. Although the dependent

variables are coded ordinally, we use the linear OLS estimator in order to preserve better comparability with the linear 2SLS estimator employed below. We have, however, used a series of ordered probit and binary probit estimations to test the robustness of the results. Our findings are not sensitive to the use of the estimator (results can be obtained from the authors on request).

Columns (1) to (3) of Table 4 refer to three forms of civic institutions: While the models in (1) and (2) cover the civic participation in highly formalized institutions (political parties, initiatives, volunteer clubs and associations), column (3) accounts for informal institutions like community engagement and neighborhood help. The reason why we distinguish between formal and informal institutions lies in supposedly different entry costs to these organizations. In Germany, the institutions labeled “formal” usually require some written and financial commitment (e.g., membership fees), while informal institutions are accessible at low or no cost. At the same time, political parties and initiatives were clearly dominated by natives in the period under consideration—specific immigrant-parties did not exist—while the same was not necessarily true for clubs and neighborhood institutions. Due to these properties, the analysis of the latter informal institutions may serve as a falsification exercise: Since neighborhood engagement does not necessarily imply contacts to Germans, we would expect to see no lower engagement rates within enclaves. The comparison across columns (1) to (3) in the upper panel clearly indicates a negative relationship between civic engagement and higher own-ethnic concentration for formal institutions, while—as expected—there is no significant correlation for informal institutions.

Finally, we focus on different ways how immigrants spend their free time. While sport and meeting friends have little to do with culture, a relatively more frequent consumption of (high) culture institutions such as theatres and operas is clearly related to the participation in the

native culture. There are popular culture institutions such as cinemas or concerts that are not necessarily linked to the culture of the host country, but which often have some consumption costs. Models (4) to (7) in the upper panel (OLS) clearly indicate that a higher own-ethnic concentration in the region is associated with reduced consumption of high culture, while there is no significant relationship with meeting friends or doing sport. The use of popular culture seems somewhat lower in high concentration areas, although the correlation is only marginally significant.

As in the inter-ethnic contact models we also provide the civic engagement and free-time specifications with a causal interpretation, i.e. after instrumenting the potentially endogenous concentration share with the exogenous placement ratios from 1975 (Table 4, bottom panel) as well as in the reduced form using the instrument directly in the OLS formulation (middle panel). By and large, the previous results are preserved suggesting that the time spent on formal civic institutions and host-country specific (high) culture institutions is reduced among immigrants who live with many own-ethnic fellows. The fact that we cannot reject the hypothesis of ethnic concentrations having no detrimental effect on activities which not necessarily require engagement with the German culture (e.g. popular culture, meeting friends, doing sports) supports our conjecture that the interaction costs faced by immigrants are integration specific.

A crucial question is whether the lower interaction with native “institutions” might be a direct consequence of their more limited availability in immigrant cities. In this case, the negative effect of enclaves on inter-cultural interaction would no longer be a choice variable of immigrant behavior. We therefore test in a comparable set of regressions whether natives in regions with higher shares of immigrants make less use of any form of civic engagement or attend events classified as “high culture” less frequently.

Table 4: OLS and reduced form estimates of civic participation and free time activities

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Formal institution		Informal institution				
Dependent variables	Political party, initiative	Volunteer club, association	Community, neighborhood help	High culture	Popular culture	Meeting friends	Sport
<i>Naïve OLS</i>							
Ethnic concentration 84	-0.027** (0.011)	-0.040* (0.022)	-0.015 (0.033)	-0.052** (0.022)	-0.048* (0.029)	0.021 (0.031)	-0.025 (0.030)
Observations	2,161	2,161	2,161	2,161	2,161	2,161	2,161
R-squared	0.076	0.100	0.183	0.193	0.336	0.163	0.265
<i>Reduced form</i>							
Ethnic concentration 75	-0.020** (0.008)	-0.026 (0.017)	-0.027 (0.025)	-0.040** (0.017)	-0.014 (0.023)	0.013 (0.023)	-0.022 (0.024)
Observations	2,161	2,161	2,161	2,161	2,161	2,161	2,161
R-squared	0.076	0.099	0.184	0.193	0.335	0.163	0.265
<i>2 SLS</i>							
Ethnic concentration 84	-0.029*** (0.011)	-0.037 (0.023)	-0.038 (0.035)	-0.057** (0.024)	-0.020 (0.031)	0.019 (0.032)	-0.031 (0.033)
Observations	2,161	2,161	2,161	2,161	2,161	2,161	2,161
R-squared	0.076	0.100	0.183	0.193	0.336	0.163	0.265

Note: Regressions control for gender, age at migration, age at migration squared, years since migration, education, schooling abroad, marital status, presence of children in the household, unemployment, ethnicity and region. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Source: GSOEP 1985; own calculations.

We do not find any statistical differences on the part of natives concluding that immigrants who live among many co-ethnics choose not to engage in these activities given their cost structure. Another threat to the time-use results might potentially stem from differences in household incomes which might directly affect the affordability of, for instance, theatre tickets. Therefore another round of regressions tests whether controlling for household income does change any of the presented results, but this is not the case (all results available from the authors upon request).

To sum up our findings, it seems important to understand how social interaction and integration are related. Earlier papers on the topic could not disentangle whether immigrants are unwilling to integrate or whether they fail for other reasons, we only address the latter issue while ruling the former out. Our results thus indicate that differences in the ability and willingness to integrate alone cannot explain why some migrants fail while others succeed with integration. The local opportunities for inter-ethnic social interaction clearly explain part of the variation in integration outcomes.

Table 5: Effect of ethnic concentration on self-identification

Dependent variables	Feeling German	Feeling foreign
OLS	-0.016 (0.038)	0.028 (0.035)
R-squared	0.21	0.17
2SLS	-0.035 (0.039)	0.056 (0.037)
R-squared	0.21	0.17
Observations	2,163	2,163

Note: Feeling German/foreign is measured on a scale from 1 (not at all) to 5 (completely). Regressions control for marital status, presence of children in the household, unemployment, ethnicity and region. Robust standard errors in parentheses. The sample differs slightly from the one used in Table 4. Source: GSOEP 1985; own calculations.

Our paper further contributes by supplementing the previous integration literature with activity- and interaction-based integration measures. Our behavioral model of integration assumes that the lack of inter-ethnic personal contacts will lead to a lack of language skills and also to a general lack of self-assessed identification with the host country. We added a behavioral model of integration to the existing self-identification models in the literature because we are convinced that social interaction is the basis for the process of subjective identification. In order to support this claim we re-estimate our standard activity model with a new dependent variable, namely the immigrant's subjective identification as a German. This indicator is measured on a five step Likert scale. Table 5 reports coefficients for the ethnic concentration variable. We find that living among many co-ethnics does not reduce subjective identification significantly. We explain this somewhat puzzling result in the following way: Guest worker migrants who entered Germany during the 1950s to 1970s did initially not plan to stay in the country or to identify with the host society culture. So, while subjective measures seem inappropriate to study cultural barriers in this early period of the large-scale migration, our interaction based approach seems to be sensitive to their implied costs. If integration and identification are the logical consequences of social interaction, then the lack of social interaction might work as early warning indicator for future integration failures.

6. Conclusions

Living in regions with high own-ethnic concentrations reduces the likelihood of immigrants integrating into the host-society. This paper provides the corresponding causal evidence for the hypothesis for a sample of guest workers in Germany. Since immigrants have to bear interaction costs in order to engage with natives we observe barriers to integration for two

classes of integration measures: The frequency of contacts with natives, and the frequency of free-time activities which can be associated with civic and cultural participation, in particular for activities which require more contacts with natives and some familiarity with German institutions and culture. Our identification stems from the fact that Germany's guest worker recruitment included an exogenous placement of foreign workers. The program was in place between the 1950s and early 1970s and we use the regional concentrations of ethnic groups shortly after the end of the program to instrument for ethnic concentrations in the survey year. By this procedure we are able to demonstrate that the negative relationship between ethnic concentration and integration cannot be attributed to a self-selection of less willing or able immigrants into regions of high ethnic concentration. The results are robust to this instrumental variable approach and to further falsification exercises which eliminate the possibility of regional supply effects in institutions as well as regional income effects. A big advantage of our integration-related behavioral indicators over previously used subjective identification measures to integration lies in their greater sensitivity in early periods of immigration episodes.

Our findings lend support to the view that areas of high ethnic concentration can potentially lead to the establishment of parallel societies in which immigrants get by without interacting with natives. However, it would be wrong to attribute all integration failures to the emergence of enclaves, as individual characteristics such as education and years since migration seem to play similarly important roles. A key insight of this paper is that our results hold in the absence of sorting of immigrants across regions and in the absence of differences in intrinsic willingness to integrate. Yet, while immigrants' ex-ante demand for integration might be similar inside and outside of ethnic enclaves, the higher cost of interacting with natives where there are few of them may lead to ex-post differences in integration outcomes. What we cannot clearly

establish on the supply side of integration is whether natives in ethnic enclaves actively prevent immigrants from assimilating (Epstein and Gang, 2010) or whether the supply effect runs through a lower “mechanical” opportunity to meet natives. While the former would necessitate anti-discrimination policies, we conjecture that policy interventions reducing interaction costs, like subsidized or even compulsory language training, could be alternative pathways to a more successful integration of immigrants.

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¹At least in terms of the sparking incident, one would have to add the riots in London in August 2011 to this list.

²The IAB (Institute for Employment Research) is the research institute of Germany's Federal Employment Agency and maintains several administrative data-sets.

³Due to Germany's concept of nationality by descent at the time of the survey the naturalization of immigrants was extremely unlikely so that we can determine natives accurately.

⁴We use workplace measures of ethnic concentration as the IAB did not collect information on place of residence prior to 1999. However, we are confident that our ethnic concentration measures reflect the ethnic composition at the place of residence, as our regions resemble Metropolitan areas with 300,000 to 500,000 inhabitants in which place of residence and workplace coincide for most immigrants. In the 2000s, with much higher interregional mobility in Germany than during the 1950s-1970s, four out of five respondents lived and worked in the same region. This fraction was higher for immigrants. Furthermore, in the framework of the guest-worker placement scheme guest-workers often lived in employer provided accommodation close to their firm. In a set of robustness checks (available from the authors on request) we also test whether social interaction at the workplace is responsible for our results. We include job-specific characteristics like blue-collar, full-time work, part-time work in the regressions but our estimates remain unchanged. Finally, we test whether ethnic concentration influences union membership. If the workplace was the predominant arena for social interaction, we would expect this to influence union membership, but we do not find any evidence for this hypothesis.

⁵The coefficients on the Turkish and Yugoslavian ethnicities are positive but this is most likely driven by the fact that these ethnic groups benefitted over proportionally from family reunification rather than by increased concentration through moves. Owing to the political situation in Turkey and the beginning disintegration of Yugoslavia after Tito's death, the Turkish and Yugoslav populations grew rapidly even after the stop of the guest worker program.