Birthplace Diversity and Economic Prosperity*

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Abstract

We use recent immigration data from 195 countries and propose an index of population diversity based on people's birthplaces. This new index is then decomposed into a *size* (share of foreign born) and a *variety* (diversity of immigrants) component and is available for 1990 and 2000 disaggregated by skill level. We show that birthplace diversity is largely uncorrelated with ethnic, linguistic or genetic diversity. Our main result is that the diversity of skilled immigration relates positively to economic development (as measured by income and TFP per capita and patent intensity) even after controlling for ethno-linguistic and genetic fractionalization, geography, trade, education, institutions, and origin-effects capturing income/productivity levels in the immigrants home countries. We make progress towards addressing endogeneity by specifying a gravity model to predict the share and diversity of immigration based on exogenous bilateral variables. The results are robust across various OLS and 2SLS specifications and suggestive of skill complementarities between native workers and immigrants, especially when the latter come from richer countries at intermediate levels of cultural proximity.

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1 Introduction

Foreign-born individuals now represent about ten percent of the workforce in OECD countries, a threefold increase since 1960 and a twofold increase since 1990.[1] Economic theory suggests that higher diversity leads to beneficial skill complementarities in certain production processes, but also to detrimental inefficiencies of mistrust and lack of social cohesion.[2] The empirical literature has so far focused on ethnic and linguistic fractionalization, which were shown to exert negative effects on economic growth in cross-country comparisons (Easterly and Levine, 1997, Collier 2001, Alesina et al., 2003, 2012) with the possible exception of very rich countries, and on genetic diversity (Ashraf and Galor, 2013a,b).[3]

In this paper we examine the relationship between diversity and development using a new perspective that focuses on the diversity arising from people's birthplaces. Albeit loosely linked through immigration, ethnic and birthplace diversity are empirically (perhaps surprisingly) almost completely uncorrelated. Conceptually, ethnic and birthplace diversity also differ as people born in different countries are likely to have been educated in different school systems, learned different skills, and developed different cognitive abilities; once gathered in a single country, first-generation immigrants arguably form a more diverse group than second and third-generation immigrants that grew up speaking the same language and, more often than not, learned from each other inside and outside of school.

This paper makes four contributions. First, we construct and discuss the properties of a new index of birthplace diversity. We build indicators of diversity for the workforce of 195 countries in 1990 and 2000, disaggregated by skill/education level, and computed both for the workforce as a whole and for its foreign-born component. In doing so, we add a new dimension to the diversity literature, which already includes measures of ethnic, linguistic, cultural, and genetic diversity.

Second, we investigate the relationship between birthplace diversity and economic development. We find that unlike ethnic/linguistic fractionalization or genetic diversity, birthplace diversity is positively related to productivity. We control for many other factors such as education, institutions, trade openness and trade diversity, ethnic/linguistic fractionalization and genetic diversity, geography, and what we term origin-effects that capture productivity in the migrants' home countries. This positive relationship between birthplace diversity and economic prosperity is stronger for skilled migrants (workers with college education) in richer, more productive countries, suggesting the presence of production function effects of diversity in countries closer to the technology frontier.

[1] See Ozden et al. (2011) for a picture of the evolution of international migration over the last fifty years. High-skill migration stands out even more, with a twofold increase during the 1990s alone (see Docquier and Rapoport, 2012).

[2] See Alesina and La Ferrara (2005) for a discussion if this issue and a survey.

[3] Spolaore and Wacziarg (2009) find genetic distance to be a strong predictor of income differences between pairs of countries and conclude that genetic distance works as a barrier to knowledge diffusion and technology adoption.

In terms of magnitudes, increasing the diversity of college-educated immigrants by one standard deviation (e.g., going from the 40th to the 95th percentile) is correlated with a rise in long-run real income by a factor of 1.2 to 1.5.

Third, we make progress towards addressing endogeneity issues arising from the fact that rich countries may attract a larger and more diverse group of immigrants because they are rich rather than becoming rich thanks to a diverse workforce. We specify a gravity model to predict the size and diversity of a country's immigration using exogenous bilateral geographic/cultural variables and confirm our initial findings in a range of 2SLS models.

Fourth, we allow for the effect of diversity to vary in the bilateral distance between immigrants and natives along a number of dimensions. We use an augmented diversity index using genetic/cultural and economic distances as additional inputs. The analysis reveals that both cultural proximity and income at origin are essential in explaining the effect of diversity on economic performance. In addition, it is also suggestive of an optimal level of diversity at intermediate levels of cultural proximity. This result is also relevant for identification: while one can think of theories trading-off costs and benefits of diversity to predict an inverse-U curve linking diversity to prosperity (see for instance Lazear (1999a,b), or Ashraf and Galor (2013a)), it is less obvious to think of a theory predicting that the prosperity of a receiving country should generate an inverted U-shaped relationship with the diversity of its immigration.

The empirical evidence on birthplace diversity and income levels is scant and, to the best of our knowledge, limited to the context of the United States. Ottaviano and Peri (2006) construct a measure of cultural diversity for the period 1970-1990 using migration data on US metropolitan areas and find positive effects on the productivity of native workers as measured by their wages. Peri (2012) found positive effects of the diversity coming from immigration on the productivity of US states, a result he attributes to unskilled migrants promoting efficient task-specialization and adoption of unskilled-efficient technologies, and more so when immigration is diverse.[4] Ager and Brückner (2011) study the link between immigration, diversity and economic growth in the context of the United States about a century ago, at a time now commonly referred to as "the age of mass migration" (Hatton and Williamson, 1998).[5] They find that fractionalization increases output while polarization decreases it in US counties during the period 1870-1920. Finally, a paper by Ortega and Peri (2013) developed independently from ours also analyzes the connection between income per capita and openness to (and diversity of) trade and immigration, respectively, in a cross-section of countries. They show that in a horse race of immigration and trade to explain cross-country differences in economic performance, immigration

[4] Ottaviano and Peri (2006) and Peri (2012) construct a measure of predicted immigration based on geographic proximity to immigration "gateways" into the U.S., such as New York or Los Angeles, and rely on Card's (2001) shift share methodology to predict changes in immigration by extrapolating the local levels of immigrant communities using national level immigration rates, thus making immigration exogenous to state-level economic shocks.

[5] See also Bandiera, Rasul and Viarengo (2013) and Abramitzky, Boustan and Eriksson (2012), respectively, on the measurement of entry and return flows and on migrants' self-selection during that period.

emerges as the clear winner.

The rest of this paper proceeds as follows. Section 2 briefly discusses the theoretical channels through which birthplace diversity can affect productivity and the recent micro and macro literature on diversity and economic performance. Section 3 explains the construction and analytical decomposition of our birthplace diversity index; we also explore its descriptive features and compare it with ethnic, linguistic and genetic diversity. In Section 4 we empirically investigate the relationship between birthplace diversity and prosperity, questioning the strength and robustness of this relationship to a range of alternative specifications. We confront endogeneity issues using a gravity framework in Section 5. In Section 6, we extend our birthplace diversity index by taking into account group distances and thus allow the effect of birthplace diversity to vary with genetic/cultural and economic distance. Section 7 concludes.

2 The costs and benefits of diversity

A population's diversity is commonly measured by fractionalization (Easterly and Levine 1997, Alesina et al., 2003, Fearon, 2003) and polarization indices (Esteban and Ray, 1994, Reynal-Querol, 2002 and Montalvo and Reynal-Querol, 2005, 2011). Ethnic or linguistic fractionalization measures cannot distinguish, for example, between a first- and second generation Italians in the US. A dimension of diversity among people that remains largely understudied is the diversity caused by differences in people's country of birth. People born in different places are likely to have different productive skills because they have been exposed to different life experiences, different school and value systems, and thus have developed different perspectives that allow them to interpret and solve problems differently. If early pre-working age years are formative for one's own values, perspectives and problem solving skills, these differences are likely (at least more likely than differences in skin color or language spoken at home) to be complementary and lead to higher overall productivity.

Birthplace diversity, therefore, may be beneficial for productivity due to skill complementarities. Alesina et al. (2000) formalize this idea using a Dixit-Stiglitz type production function where outputs increase in the variety of inputs and inputs can be interpreted as different workers. Their model thus allows for diversity to increase output without any counterbalancing costs. Lazear (1999a,b) proposes a model of teams of workers where diversity brings benefits via production complementarities from relevant disjoint information sets and also costs via barriers to communication; with decreasing marginal benefits and increasing marginal costs, this suggests that there is an optimal degree of diversity.[6] Hong and Page (2001) see two sources for the heterogeneity of people's minds: cognitive differences between people's internal perspectives (their interpretation of a complex problem) as well as their heuristics (their algorithms

[6] A related argument, also brought forward by Lazear (1999b), is that diverse groups of immigrants tend to assimilate more quickly (in terms of learning the language of the majority) since they have stronger incentives to do so.

to solve these problems). They show theoretically that, under certain conditions, a group of cognitively diverse but skill-limited workers can outperform a homogenous group of highly skilled workers.[7]

Empirical studies of diverse teams in the management and organization literature also find diversity to be a double-edged sword, with diversity (in terms of gender, education, tenure, nationality) being often beneficial for performance but also decreasing team cohesion and increasing coordination costs (see Milliken and Martins, 1996, and O'Reilly et al., 1989). Specifically, in a study of the oligopolistic airline industry with observable actions and reactions, Hambrick et al. (1996) find that heterogeneous management teams react more slowly to a competitor's actions, but also yield higher market shares and profits than their homogeneous competitors. In a recent experimental study, Hoogendoorn and van Praag (2012) set up a randomized experiment in which business school students were assigned to manage a fictitious business and increase outcome metrics like market share, sales and profits of their business. The authors find that more diverse teams (defined by parents' countries of birth) outperform more homogeneous ones, but only if the majority of team members is foreign. However, the exact causal mechanism between diversity and higher performance remains unexplained in this study.

Finally, a few recent studies use firm-level data to explore the links between workers' diversity and firms' productivity in a range of European countries. Brunow et al. (2012) analyze the impact of birthplace diversity on firm productivity in Germany. They find that the share of foreigners has no effect on firm productivity while the diversity of foreign workers does impact firm performance positively (as does workers' diversity at the regional level). These effects appear to be stronger for manufacturing and high-tech industries, suggesting the presence of skill complementarities at the firm level as well as regional spillovers from workforce diversity. Parrotta et al. (2012) use a firm level dataset of matched employee-employer records in Denmark to analyze the effects of diversity in terms of skills, age and ethnicity on firm productivity. They find that while diversity in skills increases productivity, diversity in ethnicity and age decreases it. They interpret this as showing that the costs of ethnic diversity outweigh its benefits. However and quite interestingly, they also find suggestive evidence that diversity is more valuable in problem-solving oriented tasks and in innovative industries as the effect of ethnic diversity turns less negative for white-collar workers and also turns less negative in more innovative research and development-intensive industries. Ozgen et al. (2013) match Dutch firm level innovation survey data with employer/employee records and find that the diversity of immigrant workers increases the likelihood of product and process innovations. Boeheim et al. (2012) find further micro level evidence for the presence of production function complementarities using a linked dataset of Austrian firms and their workers during the period 1994-2005. The workers' wages increase with diversity and the effect is stronger for white-collar workers

[7] Fershtman, Hvide and Weiss (2006) reach similar conclusions in a model where workers are heterogeneous in terms of status concerns.

and workers with young tenure.

At a macro level, the costs of diversity have been established theoretically and empirically, in particular for ethno-linguistic differences. These studies began with Easterly and Levine (1997), who show that ethnic fragmentation is associated with lower economic growth, specifically in Africa. Collier (1999, 2001) adds that ethnic fractionalization is less detrimental in the presence of democratic institutions, which enable different groups to mediate conflicts on the provision of public goods and create social cohesion, although it is unclear whether it is just the level of per capita income or democracy that matters since the two are highly correlated. Alesina and La Ferrara (2000, 2002) stress the role of trust, showing that individuals in racially diverse cities in the US participate less frequently in social activities and trust their neighbors to a lesser degree, while overall trust in political institutions remains unchanged. The authors also find evidence that preferences for redistribution are lower in racially diverse communities. This also extends to the provision of productive public goods (Alesina, Baqir and Easterly, 1999). Alesina et al. (2012) highlight the inequality dimension of ethnic diversity (i.e., it is the interplay between ethnic fractionalization and ethnic inequality that leads to conflict) while Esteban, Mayoral and Ray (2012) distinguish conflicts over public and private goods and find polarization to correlate positively with conflict on the former, and fractionalization to correlate positively with the latter (see also Esteban and Ray, 2011). Most recently, Ashraf and Galor (2013a) find an inverted u-shaped relationship between genetic diversity within a population and productivity, indicating the trade-off between beneficial forces of diversity expanding the technology frontier and detrimental ones leading to higher inefficiency due to communication and coordination problems.[8]

Thus, while the micro evidence clearly points toward a trade-off between costs and benefits of diversity, the macro literature (at least for ethnic diversity) seems to only uncover costs. In some ways this paper bridges this difference in results showing the benefit of diversity at a macro level. Most importantly, it explores a novel dimension of diversity which is more likely to capture skill complementarities in production: diversity in people's country of birth.

3 An index of birthplace diversity

3.1 Data

Our computation of birthplace diversity indices relies on the Docquier, Ozden, Parsons and Artuc (2012) data set, the last update of the Docquier and Marfouk (2006) data set that has been extended to include bilateral data on immigration by country of birth, skill category (above/below college education) and gender for 195 sending/receiving countries in 1990 and 2000. The main addition to the

[8] In another paper, Ashraf and Galor (2011) find that cultural diversity (based on World Values Survey data) is positively correlated with contemporary development and suggest that cultural diversity facilitated the transition from agricultural to industrial societies.

previous versions is that the data set now captures South-South migration based mainly on observations and, occasionally, on estimated data points (for the skill structure). Immigrants are defined as foreign-born individuals aged 25 or more at census or survey date. This data set, therefore, allows for characterizing the size, origin-mix, and skill structure of the foreign-born *labor force*.[9]

Before turning to birthplace diversity indices, we briefly discuss a few caveats regarding illegal immigration, the definition of an immigrant, and the skill structure. First, the fact that illegal immigration is not accounted for in most censuses is a clear limitation. In our case, this limitation is mitigated by the fact that some countries such as the United States try to account for illegal immigration in their census and, more importantly, by the fact that we use data on immigration stocks, not flows. Indeed, most illegal migrants eventually become legalized or return, meaning that even if illegal migrants represent a large fraction of total flows, they generally remain a small fraction of the immigrant stock. A second caveat concerns the very definition of an immigrant as a foreign-born individual. According to this definition, a little child immigrating with her parents will be classified as an immigrant; however, that person will grow up, socialize and go to school in the host country, thus limiting the extent of foreign skills that he or she can contribute. Finally and on a related note, an individual is considered "skilled" independently of whether college education was obtained in the home, host, or a third country, meaning that the category "skilled workers" may be very heterogeneous in terms of human capital quality; we partly address this issue by controlling for what we call "origin-effects".

3.2 Measuring birthplace diversity: a decomposition

We base our birthplace diversity measure on the Herfindahl diversity index. Let s_i refer to the share in the total population of individuals born in country i with $i = 1, \ldots, I$. In particular, $i = 1$ refers to natives.

The fractionalization index Div_{pop} may be expressed as

$$Div_{pop} = \sum_{i=1}^{I} s_i * (1 - s_i) \tag{1}$$

This index measures the probability that two individuals drawn randomly from the entire population have two different countries of birth. Since $\sum_{i=1}^{I} s_j = 1$, equation (1) may also be written as the commonly known Herfindahl index

$$Div_{pop} = 1 - \sum_{i=1}^{I} (s_i)^2 \tag{2}$$

[9] A small number of (usually small) countries is reported as having zero immigrant stocks and, on few occasions, the authors do not provide a split by skill level. Due to these missing information, we are unable to compute diversity indices for some countries: for 1990, 13 (overall), 33 (skilled) and 14 (unskilled) countries are missing and, for 2000, 8 (overall), 27 (skilled) and 11 (unskilled) countries are missing (see Table A3 in the Appendix for the details).

A certain level of moderate Div_{pop} may come from a relatively small but very diverse pool of immigrants, or by a relatively homogenous but large fraction of immigrants in the population. It is useful then to develop indices which can highlight these differences.

We therefore decompose our diversity index into a $Div_{between}$ and a Div_{within} component. We define $Div_{between}$ as the diversity from immigration, irrespective of further country of origin-differences. Div_{within} then captures all residual diversity from differences between immigrants only. If we assume that all immigrants are born in one country $i = 2$ so that $s_1 + s_2 = 1$, then using (1) we can define:

$$Div_{between} = s_1 * (1 - s_1) + (1 - s_1) * s_1 \tag{3}$$

This essentially calculates the Div_{pop} index assuming that all migrants can be grouped into one category $(1 - s_1)$ - thus excluding all diversity contributed by the fact that migrants tend to come from more than one origin country.

We rewrite (4) to include $Div_{between}$ as follows:

$$Div_{pop} = s_1 * (1 - s_1) + (1 - s_1) * s_1 + \sum_{i=2}^{I} [s_i * (1 - s_i)] - (1 - s_1) * s_1 \tag{4}$$

Since $\sum_{i=2}^{I} s_i = (1 - s_1)$, (4) simplifies to

$$Div_{pop} = 2 * s_1 * (1 - s_1) + \sum_{i=2}^{I} [s_i * ((1 - s_i) - s_1)] \tag{5}$$

We can now define

$$Div_{within} = \sum_{i=2}^{I} [s_i * ((1 - s_i) - s_1)] \tag{6}$$

so that Div_{pop} is composed of two parts, $Div_{between}$ and Div_{within} :

$$Div_{pop} = Div_{between} + Div_{within} \tag{7}$$

This decomposition does not separate clearly between size and variety effects: Div_{within} still depends on s_1 - the share of natives -, since $\sum_{i=2}^{I} s_i = (1 - s_1)$. We thus rewrite the Div_{within} component so that it does not depend on s_1. We achieve this by defining s_j as the share of immigrants from country j in the total population of immigrants. It follows that $s_j = \frac{s_i}{(1-s_1)}$ where s_1 is the share of natives $(i = 1)$.

We thus re-scale Div_{within} using (6):

$$Div_{within} = \sum_{i=2}^{I} \left[\frac{s_i}{(1 - s_1)} * \frac{((1 - s_i) - s_1)}{(1 - s_1)} \right] * (1 - s_1)^2 \tag{8}$$

and simplify to:

$$Div_{within} = \sum_{i=2}^{I} \left[\frac{s_i}{(1-s_1)} * \left[1 - \frac{s_i}{(1-s_1)}\right]\right] * (1-s_1)^2 \tag{9}$$

Since $s_j = \frac{s_i}{(1-s_1)}$, then:

$$Div_{within} = \sum_{j=1}^{J} \left[s_j * (1-s_j)\right] * (1-s_1)^2 \tag{10}$$

Our result has a very intuitive interpretation: since $\sum_{j=1}^{J} \left[s_j * (1-s_j)\right]$ is basically (1) but applied to the population of immigrants, it is essentially a diversity index of immigrants only, irrespective of the natives. We thus define:

$$Div_{mig} = \sum_{j=1}^{J} \left[s_j * (1-s_j)\right] \tag{11}$$

And rewrite (7)

$$Div_{pop} = Div_{between} + (1-s_1)^2 * Div_{mig} \tag{12}$$

where $(1-s_1)^2$ has an intuitive interpretation as scale parameter for Div_{mig}.

We can then rewrite (12) in terms of s_f, the share of immigrants (defined as foreign-born) and define $s_f = (1-s_1)$:

$$Div_{pop} = 2 * s_f * (1-s_f) + (s_f)^2 * Div_{mig} \tag{13}$$

We have thus an expression of Div_{pop} purely as a function of the size and diversity of immigration.

3.3 Descriptive statistics

We now compare the properties of these size and variety measures with each other and with other indices of ethnic/linguistic (Alesina et al., 2003) and genetic diversity (Ashraf and Galor, 2013a/b). A first visual overview (see Figures 1a and 1c) shows that ethnic fractionalization and Div_{pop} differ considerably: where ethnic differences are high, diversity of origins is quite low (e.g., in all African countries – with few exceptions – and in Central and South-East Asia). In turn, Div_{pop} is high in North-America, Europe, Australia and some Arab countries, while ethnic differences are much more modest. This is also reflected in the low bilateral correlation between ethnic and birthplace diversity (see Table 1 and Figure 2a). As expected from our decomposition, birthplace diversity of the entire population (Div_{pop}) is highly correlated (+0.98) with the share of immigration (s_f). This explains the very low population diversity in large countries such as China, India and Brazil with few foreigners relative to population. Turning to genetic diversity. Figure 1b shows that diversity decreases with distance from Africa (Ashraf and Galor, 2013a). The bilateral correlation with Div_{pop} is relatively low at +.19.[10] To complement the picture, Figure 1c displays a map showing the diversity of migrants, Div_{mig}. North-America, Europe and even some Eastern European countries exhibit a very high diversity of immigrants. Latin American countries, some African countries, China and Russia have intermediate immigration diversity while Pakistan, India, Indonesia, Iran and many (but not all) African countries are not very diverse in terms of their immigrants. Overall, when comparing the maps for ethnic and genetic diversity, Div_{pop} and Div_{mig}, all seem quite unrelated.[11]

At a country level, Canada, Italy, Israel, Germany, Australia and the UK all experience a high birthplace diversity of immigrants, above .9. The United States rank only 20th in a list of countries with the highest immigration diversity (at .92) due to its relatively low diversity for unskilled immigration (0.84). In terms of skilled immigration diversity, however, the USA is the second most diverse country together with Italy (with both countries at .97).[12] The diversity of skilled immigrants is also high in Germany, UK, France, Spain, and Canada as well as in countries such as Argentina, Brazil and Qatar. Countries with lowest overall immigration diversity are Pakistan, Bangladesh, Nepal, and Iran (all lower than .1). Some notable exceptions could be explained through neighborhood-effects: Ireland's immigration diversity (.55 overall, .44 for the unskilled and .67 for the skilled) is still quite low due to dominant immigration from the UK. Similar patterns can be observed for Switzerland, Austria or Australia. In South Asia, Nepal and Sri Lanka experience immigration from a very large neighboring country, India. Such neighborhood effects are more prevalent for the immigration of unskilled workers. In general, the diversity of skilled immigrants tends to be higher than for unskilled migrants. This is consistent with migrants' self-selection being driven by net-of-migration-costs wage differentials, where low migration costs (due to short distances and high networks) mostly affect low-skill migration.[13]

The correlation between ethnic fractionalization and birthplace diversity of immigrants is nearly zero and even negative at -.2 (in 2000) for skilled immigrants (see Table 1 for a full set of correlations). Similarly, genetic and birthplace diversity do not relate much. The correlation between a country's genetic and birthplace diversity of the population is low (+.19), it is even lower between genetic diversity and the diversity of immigration (.08) and turns negative if we consider the diversity of skilled immigration (-.08). We take this as a first hint that birthplace diversity captures a new margin of peoples' heterogeneity.

[10] See Figure 2. The low positive correlation seems to be driven in part by small countries with very high shares of immigration (e.g. in the Middle East).

[11] See also Table 2 for regional comparisons of fractionalization and birthplace diversity. Table 3 presents the various diversity indices for a selection of countries.

[12] However, the foreign-born represent only 1.8 percent of the skilled labor force in Italy versus 11 percent in the US.

[13] See Munshi (2003), McKenzie and Rapoport (2010) and Bertoli (2010) for micro evidence, and Beine, Docquier and Ozden (2011) for macro evidence.

Besides, the correlation between s_f and Div_{mig} is also surprisingly low (see Table 1), especially for skilled immigration. This implies at first glance that size and variety of immigration do not interact much and are largely independent.[14] The same observation largely holds in first differences: the correlation between changes in the size and diversity of immigration during the period 1990-2000 is relatively low at +.18 for skilled and -.01 for unskilled immigrants.[15] This is likely due to diaspora/immigrant network effects, which tend to reduce migration costs mostly for unskilled workers.[16] This pattern, however, hides considerable heterogeneity: for example, Malaysia has reduced its share of skilled immigrants (primarily a technical effect due to higher domestic educational attainment and thus a broader base) and also increased its diversity of skilled immigrants, whereas Uganda or the Czech Republic saw higher skilled immigration, but lower diversity.

Skilled and unskilled immigration diversity are highly correlated overall, with a correlation coefficient of +0.7 for the year 2000.[17] However, there are some interesting deviations from this relationship: as already stated, the United States see a higher diversity of skilled immigrants than of unskilled immigrants, primarily due to the large inflow of Mexican immigrants that dominates the group of unskilled immigrants. The same holds true for many other countries, such as Ireland, Malaysia, and, to a lower extent, Singapore.

4 Empirical analysis

4.1 Model and data

To empirically investigate the relationship between birthplace diversity and economic development, we specify the following model where our dependent variable y is a country's income (GDP) or productivity (TFP) per capita at PPP:[18]

[14] This holds even when keeping population size constant.

[15] The correlation for skilled immigrants is even lower at +.08 when excluding possible outliers or excluding very small countries with population $<$ 250.000 (bottom 10% of sample).

[16] The experience of the United States serves as an example: the large influx of Mexican immigrants to the U.S. is reflected in a higher share of immigrants among workers with less than college education and in lower diversity of unskilled immigration.

[17] Skilled and unskilled migrations are typically highly correlated, with skilled immigration Granger causing unskilled immigration (Gibson and McKenzie, 2011) through chain migration and network effects. On the latter and their differential effects at different skill levels, see McKenzie and Rapoport (2010).

[18] See Table A1 in the Appendix for details on the definitions and sources for all variables.

$$\begin{aligned}
\ln y_{kt} \quad = \quad & \alpha + \beta_1 * diversity\ of\ immigrants_{kst} \\
& +\beta_2 * share\ of\ immigration_{kst} \\
& +\beta_3 * origin\ effects_{kst} \\
& +\beta_4 * years\ of\ schooling_{kt} \\
& +\beta_5 * market\ size\ controls_{kt} \\
& +\beta_6 * \Gamma_{kt} + \beta_7 * \Delta_k + \beta_8 * \Phi_{kt} + \beta_9 * \Psi_{kt} + \eta_t + e \qquad (14)
\end{aligned}$$

Γ_{kt} is a vector of geographic characteristics, Δ_k is a vector of alternative fractionalization/diversity measures, Φ_{kt} is a control for institutional development, Ψ_{kt} is a vector of controls for trade openness and trade diversity, and η_t is a time fixed-effect. We use indices s for skill groups (s=overall, skilled, unskilled), t for time (1990, 2000) and k for countries.

The results from our decomposition and our descriptive analyses point to the need to separate the share of foreigners, s_f, and the diversity of immigrants, Div_{mig}, to isolate size and variety effects. Our empirical specification thus includes the share and the diversity of immigrants. An alternative specification which interacts size and variety shows consistently high positive estimates for the interaction, but suffers from very high multicollinearity (correlation +.98 for size and the interaction term). We thus evaluate the marginal effects of size and variety at the means of the respective variables. Still, it seems plausible that the effect of Div_{mig} increases in the share of foreigners. We test for this possibility using split samples of countries with above- and below median sf. Alternatively, we also weight our observations by sf. In both cases we find the variety effect of birthplace diversity to increase slightly compared with our baseline model at mean sf.[19] In addition, we also run various robustness checks (see Table 9) to ensure that our results are robust to the exclusion of small countries, of countries with very low share of immigration of very low diversity of immigration, etc. Our baseline model results remain fully robust at slightly increased magnitudes.

We control for a very wide range of potential confounding factors. We include standard controls (such as education via years of schooling, market potential via population and area sizes, and a landlocked dummy) to which we add a series of controls entered in groups for trade structure, fractionalization, geography, institutions, and what we term origin-effects.

As income differences can be related to trade (Frankel and Romer, 1999) and to the quality of institutions (Rodrik et al., 2004, Glaeser et al., 2004), we control for the volume and structure of trade as well as for the level of democracy. As trade controls we use real trade openness from PWT 7.0[20] and also control for the structure of trade by constructing measures of trade diversity

[19] The results are available upon request.

[20] There is substantial ambiguity when choosing a measure for trade liberalization. Measures generally fall in two camps: trade volume or trade policy measures. We use the standard and most basic measure of trade volume: real trade openness as total export and import volume over GDP in real PPP prices. Yanikkaya (2003) compares a range of openness indicators and finds trade openness to correlate most robustly with GDP growth.

(two Herfindahl indices of exports and imports, respectively, based on Feenstra et al., 2005). These diversity indices are basically the goods market equivalents of birthplace diversity; any general openness features of a country in terms of outward orientation should thus be captured by these controls. In addition, the import diversity control captures all possible productivity-effects of variety in imported intermediary goods.[21] The need to control for the volume and structure of trade stems from the fact that migration and trade share common determinants, resulting in birthplace diversity possibly capturing some of the productivity effects of trade.[22]

For the fractionalization vector, we include both ethnic and linguistic fractionalization (from Alesina et al., 2003) as well as genetic diversity (from Ashraf and Galor, 2013a) since all three tend to capture diversity-related effects to some degree. For the geography vector, we follow the literature and use absolute latitude (Hall and Jones, 1999, Gallup et al., 1998, Rodriguez and Rodrik, 2001, Sachs 2003, Rodrik et al., 2004), malaria intensity (Gallup et al., 1998, Sachs 2003, Rodrik et al., 2004) and the share of population living within 100km of an ice-free coast (Gallup et al., 1998). We also check the robustness of our results to the use of alternative geography variables (see section 4.3 and Tables 8-11). For institutional quality we use the Polity-2 score from the Polity IV database (Marshall and Jaggers, 1999).

Finally, we control for what we term "origin-effects" of diversity via a simple weighted average of the (log) GDP and TFP per capita of the origin countries of immigrants. This is important because it is likely that immigrants from richer countries can more easily afford the costs of migration, resulting in countries attracting migrants from richer countries being also more diverse. The correlation between birthplace diversity and productivity may therefore be spurious if migrants from high-productivity countries have a stronger effect on productivity at destination than migrants from low-productivity countries. Controlling for such origin-effects then allows us to focus on the pure diversity effect of immigration.[23]

We thus end up with a highly structured model (with our key variables and 15 covariates) and a panel of 93 countries with data for 1990 and 2000. We interpret the coefficient on β_1 as capturing the pure variety effects of birthplace diversity, orthogonal to a wide range of potential alternative effects or channels of influence, and β_2 to capture all size effects of immigration. In our sample, the mean GDP/capita (at PPP) stands at 4,378 USD, the diversity of immigration ranges from 0.01 to 0.96, with a mean of 0.73. This is somewhat higher than the mean of 0.65 in the overall dataset of 195 countries for which we provide this new index, mainly due to lack of data on our comprehensive control variables

[21] Our definition of trade diversity follows the trade literature as (1 - trade concentration), see e.g. Kali et al. (2007) for the effect of trade concentration on income or Frankel et al. (1995) on the link between trade concentration and transportation cost reductions.

[22] This effect, however, may not be strong: the birthplace diversity of immigrants and variables of trade openness/diversity are not much correlated (+.08 for trade openness, +0.12 for trade diversity).

[23] We take this issue further into account by incorporating group distance, see section 6.

for many small countries or territories that typically exhibit very low (or no) birthplace diversity of migrants. The correlation between size and variety of immigration in our sample is +.07 for unskilled migration and +/-.00 for skilled migration (see Tables 1-2 and Figures 1-2 for more descriptive statistics).

4.2 OLS results

We run our model using an OLS estimator with standard errors clustered at the country level to account for serial correlation of standard errors and a year fixed effect to account for year-specific shocks to all countries. We use a sample of 93 countries for which there are data for all variables, which amounts to 183 observations for the years 1990 and 2000 combined.[24] The results are presented in Tables 4 to 11, separately for GDP and TFP per capita and also separately by skill level of immigrants.

Table 4 presents the full sample results for our extended model. We only show the results for birthplace diversity (size and variety) and two important controls: education and institutions. These two are estimated precisely in our model (at 1% statistical significance). All other controls (except for the geography variables) are statistically insignificant. This is especially surprising for openness to and diversity of trade (but largely confirms similar recent findings by Ortega and Peri, 2013), and for the other dimensions of diversity (that is, ethnic, linguistic and genetic diversity). Likewise, origin-effects of immigration are insignificant throughout the specifications. These findings on the control variables do not necessarily suggest that trade, ethnic/genetic diversity or origin effects are insignificant for economic development. What they do suggest, however, is that their associations with long run differences in incomes are less robust than for other variables such as levels of education, quality of institutions and, for that matter, birthplace diversity of skilled immigrants.

Our main results regarding birthplace diversity are as follows. First, the overall diversity of immigration - which is primarily driven by the larger numbers of unskilled immigrants - does not robustly correlate with income or productivity. However, once we disaggregate skilled and unskilled immigrants, size seems to be what matters for the latter, and variety for the former (independently of whether we use GDP or TFP per capita as dependent variable). Interestingly, education and institutions shrink in magnitude when introducing birthplace diversity of immigrants. This suggests that both determinants of economic growth may interact positively with birthplace diversity of immigrants. Using interaction terms and split sample approaches, we confirm that birthplace diversity's effect is highest and most significant in countries with high level of education and good institutions (results available upon request). In the rest of this section we will assess the robustness of these results to the use of sub-samples, alternative measures of development and alternative set of controls.

[24] We have only one observation for Central African Republic, Liberia and Trinidad & Tobago, hence our dataset contains 183, not 186 observations. The results are robust to dropping these observations.

Given our theoretical discussions in Section 2, our prior is that if there were to be production function effects of birthplace diversity, we should find that they are stronger in a subset of economies which are closer to the technological frontier. We thus separate our sample into countries above and below the median GDP and TFP/capita in 1970, allowing for heterogeneity in the coefficients on birthplace diversity. In Table 5, we report our results for rich countries only. We essentially find the same results as in our overall sample, but the magnitudes of our estimates on skilled diversity are slightly higher (factor 1.3 for a one-standard deviation change) and significance is also higher, at the 1% level. Table 6 shows the results for poor countries. We find no significant relationship, neither between size nor variety of immigrants and economic development. This heterogeneity across countries indicates that skilled diversity is particularly relevant in richer countries, suggesting the presence of positive effects of diversity in skill-intensive production tasks.

To solidify our interpretation of these results, we extend our split sample approach to patent data (see Table 7). We define average patent intensity as the average number of patents granted by national patent offices to residents per capita using data from WIPO (2010) for the period 1995-2005. We apply our comprehensive model using a very limited cross section of solely 42 countries with above-median patent intensity in 2000 (see Table 7, Model 2). Again, we confirm that diversity of skilled immigrants - unlike unskilled immigrants - relates positively to income. In these highly innovative countries, diversity has an even stronger link with income, at 1% statistical significance, increasing incomes by a magnitude of 1.7 (at a one-standard deviation change). More directly, we also test the immediate link between diversity of immigrants and patents (see Table 7, Model 5). We find that higher birthplace diversity increases the rate of granted patents: going from the 50th to the 75th percentile in birthplace diversity of skilled immigrants increases patents per capita by about 2.3 percentage points for our full sample of countries in 2000. This provides additional suggestive evidence of the role of diversity in innovation.

4.3 Robustness

4.3.1 Robustness to alternative geography controls

We replace our standard controls by two alternative specifications suggested by Rodriguez and Rodrik (2001), who highlight the importance of robustness to alternative geography specifications in regressions of growth and income. Table 8 reports the results for share of tropics (in % of land mass area) and for regional dummies as alternative controls. We find that the correlation regarding skilled diversity of immigrants is robust: it holds at 10% significance in the GDP model and at 1% significance in the TFP model. The magnitudes remain stable for GDP and even increase for TFP. Interestingly, diversity of unskilled immigrants turns more positive and becomes significant once we use these alternative controls.[25]

4.3.2 Robustness to outliers

Table 9 shows the robustness of our results for the diversity of skilled immigration to alternative specifications and samples. Column 1 shows our baseline OLS estimate for comparison. Columns 2 and 3 show the stability of our OLS result when excluding small countries (with population < 3 Mio.) from our sample or when excluding the 10% of countries with the lowest shares of immigration (< 0.36% of population). We can replicate our baseline results at 5% significance and obtain very similar magnitudes. Column 4 shows our results when dropping countries with very low diversity (lowest 25% of sample, < 0.63 Herfindahl index), column 5 shows stability to excluding the potential outliers Australia, Canada and the United States. Again, we find our initial results to hold equally throughout the specifications. Lastly (column 6), we weight our observations by the share of immigration to ensure even more comprehensively that countries with very low immigration do not bias our results. Our results continue to hold. All these robustness checks are also successfully performed in the TFP/capita models.

4.3.3 Robustness to country borders pre-1989

Table 10 shows our measure of birthplace diversity corrected for the effect of recently founded new independent nation states. For example, our main measure counts Slovakians in the Czech Republic as immigrants, although these people have lived until 1993 in the same country, Czechoslovakia. We proceed to counting these groups as part of the natives in such cases (other cases include, e.g., former Soviet or Yugoslavian Republics). This results in lower birthplace diversity of the population (driven by the now lower share of foreign-born) but higher diversity of immigration in countries where these "artificial" immigrants are substantial. Conversely, one can expect small decreases in the diversity of immigration in third countries (e.g., Czechs and Slovaks are now one group and counted as such in the computation of Germany's immigration diversity). As shown in Table 10, our results for skilled diversity are robust at similar magnitudes and statistical significance.[26]

4.3.4 Robustness to migrant networks

In Table 11, we extend this robustness check to migrant networks in 1960. It is possible that countries that were diverse in 1960 are also diverse in 1990. We would thus capture not necessarily first generation, but potentially also second generation effects of diversity. Applying equation (11) on data from Ozden et

[25] In an extended robustness check following Michalopoulous (2012), we control for the deep geographic origins of ethnolinguistic diversity, namely mean and variance in land quality and elevation. Our results remain fully robust at 5% significance (available upon request).

[26] Our results are also robust to grouping all European countries (as of 2000). This indicates that the size of nations in Europe does not drive our results (available upon request).

al. (2011), we build a birthplace diversity index of migration in 1960 (for all skill levels, since the skill dimension is not available prior to 1990). We add this new index as well as the share of immigration in 1960 to our main model. We find that our results for current birthplace diversity remain positive but lose significance in the full sample when past and present immigration diversity are entered jointly. In the second panel of Table 11, however, we look at the effects in rich countries only. Here, we find that today's diversity for skilled immigration remains positive and highly significant (while past diversity is not), suggesting that skilled diversity in high productivity countries - our main finding - operates primarily through first-generation effects. This is fully consistent with the theoretical arguments outlined in Section 2.

5 Identification

In this section we discuss endogeneity concerns. Richer countries could attract a larger flow of immigrants coming from a wider range of origin countries simply because they are richer. Note however that a descriptive analysis of our data shows that diversity of immigrants does not increase with economic growth: the bivariate correlation between changes in income (in real GDP/capita) and changes in skilled diversity is extremely low at +0.02 for 1990-2000. This coefficient is larger by a factor of 5 for the correlation between changes in the share of immigrants and growth over the same period, suggesting that reverse causality is a priori more a concern for the size than for the diversity of immigration. Omitted variables present another potential source of endogeneity. We partly addressed this second concern by controlling for a large range of factors. In particular, we accounted for the trade openness of a country and for the diversity of its trade partners since it is plausible that more outward-oriented countries would be more open to both trade and immigration.[27] Still, there are certainly remaining factors that govern the joint pattern of migration and productivity (e.g., technological progress affecting transport and communication costs). We therefore look for an instrument.

5.1 A gravity model of migration and diversity

Bilateral migration – the basis for our diversity measure – is determined by various economic, political, cultural and geographic factors. The trade (e.g., Tinbergen, 1962, Frankel and Romer, 1999) and migration literatures (e.g., Grogger and Hanson, 2011, Beine et al., 2011) have developed approaches to predict trade/migration aggregate flows as a function of these bilateral determinants based on the well-known gravity model. However, since we focus on income levels and productivity, we cannot use the full set of standard bilateral variables in our first-stage estimation. In particular, we cannot use the standard economic

[27] Interestingly, the correlation between the two is very low in our dataset at +0.03 for diversity of skilled immigrants and real trade openness and about +0.12 for diversity of immigration and trade diversity of exports/imports.

(such as absolute or relative income differences, levels of economic inequality) and political factors (such as visa policies, or differences in the quality of institutions) that usually enter in a gravity equation for migration as this would create an endogeneity problem. In this sense, our gravity model is (purposefully) misspecified as we have to rely exclusively on cultural and geographic bilateral determinants that are not directly related to economic development.

Our main objective is to generate predicted bilateral migration stocks that will then serve as input for equation (11) and allow us to calculate an index of predicted Div_{mig}.

We thus specify the following gravity model for migration:

$$\begin{aligned} {}_{ikst} &= \alpha + \beta_1 * POPULATION_{kt} + \beta_2 * DISTANCE_{ikt} \\ &+ \beta_3 * BORDER_{ikt} + \beta_4 * AREA_{kt} \; + \beta_5 * LANDLOCKED_{kt} \\ &+ \beta_6 * LANGUAGE_{ikt} + \beta_7 * COLONY_{ikt} + \chi_{it} \; + \psi_{ikt} + e \quad (15) \end{aligned}$$

m_{ikst} is the bilateral immigration rate from origin country i to destination country k for immigrants of skill level s in year t expressed in terms of the population of destination country k. The choice of our model determinants follows the standard in the literature (e.g., Lewer and van den Berg 2008, Felbermayr et al. 2010, Mayda 2010, Grogger and Hanson 2011, Beine, Docquier and Schiff, 2012, Ortega and Peri, 2009 and 2013), with population size, bilateral (geodesic) distance, area, landlockedness, common border, common official language, and common colonial history, to which we add interactions (ψ_{ikt}) between these variables to increase the predictive power of our instrument (see Ortega and Peri 2013 for a similar procedure).[28] Multilateral resistance effects (Anderson and Van Wincoop, 2003) are a concern for us if they introduce a bias to our estimates on these determinants. We thus include origin-year fixed effects (χ_{it}) to account for any time varying common origin shock to migration which influences migrants' locations decisions (Bertoli and Fernández-Huertas, 2013).[29]

We then apply different estimators to our gravity model.[30] Mainly, we employ OLS in the canonical log-linear transformation of the multiplicative gravity equation (Frankel and Romer, 1999). We also specify PPML models to deal with zero-cells, as suggested by Santos Silva and Tenreyro (2006).[31] However, we focus our discussion on the OLS results for two reasons. First, we follow Head

[28] We use the size of the destination country population to proxy for country size; origin-country population size is captured in the origin-year fixed effect. Given that the population size of the receiving country is partly determined by immigration, we also ran our model with population size in 1960 instead and found our results to be robust to this alternative specification.

[29] While the use of origin fixed effects largely suffices to fully account for multilateral resistance in trade, Bertoli and Fernández-Huertas (2013) show that for migration this only holds under more restrictive distributional assumptions.

[30] See Santos Silva, Tenreyo and Windmeijer (2011) as well as Head and Mayer (2013) for a discussion and comparison of a large class of gravity model estimators.

[31] It is now well known that log-linearized models estimated by OLS often feature an error term that is correlated with its regressors, resulting in biased and inconsistent estimates due

and Mayer (2013), who find that OLS performs better than a Poisson estimator (more robust and consistent) in case of model misspecification. Second, we consider the neglect of zeros as a minor issue in our context. Indeed, our objective is to predict with sufficient precision the main bilateral migration stocks that drive country-level immigrant diversity, not to predict whether a given cell will be empty or slightly positive (as this will not affect our Herfindahl index of diversity where bilateral migration stocks enter additively after being squared). Still, we use PPML for robustness when predicting the size of immigration.[32]

5.2 First-stage results

Table 12 shows the results for our gravity models. Generally, the models have sufficiently high explanatory power (R2 > .4). All estimates on the migration determinants have the expected sign: destination country population and bilateral distance enter negatively. Skilled migration is less constrained by migratory distance, as theory would predict, and it is also less affected by border-effects (the difference between distance coefficients for skilled and unskilled migration is significant at 5%). This shows that different migration flows react differently to the gravity variables. Common colonial relationship and common official language both enter positively, as expected, with insignificant differences for skilled and unskilled migrants. For the predicted share of immigration, we aggregate the predicted bilateral immigration shares across all origins for a given destination country (and correct for differences between population and workforce size in that destination country). For the predicted diversity of immigration, we apply equation (11) using the predicted immigrants per origin country as input.

We turn to comparing our OLS-based instrument "predicted diversity" with Div_{mig}.[33] We start by visually assessing the fit of the predicted values with actual diversity. Figure 3a shows actual vs. predicted diversity of immigrants based on the gravity model. Overall, the correlation between actual and predicted diversity is very high (+.59 for skilled and unskilled immigration diversity). Our instrument should plausibly be lower (higher) than actual diversity in richer (poorer) countries if prosperity and diversity are positively correlated. In line with our expectations, some rich countries have higher observed than predicted diversity: Canada (change -0.13), Luxemburg (-0.24), Ireland (-0.34),

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to Jensen's inequality (Santos Silva and Tenreyro, 2006). This bias is particularly salient with data that is heteroskedastic, which is typical for trade or migration datasets with a large share of zero-flow bilateral observations. Overall, the degree of OLS bias relative to PPML depends on the underlying features of the data. Our dataset has a particularly large share of zero-observations: out of the 67340 cells, only 15435 observations have a non-zero value for bilateral migration. This corresponds to a very high share of 77% zero-values.

[32] As in this case, bilateral migration stocks enter without being squared.

[33] We report only OLS-based results for predicted diversity, because the PPML based instruments for diversity are - as expected - biased upward. This is particularly true for those countries where actual diversity is low because it is driven by a few large immigrant groups (since PPML systematically underestimates these few large observations). We observe no such bias in the instruments for the share of immigration. Here, the difference between OLS and PPML instruments is random and independent of actual immigration (results available upon request).

Singapore (-0.24) and Sweden (change -0.42). For some of these countries, this difference can be observed for skilled immigrants only, notably Canda and USA (-0.05, respectively). Other countries that exhibit low observed birthplace diversity due, e.g., to restrictive immigration policies, see higher exogenously predicted values, such as Japan (+0.07) or Turkey (+0.22). Figure 3b plots this "prediction error" as a function of GDP per capita (PPP). As expected, the difference between predicted and actual diversity turns negative as GDP/capita increases. A bivariate regression confirms this result (slope of -0.04, significant at 1%) and thus serves as illustrative evidence that our gravity model produces an instrument that plausibly takes out at least part of the potential endogenous component in the diversity-income relationship.

We see however two remaining potential concerns regarding the exogeneity of our instruments. First, bilateral omitted variables could be correlated with bilateral migration and also overall GDP/TFP, thus violating the exclusion restriction. An example is bilateral trade with a rapidly growing trade partner (such as China), which could affect the overall TFP of China's neighboring trade partners. Hsieh and Ossa (2011) analyze this effect (precisely for the case of China) and find that China's productivity growth has only very small positive effects on the TFP of its trading partners. This implies that any effect on TFP through the bilateral trade channel, while present, is bound to be very low. We are also not concerned about this issue, since all time varying common origin effects (such as rapid productivity growth in one country) would be captured in the origin-time fixed effect. All other global time-specific shocks will be captured in the time fixed effect. We also believe that our trade controls (for trade openness and trade diversity) in the second stage of our 2SLS model adequately capture these effects in the aggregate.

A second concern regarding the exclusion restriction is that relative (bilateral) geography variables in our gravity model (such as distance, common language or border) could be correlated with absolute (unilateral) geography variables, a point first raised in the context of trade gravity models by Rodriguez and Rodrik (2001). We account for that by including three main geography and disease variables into our 2nd stage baseline model - we also pass the Rodriguez and Rodrik (2001) robustness check for our IV models (available upon request).

5.3 2SLS results

Tables 13 and 14 show our baseline model with s_f and Div_{mig} instrumented by our gravity-model based measures. We present results where we treat only diversity as endogenous (assuming the bias on diversity from the endogeneity of the share of migration as negligible) and results where we estimate both potentially endogenous regressors using instruments. We largely confirm our prior OLS findings: skilled diversity has positive and significant effects (at 1% and 5% levels) on GDP/capita and TFP/capita. The size of the skilled diversity effect on income (for one standard deviation change) increases from 1.2 (OLS) to about 1.5 (2SLS) in our main sample, suggesting the presence of measurement error in our Div_{mig} variable, most likely due to poorer countries reporting information on immigrants less systematically and less accurately.[34] We also fully confirm the split-sample results for rich countries at 5% and 10% statistical significance for both GDP and TFP per capita - the magnitudes remain largely unchanged. Skilled diversity is identified based on strong instruments (Angrist-Pischke F-tests for endogenous variables) exceeding the highest Stock Yogo critical values throughout the models, unlike the share of skilled immigration, for which instruments tend to be weaker (especially in the full sample). The findings are also robust across different models (e.g., the use of OLS or PPML-based instruments for the size of immigration).[35]

We also find some evidence for positive effects of unskilled immigration. Here, especially the share of immigration can be predicted strongly and has positive effects on income (not TFP).[36] Results for diversity of unskilled immigrants are qualitatively positive, but significant only in the rich country subsample. These results can be indicative of capturing some diversity of skilled immigrants due to skill heterogeneity.

To test the validity of our instruments more directly, we instrument diversity using a second instrument: immigrants' birthplace diversity in 1960 (based on Ozden et al., 2011). This approach is valid to the extent that diversity in 1960 is not correlated with unobserved factors that also determine diversity and income today. This assumption is admittedly questionable, since a range of economic or political factors that made, say, the USA attractive for immigrants four decades ago still determine immigration flows today. However, we can test this assumption. Table 15 shows our results: in the full samples, we replicate our earlier OLS results using sufficiently strong instruments (exceeding critical values for diversity) at the 1% and 5% significance level. This also holds for the split samples. In addition, we find no statistical evidence - across all models - that our instrumentation approach using gravity model based predicted values violates the exclusion restriction (Hansen J-test test p-values all well above .1). We interpret these results as additional supporting evidence for the robustness of our gravity-model based 2SLS findings.

6 Group distance

Until now, our indices of birthplace diversity have been based entirely on relative group sizes and (purposefully) neglected additional group characteristics. We now expand this well-established but restrictive notion of diversity.

[34] Indeed, this attenuation bias largely disappears in our rich country sub-samples.

[35] However, only the OLS-based gravity model delivers strong instruments for diversity. This is not surprising given that the OLS estimator estimates more precisely the large immigration flows that drive the Herfindahl index of squared group shares (see the discussions of this issue in the previous section). When dropping the large share of zero-observations from the PPML estimator, we obtain equally strong predictors for the large groups, which in turn improves the strength of the instrument for diversity.

[36] The estimates, although positive and significant, vary substantially between the models - the magnitude of this effect can thus not be reliably estimated using our instrumentation strategy.

6.1 An augmented birthplace diversity index

We proceed by looking at a new margin of birthplace diversity: group distance. So far we implicitly assumed that all groups were equidistant from each other. We now relax this assumption. For this, we rely on Greenberg (1956), who expanded the original Herfindahl index (see equation 11) to include group distance by adding a group weight d_{jk}:

$$Div_{mig,augmented} = \sum_{j=1}^{J} s_j * (1 - s_j) * d_{jk} \tag{16}$$

In our case, j is an index of immigrant groups and d_{jk} is a bilateral distance variable between immigrants j and natives k. The augmented diversity index reduces to Div_{mig} when all groups are equidistant at $d_{jk} = 1$. Finding a distance variable d_{jk} for our index of birthplace diversity requires two building blocks: first, input data for bilateral group characteristics, and second a mapping of these group characteristics to d_{jk}. As input, we use bilateral population-weighted genetic distance (Spolaore and Wacziarg, 2009 based on Alesina et. al, 2003, and Cavalli-Sforza et al., 1994) and a unilateral measure of GDP/capita (PPP) at origin (PWT 7.0). We standardize these inputs for each destination country and obtain vectors of genetic distance as well as GDP at origin that range from 0 (min) to 1 (max).

We specify a range of alternative functional forms for d_{jk}, some of which are increasing and others are decreasing functions of our three distance vectors on d_{jk}. This allows us to create a limited set of alternative $Div_{mig,augmented}$ indices that are representative of different hypotheses (e.g., an index that over-weights immigrants from richer vs. poorer origins). We then let these alternative indices run in a "horse-race" by replacing our initial Div_{Mig} index with these alternative specifications in our baseline model (equation 14). The results from this horse race are indicative of the productive role played by these three distance vectors in the relationship between diversity and productivity differences.

To model these different functional forms of genetic/economic distance into d_{jk}, we use a standard logistic function. The logistic function is convenient for our purpose.[37] It assigns d_{jk} values between 0 and 2 (centered on $d_{jk} = 1$ for the theoretical case that all immigrant groups are equidistant to natives). d_{jk} then acts as group weight in the calculation of $Div_{mig,augmented}$.

$$d_{jk} = \frac{2}{\left(1 + e^{-(\theta * x_{jk})}\right)} \tag{17}$$

where θ is a parameter that ranges from -10 to +10 and x_{jk} takes on standardized values of genetic distance and income at origin.[38] Larger absolute val-

[37] It can be centered easily on $d_{jk} = 1$ for groups at average genetic proximity (income) from the natives of a given per country and set to converge to two bounds 0 and 2. In addition, by varying a single parameter θ, we can vary both the slope of the function and the spread between genetically closer (poorer) and more distant (richer) groups.

[38] By centering x_{jk} on the mean of each country-specific distribution, we avoid implicitly capturing destination country characteristics (mean genetic distance or income at origin).

ues of θ indicate a higher degree of relative over/under-weighting.[39] Augmented diversity indices based on $\theta > 0$ overweight groups with higher genetic distance (richer origins), those based on $\theta < 0$ overweight closer groups (poorer origins). The intuition is the following: if, say, genetically more distant groups were more valuable in terms of explaining productivity differences, weighting these groups with $d_{jk} > 1$and correspondingly giving a lower weight of $d_{jk} < 1$ to genetically closer groups should result in an augmented birthplace diversity index that has higher explanatory power in our GDP/TFP model than its inverse index, one where we overweight closer groups. For income at origin, if one assumes that immigrants from richer countries carry more productive skills, over-weighting these groups should result in an index that captures productivity differences to a larger degree than an index that does the opposite. We conduct these simulation exercises separately for genetic distance as well as for income per capita.

6.2 Genetic/cultural distance

We compute a range of $Div_{mig,augmented}$ indices using (weighted) genetic distance (Spolaore and Wacziarg, 2009) and different values for θ as inputs, interpreting genetic distance as a composite measure of cultural distance.[40] Table 16 shows regression coefficients on the range of standardized augmented birthplace diversity indices (estimated in our full model, see equation 14), for the full sample and the sample of rich countries.

We compare the estimated coefficients across models. When imposing an increasing function ($\theta > 0$, that is, given higher weights to culturally distant immigrants), the birthplace diversity index becomes a much *weaker* determinant of long-run income (in both samples). On the opposite, when imposing a decreasing function ($\theta < 0$), both the estimated coefficients and the significance of the augmented birthplace diversity index are *retained*.[41] Testing for equality of coefficients across these two models at same absolute values for θ, we reject the hypothesis of equal coefficients (mostly at 5%,) for the rich country subsample. This implies that our augmented index that gives higher weight to culturally closer groups ($\theta < 0$) performs significantly better than its mirror image ($\theta > 0$) in richer countries. This suggests that diversity is productivity enhancing "up to a point". Also it implies that the new dimension "genetic/cultural distance"

[39] θ is the key parameter to determine the slope of d_{jk} or, in other words, the extent of group over- and underweighting relative to mean group distance. An example using genetic distance: at $\theta = -5$, Australian immigrants to the USA would be overweighed at a d_{jk} of 1.4, Peruvian immigrants at close to the US-average would lie at $d_{jk} = 1.02$ and Zimbabwean immigrants to the USA would be down-weighed at $d_{jk} = 0.4$. At a lower θ (e.g., $\theta = -10$), these ratios would be 1.7, 1 and 0.1, respectively. At a positive value for θ, the ratios inverse and more distant groups carry a larger weight.

[40] For an extended discussion on the link between genetic and cultural differences, see Spolaore and Wacziarg (2009, 2013) who interpret genetic group differences as an overall measure of a whole set of intergenerationally transmitted characteristics.

[41] We also test for a negative quadratic relationship of genetic distance (overweighting intermediary distance relative to low and high), but find no robust evidence.

adds more than just noise to our birthplace diversity index which now responds differentially under different slope assumptions (via θ).[42]

6.3 Income at origin

We do the same simulation exercise using income (in terms of GDP per capita at PPP) to test for bilateral origin-effects of birthplace diversity (as opposed to the aggregate origin-effect captured by the eponymous control variable in our main specification). Again, we specify different logistic functions for d_{jk} with different parameters for θ as input for a range of $Div_{mig,augmented}$ indices. Table 17 shows coefficients for these augmented skilled and unskilled birthplace diversity variables. When overweighting skilled immigrants from richer origins, our estimates *increase* in magnitude and remain highly significant, whereas when overweighting skilled immigrants from poor origins, we tend to *lose* significance. These differences between models are statistically significant (mostly at 5%), suggesting that income level at origin is an attribute that is correlated with the productivity-effects of skilled immigrant diversity. For unskilled diversity, we find similar results for rich countries only. However, these augmented indices overweighting richer origins do not perform better than our simple baseline index (statistically, they are largely equal), it is only when richer countries are underweighted that the diversity index becomes less powerful.

6.4 Interacting genetic/cultural distance and income at origin

In order to make progress toward disentangle the effects of income at origin or genetic/cultural distance, we further expand the Greenberg (1956) index (equation 16) to jointly include both distance measures:

$$Div_{mig,augmented} = \sum_{j=1}^{J} s_j * (1 - s_j) * d_{jk} * e_{jk} \qquad (18)$$

e_{jk} is simply a second group weight (calculated like d_{jk}) that takes a second distance attribute as input. This formula allows us to now weight the same group in terms of two dimensions, by genetic/cultural distance (using θ_1 in d_{jk}) and income at origin (using θ_2 in e_{jk}). Table 18 shows coefficients on a full range of alternative birthplace diversity indices at different combinations of θ_1 and θ_2 for the subsample of rich countries. A first result relates to interaction effects: for $\theta_1 < 0$ and $\theta_2 > 0$, the estimate on the augmented index (e.g., $Div_{mig,augmented}(\theta_1 = -2.5; \theta_2 = 2.5)$ increases significantly (at 5% level) in magnitude vis-a-vis the simple baseline index $Div_{mig}(\theta_1, \theta_2 = 0)$. This increase is larger than any individual increase in either dimension (holding constant either $\theta_1$or θ_2 at zero). This suggests that it is the combination of culturally

[42] We also replaced the genetic-distance measure using linguistic distance (Isphording and Otten, 2013). For that measure, neither over- nor underweighting linguistically close groups matters (available upon request).

closer immigrants and richer origin backgrounds (potentially a proxy for higher skills) that is particularly valuable. Second, we note that giving more weight to genetically/culturally closer groups (holding θ_2 constant) shows a quadratic relationship between genetic/cultural distance and productive effects of diversity. This suggests a trade-off between the productive costs and benefits of cultural distance (the optimal point lies at θ_1= -5). Third, underweighting genetically/ culturally closer groups, leads the index to lose its ability to capture productive differences, whereas when underweighting richer immigrant groups this ability is retained.

7 Conclusion

We propose a new index of *birthplace diversity* that captures the variety of countries of birth represented in a country's workforce. This new index, which we decompose into a *size* (share of foreign born) and a *variety* (diversity of immigrants) component, is available for 195 countries in 1990 and 2000 disaggregated by skill level. We empirically investigate the relationship between the birthplace diversity of an entire country (through the two components raising from our decomposition, that is, the share of foreign-born and their diversity in terms of birthplaces) and standard measures of economic performance (GDP and TFP per capita, and patenting intensity), controlling for a large set of potential confounding factors.

We find a positive and robust correlation between birthplace diversity and income/productivity. This association is particularly strong for the diversity of immigrants, especially for skilled immigrants in richer as well as patent-intensive countries.[43] We also find evidence for positive effects of skilled diversity on patent citations per capita. Expanding the diversity of skilled immigration by one standard deviation (e.g., going from Iran to Ireland, or Ireland to the United States) increases long-run real income by a factor of 1.2 to 1.5. The results using group distances further reveal that these diversity effects are magnified by cultural proximity and by income at origin but unaffected by linguistic proximity. The analysis combining the two dimensions of cultural/genetic distance and income at origin suggests an optimal level of birthplace diversity in the sense that the productive effect of diversity is highest for immigrants coming from richer countries at intermediate levels of cultural proximity. We interpret these findings as suggestive of production function effects of birthplace diversity that can emerge from complementarities in skills, cognitive abilities or problem solving capabilities that stem from the combination of workers with diverse origins in a joint production task. Such positive production function effects have been found in a number of recent empirical and experimental micro studies at the team and firm levels, but evidence at an aggregate level had so far been limited

[43] We also find some limited evidence of positive diversity effects for unskilled immigrants, which can be due to higher assimilation incentives and/or lower substitutability with native workers where low-skill immigration is more diverse, or heterogeneity of skills within the low-skill category of immigrants.

to US cities and states. Our paper fills this gap by providing evidence consistent with skill complementarities at a macro level in a large sample of countries.

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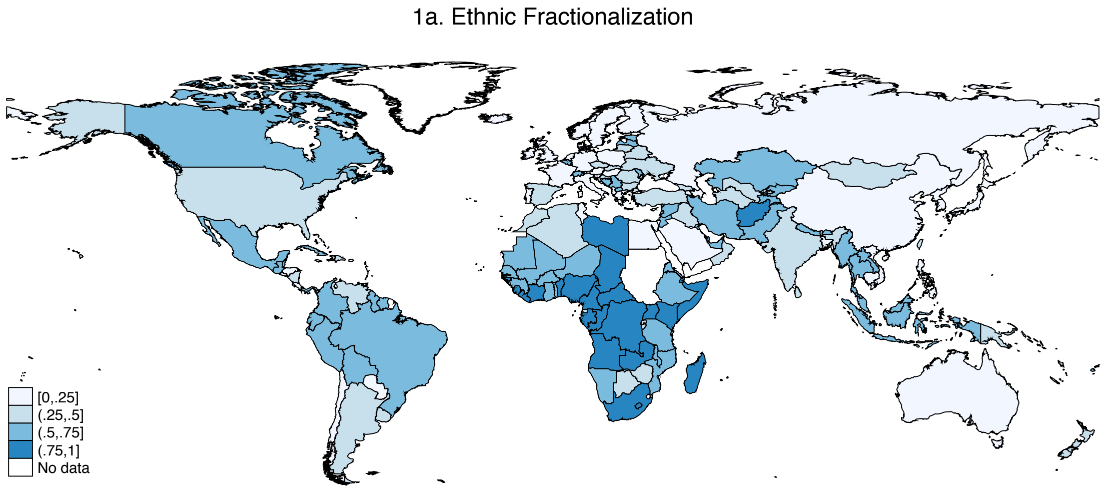
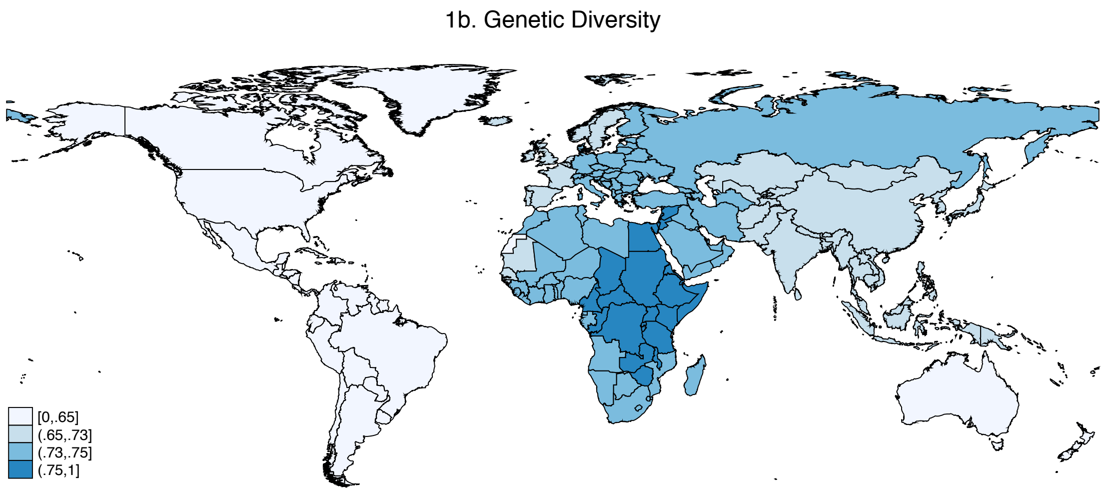
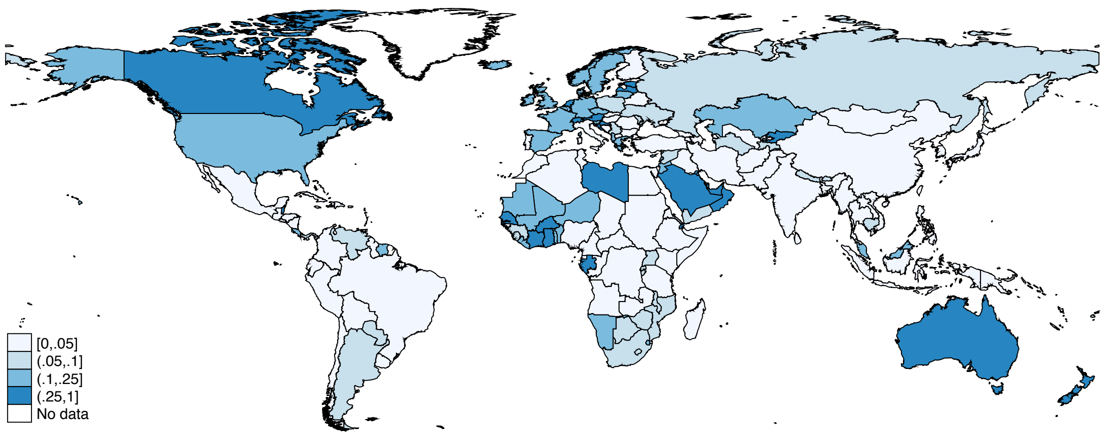
Figure 1: Maps of Ethnic, Genetic and Birthplace Diversity Indices, 2000





1c. Birthplace Diversity, Population - (DivPop)



1d. Birthplace Diversity, Migrants - (DivMig)

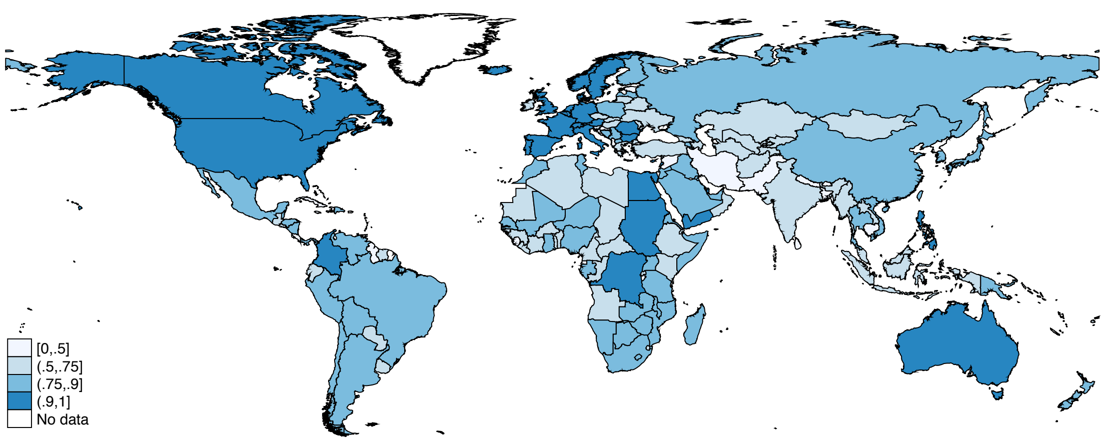
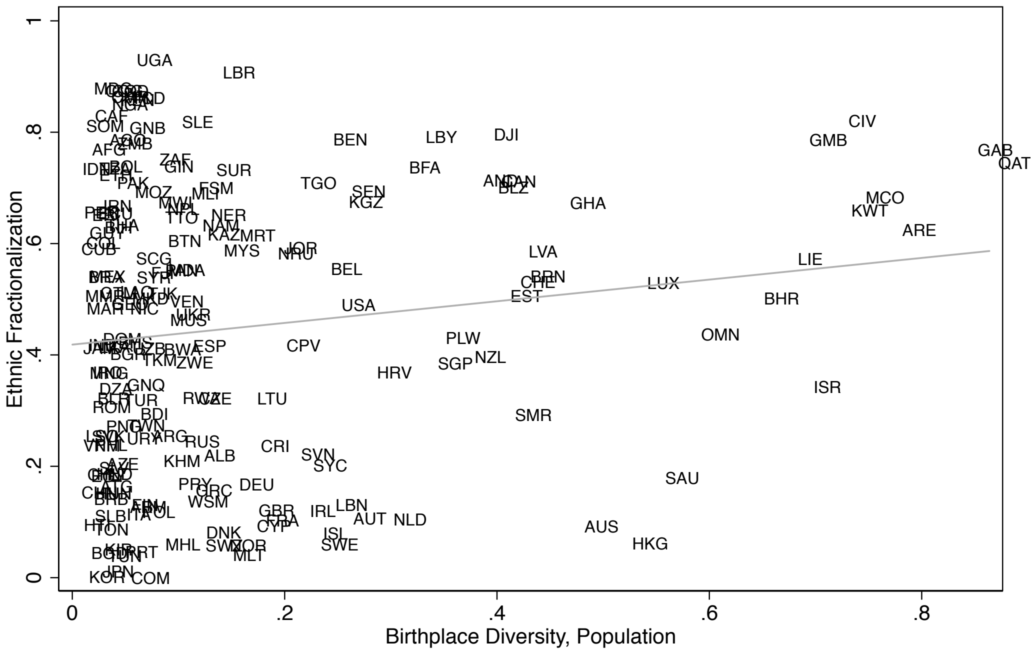


Figure 2: Correlations between Ethnic, Genetic and Birthplace Diversity Indices, 2000

2a. Ethnic Fractionalization and Birthplace Diversity, Population (DivPop)



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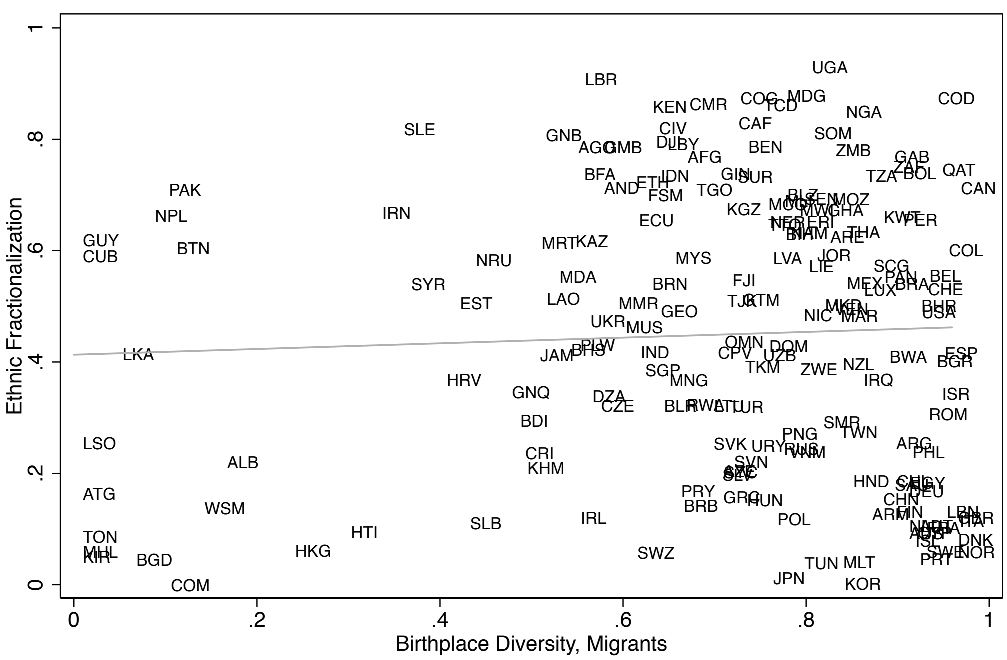
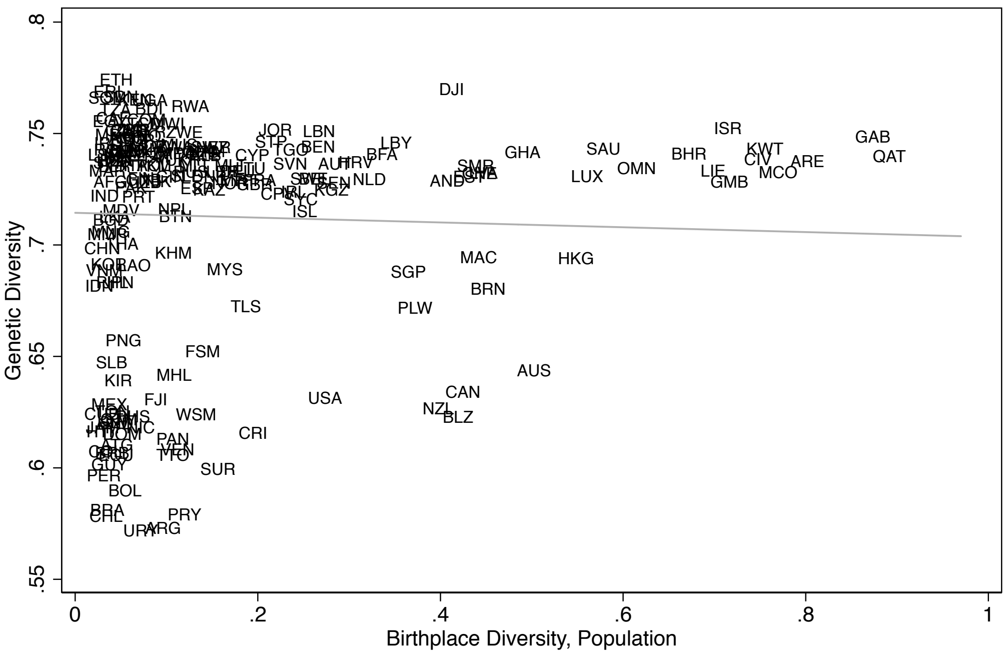
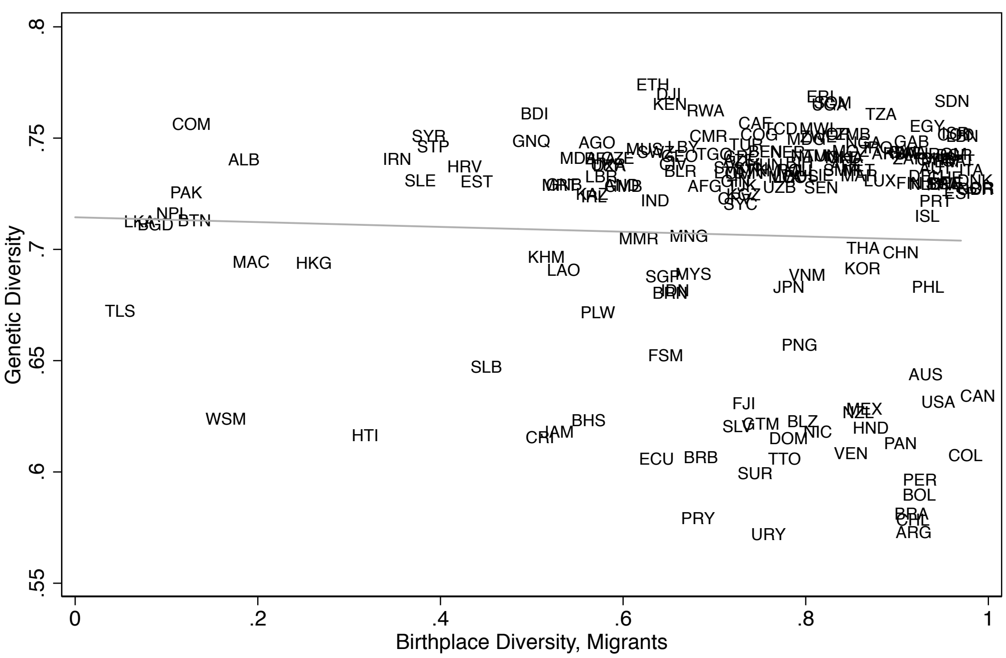


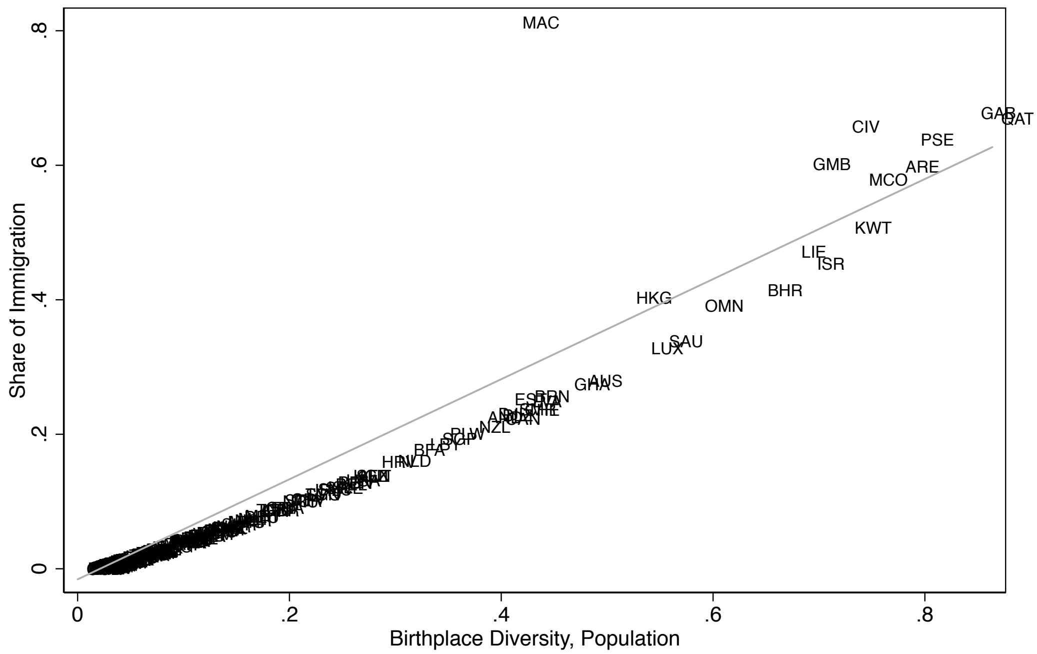
2c. Genetic Diversity and Birthplace Diversity, Population (DivPop)



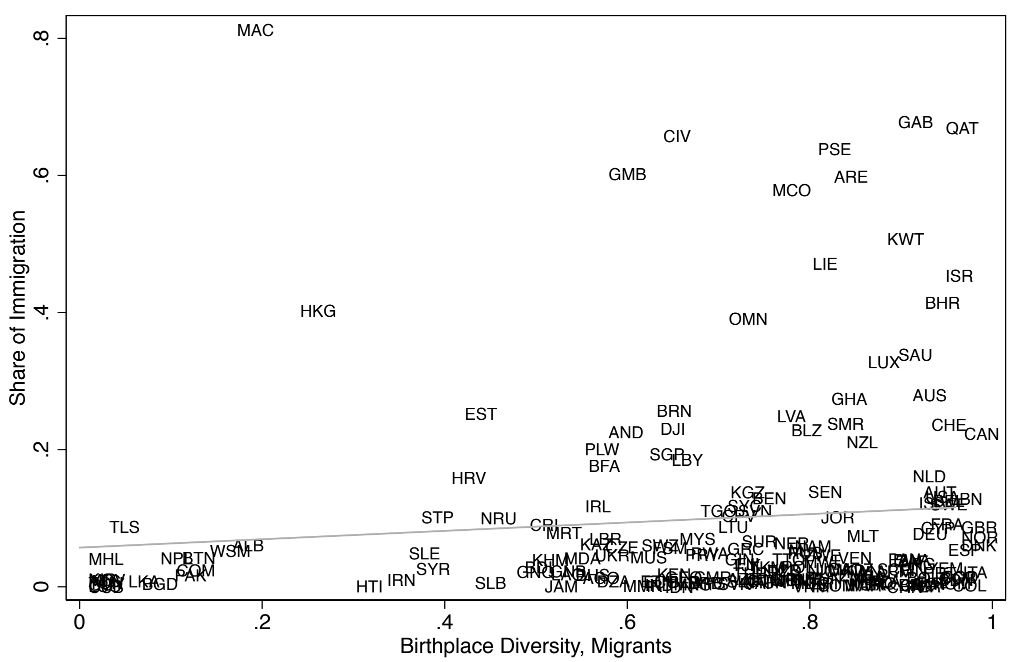
2d. Genetic Diversity and Birthplace Diversity, Migrants (DivMig)



2e. Share of Immigrants and Birthplace Diversity, Population (DivPop)



2f. Share of Immigrants and Birthplace Diversity, Migrants (DivMig)



2g. Share of Immigrants and Birthplace Diversity, Skilled Migrants

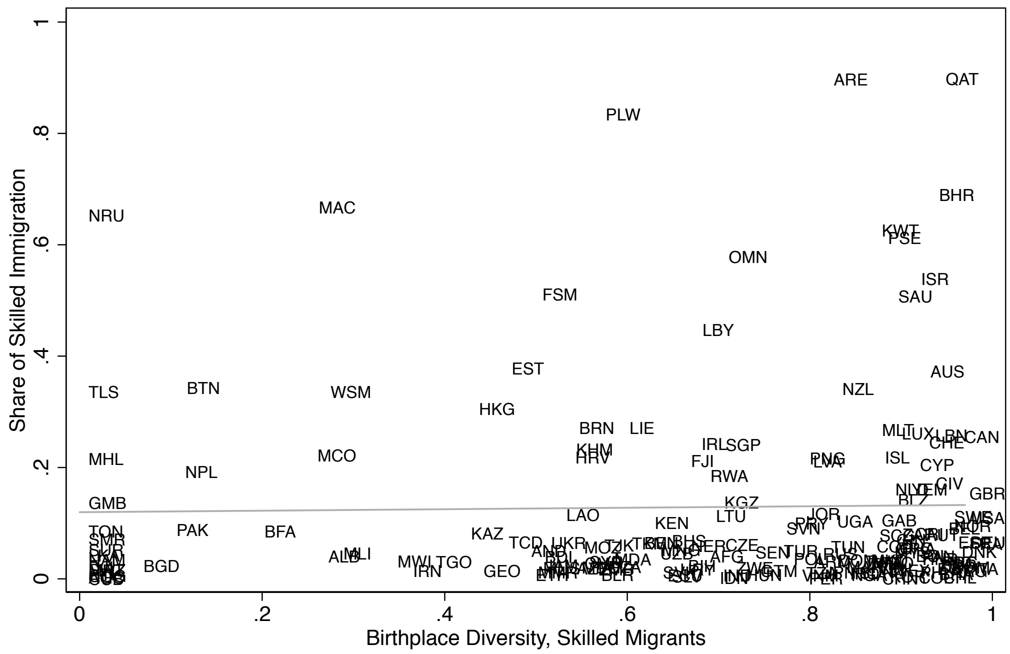
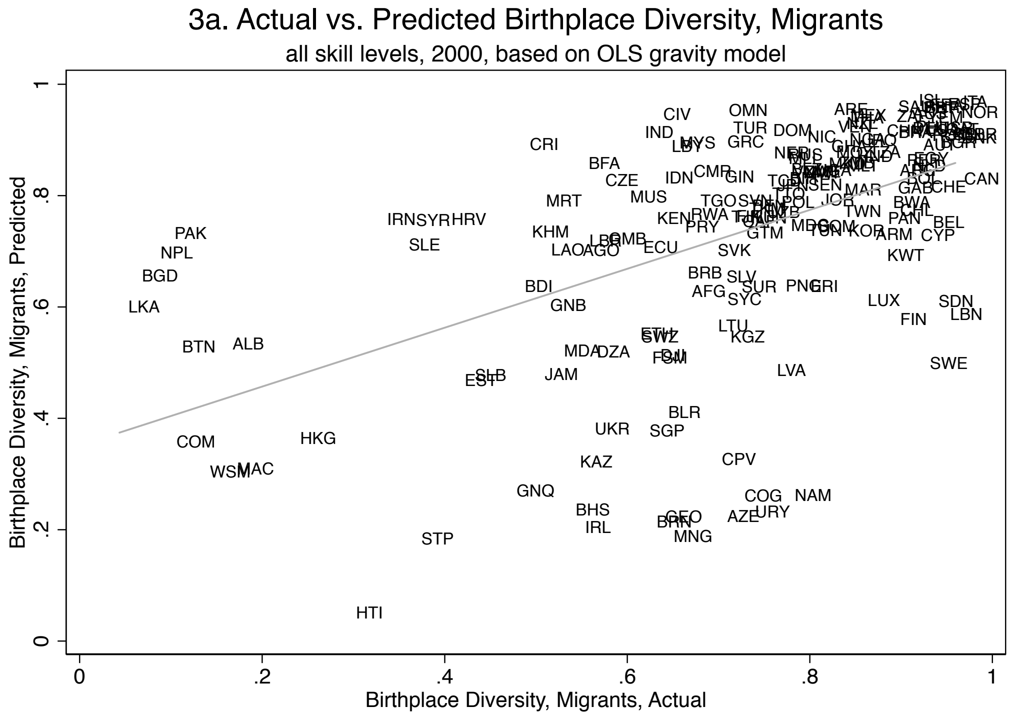


Figure 3: Actual vs. Predicted Birthplace Diversity, Migrants



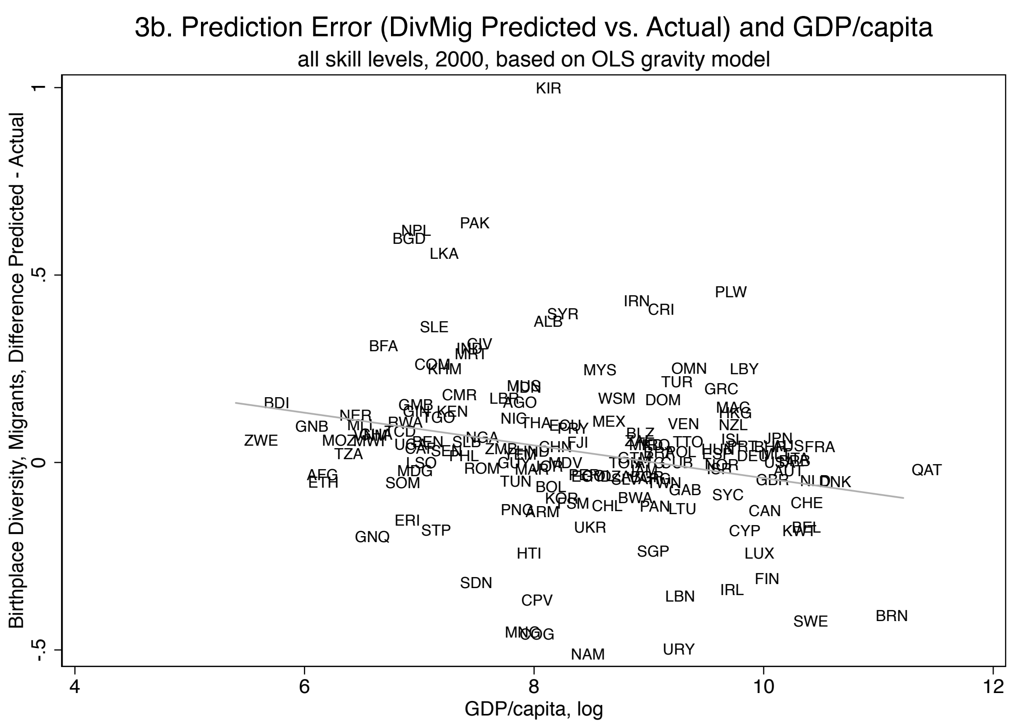


Table 1: Bilateral correlations between different diversity measures, 2000

Bilateral correlations Year: 2000; n=160	Ethnic Fractio-nalization	Genetic diversity	Birthplace Diversity (Pop)	Share of foreigners	Birthplace Diversity (Migrants)	Birthplace Diversity (Skilled Migrants)
Ethnic Fractionalization	1					
Genetic Diversity	0,13	1				
Birthplace Diversity (Population)	0,16	0,19	1			
Share of Foreigners	0,18	0,19	0,98	1		
Birthplace Diversity (Migrants)	-0,01	0,08	0,16	0,13	1	
Birthplace Diversity (Skilled Migrants)	-0,20	-0,08	0,09	0,07	0,75	1

Table 2: Birthplace diversity vs. fractionalization, by regions (means)

Average 1990-2000	**Fractionalization**			**Birthplace Diversity, population**			**Birthplace Diversity, Migrants**		
Region	ethnic	linguistic	genetic	all	skilled	unskilled	all	skilled	unskilled
Australia and Oceania	**0,20**	**0,30**	**0,64**	**0,14**	**0,48**	**0,12**	**0,41**	**0,46**	**0,40**
	11	11	11	11	9	10	11	9	10
Eastern Europe and Central Asia	**0,40**	**0,37**	**0,74**	**0,05**	**0,08**	**0,05**	**0,69**	**0,66**	**0,69**
	17	16	16	17	17	17	17	17	17
Latin America & Caribbean	**0,40**	**0,18**	**0,61**	**0,05**	**0,06**	**0,05**	**0,65**	**0,71**	**0,65**
	33	34	38	26	22	25	26	22	25
Middle East and North Africa	**0,39**	**0,26**	**0,74**	**0,29**	**0,39**	**0,28**	**0,78**	**0,77**	**0,78**
	21	23	23	24	24	24	24	24	24
North America	**0,60**	**0,41**	**0,63**	**0,30**	**0,31**	**0,28**	**0,94**	**0,96**	**0,91**
	2	2	2	2	2	2	2	2	2
South & South East Asia	**0,40**	**0,47**	**0,69**	**0,11**	**0,20**	**0,10**	**0,46**	**0,48**	**0,45**
	28	35	33	29	28	29	29	28	29
Sub-Saharan Africa	**0,66**	**0,63**	**0,75**	**0,15**	**0,13**	**0,16**	**0,68**	**0,52**	**0,68**
	46	47	48	47	34	47	47	34	47
Western Europe	**0,29**	**0,28**	**0,73**	**0,24**	**0,23**	**0,25**	**0,78**	**0,76**	**0,77**
	30	30	33	30	30	30	30	30	30

Note: Table 2 shows un-weighted average of countries' diversity scores. Sample: full sample of countries for which Alesina et al. 2003 fractionalization indices are available)

Table 3: Fractionalization and diversity indices, selected countries (2000)

Destination	Ethnic Fractionalization	Birthplace Diversity, Population	Share of immigration	Birthplace Diversity, Migrants	Birthplace Diversity, Skilled Immigrants
Argentina	0.26	0.07	0.03	0.89	0.95
Australia	0.09	0.47	0.28	0.90	0.92
Bangladesh	0.05	0.01	0.00	0.06	0.06
Brazil	0.54	0.01	0.00	0.89	0.93
Cambodia	0.21	0.08	0.04	0.49	0.53
Canada	0.71	0.40	0.22	0.96	0.96
China	0.15	0.00	0.00	0.87	0.87
France	0.10	0.17	0.09	0.92	0.96
Germany	0.17	0.15	0.08	0.90	0.97
India	0.42	0.01	0.00	0.61	0.70
Iran	0.67	0.02	0.01	0.33	0.36
Israel	0.34	0.69	0.45	0.94	0.91
Italy	0.11	0.04	0.02	0.96	0.97
Qatar	0.75	0.86	0.67	0.94	0.94
Saudi Arabia	0.18	0.55	0.34	0.89	0.89
Singapore	0.39	0.34	0.19	0.61	0.70
South Africa	0.75	0.07	0.04	0.89	0.89
Spain	0.42	0.11	0.05	0.94	0.95
United Kindom	0.12	0.17	0.09	0.96	0.96
United States	0.49	0.25	0.13	0.92	0.97

Table 4: Diversity of immigrants and economic development, OLS

	(1)	(2)	(3)	(4)	(5)	(6)
Sample	FULL	FULL	FULL	FULL	FULL	FULL
Dependent variable (log)	GDP/capita	GDP/capita	GDP/capita	TFP/capita	TFP/capita	TFP/capita
Birthplace Diversity, Immigrants	0.426			0.264		
	(0.261)			(0.207)		
Share of Immigration	1.681**			1.140***		
	(0.684)			(0.426)		
Birthplace Diversity, Immigrants, skilled		**0.652****			**0.376****	
		(0.306)			**(0.189)**	
Share of Immigration, skilled		0.496			0.443	
		(0.459)			(0.332)	
Birthplace Diversity, Immigrants, unskilled			0.386			0.241
			(0.247)			(0.202)
Share of Immigration, unskilled			1.672**			1.125***
			(0.649)			(0.404)
Years of schooling (log)	0.841***	0.850***	0.841***	0.463***	0.463***	0.463***
	(0.165)	(0.200)	(0.164)	(0.135)	(0.160)	(0.134)
Quality of institutions	0.0344***	0.0356***	0.0344***	0.0212*	0.0206**	0.0212*
	(0.0124)	(0.0119)	(0.0124)	(0.0109)	(0.0103)	(0.0109)
Observations	183	183	183	183	183	183
Adjusted R-squared	0.831	0.814	0.832	0.779	0.764	0.780

All models include basic controls for education and market size (average GDP/TFP of immigrants at origin, years of schooling, population, area size [all in logs] and a landlocked dummy. Trade controls: Trade openness in % of GDP at PPP, indices of exportand import diversity. Ethnicity: Ethnic, linguistic fractionalization and genetic diversity. Geography: Absolute latitude, Malaria incidence area in % (1994) and population within 100km of icefree coast (%). Institutions: Polity2 institutional quality index. All models contain an intercept and year fixed effects (not shown).
Standard errors clustered by country.
*** p<0.01, ** p<0.05, * p<0.1

Table 5: Diversity of immigrants and economic development, OLS, rich countries only

	(1)	(2)	(3)	(4)	(5)	(6)
Sample	> median GDP/capita in 1970			> median TFP/capita in 1970		
Dependent variable (log)	GDP/capita	GDP/capita	GDP/capita	TFP/capita	TFP/capita	TFP/capita
Birthplace Diversity, Immigrants	0.550*			0.225		
	(0.319)			(0.187)		
Share of Immigration	2.752***			1.736***		
	(0.674)			(0.354)		
Birthplace Diversity, Immigrants, skilled		**1.365*** **			**0.555*** **	
		(0.383)			**(0.158)**	
Share of Immigration, skilled		0.591			0.446	
		(0.643)			(0.401)	
Birthplace Diversity, Immigrants, unskilled			0.412			0.191
			(0.292)			(0.173)
Share of Immigration, unskilled			2.680***			1.663***
			(0.651)			(0.340)
Years of schooling (log)	0.232	0.774**	0.249	-0.0466	0.394*	-0.0353
	(0.285)	(0.298)	(0.279)	(0.160)	(0.203)	(0.160)
Quality of institutions	0.0350**	0.0216	0.0365**	0.0295***	0.0199	0.0293***
	(0.0158)	(0.0205)	(0.0158)	(0.0105)	(0.0122)	(0.0107)
Observations	93	93	93	93	93	93
Adjusted R-squared	0.814	0.741	0.814	0.809	0.743	0.811

All models include basic controls for education and market size (average GDP/TFP of immigrants at origin, years of schooling, population, area size [all in logs] and a landlocked dummy. Trade controls: Trade openness in % of GDP at PPP, indices of exportand import diversity. Ethnicity: Ethnic, linguistic fractionalization and genetic diversity. Geography: Absolute latitude, Malaria incidence area in % (1994) and population within 100km of icefree coast (%). Institutions: Polity2 institutional quality index. All models contain an intercept and year fixed effects (not shown).
Standard errors clustered by country.
*** p<0.01, ** p<0.05, * p<0.1

Table 6: Diversity of immigrants and economic development, OLS, poor countries only

	(1)	(2)	(3)	(4)	(5)	(6)
Sample	< median GDP/capita in 1970			< median TFP/capita in 1970		
Dependent variable (log)	GDP/capita	GDP/capita	GDP/capita	TFP/capita	TFP/capita	TFP/capita
Birthplace Diversity, Immigrants	0.142			0.0212		
	(0.389)			(0.275)		
Share of Immigration	-0.320			-0.00500		
	(0.699)			(0.612)		
Birthplace Diversity, Immigrants, skilled		**0.337**			**0.181**	
		(0.357)			**(0.211)**	
Share of Immigration, skilled		0.719			0.681	
		(0.575)			(0.473)	
Birthplace Diversity, Immigrants, unskilled			0.146			0.00875
			(0.387)			(0.278)
Share of Immigration, unskilled			-0.364			-0.0266
			(0.678)			(0.601)
Years of schooling (log)	0.573***	0.553***	0.573***	0.233	0.203	0.228
	(0.146)	(0.159)	(0.144)	(0.161)	(0.157)	(0.161)
Quality of institutions	0.00676	0.00563	0.00635	0.00235	-0.000957	0.00213
	(0.00973)	(0.0104)	(0.00961)	(0.00887)	(0.00906)	(0.00884)
Observations	90	90	90	90	90	90
Adjusted R-squared	0.633	0.642	0.637	0.499	0.523	0.500

All models include basic controls for education and market size (average GDP/TFP of immigrants at origin, years of schooling, population, area size [all in logs] and a landlocked dummy. Trade controls: Trade openness in % of GDP at PPP, indices of exportand import diversity. Ethnicity: Ethnic, linguistic fractionalization and genetic diversity. Geography: Absolute latitude, Malaria incidence area in % (1994) and population within 100km of icefree coast (%). Institutions: Polity2 institutional quality index. All models contain an intercept and year fixed effects (not shown).
Standard errors clustered by country.
*** p<0.01, ** p<0.05, * p<0.1

Table 7: Diversity of immigrants and patent intensity, OLS

	(1)	(2)	(3)	(4)	(5)	(6)
Sample	> median patents/capita, 2000			FULL SAMPLE, 2000		
Dependent variables	lGDP/capita	lGDP/capita	lGDP/capita	Patents/capita	Patents/capita	Patents/capita
Birthplace Diversity, Immigrants	0.544			0.153		
	(0.555)			(0.0976)		
Share of Immigration	4.072**			0.414*		
	(1.749)			(0.220)		
Birthplace Diversity, Immigrants, skilled		**2.312*** **			**0.184** **	
		(0.786)			**(0.0846)**	
Share of Immigration, skilled		1.985			0.296	
		(1.242)			(0.317)	
Birthplace Diversity, Immigrants, unskilled			0.183			0.126
			(0.487)			(0.0976)
Share of Immigration, unskilled			4.552**			0.424**
			(1.840)			(0.210)
Years of schooling (log)	-0.372	0.0197	-0.348	0.0738	0.0853	0.0763
	(0.523)	(0.649)	(0.488)	(0.0515)	(0.0588)	(0.0517)
Quality of institutions	0.103***	0.0785**	0.102***	0.00386	0.00453	0.00417
	(0.0325)	(0.0371)	(0.0313)	(0.00419)	(0.00426)	(0.00417)
Observations	42	42	42	85	85	85
Adjusted R-squared	0.695	0.673	0.699	0.260	0.235	0.259

Patents as average number of patents granted 1995-2005 per capita. All models include basic controls for education and market size (average GDP/TFP of immigrants at origin, years of schooling, population, area size [all in logs] and a landlocked dummy. Trade controls: Trade openness in % of GDP at PPP, indices of exportand import diversity. Ethnicity: Ethnic, linguistic fractionalization and genetic diversity. Geography: Absolute latitude, Malaria incidence area in % (1994) and population within 100km of icefree coast (%). Institutions: Polity2 institutional quality index. All models contain an intercept (not shown).
Heteroskedasticity-robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Table 8: Robustness to alternative geography controls

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Sample		Base specification			Robustness check #1			Robustness check #2	
Dependent variable (log)	GDP/capita	GDP/capita	GDP/capita	GDP/capita	GDP/capita	GDP/capita	GDP/capita	GDP/capita	GDP/capita
Birthplace Diversity, Immigrants	0.426			0.479			0.874**		
	(0.261)			(0.307)			(0.368)		
Share of Immigration	1.681**			1.620***			1.692***		
	(0.684)			(0.554)			(0.500)		
Birthplace Diversity, Immigrants, skilled		**0.652****			**0.567***			**0.676***	
		(0.306)			**(0.341)**			**(0.381)**	
Share of Immigration, skilled		0.496			0.223			-0.303	
		(0.459)			(0.558)			(0.559)	
Birthplace Diversity, Immigrants, unskilled			0.386			0.434			0.807**
			(0.247)			(0.292)			(0.351)
Share of Immigration, unskilled			1.672**			1.584***			1.661***
			(0.649)			(0.519)			(0.468)
Absolute Latitude/90	1.655***	1.684***	1.666***						
	(0.468)	(0.517)	(0.458)						
Malaria area in 1994, %	-0.825***	-0.890***	-0.824***						
	(0.238)	(0.239)	(0.236)						
Population w/i 100km from icefree coast, %	0.500**	0.463*	0.522**						
	(0.249)	(0.277)	(0.244)						
Land area in geo. tropics, %				-0.821***	-0.894***	-0.817***			
				(0.250)	(0.241)	(0.247)			
Asia Dummy							-0.624**	-0.798***	-0.624**
							(0.255)	(0.259)	(0.256)
Africa Dummy							-1.320***	-1.192***	-1.297***
							(0.375)	(0.335)	(0.370)
Latin America Dummy							-0.563**	-0.890***	-0.590**
							(0.255)	(0.261)	(0.246)
Observations	183	183	183	183	183	183	183	183	183
Adjusted R-squared	0.831	0.814	0.832	0.806	0.787	0.806	0.824	0.798	0.824

All models include basic controls for education and market size (average GDP/TFP of immigrants at origin, years of schooling, population, area size [all in logs] and a landlocked dummy. Trade controls: Trade openness in % of GDP at PPP, indices of exportand import diversity. Ethnicity: Ethnic, linguistic fractionalization and genetic diversity. Geography controls as indicated. Institutions: Polity2 institutional quality index. All models contain an intercept and year fixed effects (not shown).
Standard errors clustered by country.
*** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Sample		Base specification			Robustness check #1			Robustness check #2	
Dependent variable (log)	TFP/capita	TFP/capita	TFP/capita	TFP/capita	TFP/capita	TFP/capita	TFP/capita	TFP/capita	TFP/capita
Birthplace Diversity, Immigrants	0.264			0.916***			1.232***		
	(0.207)			(0.274)			(0.266)		
Share of Immigration	1.140***			1.355***			1.412***		
	(0.426)			(0.480)			(0.388)		
Birthplace Diversity, Immigrants, skilled		**0.376****			**1.018*****			**1.150*****	
		(0.189)			**(0.240)**			**(0.245)**	
Share of Immigration, skilled		0.443			0.387			-0.154	
		(0.332)			(0.565)			(0.528)	
Birthplace Diversity, Immigrants, unskilled			0.241			0.853***			1.153***
			(0.202)			(0.272)			(0.275)
Share of Immigration, unskilled			1.125***			1.318***			1.388***
			(0.404)			(0.444)			(0.359)
Absolute Latitude/90	1.193***	1.160***	1.213***						
	(0.329)	(0.353)	(0.324)						
Malaria area in 1994, %	-0.659***	-0.675***	-0.660***						
	(0.171)	(0.177)	(0.172)						
Population w/i 100km from icefree coast, %	0.298	0.252	0.315						
	(0.201)	(0.221)	(0.197)						
Land area in geo. tropics, %				-1.093***	-1.068***	-1.097***			
				(0.166)	(0.183)	(0.167)			
Africa Dummy							-1.564***	-1.356***	-1.551***
							(0.236)	(0.251)	(0.237)
Latin America Dummy							-0.672***	-0.987***	-0.703***
							(0.202)	(0.262)	(0.203)
Asia Dummy							-0.841***	-1.004***	-0.853***
							(0.198)	(0.201)	(0.200)
Observations	183	183	183	183	183	183	183	183	183
Adjusted R-squared	0.779	0.764	0.780	0.653	0.645	0.649	0.706	0.680	0.701

All models include basic controls for education and market size (average GDP/TFP of immigrants at origin, years of schooling, population, area size [all in logs] and a landlocked dummy. Trade controls: Trade openness in % of GDP at PPP, indices of exportand import diversity. Ethnicity: Ethnic, linguistic fractionalization and genetic diversity. Geography controls as indicated. Institutions: Polity2 institutional quality index. All models contain an intercept and year fixed effects (not shown).
Standard errors clustered by country.
*** p<0.01, ** p<0.05, * p<0.1

Table 9: Other robustness checks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dependent variable (log)	GDP/capita	GDP/capita	GDP/capita	GDP/capita	GDP/capita	GDP/capita	TFP/capita	TFP/capita	TFP/capita	TFP/capita	TFP/capita	TFP/capita
Model	base model	excl. countries with small population	excl. countries with low share of immigration	excl. countries with low diversity(skilled)	excl. AUS CAN USA	weighted by share of skilled immigrants	base model	excl. countries with small population	excl. countries with low share of immigration	excl. countries with low diversity(skilled)	excl. AUS CAN USA	weighted by share of skilled immigrants
Birthplace Diversity, Immigrants, skilled	**0.652****	**0.797****	**0.715****	**1.599****	**0.630****	**0.796*****	**0.376****	**0.463****	**0.393****	**1.095****	**0.382****	**0.504*****
	(0.306)	**(0.324)**	**(0.319)**	**(0.687)**	**(0.309)**	**(0.266)**	**(0.189)**	**(0.198)**	**(0.197)**	**(0.507)**	**(0.190)**	**(0.173)**
Share of Immigration, skilled	0.496	0.734	0.355	0.716	0.282	0.0676	0.443	0.578	0.354	0.482	0.292	0.189
	(0.459)	(0.525)	(0.439)	(0.819)	(0.443)	(0.257)	(0.332)	(0.387)	(0.319)	(0.549)	(0.327)	(0.198)
Years of schooling (log)	0.850***	0.640***	0.823***	0.830**	0.823***	0.958***	0.463***	0.306**	0.451***	0.359	0.445***	0.565***
	(0.200)	(0.174)	(0.204)	(0.344)	(0.205)	(0.194)	(0.160)	(0.139)	(0.164)	(0.246)	(0.165)	(0.150)
Quality of institutions	0.0356***	0.0401***	0.0299**	0.0522***	0.0349***	0.0311***	0.0206**	0.0232**	0.0126	0.0330**	0.0201*	0.0168*
	(0.0119)	(0.0128)	(0.0129)	(0.0160)	(0.0119)	(0.0101)	(0.0103)	(0.0107)	(0.0107)	(0.0144)	(0.0102)	(0.00897)
Observations	183	167	166	132	177	183	183	167	166	132	177	183
Adjusted R-squared	0.814	0.854	0.825	0.791	0.803	0.893	0.764	0.809	0.782	0.748	0.752	0.864

Specification (1) and (7) base models. Model (2) and (8) exclude 10% smallest countries, model (3) and (9) 10% of countries with smallest share of immigrants. Model (4) and (10) exclude all countries with very small diversity (25% of sample). Model (5) and (11) exclude possible outliers Australia, Canada and USA. Model (6) and (12) weight the observations by the share of skilled immigrants. All models include basic controls for education and market size (average GDP/TFP of immigrants at origin, years of schooling, population, area size [all in logs] and a landlocked dummy. Trade controls: Trade openness in % of GDP at PPP, indices of exportand import diversity. Ethnicity: Ethnic, linguistic fractionalization and genetic diversity. Geography: Absolute latitude, Malaria incidence area in % (1994) and population within 100km of icefree coast (%). Institutions: Polity2 institutional quality index. All models contain an intercept and year fixed effects (not shown).
Standard errors clustered by country.
*** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Sample			> median GDP/capita in 1970						> median TFP/capita in 1970			
Dependent variable (log)	GDP/capita	GDP/capita	GDP/capita	GDP/capita	GDP/capita	GDP/capita	TFP/capita	TFP/capita	TFP/capita	TFP/capita	TFP/capita	TFP/capita
Model	base model	excl. countries with small population	excl. countries with low share of immigration	excl. countries with low diversity(skilled)	excl. AUS CAN USA	weighted by share of skilled immigrants	base model	excl. countries with small population	excl. countries with low share of immigration	excl. countries with low diversity(skilled)	excl. AUS CAN USA	weighted by share of skilled immigrants
Birthplace Diversity, Immigrants, skilled	**1.365*****	**1.198*****	**1.406*****	**1.456****	**1.323*****	**1.070*****	**0.555*****	**0.431****	**0.582*****	**0.679***	**0.560*****	**0.555*****
	(0.383)	**(0.339)**	**(0.409)**	**(0.692)**	**(0.366)**	**(0.235)**	**(0.158)**	**(0.210)**	**(0.152)**	**(0.378)**	**(0.151)**	**(0.203)**
Share of Immigration, skilled	0.591	1.007*	0.342	0.514	0.535	0.173	0.446	0.954***	0.285	0.443	0.441	0.242
	(0.643)	(0.555)	(0.675)	(0.693)	(0.639)	(0.357)	(0.401)	(0.325)	(0.417)	(0.447)	(0.399)	(0.301)
Years of schooling (log)	0.774**	0.313	0.811**	0.739**	0.656**	1.469***	0.394*	0.0218	0.417*	0.352	0.271	0.819***
	(0.298)	(0.289)	(0.321)	(0.312)	(0.290)	(0.280)	(0.203)	(0.200)	(0.232)	(0.211)	(0.163)	(0.227)
Quality of institutions	0.0216	0.0513***	0.0175	0.0112	0.0237	-0.0232	0.0199	0.0285**	0.0154	0.0125	0.0235**	-0.00695
	(0.0205)	(0.0164)	(0.0217)	(0.0229)	(0.0205)	(0.0233)	(0.0122)	(0.0118)	(0.0132)	(0.0142)	(0.0111)	(0.0158)
Observations	93	87	85	85	87	93	93	87	85	83	87	93
Adjusted R-squared	0.741	0.839	0.716	0.716	0.722	0.801	0.743	0.814	0.720	0.736	0.741	0.835

Specification (1) and (7) base models. Model (2) and (8) exclude 10% smallest countries, model (3) and (9) 10% of countries with smallest share of immigrants. Model (4) and (10) exclude all countries with very small diversity (25% of sample). Model (5) and (11) exclude possible outliers Australia, Canada and USA. Model (6) and (12) weight the observations by the share of skilled immigrants. All models include basic controls for education and market size (average GDP/TFP of immigrants at origin, years of schooling, population, area size [all in logs] and a landlocked dummy. Trade controls: Trade openness in % of GDP at PPP, indices of exportand import diversity. Ethnicity: Ethnic, linguistic fractionalization and genetic diversity. Geography: Absolute latitude, Malaria incidence area in % (1994) and population within 100km of icefree coast (%). Institutions: Polity2 institutional quality index. All models contain an intercept and year fixed effects (not shown).
Standard errors clustered by country.
*** p<0.01, ** p<0.05, * p<0.1

Table 10: Robustness to border changes since 1989

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Sample		Full sample			> median GDP/capita in 1970			< median GDP/capita in 1970	
Dependent variable (log)	GDP/capita	GDP/capita	GDP/capita	GDP/capita	GDP/capita	GDP/capita	GDP/capita	GDP/capita	GDP/capita
Birthplace Diversity, Immigrants (adjusted)	0.468*			0.690**			0.126		
	(0.252)			(0.298)			(0.390)		
Share of Immigration	1.667**			2.701***			-0.316		
	(0.680)			(0.672)			(0.700)		
Birthplace Diversity, Immigrants, skilled (adjusted)		**0.721****			**1.441*****			**0.316**	
		(0.297)			**(0.325)**			**(0.358)**	
Share of Immigration, skilled		0.526			0.938			0.701	
		(0.455)			(0.571)			(0.575)	
Birthplace Diversity, Immigrants, unskilled (adjusted)			0.419*			0.522*			0.134
			(0.241)			(0.279)			(0.387)
Share of Immigration, unskilled			1.660**			2.630***			-0.361
			(0.648)			(0.658)			(0.679)
Years of schooling (log)	0.844***	0.846***	0.844***	0.247	0.746**	0.264	0.574***	0.558***	0.574***
	(0.164)	(0.198)	(0.164)	(0.290)	(0.304)	(0.282)	(0.146)	(0.158)	(0.144)
Quality of institutions	0.0348***	0.0362***	0.0348***	0.0346**	0.0232	0.0361**	0.00695	0.00608	0.00654
	(0.0125)	(0.0119)	(0.0125)	(0.0155)	(0.0195)	(0.0157)	(0.00980)	(0.0105)	(0.00967)
Observations	183	183	183	93	93	93	90	90	90
Adjusted R-squared	0.831	0.816	0.833	0.822	0.760	0.819	0.633	0.641	0.636

Birthplace diversity adjusted for border changes post 1989. All models include basic controls for education and market size (average GDP/TFP of immigrants at origin, years of schooling, population, area size [all in logs] and a landlocked dummy. Trade controls: Trade openness in % of GDP at PPP, indices of exportand import diversity. Ethnicity: Ethnic, linguistic fractionalization and genetic diversity. Geography: Absolute latitude, Malaria incidence area in % (1994) and population within 100km of icefree coast (%). Institutions: Polity2 institutional quality index. All models contain an intercept and year fixed effects (not shown).
Standard errors clustered by country.
*** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Sample		Full sample			> median TFP/capita in 1970			< median TFP/capita in 1970	
Dependent variable (log)	TFP/capita	TFP/capita	TFP/capita	TFP/capita	TFP/capita	TFP/capita	TFP/capita	TFP/capita	TFP/capita
Birthplace Diversity, Immigrants (adjusted)	0.281			0.268			0.0263		
	(0.207)			(0.186)			(0.280)		
Share of Immigration	1.138***			1.715***			-0.00601		
	(0.428)			(0.353)			(0.613)		
Birthplace Diversity, Immigrants, skilled (adjusted)		**0.418****			**0.645*****			**0.185**	
		(0.193)			**(0.177)**			**(0.217)**	
Share of Immigration, skilled		0.463			0.461			0.679	
		(0.329)			(0.396)			(0.472)	
Birthplace Diversity, Immigrants, unskilled (adjusted)			0.255			0.220			0.0184
			(0.202)			(0.170)			(0.284)
Share of Immigration, unskilled			1.123***			1.647***			-0.0277
			(0.407)			(0.340)			(0.602)
Years of schooling (log)	0.461***	0.453***	0.461***	-0.0385	0.389*	-0.0278	0.232	0.203	0.227
	(0.135)	(0.161)	(0.134)	(0.160)	(0.199)	(0.161)	(0.161)	(0.158)	(0.161)
Quality of institutions	0.0212*	0.0204**	0.0213*	0.0288***	0.0189	0.0289***	0.00233	-0.000888	0.00210
	(0.0108)	(0.0102)	(0.0109)	(0.0102)	(0.0118)	(0.0104)	(0.00887)	(0.00904)	(0.00885)
Observations	183	183	183	93	93	93	90	90	90
Adjusted R-squared	0.780	0.766	0.780	0.812	0.753	0.812	0.499	0.523	0.500

Birthplace diversity adjusted for border changes post 1989. All models include basic controls for education and market size (average GDP/TFP of immigrants at origin, years of schooling, population, area size [all in logs] and a landlocked dummy. Trade controls: Trade openness in % of GDP at PPP, indices of exportand import diversity. Ethnicity: Ethnic, linguistic fractionalization and genetic diversity. Geography: Absolute latitude, Malaria incidence area in % (1994) and population within 100km of icefree coast (%). Institutions: Polity2 institutional quality index. All models contain an intercept and year fixed effects (not shown).
Standard errors clustered by country.
*** p<0.01, ** p<0.05, * p<0.1

Table 11: Robustness to migration networks in 1960

	(1)	(2)	(3)	(4)	(5)	(6)
Sample	FULL	FULL	FULL	FULL	FULL	FULL
Dependent variable (log)	GDP/capita	GDP/capita	GDP/capita	TFP/capita	TFP/capita	TFP/capita
Birthplace Diversity, Immigrants, skilled	**0.652****		**0.558**	**0.376****		**0.199**
	(0.306)		**(0.436)**	**(0.189)**		**(0.270)**
Share of Immigration, skilled	0.496		0.662	0.443		0.603
	(0.459)		(0.577)	(0.332)		(0.441)
Birthplace Diversity, Immigrants, 1960		0.403	0.168		0.392*	0.319
		(0.272)	(0.411)		(0.207)	(0.307)
Share of Immigration, 1960		0.150	-0.306		0.359	-0.0916
		(0.681)	(0.789)		(0.615)	(0.758)
Observations	183	183	183	183	183	183
Adjusted R-squared	0.814	0.809	0.812	0.764	0.762	0.764

Birthplace diversity of immigrants and share of immigration calculated also for 1960. All models include basic controls for education and market size (average GDP/TFP of immigrants at origin, years of schooling, population, area size [all in logs] and a landlocked dummy. Trade controls: Trade openness in % of GDP at PPP, indices of exportand import diversity. Ethnicity: Ethnic, linguistic fractionalization and genetic diversity. Geography: Absolute latitude, Malaria incidence area in % (1994) and population within 100km of icefree coast (%). Institutions: Polity2 institutional quality index. All models contain an intercept and year fixed effects (not shown).
Standard errors clustered by country.
*** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)	(3)	(4)	(5)	(6)
Sample	> median GDP/capita in 1970			> median TFP/capita in 1970		
Dependent variable (log)	GDP/capita	GDP/capita	GDP/capita	TFP/capita	TFP/capita	TFP/capita
Birthplace Diversity, Immigrants, skilled	**1.365*****		**1.574*****	**0.555*****		**0.512****
	(0.383)		**(0.441)**	**(0.158)**		**(0.201)**
Share of Immigration, skilled	0.591		0.899	0.446		0.401
	(0.643)		(0.639)	(0.401)		(0.459)
Birthplace Diversity, Immigrants, 1960		0.238	-0.249		0.270*	0.0568
		(0.347)	(0.338)		(0.155)	(0.196)
Share of Immigration, 1960		0.232	-0.545		0.514	0.116
		(0.651)	(0.603)		(0.432)	(0.449)
Observations	93	93	93	93	93	93
Adjusted R-squared	0.741	0.693	0.739	0.743	0.724	0.736

Birthplace diversity of immigrants and share of immigration calculated also for 1960. All models include basic controls for education and market size (average GDP/TFP of immigrants at origin, years of schooling, population, area size [all in logs] and a landlocked dummy. Trade controls: Trade openness in % of GDP at PPP, indices of exportand import diversity. Ethnicity: Ethnic, linguistic fractionalization and genetic diversity. Geography: Absolute latitude, Malaria incidence area in % (1994) and population within 100km of icefree coast (%). Institutions: Polity2 institutional quality index. All models contain an intercept and year fixed effects (not shown).
Standard errors clustered by country.
*** p<0.01, ** p<0.05, * p<0.1

Table 12: Gravity model, OLS and PPML

	(1)	(2)	(3)	(4)	(5)	(6)
Model	OLS	OLS	OLS	PPML	PPML	PPML
Sample	ALL	SKILLED	UNSKILLED	ALL	SKILLED	UNSKILLED
Dependent variable	Emigration Share (log)	Emigration Share (log)	Emigration Share (log)	Emigration Share	Emigration Share	Emigration Share
Population size, destination country	-0.350***	-0.360***	-0.382***	-2.71e-08	-1.93e-08	-3.02e-08**
	(0.121)	(0.131)	(0.108)	(1.66e-08)	(2.03e-08)	(1.44e-08)
Bilateral distance	-1.055***	-0.711***	-1.081***	-0.000425***	-0.000252***	-0.000481***
	(0.115)	(0.122)	(0.105)	(7.75e-05)	(7.15e-05)	(7.59e-05)
Area, destination country	0.179*	0.195	0.181*	2.79e-07**	2.71e-07*	2.76e-07***
	(0.108)	(0.123)	(0.0925)	(1.16e-07)	(1.48e-07)	(1.01e-07)
Landlocked dummy, destination country	-0.215	-0.155	-0.108	-1.344**	-1.671***	-1.293**
	(0.633)	(0.577)	(0.573)	(0.548)	(0.570)	(0.550)
Dummy: Common border	6.218***	4.160**	5.759***	2.127***	1.866***	2.033***
	(2.114)	(2.047)	(2.063)	(0.354)	(0.360)	(0.339)
Dummy: Colonial relationship	1.789***	1.583***	1.887***	0.797***	0.984***	0.762***
	(0.277)	(0.271)	(0.262)	(0.243)	(0.259)	(0.253)
Dummy: Common official language	7.044***	5.382***	7.838***	0.788**	0.883***	0.865**
	(1.784)	(1.933)	(1.776)	(0.352)	(0.343)	(0.369)
Observations	15,435	12,857	14,831	67,340	67,340	67,340
Adjusted R-squared	0.468	0.433	0.473	0.599	0.414	0.622

OLS model in logs (regressors and dependent variable). PPML model in levels. Dependent variable as bilateral migration from origin to destination over destination population size. All models include origin*year fixed effects to account for multilateral resistance terms, further interaction terms between covariates and an intercept (not shown). Standard errors clustered by destination country.
*** p<0.01, ** p<0.05, * p<0.1

Table 13: 2SLS results – skilled immigrants

	(1)	(2)	(3)	(4)	(5)	(6)
Sample		Full sample			> median GDP/capita in 1970	
Dependent variable (log)	GDP/capita	GDP/capita	GDP/capita	GDP/capita	GDP/capita	GDP/capita
Birthplace Diversity, Immigrants, skilled	**1.525*** **	**1.502*** **	**1.455** **	**1.110*** **	**1.393*** **	**1.549** **
	(0.470)	**(0.475)**	**(0.582)**	**(0.394)**	**(0.529)**	**(0.649)**
Share Immigration, skilled	0.573	-0.706	-3.296	0.621	-1.271	-2.309*
	(0.421)	(1.935)	(2.786)	(0.580)	(1.462)	(1.373)
Years of schooling (log)	0.728***	0.731***	0.736***	0.792***	1.067***	1.218***
	(0.209)	(0.204)	(0.205)	(0.275)	(0.345)	(0.299)
Quality of institutions	0.0321***	0.0341***	0.0383***	0.0253	0.0251	0.0250
	(0.0117)	(0.0116)	(0.0123)	(0.0167)	(0.0221)	(0.0263)
Observations	183	183	183	93	93	93
Adjusted R-squared	0.801	0.794	0.732	0.740	0.704	0.651
Instrument	Diversity (OLS)	Diversity (OLS), Share Immigration (OLS)	Diversity (OLS), Share Immigration (PPML)	Diversity (OLS)	Diversity (OLS), Share Immigration (OLS)	Diversity (OLS), Share Immigration (PPML)
Kleibergen-Paap F-Test	57.43	2.371	2.912	69.96	9.723	8.799
Angrist-Pischke F-Test (Share of Immigration)		2.397	3.534		9.886	8.335
Angrist-Pischke F-Test (Birthplace Diversity)		29.95	29.87		35.18	31.31
Stock Yogo critical values at 10% and 15% max IV size	16.38 / 8.96	7.03 / 4.58	7.03 / 4.58	16.38 / 8.96	7.03 / 4.58	7.03 / 4.58

All models include basic controls for education and market size (average GDP/TFP of immigrants at origin, years of schooling, population, area size [all in logs] and a landlocked dummy. Trade controls: Trade openness in % of GDP at PPP, indices of exportand import diversity. Ethnicity: Ethnic, linguistic fractionalization and genetic diversity. Geography: Absolute latitude, Malaria incidence area in % (1994) and population within 100km of icefree coast (%). Institutions: Polity2 institutional quality index. All models contain an intercept and year fixed effects (not shown). Standard errors clustered by country.
*** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)	(3)	(4)	(5)	(6)
		Full sample			> median TFP/capita in 1970	
Dependent variable (log)	TFP/capita	TFP/capita	TFP/capita	TFP/capita	TFP/capita	TFP/capita
Birthplace Diversity, Immigrants, skilled	**0.877*** **	**0.860** **	**0.847** **	**0.785** **	**1.012* **	**1.076* **
	(0.317)	**(0.335)**	**(0.383)**	**(0.389)**	**(0.541)**	**(0.601)**
Share Immigration, skilled	0.475	-1.077	-2.317	0.396	-0.784	-1.118
	(0.307)	(1.572)	(1.944)	(0.343)	(0.897)	(0.778)
Years of schooling (log)	0.365**	0.369**	0.373**	0.383**	0.563**	0.614***
	(0.173)	(0.171)	(0.174)	(0.175)	(0.228)	(0.207)
Quality of institutions	0.0162	0.0189*	0.0211**	0.0151	0.00907	0.00736
	(0.0100)	(0.0102)	(0.0105)	(0.0104)	(0.0166)	(0.0169)
Observations	183	183	183	93	93	93
Adjusted R-squared	0.750	0.726	0.671	0.738	0.689	0.661
Instrument	Diversity (OLS)	Diversity (OLS), Share Immigration (OLS)	Diversity (OLS), Share Immigration (PPML)	Diversity (OLS)	Diversity (OLS), Share Immigration (OLS)	Diversity (OLS), Share Immigration (PPML)
Kleibergen-Paap F-Test	37.55	2.419	3.127	34.19	9.642	7.287
Angrist-Pischke F-Test (Share of Immigration)		2.392	3.606		13.27	17.63
Angrist-Pischke F-Test (Birthplace Diversity)		20.56	19.46		15.24	16.01
Stock Yogo critical values at 10% and 15% max IV size	16.38 / 8.96	7.03 / 4.58	7.03 / 4.58	16.38 / 8.96	7.03 / 4.58	7.03 / 4.58

All models include basic controls for education and market size (average GDP/TFP of immigrants at origin, years of schooling, population, area size [all in logs] and a landlocked dummy. Trade controls: Trade openness in % of GDP at PPP, indices of exportand import diversity. Ethnicity: Ethnic, linguistic fractionalization and genetic diversity. Geography: Absolute latitude, Malaria incidence area in % (1994) and population within 100km of icefree coast (%). Institutions: Polity2 institutional quality index. All models contain an intercept and year fixed effects (not shown). Standard errors clustered by country.
*** p<0.01, ** p<0.05, * p<0.1

Table 14: 2SLS results – unskilled immigrants

	(1)	(2)	(3)	(4)	(5)	(6)
Sample		Full sample			> median GDP/capita in 1970	
Dependent variable (log)	GDP/capita	GDP/capita	GDP/capita	GDP/capita	GDP/capita	GDP/capita
Birthplace Diversity, Immigrants, unskilled	**0.979**	**0.316**	**0.857**	**0.934****	**0.771***	**0.976****
	(0.666)	**(0.752)**	**(0.656)**	**(0.415)**	**(0.407)**	**(0.435)**
Share Immigration, unskilled	1.540**	3.817***	1.958***	2.460***	3.478***	2.195***
	(0.642)	(0.622)	(0.726)	(0.649)	(0.687)	(0.808)
Years of schooling (log)	0.839***	0.722***	0.817***	0.303	0.0272	0.375
	(0.152)	(0.182)	(0.157)	(0.247)	(0.345)	(0.255)
Quality of institutions	0.0314**	0.0313**	0.0313**	0.0308**	0.0318**	0.0305**
	(0.0127)	(0.0137)	(0.0128)	(0.0145)	(0.0131)	(0.0150)
Observations	183	183	183	93	93	93
Adjusted R-squared	0.826	0.796	0.827	0.805	0.797	0.802
Instrument	Diversity (OLS)	Diversity (OLS), Share Immigration (OLS)	Diversity (OLS), Share Immigration (PPML)	Diversity (OLS)	Diversity (OLS), Share Immigration (OLS)	Diversity (OLS), Share Immigration (PPML)
Kleibergen-Paap F-Test	24.47	12.52	13.03	11.78	8.831	6.043
Angrist-Pischke F-Test (Share of Immigration)		40.29	45.85		29.03	61.81
Angrist-Pischke F-Test (Birthplace Diversity)		13.58	13.17		7.935	7.992
Stock Yogo critical values at 10% and 15% max IV size	16.38 / 8.96	7.03 / 4.58	7.03 / 4.58	16.38 / 8.96	7.03 / 4.58	7.03 / 4.58

All models include basic controls for education and market size (average GDP/TFP of immigrants at origin, years of schooling, population, area size [all in logs] and a landlocked dummy. Trade controls: Trade openness in % of GDP at PPP, indices of exportand import diversity. Ethnicity: Ethnic, linguistic fractionalization and genetic diversity. Geography: Absolute latitude, Malaria incidence area in % (1994) and population within 100km of icefree coast (%). Institutions: Polity2 institutional quality index. All models contain an intercept and year fixed effects (not shown). Standard errors clustered by country.
*** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)	(3)	(4)	(5)	(6)
		Full sample			> median TFP/capita in 1970	
Dependent variable (log)	TFP/capita	TFP/capita	TFP/capita	TFP/capita	TFP/capita	TFP/capita
Birthplace Diversity, Immigrants, unskilled	**0.877*****	**0.860****	**0.847****	**0.785****	**1.012***	**1.076***
	(0.317)	**(0.335)**	**(0.383)**	**(0.389)**	**(0.541)**	**(0.601)**
Share Immigration, unskilled	0.475	-1.077	-2.317	0.396	-0.784	-1.118
	(0.307)	(1.572)	(1.944)	(0.343)	(0.897)	(0.778)
Years of schooling (log)	0.365**	0.369**	0.373**	0.383**	0.563**	0.614***
	(0.173)	(0.171)	(0.174)	(0.175)	(0.228)	(0.207)
Quality of institutions	0.0162	0.0189*	0.0211**	0.0151	0.00907	0.00736
	(0.0100)	(0.0102)	(0.0105)	(0.0104)	(0.0166)	(0.0169)
Observations	183	183	183	93	93	93
Adjusted R-squared	0.750	0.726	0.671	0.738	0.689	0.661
Instrument	Diversity (OLS)	Diversity (OLS), Share Immigration (OLS)	Diversity (OLS), Share Immigration (PPML)	Diversity (OLS)	Diversity (OLS), Share Immigration (OLS)	Diversity (OLS), Share Immigration (PPML)
Kleibergen-Paap F-Test	37.55	2.419	3.127	34.19	9.642	7.287
Angrist-Pischke F-Test (Share of Immigration)		2.392	3.606		13.27	17.63
Angrist-Pischke F-Test (Birthplace Diversity)		20.56	19.46		15.24	16.01
Stock Yogo critical values at 10% and 15% max IV size	16.38 / 8.96	7.03 / 4.58	7.03 / 4.58	16.38 / 8.96	7.03 / 4.58	7.03 / 4.58

All models include basic controls for education and market size (average GDP/TFP of immigrants at origin, years of schooling, population, area size [all in logs] and a landlocked dummy. Trade controls: Trade openness in % of GDP at PPP, indices of exportand import diversity. Ethnicity: Ethnic, linguistic fractionalization and genetic diversity. Geography: Absolute latitude, Malaria incidence area in % (1994) and population within 100km of icefree coast (%). Institutions: Polity2 institutional quality index. All models contain an intercept and year fixed effects (not shown). Standard errors clustered by country.
*** p<0.01, ** p<0.05, * p<0.1

Table 15: 2SLS results – alternative approach for skilled immigrants

	(1)	(2)	(3)	(4)	(5)	(6)
Sample		Full sample			> median GDP/capita in 1970	
Dependent variable (log)	GDP/capita	GDP/capita	GDP/capita	GDP/capita	GDP/capita	GDP/capita
Birthplace Diversity, Immigrants, skilled	**1.146*** **	**1.148*** **	**0.855** **	**1.030*** **	**1.200*** **	**1.326** **
	(0.361)	**(0.359)**	**(0.407)**	**(0.361)**	**(0.430)**	**(0.538)**
Share Immigration, skilled	0.540	0.636	-1.636	0.631	-1.061	-2.177
	(0.419)	(1.270)	(1.968)	(0.580)	(1.428)	(1.368)
Years of schooling (log)	0.781***	0.781***	0.820***	0.797***	1.050***	1.216***
	(0.198)	(0.203)	(0.199)	(0.276)	(0.348)	(0.305)
Quality of institutions	0.0336***	0.0334***	0.0381***	0.0264	0.0275	0.0280
	(0.0116)	(0.0115)	(0.0117)	(0.0168)	(0.0208)	(0.0249)
Observations	183	183	183	93	93	93
Adjusted R-squared	0.810	0.809	0.791	0.739	0.710	0.658
Instrument	Diversity (OLS, diversity 1960)	Diversity (OLS, 1960), Share Immigration (OLS)	Diversity (OLS, 1960), Share Immigration (PPML)	Diversity (OLS)	Diversity (OLS, 1960), Share Immigration (OLS)	Diversity (OLS, 1960), Share Immigration (PPML)
Kleibergen-Paap F-Test	52.07	3.122	3.363	97.89	6.797	6.027
Angrist-Pischke F-Test (Share of Immigration)		3.272	3.260		6.964	5.870
Angrist-Pischke F-Test (Birthplace Diversity)		38.45	36.90		63.70	63.23
Hansen-J Test (p-value)	0.226	0.231	0.0771	0.621	0.294	0.282
Stock Yogo critical values at 10% and 15% max IV size	19.93 / 11.59	13.43 / 8.18	13.43 / 8.18	19.93 / 11.59	13.43 / 8.18	13.43 / 8.18

Endogenous variables instrumented using predicted values from gravity models (OLS or PPML) as well as birthplace diversity in 1960 (all skill levels). All models include basic controls for education and market size (average GDP/TFP of immigrants at origin, years of schooling, population, area size [all in logs] and a landlocked dummy. Trade controls: Trade openness in % of GDP at PPP, indices of exportand import diversity. Ethnicity: Ethnic, linguistic fractionalization and genetic diversity. Geography: Absolute latitude, Malaria incidence area in % (1994) and population within 100km of icefree coast (%). Institutions: Polity2 institutional quality index. All models contain an intercept and year fixed effects (not shown).
Standard errors clustered by country.
*** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)	(3)	(4)	(5)	(6)
		Full sample			> median TFP/capita in 1970	
Dependent variable (log)	TFP/capita	TFP/capita	TFP/capita	TFP/capita	TFP/capita	TFP/capita
Birthplace Diversity, Immigrants, skilled	**0.732*** **	**0.672*** **	**0.564** **	**0.729*** **	**0.805*** **	**0.845** **
	(0.252)	**(0.236)**	**(0.269)**	**(0.276)**	**(0.310)**	**(0.356)**
Share Immigration, skilled	0.466	-0.130	-1381	0.408	-0.526	-0.905
	(0.303)	(0.911)	-1470	(0.350)	(0.778)	(0.678)
Years of schooling (log)	0.393**	0.405**	0.428***	0.386**	0.537**	0.598***
	(0.162)	(0.162)	(0.163)	(0.175)	(0.219)	(0.206)
Quality of institutions	0.0175*	0.0190*	0.0220**	0.0163*	0.0137	0.0124
	(0.0100)	(0.0101)	(0.0103)	(0.00990)	(0.0128)	(0.0132)
Observations	183	183	183	93	93	93
Adjusted R-squared	0.757	0.756	0.727	0.740	0.714	0.689
Instrument	Diversity (OLS, diversity 1960)	Diversity (OLS, 1960), Share Immigration (OLS)	Diversity (OLS, 1960), Share Immigration (PPML)	Diversity (OLS)	Diversity (OLS, 1960), Share Immigration (OLS)	Diversity (OLS, 1960), Share Immigration (PPML)
Kleibergen-Paap F-Test	37.51	3.077	3.187	30.07	9.327	11.40
Angrist-Pischke F-Test (Share of Immigration)		3.290	3.181		10.01	11.63
Angrist-Pischke F-Test (Birthplace Diversity)		28.13	26.25		32.40	26.75
Hansen-J Test (p-value)	0.410	0.275	0.122	0.766	0.444	0.423
Stock Yogo critical values at 10% and 15% max IV size	19.93 / 11.59	13.43 / 8.18	13.43 / 8.18	19.93 / 11.59	13.43 / 8.18	13.43 / 8.18

Endogenous variables instrumented using predicted values from gravity models (OLS or PPML) as well as birthplace diversity in 1960 (all skill levels). All models include basic controls for education and market size (average GDP/TFP of immigrants at origin, years of schooling, population, area size [all in logs] and a landlocked dummy. Trade controls: Trade openness in % of GDP at PPP, indices of exportand import diversity. Ethnicity: Ethnic, linguistic fractionalization and genetic diversity. Geography: Absolute latitude, Malaria incidence area in % (1994) and population within 100km of icefree coast (%). Institutions: Polity2 institutional quality index. All models contain an intercept and year fixed effects (not shown).
Standard errors clustered by country.
*** p<0.01, ** p<0.05, * p<0.1

Table 16: Genetic/cultural distance - augmented diversity (skilled/unskilled)

FULL MODEL

Birthplace Diversity (skilled) at different θ-values				p-value
θ-values	Coefficient (std error)	θ-values	Coefficient (std error)	H0: Equality of coefficients
0	0.180**	0	0.180**	n/a
	(0.0847)		(0.0847)	
2.5	0.158*	-2.5	0.179**	0.6766
	(0.0806)		(0.0862)	
5	0.0897	-5	0.182**	0.3136
	(0.0789)		(0.0865)	
7.5	0.0234	-7.5	0.187**	0.1493
	(0.0787)		(0.0867)	
10	-0.0153	-10	0.192**	0.0919*
	(0.0771)		(0.0868)	

> Median GDP/capita in 1970

Birthplace Diversity (skilled) at different θ-values				p-value
θ-values	Coefficient (std error)	θ-values	Coefficient (std error)	H0: Equality of coefficients
0	0.271***	0	0.271***	n/a
	(0.0761)		(0.0761)	
2.5	**0.197*** **	-2.5	0.313***	0.0276**
	(0.0684)		(0.0808)	
5	**0.141** **	-5	0.315***	0.0318**
	(0.0687)		(0.0810)	
7.5	**0.117**	-7.5	0.295***	0.0612*
	(0.0723)		(0.0806)	
10	**0.112**	-10	0.267***	0.1418
	(0.0768)		(0.0802)	

FULL MODEL

Birthplace Diversity (unskilled) at different θ-values				p-value
θ-values	Coefficient (std error)	θ-values	Coefficient (std error)	H0: Equality of coefficients
0	0.0831	0	0.0831	n/a
	(0.0531)		(0.0531)	
2.5	0.105*	-2.5	0.0672	0.2423
	(0.0582)		(0.0516)	
5	0.0978	-5	0.0644	0.5445
	(0.0595)		(0.0520)	
7.5	0.0697	-7.5	0.0669	0.9676
	(0.0588)		(0.0525)	
10	0.0453	-10	0.0701	0.7519
	(0.0590)		(0.0531)	

> Median GDP/capita in 1970

Birthplace Diversity (unskilled) at different θ-values				p-value
θ-values	Coefficient (std error)	θ-values	Coefficient (std error)	H0: Equality of coefficients
0	0.0725	0	0.0725	n/a
	(0.0603)		(0.0514)	
2.5	0.0673	-2.5	0.0720	0.9784
	(0.0492)		(0.0531)	
5	0.0636	-5	0.0647	0.9303
	(0.0469)		(0.0523)	
7.5	0.0637	-7.5	0.0547	0.6272
	(0.0443)		(0.0502)	
10	0.0662	-10	0.0450	0.7089
	(0.0425)		(0.0483)	

*Note: Standardized coefficients on augmented diversity index (equation 16) in full GDP/capita model using all covariates and time fixed effects. Standard errors clustered by country. Coefficients in bold indicate p< 0.05** in Wald test for equality of coefficients relative to* $\theta = 0$*, clustered by country.*

Table 17: Income (GDP) at origin - augmented diversity (skilled/unskilled)

FULL MODEL

Birthplace Diversity (skilled) at different θ-values				p-value
θ-values	Coefficient (std error)	θ-values	Coefficient (std error)	H0: Equality of coefficients
0	0.180**	0	0.180**	n/a
	(0.0847)		(0.0847)	
2.5	**0.247** **	-2.5	**0.125***	0.0277**
	(0.103)		(0.0708)	
5	0.294**	-5	**0.0972**	0.0398**
	(0.121)		(0.0649)	
7.5	0.315**	-7.5	**0.0857**	0.0615*
	(0.135)		(0.0635)	
10	0.321**	-10	**0.0811**	0.0911*
	(0.146)		(0.0635)	

> Median GDP/capita in 1970

Birthplace Diversity (skilled) at different θ-values				p-value
θ-values	Coefficient (std error)	θ-values	Coefficient (std error)	H0: Equality of coefficients
0	0.271***	0	0.271***	n/a
	(0.0761)		(0.0761)	
2.5	0.313***	-2.5	**0.219*** **	0.0095***
	(0.0842)		(0.0646)	
5	0.330***	-5	**0.187*** **	0.0128**
	(0.0878)		(0.0586)	
7.5	0.333***	-7.5	**0.173*** **	0.022**
	(0.0908)		(0.0570)	
10	0.329***	-10	**0.169*** **	0.0399**
	(0.0940)		(0.0570)	

FULL MODEL

Birthplace Diversity (unskilled) at different θ-values				p-value
θ-values	Coefficient (std error)	θ-values	Coefficient (std error)	H0: Equality of coefficients
0	0.0831	0	0.0831	n/a
	(0.0531)		(0.0531)	
2.5	0.119*	-2.5	0.0611	0.0788*
	(0.0673)		(0.0467)	
5	0.156*	-5	0.0523	0.1012
	(0.0846)		(0.0465)	
7.5	0.182*	-7.5	0.0492	0.134
	(0.101)		(0.0482)	
10	0.197*	-10	0.0482	0.1727
	(0.114)		(0.0497)	

> Median GDP/capita in 1970

Birthplace Diversity (unskilled) at different θ-values				p-value
θ-values	Coefficient (std error)	θ-values	Coefficient (std error)	H0: Equality of coefficients
0	0.0725	0	0.0725	n/a
	(0.0514)		(0.0514)	
2.5	**0.114***	-2.5	**0.0438**	0.0387**
	(0.0612)		(0.0485)	
5	0.152**	-5	**0.0294**	0.0413**
	(0.0743)		(0.0495)	
7.5	0.179**	-7.5	**0.0230**	0.0436**
	(0.0839)		(0.0511)	
10	0.195**	-10	**0.0203**	0.0324**
	(0.0885)		(0.0523)	

*Note: Standardized coefficients on augmented diversity index (equation 15) in full GDP/capita model using all covariates and time fixed effects. Standard errors clustered by country. Coefficients in bold indicate p< 0.05** in Wald test for equality of coefficients relative to* $\theta = 0$*, clustered by country.*

Table 18: Interacting genetic/cultural distance and income at origin

Dimension 2: Income at origin		Dimension 1: Genetic distance								
		θ < 0 - higher weight to closer groups					θ > 0 - lower weight to closer groups			
		-10	-7.5	-5	-2.5	0	2.5	5	7.5	10
θ < 0 - lower weight to richer groups	-10	**0.0893**	**0.114***	**0.141****	**0.163****	**0.169*****	**0.165*****	**0.168*****	0.179***	0.190***
		(0.0654)	**(0.0662)**	**(0.0659)**	**(0.0625)**	**(0.0570)**	**(0.0560)**	**(0.0584)**	(0.0590)	(0.0585)
	-7.5	**0.101**	**0.126***	**0.152****	**0.171*****	**0.173*****	**0.165*****	**0.164*****	0.173***	0.183***
		(0.0642)	**(0.0648)**	**(0.0645)**	**(0.0617)**	**(0.0570)**	**(0.0560)**	**(0.0577)**	(0.0576)	(0.0568)
	-5	0.127*	0.152**	0.176***	0.191***	**0.187*****	**0.169*****	**0.159*****	**0.162*****	**0.170*****
		(0.0643)	(0.0645)	(0.0640)	(0.0619)	**(0.0586)**	**(0.0571)**	**(0.0575)**	**(0.0564)**	**(0.0553)**
	-2.5	0.182**	0.207***	0.229***	0.237***	**0.219*****	**0.181*****	**0.153****	**0.145****	**0.148****
		(0.0701)	(0.0698)	(0.0691)	(0.0677)	**(0.0646)**	**(0.0610)**	**(0.0598)**	**(0.0588)**	**(0.0591)**
	0	0.267***	0.295***	0.315***	0.313***	0.271***	**0.197*****	**0.141****	**0.117**	**0.112**
		(0.0802)	(0.0806)	(0.0810)	(0.0808)	(0.0761)	**(0.0684)**	**(0.0687)**	**(0.0723)**	**(0.0768)**
θ > 0 - higher weight to richer groups	2.5	0.329***	**0.359*****	**0.380*****	**0.374*****	0.313***	0.205**	0.120	**0.0815**	**0.0710**
		(0.0785)	**(0.0795)**	**(0.0828)**	**(0.0870)**	(0.0842)	(0.0777)	(0.0846)	**(0.0923)**	**(0.0978)**
	5	0.351***	**0.380*****	**0.402*****	**0.397*****	0.330***	0.201**	0.0956	**0.0490**	**0.0361**
		(0.0758)	**(0.0763)**	**(0.0804)**	**(0.0870)**	(0.0878)	(0.0873)	(0.100)	**(0.106)**	**(0.109)**
	7.5	0.356***	**0.383*****	**0.405*****	**0.402*****	0.333***	0.190*	0.0734	**0.0236**	**0.0104**
		(0.0773)	**(0.0775)**	**(0.0814)**	**(0.0884)**	(0.0908)	(0.0961)	(0.111)	**(0.113)**	**(0.112)**
	10	0.355***	**0.381*****	**0.401*****	**0.399*****	0.329***	0.178*	0.0545	**0.00418**	**-0.00831**
		(0.0801)	**(0.0804)**	**(0.0843)**	**(0.0911)**	(0.0940)	(0.103)	(0.118)	**(0.116)**	**(0.112)**

Table shows coefficients and (country clustered) standard errors for standardized augmented diversity(mig) variable in model (equation 14).
Sample includes countries with above-median GDP/capita (PPP) in 1970.
*Coefficients in bold indicate $p < 0.05$** in Wald test for equality of coefficients relative to θ =(0;0), clustered by country.*

APPENDIX

Table A1: Data definitions and sources

Variable Name	Definion	Source
Income (Y)		
GDP/capita	log of GDP/capita in int. USD, PPP	Penn World Tables 7.0, Heston Summers Aten (2011)
TFP/capita	log of total factor productivity (TFP) / capita. TFP calculated using capital share (alpha) = 0.3, depreciation rate (delta) = 0.06. Capital stock calculated using perpetual inventory method based on 10 year average investment using starting values of series in 1960 and 1970.	Hall and Jones (1999), Penn World Tables, 7.0 Heston Summers Aten (2011)
Migration & Diversity		
Birthplace Diversity(Population)	Herfindahl index of overall population (above age 24) group shares based on country of origin (including native born population). Calculated by skill level: Overall, college-educated and non-college-educated workers	Own calculations, Docquier et al (2010)
Birthplace Diversity(Migrants)	Herfindahl index of immigrant population (above age 24) group shares based on country of origin (excluding native born population). Calculated by skill level: Overall, college-educated and non-college-educated workers	Own calculations, Docquier et al (2010)
Share of immigration	Sum of all immigrants / total population (above age 24), by skill level	Docquier et al (2010)
Market size controls		
Population size	Population size, log	Penn World Tables 7.0, Heston Summers Aten (2011)
Area size	Country area size in square kilometers, log	CEPII (2010), Head et al. (2010)
Landlockedness	Dummy =1 if country is landlocked	CEPII (2010), Head et al. (2010)
Education		
Years of schooling	Years of schooling, population > 25 years, log	Barro and Lee (2010)
Origin effects		
GDP/capita of immigrants	Weighted average of immigrants GDP/ capita at origin	Own calculations, PWT 7.0
TFP/capita of immigrants	Weighted average of immigrants TFP/ capita at origin	Own calculations, PWT 7.0
Trade openness		
Trade openness	Sum of exports and imports over GDP, in PPP	Penn World Tables 7.0, Heston Summers Aten (2011)
Diversity of trade (exports)	Herfindahl index of export shares with all trade partners, in nominal USD	Own calculations, Feenstra (2005)
Diversity of trade (imports)	Herfindahl index of import shares with all trade partners, in nominal USD, data for India 2000 based on 1999 due to lack of data for this country in 2000	Own calculations, Feenstra (2005)
Fractionalization		
Ethnic fractionalization	Herfindahl index of ethnic group shares	Alesina et al. (2003)
Linguistic fractionalization	Herfindahl index of linguistic group shares	Alesina et al. (2003)
(Predicted) genetic diversity	Expected heterozygosity of a country's population, predicted by migratory distances from East Africa and predicted pairwise genetic distance between ethnic groups within a country for population in 2000	Ashraf, Galor (2013)
Geography		
Absolute latitude	Absolute latitude of capital/90	Gallup, Sachs, Mellinger (1998)
Malaria area	% Malaria area in 1994	Gallup, Sachs, Mellinger (1998)
Coastal population	% Population within 100km from ice-free coast, 1995	Gallup, Sachs, Mellinger (1998)
Institutions		
Quality of institutions	Polity2- score -10: Most repressive, +10: Most democratic	PolityIV database, Marshall Jaggers (2009)
Other variables		
Tropical area	% land area in geographical tropics	Gallup, Sachs, Mellinger (1998)
Geography fixed effects	Latin America, South-Saharan Africa and South-East Asia	Rodriguez and Rodrik (2001)
Patent intensity	Average of patents granted (1995-2005) per capita	WIPO (2010)
Gravity model parameters		
Population size	Population size, log	CEPII (2010), Head et al. (2010)
Distance	Geodesic distance, log	CEPII (2010), Head et al. (2010)
Area size	Country area size in square kilometers, log	CEPII (2010), Head et al. (2010)
Landlocked	Dummy =1 for landlocked country	CEPII (2010), Head et al. (2010)
Common official language	Dummy =1 for pair with same official language	CEPII (2010), Head et al. (2010)
Common border	Dummy =1 for pair with common land border	CEPII (2010), Head et al. (2010)
Colony	Dummy =1 for pair ever in colonial relationship	CEPII (2010), Head et al. (2010)

Table A2: Descriptive statistics

Birthplace Diversity Index Descriptive Features (full sample)

Variable	Obs	Mean	St.Dev	Min	Max
GDP/Capita, PPP, log	183	8,39	1,38	4,77	10,71
TFP/Capita, PPP, log	183	6,16	0,93	3,41	7,64
Diversity(Pop), all	183	0,12	0,17	0,00	0,84
Diversity(Pop), skilled	183	0,14	0,14	0,00	0,76
Diversity(Pop), unskilled	183	0,12	0,17	0,00	0,87
Share of immigration, all	183	0,08	0,13	0,00	0,84
Share of immigration, skilled	183	0,08	0,10	0,00	0,61
Share of immigration, unskilled	183	0,08	0,14	0,00	0,91
Diversity(Mig), all	183	0,73	0,21	0,01	0,96
Diversity(Mig), skilled	183	0,71	0,26	0,00	0,97
Diversity(Mig), unskilled	183	0,72	0,22	0,01	0,96
Weighted GDP/capita (PPP, log) of immigrants, all	183	8,71	1,01	6,41	10,19
Weighted GDP/capita (PPP, log) of immigrants, unskilled	183	8,67	1,00	6,42	10,20
Weighted GDP/capita (PPP, log) of immigrants, skilled	183	8,87	1,13	4,77	10,18
Weighted TFP/capita (PPP, log) of immigrants, all	183	5,69	0,94	1,53	7,32
Weighted TFP/capita (PPP, log) of immigrants, skilled	183	5,83	0,99	1,18	7,30
Weighted TFP/capita (PPP, log) of immigrants, skilled	183	5,67	0,93	1,58	7,34
Population, log	183	9,69	1,36	6,84	14,05
Area in squared km, log	183	12,75	1,46	8,54	16,12
Landlocked dummy	183	0,18	0,39	0,00	1,00
Years of Schooling (log)	183	1,75	0,54	-0,10	2,54
Ethnic Fractionalization	183	0,45	0,26	0,00	0,93
Linguistic Fractionalization	183	0,40	0,31	0,00	0,92
Genetic Diversity	183	0,70	0,57	0,57	0,77
Trade openness (exp+imp/gdp at PPP)	183	64,76	40,93	11,99	364,18
Diversity of exports	183	0,83	0,15	0,20	0,95
Diversity of imports	183	0,85	0,11	0,40	0,96
Abs. distance equator, in degrees	183	0,29	0,19	0,00	0,71
Malaria area, 1994	183	0,41	0,43	0,00	1,00
Population within 100km of icefree coast	183	0,44	0,35	0,00	1,00
Polity2, institutional quality	183	3,48	6,81	-9,00	10,00

Table A3: List of countries with no immigration data

Country	Div(Pop), all skills 1990	Div(Pop), all skills 2000	Div(Pop), skilled 1990	Div(Pop), skilled 2000	Div(Pop), unskilled 1990	Div(Pop), unskilled 2000	Div(Mig), all skills 1990	Div(Mig), all skills 2000	Div(Mig), skilled 1990	Div(Mig), skilled 2000	Div(Mig), unskilled 1990	Div(Mig), unskilled 2000
Antigua and Barbuda	.		.	.	.		.		.	.	.	
Bahamas, The			.						.			
Barbados	.		.	.	.		.		.	.	.	
Belize	.		.		.		.		.		.	
Botswana			.	.					.	.		
Cape Verde			.	.					.	.		
Central African Republic				.						.		
Comoros			.	.					.	.		
Cuba			.			.			.			.
Dominica	.	.	.	.	.	.	.	.	.	.	.	.
Equatorial Guinea			.	.					.	.		
Eritrea			.	.					.	.		
Grenada	.	.	.	.	.	.	.	.	.	.	.	.
Guinea-Bissau	.		.	.	.		.		.	.	.	
Guyana	.		.	.	.		.		.	.	.	
Haiti			.						.			
Holy See (Vatican City)	.	.	.	.	.	.	.	.	.	.	.	.
Jamaica	.		.		.	.	.		.		.	.
Kiribati			.	.					.	.		
Lesotho			.	.					.	.		
Liberia				.						.		
Maldives			.	.					.	.		
Marshall Islands					.						.	
Mauritius			.						.			
Saint Kitts and Nevis	.	.	.	.	.	.	.	.	.	.	.	.
Saint Lucia	.	.	.	.	.	.	.	.	.	.	.	.
Saint Vincent & Grenadines			.	.	.	.			.	.	.	.
San Marino			.						.			
Sao Tome and Principe			.	.					.	.		
Seychelles			.	.					.	.		
Sierra Leone			.	.					.	.		
Solomon Islands			.	.					.	.		
Somalia			.	.					.	.		
Swaziland			.						.			
Tonga						.						.
Trinidad and Tobago			.						.			
Tuvalu	.	.	.	.	.	.	.	.	.	.	.	.
Vanuatu		.		.		.		.		.		.
Total	**13**	**8**	**33**	**27**	**14**	**11**	**13**	**8**	**33**	**27**	**14**	**11**

Table A4a: Diversity indices, 1990, list of countries

Country	Year	Alesina et al 2003 Ethnic	Alesina et al 2003 Linguistic	Overall population Birthplace, all	Overall population Birthplace, skilled	Overall population Birthplace, unskilled	Migrant population only Birthplace, all	Migrant population only Birthplace, skilled	Migrant population only Birthplace, unskilled
Afghanistan	1990	0,77	0,61	0,02	0,14	0,02	0,65	0,66	0,64
Albania	1990	0,22	0,04	0,09	0,11	0,09	0,17	0,26	0,15
Algeria	1990	0,34	0,44	0,03	0,14	0,02	0,62	0,59	0,60
American Samoa	1990	.	0,17	.	.	.	.	.	.
Andorra	1990	0,71	0,68	0,45	0,07	0,54	0,58	0,52	0,58
Angola	1990	0,79	0,79	0,02	0,00	0,02	0,68	0,00	0,68
Anguilla	1990	.	.	.	.	.	.	.	.
Antigua & Barbuda	1990	0,16	0,11	0,00	0,00	0,00	.	.	.
Argentina	1990	0,26	0,06	0,01	0,00	0,01	0,83	0,91	0,83
Armenia	1990	0,13	0,13	0,01	0,02	0,01	0,67	0,40	0,72
Aruba	1990	.	0,39	.	.	.	.	.	.
Australia	1990	0,09	0,33	0,49	0,57	0,46	0,88	0,94	0,83
Austria	1990	0,11	0,15	0,12	0,05	0,13	0,88	0,92	0,87
Azerbaijan	1990	0,20	0,21	0,01	0,02	0,00	0,56	0,49	0,58
Bahamas	1990	0,42	0,19	0,02	0,00	0,02	0,00	.	0,00
Bahrain	1990	0,50	0,43	0,57	0,73	0,55	0,91	0,93	0,90
Bangladesh	1990	0,05	0,09	0,02	0,14	0,02	0,07	0,10	0,06
Barbados	1990	0,14	0,09	0,00	0,00	0,00	.	.	.
Belarus	1990	0,32	0,47	0,02	0,02	0,01	0,64	0,56	0,65
Belgium	1990	0,56	0,54	0,21	0,12	0,23	0,91	0,92	0,90
Belize	1990	0,70	0,63	0,00	0,00	0,00	.	.	.
Benin	1990	0,79	0,79	0,20	0,22	0,20	0,74	0,63	0,74
Bermuda	1990	.	.	.	.	.	.	.	.
Bhutan	1990	0,61	0,61	0,10	0,36	0,07	0,09	0,10	0,09
Bolivia	1990	0,74	0,22	0,01	0,02	0,01	0,77	0,66	0,78
Bosnia and Herzegovina	1990	0,63	0,68	0,02	0,09	0,02	0,76	0,74	0,77
Botswana	1990	0,41	0,41	0,08	0,00	0,08	0,84	.	0,84
Brazil	1990	0,54	0,05	0,01	0,03	0,01	0,89	0,93	0,87
Brunei Darussalam	1990	0,54	0,34	0,54	0,27	0,57	0,60	0,42	0,61
Bulgaria	1990	0,40	0,30	0,01	0,01	0,00	0,93	0,93	0,93
Burkina Faso	1990	0,74	0,72	0,18	0,18	0,18	0,82	0,57	0,82
Burundi	1990	0,30	0,30	0,11	0,24	0,11	0,59	0,45	0,58
Cambodia	1990	0,21	0,21	0,02	0,24	0,01	0,52	0,54	0,50
Cameroon	1990	0,86	0,89	0,08	0,08	0,08	0,71	0,64	0,71
Canada	1990	0,71	0,58	0,37	0,42	0,33	0,94	0,94	0,93
Cape Verde	1990	0,42	.	0,21	0,00	0,22	0,72	.	0,72
Cayman Islands	1990	.	.	.	.	.	.	.	.
Central African Republic	1990	0,83	0,83	0,07	0,13	0,07	0,68	0,42	0,68
Chad	1990	0,86	0,86	0,05	0,26	0,05	0,78	0,46	0,78
Chile	1990	0,19	0,19	0,00	0,00	0,00	0,91	0,93	0,91
China	1990	0,15	0,13	0,00	0,00	0,00	0,59	0,64	0,54
Colombia	1990	0,60	0,02	0,01	0,01	0,01	0,95	0,87	0,95
Comoros	1990	0,00	0,01	0,05	0,00	0,05	0,33	.	0,33
Congo	1990	0,87	0,69	0,32	0,17	0,32	0,44	0,18	0,44
Congo, Democratic Republic	1990	0,87	0,87	0,05	0,25	0,05	0,93	0,85	0,93
Cook Islands	1990	.	.	.	.	.	.	.	.
Costa Rica	1990	0,24	0,05	0,30	0,29	0,30	0,48	0,93	0,35
Cote d'Ivoire	1990	0,82	0,78	0,73	0,39	0,73	0,63	0,93	0,63
Croatia	1990	0,37	0,08	0,24	0,48	0,22	0,48	0,61	0,45
Cuba	1990	0,59	.	0,00	0,00	0,00	0,00	.	0,00
Cyprus	1990	0,09	0,40	0,11	0,25	0,08	0,91	0,91	0,90
Czech Republic	1990	0,32	0,32	0,11	0,06	0,12	0,57	0,87	0,54
Denmark	1990	0,08	0,10	0,08	0,05	0,08	0,94	0,94	0,94
Djibouti	1990	0,80	0,66	0,62	0,19	0,64	0,64	0,46	0,64
Dominica	1990	0,20	.	0,00	0,00	0,00	.	.	.
Dominican Republic	1990	0,43	0,04	0,01	0,02	0,01	0,13	0,00	0,14
Ecuador	1990	0,66	0,13	0,01	0,01	0,01	0,49	0,54	0,48
Egypt	1990	0,18	0,02	0,01	0,06	0,01	0,87	0,90	0,84
El Salvador	1990	0,20	.	0,05	0,06	0,04	0,76	0,68	0,76
Equatorial Guinea	1990	0,35	0,32	0,03	0,00	0,03	0,61	.	0,61
Eritrea	1990	0,65	0,65	0,02	0,00	0,02	0,89	.	0,89
Estonia	1990	0,51	0,49	0,55	0,65	0,49	0,43	0,48	0,40
Ethiopia	1990	0,72	0,81	0,02	0,06	0,02	0,66	0,62	0,66
Falkland Islands (Malvinas)	1990	.	.	.	.	.	.	.	.
Faroe Islands	1990	.	.	.	.	.	.	.	.
Fiji	1990	0,55	0,55	0,08	0,51	0,05	0,69	0,66	0,70
Finland	1990	0,13	0,14	0,02	0,01	0,02	0,90	0,88	0,91
France	1990	0,10	0,12	0,18	0,08	0,20	0,91	0,97	0,90
French Guiana	1990	.	0,12	.	.	.	.	.	.
French Polynesia	1990	.	0,61	.	.	.	.	.	.
Gabon	1990	0,77	0,78	0,76	0,08	0,74	0,70	0,71	0,70
Gambia	1990	0,79	0,81	0,52	0,31	0,53	0,59	0,00	0,59
Georgia	1990	0,49	0,47	0,01	0,01	0,00	0,48	0,41	0,50
Germany	1990	0,17	0,16	0,11	0,09	0,12	0,89	0,96	0,87
Ghana	1990	0,67	0,67	0,36	0,24	0,36	0,78	0,84	0,77

Country	Year	Alesina et al 2003 Ethnic	Alesina et al 2003 Linguistic	Overall population Birthplace, all	Overall population Birthplace, skilled	Overall population Birthplace, unskilled	Migrant population only Birthplace, all	Migrant population only Birthplace, skilled	Migrant population only Birthplace, unskilled
Gibraltar	1990	.	.	.	.	.	.	.	.
Greece	1990	0,16	0,03	0,12	0,16	0,11	0,70	0,88	0,65
Greenland	1990	.	0,22	.	.	.	.	.	.
Grenada	1990	0,27	.	0,00	0,00	0,00	.	.	.
Guadeloupe	1990	.	0,09	.	.	.	.	.	.
Guam	1990	.	0,73	.	.	.	.	.	.
Guatemala	1990	0,51	0,46	0,05	0,11	0,05	0,78	0,83	0,76
Guinea	1990	0,74	0,77	0,15	0,15	0,15	0,52	0,50	0,52
Guinea-Bissau	1990	0,81	0,81	0,00	0,00	0,00	.	.	.
Guyana	1990	0,62	0,07	0,00	0,00	0,00	.	.	.
Haiti	1990	0,10	.	0,00	0,00	0,00	0,33	.	0,33
Honduras	1990	0,19	0,06	0,09	0,17	0,09	0,71	0,75	0,70
Hong Kong	1990	0,06	0,21	0,51	0,36	0,52	0,11	0,26	0,10
Hungary	1990	0,15	0,03	0,02	0,01	0,02	0,73	0,71	0,73
Iceland	1990	0,08	0,08	0,17	0,28	0,15	0,88	0,81	0,90
India	1990	0,42	0,81	0,01	0,03	0,01	0,62	0,71	0,61
Indonesia	1990	0,74	0,77	0,00	0,02	0,00	0,17	0,29	0,16
Iran, Islamic Republic of	1990	0,67	0,75	0,04	0,06	0,04	0,26	0,37	0,26
Iraq	1990	0,37	0,37	0,02	0,07	0,02	0,84	0,84	0,84
Ireland	1990	0,12	0,03	0,12	0,20	0,11	0,31	0,46	0,25
Israel	1990	0,34	0,55	0,74	0,46	0,80	0,91	0,90	0,91
Italy	1990	0,11	0,11	0,03	0,03	0,03	0,96	0,97	0,95
Jamaica	1990	0,41	0,11	0,00	0,00	0,00	.	.	.
Japan	1990	0,01	0,02	0,01	0,01	0,01	0,56	0,71	0,51
Jordan	1990	0,59	0,04	0,33	0,44	0,31	0,74	0,62	0,74
Kazakhstan	1990	0,62	0,66	0,03	0,04	0,02	0,46	0,37	0,48
Kenya	1990	0,86	0,89	0,01	0,07	0,01	0,61	0,63	0,61
Kiribati	1990	0,05	0,02	0,06	0,00	0,06	0,00	.	0,00
Korea, DPR	1990	0,04	0,00	.	.	.	.	.	.
Korea, Republic of	1990	0,00	0,00	0,01	0,02	0,01	0,83	0,88	0,76
Kuwait	1990	0,66	0,34	0,71	0,76	0,71	0,88	0,87	0,88
Kyrgyzstan	1990	0,68	0,59	0,02	0,06	0,02	0,60	0,45	0,64
Lao People's Democratic Republic	1990	0,51	0,64	0,04	0,33	0,03	0,59	0,58	0,59
Latvia	1990	0,59	0,58	0,56	0,61	0,55	0,62	0,56	0,63
Lebanon	1990	0,13	0,13	0,26	0,51	0,24	0,92	0,91	0,92
Lesotho	1990	0,26	0,25	0,01	0,00	0,01	0,28	.	0,28
Liberia	1990	0,91	0,90	0,18	0,10	0,18	0,59	0,50	0,59
Libyan Arab Jamahiriya	1990	0,79	0,08	0,46	0,74	0,41	0,63	0,65	0,62
Liechtenstein	1990	0,57	0,22	0,76	0,49	0,79	0,80	0,59	0,80
Lithuania	1990	0,32	0,32	0,22	0,26	0,21	0,69	0,69	0,69
Luxembourg	1990	0,53	0,64	0,43	0,36	0,45	0,84	0,90	0,80
Macau	1990	.	0,25	0,41	0,51	0,31	0,16	0,27	0,15
Macedonia	1990	0,50	0,50	0,08	0,11	0,07	0,76	0,83	0,75
Madagascar	1990	0,88	0,02	0,02	0,08	0,02	0,78	0,59	0,79
Malawi	1990	0,67	0,60	0,10	0,14	0,10	0,60	0,39	0,60
Malaysia	1990	0,59	0,60	0,20	0,27	0,20	0,55	0,73	0,54
Maldives	1990	.	.	0,09	0,00	0,10	0,52	.	0,52
Mali	1990	0,69	0,84	0,11	0,08	0,11	0,82	0,00	0,82
Malta	1990	0,04	0,09	0,11	0,50	0,07	0,83	0,87	0,79
Marshall Islands	1990	0,06	0,06	0,02	0,40	0,00	0,00	0,00	.
Martinique	1990	.	0,07	.	.	.	.	.	.
Mauritania	1990	0,62	0,33	0,15	0,06	0,15	0,55	0,00	0,55
Mauritius	1990	0,46	0,45	0,03	0,00	0,03	0,77	.	0,77
Mayotte	1990	.	0,72	.	.	.	.	.	.
Mexico	1990	0,54	0,15	0,01	0,03	0,01	0,84	0,89	0,79
Micronesia, Federated States of	1990	0,70	0,75	0,30	0,66	0,21	0,65	0,65	0,61
Moldova, Republic of	1990	0,55	0,55	0,02	0,04	0,01	0,48	0,49	0,45
Monaco	1990	0,68	0,73	0,78	0,37	0,81	0,73	0,00	0,76
Mongolia	1990	0,37	0,37	0,02	0,37	0,01	0,48	0,48	0,48
Montserrat	1990	.	.	.	.	.	.	.	.
Morocco	1990	0,48	0,47	0,01	0,09	0,01	0,66	0,42	0,70
Mozambique	1990	0,69	0,81	0,03	0,07	0,03	0,78	0,44	0,78
Myanmar	1990	0,51	0,51	0,01	0,14	0,01	0,62	0,70	0,58
Namibia	1990	0,63	0,70	0,23	0,03	0,24	0,79	0,00	0,79
Nauru	1990	0,58	0,62	0,20	0,26	0,18	0,57	0,00	0,61
Nepal	1990	0,66	0,72	0,09	0,48	0,08	0,01	0,00	0,01
Netherlands	1990	0,11	0,51	0,29	0,26	0,29	0,88	0,88	0,88
Netherlands Antilles	1990	.	0,25	.	.	.	.	.	.
New Caledonia	1990	.	0,66	.	.	.	.	.	.
New Zealand	1990	0,40	0,17	0,34	0,57	0,26	0,71	0,70	0,71
Nicaragua	1990	0,48	0,05	0,08	0,10	0,08	0,76	0,77	0,76
Niger	1990	0,65	0,65	0,14	0,27	0,13	0,80	0,72	0,80
Nigeria	1990	0,85	0,85	0,02	0,01	0,02	0,86	0,83	0,86
Niue	1990	.	.	.	.	.	.	.	.
Norfolk Island	1990	.	.	.	.	.	.	.	.
Northern Mariana Islands	1990	.	0,78	.	.	.	.	.	.

Country	Year	Alesina et al 2003 Ethnic	Linguistic	Overall population Birthplace, all	Birthplace, skilled	Birthplace, unskilled	Migrant population only Birthplace, all	Birthplace, skilled	Birthplace, unskilled
Norway	1990	0,06	0,07	0,10	0,14	0,09	0,94	0,94	0,94
Oman	1990	0,44	0,36	0,58	0,70	0,56	0,70	0,70	0,70
Pakistan	1990	0,71	0,72	0,08	0,29	0,07	0,10	0,15	0,09
Palau	1990	0,43	0,32	0,23	0,50	0,18	0,00	0,00	0,00
Palestinian Territory, Occupied	1990	.	0,14	0,85	0,88	0,84	0,82	0,87	0,82
Panama	1990	0,55	0,39	0,20	0,17	0,21	0,87	0,85	0,87
Papua New Guinea	1990	0,27	0,35	0,05	0,75	0,03	0,81	0,81	0,81
Paraguay	1990	0,17	0,60	0,05	0,08	0,05	0,61	0,55	0,62
Peru	1990	0,66	0,34	0,00	0,00	0,00	0,91	0,79	0,91
Philippines	1990	0,24	0,84	0,01	0,04	0,01	0,72	0,79	0,65
Poland	1990	0,12	0,05	0,08	0,11	0,08	0,76	0,77	0,76
Portugal	1990	0,05	0,02	0,02	0,03	0,01	0,90	0,90	0,88
Puerto Rico	1990	.	0,04	.	.	.	.	.	.
Qatar	1990	0,75	0,48	0,79	0,83	0,78	0,87	0,89	0,87
Reunion	1990	.	0,16	.	.	.	.	.	.
Romania	1990	0,31	0,17	0,01	0,05	0,01	0,92	0,95	0,91
Russian Federation	1990	0,25	0,25	0,10	0,07	0,11	0,62	0,76	0,60
Rwanda	1990	0,32	.	0,08	0,70	0,08	0,66	0,66	0,66
Saint Helena	1990	.	.	.	.	.	.	.	.
Saint Kitts and Nevis	1990	0,18	.	0,00	0,00	0,00	.	.	.
Saint Lucia	1990	0,18	0,32	0,00	0,00	0,00	.	.	.
Saint Pierre and Miquelon	1990	.	.	.	.	.	.	.	.
Saint Vincent and the Grenadines	1990	0,31	0,02	0,00	0,00	0,00	.	.	.
Samoa	1990	0,14	0,01	0,07	0,44	0,04	0,00	0,00	0,00
San Marino	1990	0,29	.	0,46	0,00	0,54	0,82	.	0,82
Sao Tome and Principe	1990	.	0,23	0,33	0,00	0,33	0,49	.	0,49
Saudi Arabia	1990	0,18	0,09	0,66	0,80	0,64	0,89	0,89	0,89
Senegal	1990	0,69	0,70	0,25	0,15	0,26	0,81	0,57	0,81
Serbia and Montenegro	1990	0,57	.	0,02	0,07	0,01	0,83	0,79	0,84
Seychelles	1990	0,20	0,16	0,16	0,00	0,18	0,69	.	0,69
Sierra Leone	1990	0,82	0,76	0,11	0,00	0,11	0,43	.	0,43
Singapore	1990	0,39	0,38	0,37	0,19	0,41	0,64	0,57	0,64
Slovakia	1990	0,25	0,26	0,00	0,01	0,00	0,69	0,60	0,70
Slovenia	1990	0,22	0,22	0,23	0,23	0,23	0,76	0,76	0,74
Solomon Islands	1990	0,11	0,53	0,04	0,00	0,04	0,49	.	0,49
Somalia	1990	0,81	0,03	0,01	0,00	0,01	0,89	.	0,89
South Africa	1990	0,75	0,87	0,08	0,25	0,07	0,89	0,88	0,87
Spain	1990	0,42	0,41	0,06	0,08	0,05	0,94	0,95	0,94
Sri Lanka	1990	0,42	0,46	0,03	0,16	0,03	0,05	0,04	0,05
Sudan	1990	.	.	0,04	0,05	0,04	0,91	0,76	0,91
Suriname	1990	0,73	0,33	0,06	0,04	0,06	0,76	0,00	0,77
Swaziland	1990	0,06	0,17	0,29	0,00	0,30	0,55	.	0,55
Sweden	1990	0,06	0,20	0,19	0,15	0,20	0,87	0,92	0,86
Switzerland	1990	0,53	0,54	0,42	0,33	0,44	0,90	0,92	0,88
Syrian Arab Republic	1990	0,54	0,18	0,09	0,18	0,08	0,43	0,62	0,38
Taiwan	1990	0,27	0,50	0,00	0,01	0,00	0,83	0,81	0,83
Tajikistan	1990	0,51	0,55	0,02	0,07	0,01	0,54	0,43	0,59
Tanzania, United Republic of	1990	0,74	0,90	0,04	0,07	0,04	0,83	0,79	0,82
Thailand	1990	0,63	0,63	0,01	0,04	0,01	0,69	0,74	0,68
Timor Leste	1990	.	0,53	0,15	0,46	0,12	0,00	0,00	0,00
Togo	1990	0,71	0,90	0,25	0,22	0,26	0,72	0,69	0,72
Tokelau	1990	.	.	.	.	.	.	.	.
Tonga	1990	0,09	0,38	0,07	0,41	0,05	0,00	0,00	0,00
Trinidad and Tobago	1990	0,65	0,13	0,00	0,00	0,01	0,49	.	0,49
Tunisia	1990	0,04	0,01	0,03	0,24	0,02	0,82	0,83	0,78
Turkey	1990	0,32	0,22	0,04	0,09	0,04	0,65	0,67	0,64
Turkmenistan	1990	0,39	0,40	0,02	0,03	0,02	0,56	0,20	0,62
Turks and Caicos	1990	.	.	.	.	.	.	.	.
Tuvalu	1990	0,16	0,14	0,00	0,00	0,00	.	.	.
Uganda	1990	0,93	0,92	0,09	0,05	0,09	0,74	0,91	0,74
Ukraine	1990	0,47	0,47	0,12	0,19	0,11	0,40	0,42	0,40
United Arab Emirates	1990	0,63	0,49	0,68	0,79	0,66	0,82	0,82	0,82
United Kingdom	1990	0,12	0,05	0,14	0,17	0,13	0,94	0,96	0,93
United States of America	1990	0,49	0,25	0,18	0,18	0,17	0,95	0,97	0,91
Uruguay	1990	0,25	0,08	0,02	0,01	0,03	0,74	0,59	0,74
Uzbekistan	1990	0,41	0,41	0,01	0,04	0,01	0,66	0,56	0,68
Vanuatu	1990	0,04	0,58	0,04	0,56	0,01	0,62	0,66	0,00
Venezuela	1990	0,50	0,07	0,11	0,04	0,12	0,82	0,90	0,82
Viet Nam	1990	0,24	0,24	0,00	0,01	0,00	0,63	0,68	0,60
Virgin Islands, British	1990	.	.	.	.	.	.	.	.
Virgin Islands, U.S.	1990	.	0,31	.	.	.	.	.	.
Wallis and Futuna	1990	.	.	.	.	.	.	.	.
Yemen	1990	.	0,01	0,10	0,92	0,08	0,93	0,91	0,93
Zambia	1990	0,78	0,87	0,06	0,07	0,06	0,83	0,49	0,83
Zimbabwe	1990	0,39	0,45	0,16	0,03	0,16	0,77	0,67	0,77

Table A4b: Diversity indices, 2000, list of countries

		Alesina et al 2003		Overall population			Migrant population only		
Country	Year	Ethnic	Linguistic	Birthplace, all	Birthplace, skilled	Birthplace, unskilled	Birthplace, all	Birthplace, skilled	Birthplace, unskilled
Afghanistan	2000	0,77	0,61	0,01	0,08	0,01	0,66	0,68	0,66
Albania	2000	0,22	0,04	0,12	0,08	0,12	0,16	0,26	0,15
Algeria	2000	0,34	0,44	0,02	0,04	0,02	0,56	0,57	0,54
American Samoa	2000	.	0,17	.	.	.	.	.	.
Andorra	2000	0,71	0,68	0,38	0,10	0,47	0,57	0,48	0,57
Angola	2000	0,79	0,79	0,03	0,01	0,03	0,54	0,00	0,55
Anguilla	2000	.	.	.	.	.	.	.	.
Antigua & Barbuda	2000	0,16	0,11	0,02	0,00	0,02	0,00	.	0,00
Argentina	2000	0,26	0,06	0,07	0,03	0,08	0,89	0,95	0,88
Armenia	2000	0,13	0,13	0,05	0,06	0,04	0,86	0,79	0,87
Aruba	2000	.	0,39	.	.	.	.	.	.
Australia	2000	0,09	0,33	0,47	0,60	0,40	0,90	0,92	0,88
Austria	2000	0,11	0,15	0,26	0,15	0,28	0,91	0,92	0,91
Azerbaijan	2000	0,20	0,21	0,02	0,04	0,02	0,70	0,53	0,71
Bahamas	2000	0,42	0,19	0,04	0,13	0,02	0,53	0,64	0,33
Bahrain	2000	0,50	0,43	0,64	0,87	0,60	0,92	0,93	0,91
Bangladesh	2000	0,05	0,09	0,01	0,05	0,01	0,06	0,06	0,06
Barbados	2000	0,14	0,09	0,01	0,00	0,01	0,66	.	0,66
Belarus	2000	0,32	0,47	0,02	0,02	0,02	0,64	0,56	0,65
Belgium	2000	0,56	0,54	0,24	0,17	0,26	0,93	0,94	0,91
Belize	2000	0,70	0,63	0,39	0,26	0,40	0,77	0,89	0,75
Benin	2000	0,79	0,79	0,24	0,12	0,24	0,73	0,61	0,73
Bermuda	2000	.	.	.	.	.	.	.	.
Bhutan	2000	0,61	0,61	0,08	0,46	0,07	0,10	0,11	0,10
Bolivia	2000	0,74	0,22	0,03	0,08	0,02	0,90	0,91	0,87
Bosnia and Herzegovina	2000	0,63	0,68	0,02	0,05	0,02	0,77	0,66	0,79
Botswana	2000	0,41	0,41	0,08	0,00	0,08	0,88	.	0,88
Brazil	2000	0,54	0,05	0,01	0,02	0,01	0,89	0,93	0,87
Brunei Darussalam	2000	0,54	0,34	0,42	0,44	0,42	0,62	0,54	0,64
Bulgaria	2000	0,40	0,30	0,03	0,05	0,02	0,93	0,93	0,93
Burkina Faso	2000	0,74	0,72	0,31	0,16	0,31	0,55	0,19	0,55
Burundi	2000	0,30	0,30	0,06	0,08	0,06	0,48	0,50	0,47
Cambodia	2000	0,21	0,21	0,08	0,39	0,07	0,49	0,53	0,48
Cameroon	2000	0,86	0,89	0,03	0,06	0,03	0,66	0,54	0,67
Canada	2000	0,71	0,58	0,40	0,44	0,34	0,96	0,96	0,95
Cape Verde	2000	0,42	.	0,19	0,00	0,20	0,69	.	0,69
Cayman Islands	2000	.	.	.	.	.	.	.	.
Central African Republic	2000	0,83	0,83	0,01	0,00	0,01	0,72	.	0,72
Chad	2000	0,86	0,86	0,05	0,13	0,05	0,74	0,46	0,75
Chile	2000	0,19	0,19	0,01	0,01	0,01	0,89	0,94	0,87
China	2000	0,15	0,13	0,00	0,00	0,00	0,87	0,87	0,87
Colombia	2000	0,60	0,02	0,00	0,01	0,00	0,95	0,91	0,95
Comoros	2000	0,00	0,01	0,05	0,00	0,05	0,10	.	0,10
Congo	2000	0,87	0,69	0,02	0,01	0,02	0,72	0,00	0,73
Congo, Democratic Republic	2000	0,87	0,87	0,03	0,11	0,03	0,93	0,86	0,94
Cook Islands	2000	.	.	.	.	.	.	.	.
Costa Rica	2000	0,24	0,05	0,17	0,16	0,17	0,48	0,91	0,34
Cote d'Ivoire	2000	0,82	0,78	0,72	0,31	0,72	0,63	0,93	0,63
Croatia	2000	0,37	0,08	0,28	0,37	0,27	0,40	0,53	0,37
Cuba	2000	0,59	.	0,00	0,00	0,00	0,00	0,00	.
Cyprus	2000	0,09	0,40	0,17	0,36	0,12	0,91	0,91	0,90
Czech Republic	2000	0,32	0,32	0,11	0,12	0,11	0,57	0,70	0,55
Denmark	2000	0,08	0,10	0,12	0,10	0,12	0,96	0,96	0,95
Djibouti	2000	0,80	0,66	0,39	0,04	0,40	0,63	0,00	0,63
Dominica	2000	0,20	.	0,00	0,00	0,00	.	.	.
Dominican Republic	2000	0,43	0,04	0,02	0,07	0,01	0,75	0,82	0,67
Ecuador	2000	0,66	0,13	0,02	0,01	0,02	0,61	0,63	0,60
Egypt	2000	0,18	0,02	0,01	0,04	0,01	0,90	0,93	0,88
El Salvador	2000	0,20	.	0,02	0,01	0,02	0,70	0,64	0,69
Equatorial Guinea	2000	0,35	0,32	0,04	0,00	0,05	0,47	.	0,47
Eritrea	2000	0,65	0,65	0,01	0,00	0,01	0,79	.	0,79
Estonia	2000	0,51	0,49	0,40	0,54	0,36	0,41	0,46	0,39
Ethiopia	2000	0,72	0,81	0,02	0,02	0,02	0,60	0,49	0,61
Falkland Islands (Malvinas)	2000	.	.	.	.	.	.	.	.
Faroe Islands	2000	.	.	.	.	.	.	.	.
Fiji	2000	0,55	0,55	0,07	0,36	0,04	0,71	0,66	0,74
Finland	2000	0,13	0,14	0,05	0,04	0,05	0,89	0,86	0,90
France	2000	0,10	0,12	0,17	0,12	0,19	0,92	0,96	0,91
French Guiana	2000	.	0,12	.	.	.	.	.	.
French Polynesia	2000	.	0,61	.	.	.	.	.	.
Gabon	2000	0,77	0,78	0,84	0,20	0,87	0,89	0,87	0,89
Gambia	2000	0,79	0,81	0,69	0,24	0,69	0,57	0,00	0,57
Georgia	2000	0,49	0,47	0,03	0,03	0,03	0,63	0,43	0,66
Germany	2000	0,17	0,16	0,15	0,13	0,16	0,90	0,97	0,87
Ghana	2000	0,67	0,67	0,46	0,11	0,49	0,81	0,89	0,81

Country	Year	Alesina et al 2003 Ethnic	Alesina et al 2003 Linguistic	Overall population Birthplace, all	Overall population Birthplace, skilled	Overall population Birthplace, unskilled	Migrant population only Birthplace, all	Migrant population only Birthplace, skilled	Migrant population only Birthplace, unskilled
Gibraltar	2000	.	.	.	.	.	.	.	.
Greece	2000	0,16	0,03	0,11	0,11	0,11	0,70	0,88	0,66
Greenland	2000	.	0,22	.	.	.	.	.	.
Grenada	2000	0,27	.	0,00	0,00	0,00	.	.	.
Guadeloupe	2000	.	0,09	.	.	.	.	.	.
Guam	2000	.	0,73	.	.	.	.	.	.
Guatemala	2000	0,51	0,46	0,02	0,03	0,02	0,72	0,74	0,71
Guinea	2000	0,74	0,77	0,08	0,14	0,08	0,70	0,89	0,68
Guinea-Bissau	2000	0,81	0,81	0,05	0,00	0,05	0,51	.	0,51
Guyana	2000	0,62	0,07	0,01	0,00	0,01	0,00	.	0,00
Haiti	2000	0,10	.	0,00	0,02	0,00	0,29	0,00	0,31
Honduras	2000	0,19	0,06	0,01	0,07	0,01	0,84	0,91	0,76
Hong Kong	2000	0,06	0,21	0,52	0,46	0,52	0,23	0,43	0,19
Hungary	2000	0,15	0,03	0,01	0,01	0,01	0,73	0,72	0,73
Iceland	2000	0,08	0,08	0,23	0,38	0,19	0,91	0,87	0,92
India	2000	0,42	0,81	0,01	0,01	0,01	0,61	0,70	0,60
Indonesia	2000	0,74	0,77	0,00	0,00	0,00	0,63	0,69	0,61
Iran, Islamic Republic of	2000	0,67	0,75	0,02	0,03	0,02	0,33	0,36	0,32
Iraq	2000	0,37	0,37	0,01	0,02	0,01	0,85	0,83	0,85
Ireland	2000	0,12	0,03	0,22	0,41	0,16	0,54	0,67	0,44
Israel	2000	0,34	0,55	0,69	0,76	0,65	0,94	0,91	0,94
Italy	2000	0,11	0,11	0,04	0,04	0,04	0,96	0,97	0,95
Jamaica	2000	0,41	0,11	0,00	0,05	0,00	0,50	0,50	.
Japan	2000	0,01	0,02	0,02	0,02	0,02	0,75	0,81	0,73
Jordan	2000	0,59	0,04	0,19	0,22	0,19	0,80	0,79	0,80
Kazakhstan	2000	0,62	0,66	0,12	0,15	0,11	0,54	0,42	0,56
Kenya	2000	0,86	0,89	0,04	0,19	0,04	0,62	0,62	0,59
Kiribati	2000	0,05	0,02	0,02	0,00	0,02	0,00	.	0,00
Korea, DPR	2000	0,04	0,00	.	.	.	.	.	.
Korea, Republic of	2000	0,00	0,00	0,01	0,01	0,01	0,83	0,88	0,76
Kuwait	2000	0,66	0,34	0,73	0,81	0,71	0,88	0,87	0,88
Kyrgyzstan	2000	0,68	0,59	0,25	0,25	0,25	0,70	0,70	0,70
Lao People's Democratic Republic	2000	0,51	0,64	0,04	0,21	0,03	0,51	0,52	0,50
Latvia	2000	0,59	0,58	0,42	0,37	0,43	0,75	0,79	0,74
Lebanon	2000	0,13	0,13	0,24	0,44	0,21	0,94	0,93	0,95
Lesotho	2000	0,26	0,25	0,00	0,00	0,00	0,00	.	0,00
Liberia	2000	0,91	0,90	0,13	0,00	0,14	0,55	.	0,55
Libyan Arab Jamahiriya	2000	0,79	0,08	0,32	0,63	0,27	0,64	0,67	0,62
Liechtenstein	2000	0,57	0,22	0,67	0,44	0,72	0,79	0,59	0,80
Lithuania	2000	0,32	0,32	0,17	0,21	0,16	0,69	0,69	0,69
Luxembourg	2000	0,53	0,64	0,53	0,45	0,56	0,85	0,89	0,80
Macau	2000	.	0,25	0,41	0,56	0,36	0,16	0,25	0,14
Macedonia	2000	0,50	0,50	0,05	0,07	0,04	0,81	0,86	0,80
Madagascar	2000	0,88	0,02	0,01	0,04	0,01	0,77	0,54	0,77
Malawi	2000	0,67	0,60	0,07	0,06	0,07	0,78	0,34	0,78
Malaysia	2000	0,59	0,60	0,13	0,09	0,14	0,65	0,88	0,62
Maldives	2000	.	.	0,02	0,00	0,02	0,00	.	0,00
Mali	2000	0,69	0,84	0,10	0,09	0,10	0,77	0,28	0,77
Malta	2000	0,04	0,09	0,14	0,46	0,09	0,83	0,87	0,79
Marshall Islands	2000	0,06	0,06	0,08	0,34	0,05	0,00	0,00	0,00
Martinique	2000	.	0,07	.	.	.	.	.	.
Mauritania	2000	0,62	0,33	0,15	0,03	0,15	0,50	0,00	0,50
Mauritius	2000	0,46	0,45	0,08	0,04	0,09	0,59	0,50	0,59
Mayotte	2000	.	0,72	.	.	.	.	.	.
Mexico	2000	0,54	0,15	0,01	0,03	0,00	0,83	0,88	0,78
Micronesia, Federated States of	2000	0,70	0,75	0,11	0,63	0,05	0,62	0,50	0,50
Moldova, Republic of	2000	0,55	0,55	0,08	0,07	0,08	0,52	0,58	0,50
Monaco	2000	0,68	0,73	0,74	0,36	0,80	0,75	0,25	0,78
Mongolia	2000	0,37	0,37	0,01	0,10	0,01	0,64	0,63	0,64
Montserrat	2000	.	.	.	.	.	.	.	.
Morocco	2000	0,48	0,47	0,01	0,04	0,00	0,83	0,83	0,83
Mozambique	2000	0,69	0,81	0,05	0,11	0,05	0,82	0,54	0,82
Myanmar	2000	0,51	0,51	0,00	0,02	0,00	0,59	0,49	0,60
Namibia	2000	0,63	0,70	0,11	0,07	0,12	0,77	0,00	0,78
Nauru	2000	0,58	0,62	0,19	0,45	0,16	0,43	0,00	0,47
Nepal	2000	0,66	0,72	0,08	0,32	0,07	0,08	0,11	0,08
Netherlands	2000	0,11	0,51	0,29	0,29	0,29	0,90	0,88	0,90
Netherlands Antilles	2000	.	0,25	.	.	.	.	.	.
New Caledonia	2000	.	0,66	.	.	.	.	.	.
New Zealand	2000	0,40	0,17	0,37	0,55	0,30	0,83	0,83	0,83
Nicaragua	2000	0,48	0,05	0,05	0,06	0,04	0,79	0,94	0,75
Niger	2000	0,65	0,65	0,12	0,12	0,12	0,75	0,66	0,75
Nigeria	2000	0,85	0,85	0,03	0,02	0,03	0,83	0,84	0,83
Niue	2000	.	.	.	.	.	.	.	.
Norfolk Island	2000	.	.	.	.	.	.	.	.
Northern Mariana Islands	2000	.	0,78	.	.	.	.	.	.

		Alesina et al 2003		Overall population			Migrant population only		
Country	Year	Ethnic	Linguistic	Birthplace, all	Birthplace, skilled	Birthplace, unskilled	Birthplace, all	Birthplace, skilled	Birthplace, unskilled
Norway	2000	0,06	0,07	0,14	0,18	0,13	0,96	0,95	0,96
Oman	2000	0,44	0,36	0,58	0,72	0,56	0,70	0,70	0,70
Pakistan	2000	0,71	0,72	0,03	0,16	0,03	0,09	0,10	0,09
Palau	2000	0,43	0,32	0,34	0,67	0,25	0,54	0,57	0,51
Palestinian Territory, Occupied	2000	.	0,01	0,79	0,80	0,78	0,80	0,88	0,79
Panama	2000	0,55	0,39	0,08	0,08	0,08	0,88	0,91	0,86
Papua New Guinea	2000	0,27	0,35	0,02	0,38	0,01	0,76	0,79	0,72
Paraguay	2000	0,17	0,60	0,09	0,19	0,08	0,65	0,77	0,59
Peru	2000	0,66	0,34	0,00	0,00	0,00	0,90	0,79	0,90
Philippines	2000	0,24	0,84	0,01	0,02	0,01	0,91	0,91	0,90
Poland	2000	0,12	0,05	0,06	0,07	0,06	0,76	0,77	0,76
Portugal	2000	0,05	0,02	0,04	0,06	0,04	0,91	0,93	0,90
Puerto Rico	2000	.	0,04	.	.	.	.	.	.
Qatar	2000	0,75	0,48	0,86	0,94	0,84	0,94	0,94	0,94
Reunion	2000	.	0,16	.	.	.	.	.	.
Romania	2000	0,31	0,17	0,01	0,04	0,01	0,92	0,95	0,90
Russian Federation	2000	0,25	0,25	0,10	0,09	0,10	0,77	0,80	0,76
Rwanda	2000	0,32	.	0,10	0,33	0,09	0,66	0,68	0,66
Saint Helena	2000	.	.	.	.	.	.	.	.
Saint Kitts and Nevis	2000	0,18	.	0,00	0,00	0,00	.	.	.
Saint Lucia	2000	0,18	0,32	0,00	0,00	0,00	.	.	.
Saint Pierre and Miquelon	2000	.	.	.	.	.	.	.	.
Saint Vincent and the Grenadines	2000	0,31	0,02	0,00	0,00	0,00	.	.	.
Samoa	2000	0,14	0,01	0,10	0,48	0,06	0,13	0,27	0,00
San Marino	2000	0,29	.	0,41	0,13	0,48	0,81	0,00	0,82
Sao Tome and Principe	2000	.	0,23	0,19	0,00	0,19	0,36	.	0,36
Saudi Arabia	2000	0,18	0,09	0,55	0,73	0,52	0,89	0,89	0,89
Senegal	2000	0,69	0,70	0,25	0,09	0,26	0,79	0,73	0,79
Serbia and Montenegro	2000	0,57	.	0,05	0,15	0,04	0,86	0,87	0,86
Seychelles	2000	0,20	0,16	0,22	0,00	0,25	0,70	.	0,70
Sierra Leone	2000	0,82	0,76	0,09	0,00	0,10	0,35	.	0,35
Singapore	2000	0,39	0,38	0,34	0,41	0,32	0,61	0,70	0,58
Slovakia	2000	0,25	0,26	0,01	0,02	0,01	0,69	0,63	0,71
Slovenia	2000	0,22	0,22	0,21	0,17	0,21	0,71	0,76	0,69
Solomon Islands	2000	0,11	0,53	0,01	0,00	0,01	0,42	.	0,42
Somalia	2000	0,81	0,03	0,00	0,00	0,00	0,80	.	0,80
South Africa	2000	0,75	0,87	0,07	0,15	0,06	0,89	0,89	0,86
Spain	2000	0,42	0,41	0,11	0,13	0,10	0,94	0,95	0,94
Sri Lanka	2000	0,42	0,46	0,02	0,08	0,01	0,04	0,00	0,05
Sudan	2000	.	.	0,02	0,02	0,02	0,93	0,84	0,93
Suriname	2000	0,73	0,33	0,13	0,10	0,13	0,72	0,00	0,71
Swaziland	2000	0,06	0,17	0,12	0,03	0,12	0,61	0,00	0,60
Sweden	2000	0,06	0,20	0,23	0,21	0,23	0,92	0,95	0,91
Switzerland	2000	0,53	0,54	0,41	0,43	0,41	0,92	0,92	0,91
Syrian Arab Republic	2000	0,54	0,18	0,05	0,06	0,05	0,36	0,55	0,33
Taiwan	2000	0,27	0,50	0,04	0,06	0,04	0,83	0,85	0,81
Tajikistan	2000	0,51	0,55	0,06	0,12	0,06	0,70	0,57	0,72
Tanzania, United Republic of	2000	0,74	0,90	0,02	0,02	0,02	0,86	0,79	0,85
Thailand	2000	0,63	0,63	0,02	0,05	0,02	0,83	0,86	0,82
Timor Leste	2000	.	0,53	0,16	0,45	0,15	0,02	0,00	0,03
Togo	2000	0,71	0,90	0,21	0,06	0,21	0,67	0,38	0,67
Tokelau	2000	.	.	.	.	.	.	.	.
Tonga	2000	0,09	0,38	0,01	0,16	0,00	0,00	0,00	.
Trinidad and Tobago	2000	0,65	0,13	0,08	0,06	0,08	0,75	0,87	0,73
Tunisia	2000	0,04	0,01	0,03	0,11	0,02	0,79	0,81	0,77
Turkey	2000	0,32	0,22	0,04	0,10	0,03	0,71	0,76	0,68
Turkmenistan	2000	0,39	0,40	0,06	0,12	0,05	0,72	0,60	0,75
Turks and Caicos	2000	.	.	.	.	.	.	.	.
Tuvalu	2000	0,16	0,14	0,00	0,00	0,00	.	.	.
Uganda	2000	0,93	0,92	0,05	0,19	0,05	0,80	0,82	0,79
Ukraine	2000	0,47	0,47	0,09	0,12	0,08	0,55	0,51	0,57
United Arab Emirates	2000	0,63	0,49	0,77	0,84	0,75	0,82	0,82	0,82
United Kingdom	2000	0,12	0,05	0,17	0,28	0,14	0,96	0,96	0,95
United States of America	2000	0,49	0,25	0,25	0,21	0,28	0,92	0,97	0,84
Uruguay	2000	0,25	0,08	0,04	0,04	0,04	0,73	0,65	0,74
Uzbekistan	2000	0,41	0,41	0,05	0,09	0,04	0,74	0,63	0,76
Vanuatu	2000	0,04	0,58	0,00	0,00	0,00	.	.	.
Venezuela	2000	0,50	0,07	0,08	0,04	0,09	0,82	0,86	0,82
Viet Nam	2000	0,24	0,24	0,00	0,01	0,00	0,77	0,78	0,76
Virgin Islands, British	2000	.	.	.	.	.	.	.	.
Virgin Islands, U.S.	2000	.	0,31	.	.	.	.	.	.
Wallis and Futuna	2000	.	.	.	.	.	.	.	.
Yemen	2000	.	0,01	0,05	0,29	0,05	0,92	0,90	0,92
Zambia	2000	0,78	0,87	0,03	0,04	0,03	0,82	0,56	0,82
Zimbabwe	2000	0,39	0,45	0,09	0,04	0,09	0,78	0,71	0,78