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EUI Working Papers

SPS No. 2007/05

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EUI Working Paper **SPS** No. 2007/05

ISSN 1725-6755

Printed in Italy
European University Institute
Badia Fiesolana
I – 50014 San Domenico di Fiesole (FI)
Italy

http://www.eui.eu/
http://cadmus.eui.eu/

Abstract

Why do immigrants in different countries perform differently at school, and what explains the fact that immigrants from different countries of origin perform differently? This paper explores the extent to which the macro-level characteristics of destination and origin countries and immigrant communities can explain differences in educational achievement. Using data from the 2003 PISA survey, analyses on the mathematical performance of 7459 immigrants, originating in 48 different countries and 94 communities, in 13 countries of destination are performed. Cross-classified multilevel analysis shows that the better educational performance of immigrants in traditional immigrant receiving countries cannot be reduced to compositional effects caused by strict immigration laws. Furthermore, it is found that immigrants from predominantly Islamic countries perform worse at school than immigrants from predominantly Christian countries. This can be explained by the greater cultural and socio-economic distance from the native population. Results indicate that the characteristics of countries of destination, countries of origin and immigrant communities are an important component in explaining differences in the educational performance of immigrants

Keywords

Educational achievement, immigrants, cross-national comparison, countries of origin, countries of destination

INTRODUCTION

The globalisation of international migration (Castles and Miller 1998) has had considerable consequences for immigrant receiving countries. The influx of large numbers of immigrants has altered the population composition of receiving countries, raising questions as to the integration of newcomers into their destination societies. This subject is of considerable importance, since the integration of immigrants can affect social cohesion and relates directly to issues such as economic and social inequality. For this reason, the integration of immigrants has attracted scholarly attention since the 1920's. Since then, scholars have studied roughly four dimensions regarding the integration of immigrants (Alba and Nee 1999). The first field of study considers the spatial integration of immigrants, more specifically the level of geographic segregation between immigrants and natives within cities or countries. The second dimension concerns the economic integration of migrants. Studying the degree of economic equality between immigrants and natives, scientists use indicators such as the labour market position or the employment rate to explore the economic integration of immigrants. Thirdly, the cultural dimension deals with the extent to which immigrants and natives share cultural norms and values. Finally, there is a social dimension to the integration of immigrants; this social component involves a study of social interactions between natives and immigrants.

For a long time, the educational system was thought to facilitate at least the latter three of the above-mentioned dimensions of immigrant integration. Firstly, schooling would facilitate the progress of cultural integration by ensuring the transferral of general cultural values and norms. At school, newcomers would internalize general democratic values and social norms, would learn how to behave and think, and thereby gain knowledge preparing them for participation in society. Ideas on the function of the educational system as a safeguard for the cultural melting pot can be traced back to Durkheim, who emphasized the importance of the republican education for the shaping and preservation of the French Republic. Secondly, the educational system would stimulate the social interaction between natives and immigrants by creating contexts (i.e., classrooms, year-groups and the like) forcing these groups to interact. Pupils ordinarily cannot choose their classmates; educational laws usually ensure children participate in education and therefore interact with others for the better part of their socialisation period. Finally, in open Western meritocracies, education was thought to facilitate the economic integration of immigrants. Scholastic achievement is indicative of future labour market positions, and if immigrants were on average to perform at the same level as natives, in theory they would eventually be distributed equally across occupational positions.

Initially, researchers used a primarily micro perspective to explain immigrants' scholastic achievement, arguing that individual characteristics offered sufficient explanations of educational performance. Indeed, research has demonstrated the classical micro-level explanations for scholastic achievement to be of importance when explaining the educational performance of immigrants. Nevertheless, immigration is an intrinsically international phenomenon, which should be studied accordingly (Portes 1999). Therefore, specifically when studying the educational performance of immigrants, factors relating to the migration-process itself should be taken into account. Recent cross-national studies on the scholastic achievement of immigrants indeed indicate that a satisfactory explanatory framework for the educational performance of immigrants must incorporate macro-level explanations. To exemplify the need for a macro-level perspective on immigrants' educational achievement, we will shortly elaborate on three such studies.

Schnepf (2006) analyses differences in mathematical literacy between first- and second-generation immigrants and native pupils in 10 western countries. In general, first-generation migrants prove to be less mathematically literate than second-generation migrants,

who in turn are less mathematically literate than natives. Both findings are explained by the influence of time: the longer immigrants stay in their country of destination, the better they will perform at school. In addition, the overall lower educational achievement of immigrants can be explained by micro-level characteristics such as socio-economic background and proficiency in the destination language. Results are controlled for the influence of school characteristics, such as the levels of socio-economic and ethnic segregation; the latter proves to be of some importance for explaining different levels of mathematical literacy between natives and second-generation immigrants. However, these explanations do not solve the whole puzzle. The found effects differ widely according to country of destination, both in strength and in direction. Schnepf suggests that such differences can be explained by selection mechanisms in the migration process.

Using data from the PISA 2000 surveys, Marks (2005) analyses reading and mathematical literacy of first- and second-generation immigrants in a large number of countries. He also concludes that in most countries socio-economic, social-cultural and school characteristics explain to some extent the differences in educational achievement between native and immigrant pupils. Nevertheless, Marks found international differences in the way these determinants affect the educational performance of immigrants. Only in Belgium, France, Portugal, the United Kingdom and the United States, could differences in reading scores be fully explained by these determinants. In Austria, Denmark, France, the Netherlands, Sweden, Switzerland and the United Kingdom, the reading literacy scores of second-generation immigrants proficient in the destination language remained substantially lower than those of comparable natives. For mathematical literacy, similar results where found in Austria, Denmark, France, the Netherlands, Sweden and Switzerland: second-generation immigrant pupils who spoke the language of their destination country on average scored 20 points lower on the mathematical proficiency scale. Again, effects vary substantially according to the destination country. Suggested explanations for these findings are international differences in educational systems or differences in immigration policies.

In addition to differences between countries of destination, another type of macro-level effect is shown to be relevant. Levels and Dronkers (2006) demonstrate that the success with which immigrants perform at school is not only dependent on their destination, but also on their country of origin. Regardless of their destination, immigrants from Southern and Central America, Northern Africa, Western Asia and immigrants from Western Europe who have lower socio-economic backgrounds achieve substantially lower levels of mathematical proficiency than comparable native pupils and migrant-pupils from other origins. The authors hint that cultural differences, different self-selection mechanisms or origin-dependent variations in discrimination might explain their findings.

The above-mentioned studies all have in common that they demonstrate the existence of destination- and origin-effects on the educational performance of immigrants. They show that immigrants from different countries of origin perform differently at school, as do immigrants in different countries of destination. However, these studies do not provide a satisfactory theoretical explanation for these effects. Explanations are mostly speculative and remain, for the main part, untested. In this study, we aim to make theoretical progress by deducing hypotheses as to how macro-level conditions affect micro-level rationales, leading to individual differences in immigrants' scholastic achievement that aggregate to macro-level differences. More specifically, we aim to answer the following question: *to what extent can differences in the mathematical performance of immigrants from various countries of origin in various Western countries of destination be explained by certain characteristics of these countries, when controlling for compositional differences?* In order to answer this question, we use the 2003 PISA data to analyse the educational performances of 7549 fifteen-year-old immigrants in thirteen Western countries.

THEORETICAL EXPLANATIONS FOR MACRO-LEVEL EFFECTS

To underline the need for theoretical progress in this area, we will shortly elaborate on one of the more classical mainstream theories for explaining immigrant integration, i.e. assimilation theory. According to the classical definition, assimilation is "a process of interpretation and fusion in which persons and groups acquire the memories, sentiments, and attitudes of other persons and groups and, by sharing their experience and history, are incorporated with them in a common cultural life" (Park and Burgess [1921] 1969: 735). From a micro-level perspective, assimilation means that individual migrants will gradually assimilate the cultural patterns of their destination countries. Through life-cycle and cohort-effects, first-generation migrants would thus, after some time, adopt the cultural patterns of their host societies. Also, second-generation migrants would be better assimilated into societies than their parents. Note that the key element in this theoretical explanation is time.

Initially, several empirical findings supported the theory. For example, second-generation migrants were found to be more strongly integrated economically in their host societies than first-generation migrants (Kalmijn 1996), who in turn integrated more effectively over the course of their lives (Chiswick and Miller 2002). Such findings were replicated a number of times. Indeed, there was little evidence refuting the hypothesis. However, cross-national testing confronted scientists with findings that the assimilation theory could not explain. If time is the only element at play, immigrants from different countries of origin should assimilate at the same rate into destination societies. Also, immigrants who share the same origin should assimilate within comparable time-lags. These expectations were refuted: macro-level differences were found along all dimensions of immigrants' integration.[1] As mentioned before, several research findings indicate that macro-level differences also play a role in the educational performance of immigrants. Being the subject of a relatively young field of study, theoretical explanations for macro-differences in the scholastic achievement of immigrants are still scarce. Marks (2005) suggests that the international variance in the scholastic performance of immigrants can be explained through the positive effects of certain types of policy; Levels and Dronkers (2006) argue that the origin effects they found can be explained by taking cultural differences into account. These explanations however are *ad hoc* and not clearly grounded in theory. In an outline of recent research, Kao and Thompson (2003) provide a systematic overview of the theoretical backgrounds and empirical relevance of determinants of the school performance of immigrants. After establishing that individual characteristics and school characteristics can only partially explain differences in performance between immigrant and native pupils, they discuss several research findings on macro-level explanations of origin- and destination-effects. Several findings underline the importance of group characteristics in the explanation of origin-effects. The social capital and cultural orientations of origin groups prove to be of importance. For example, the relatively good performance at school of South-Asian Americans can be explained by the strong intra-ethnic social ties, allowing South-Asian American parents to monitor each others' children (Zou and Bankston 1998). Another explanation for the good performance of South-Asian American children can be found in the positive valuation of performance and labour that is emphasized in their cultural orientation (Caplan, Choy, and Whitmore 1991). Destination effects can partly be explained through the socio-economic composition of communities. Immigrants that assimilate within communities largely comprised of people with lower levels of education perform worst at school than immigrants that assimilate in groups that are on average better educated (Portes and Rumbaut 1996). Explanations for international differences between immigrants can be found in the

[1] Since most of these subjects lie beyond the scope of this study, we refrain from discussing these findings. An extensive summary of the empirical challenges of the assimilation theory is given by Van Tubergen (2005).

influence of certain types of government policy or specific economic conditions (Portes and Rumbaut 1996).

In this study, we aim to explain these diverse and sometimes contradictory findings by using human capital theory (Mincer 1958; Becker 1964; Becker and Chiswick 1966; Chiswick1991). This theory was initially designed to explain general differences in the economic development of individuals, and later was used to explain macro-level differences in the economic integration of immigrants (Van Tubergen and Kalmijn 2005). The theory proposes that people's chances of participating successfully in modern day societies depend largely on their human capital. Furthermore, it states that people are aware of the importance of human capital for their future success, and that this awareness acts as an incentive to invest in the acquisition of human capital. Being rational actors, people therefore evaluate the costs and benefits of such an investment, and act accordingly. Based on these assumptions, hypotheses can be deduced that incorporate the predictions of the assimilation theory. Almost by definition, many non-Western immigrants have lower degrees of human capital than comparable natives, when reaching their country of destination. Even highly educated and skilled western immigrants have to overcome disadvantages. For example, on average natives can be expected to have more experience of their societies' mores and traditions, making it easier to interact socially, acquire a good education or find a job. Apart from such cultural gaps, the obvious skill gap involves the proficiency in the dominant language. Assuming that first-generation immigrants are aware of the benefits to be gained from investing in closing these gaps, the human capital theory explains why the integration of first-generation immigrants into their destination societies improves with the length of their stay. The longer the stay, the more time immigrants have to invest in obtaining skills, and adapting to their new society's culture. Chiswick (1991) uses this argument to explain why immigrants' proficiency in their destination language improves with time. Using the same line of reasoning, the human capital theory explains why second-generation immigrants are usually more integrated into their destination society than their parents: the gap they have to close is simply less wide.

Human capital theory is intrinsically a micro-level theory that explains how individuals act when acquiring different forms of human capital. However, if we assume that the underlying individual rationale is affected by macro-level constraints and opportunities, the theory can also be used to deduce hypotheses as to macro-level differences. Van Tubergen (2004) used this theory to formulate macro-level hypotheses concerning the economic integration of immigrants. One of his main theoretical assumptions is that immigrants are selected (or pre-select themselves) to access a certain country of destination. In those destination countries in which positive selection of immigrants is employed, the average level of immigrant human capital is higher. Therefore, immigrants in such countries on average reach higher levels of economic attainment, positively impacting on their economic integration. This theoretical design presupposes that the selection process is a sole determinant for the economic position of immigrants in their destination country. For adult immigrants, this likely is the case. However, their children are usually not selected, but enter a destination country alongside their parents (first-generation migrants), or are born there (second-generation immigrants). For these children, the level of human capital upon 'arrival' presumably has little or no effect on their future chances. Conversely, since in modern Western societies the acquirement of human capital has been partly institutionalised in the educational system, immigrant children have more opportunity to acquire human capital after 'arriving' in their country of destination. In Western societies, schools play a central role in the acquisition process of human capital. Therefore, we argue that the human capital theory provides a fruitful foundation for hypotheses on scholastic achievement. To explain macro-level differences in educational performance between immigrant groups, we assume that

individual judgments about the (perceived) costs and benefits of investing in the acquirement of human capital are affected by macro-level differences. In the case of immigrants' educational performance, specific differences between destination countries, between countries of origin and between origin-destination communities are assumed to have an effect on educational outcomes. To exemplify this line of reasoning, the assumed causal effects are depicted as Coleman-models (Coleman 1990) in figure 1. The Coleman-model contains two levels, i.e. a macro-level (A) and a micro-level (B). The arrows depict the direction of four causal relationships, i.e. a macro-micro relationship (1), a micro-micro relationship (2), a micro-macro relationship (3) and a macro-macro relationship (4).

Figure 1 about here

Figure 1 illustrates how differences in educational performance between immigrants from different countries of origin and in different countries of destination can be explained through hypotheses based on human capital theory. If pupils are aware of the importance of their educational success for their future economic and social participation in society, they will be induced to perform well. The extent to which pupils are able to act upon this incentive depends partly on micro-level characteristics, such as cognitive skills, socio-economic status and the availability of financial and cultural resources (not depicted). However, since the expected returns on a good diploma or good grades are not invariable for all groups of pupils, we argue that this analysis of costs and benefits can also be subject to different types of macro-level determinants (relationship 1). For example, under circumstances of perceived or expected discrimination, certain groups of immigrant pupils can expect lower labour market returns from their educational qualifications. If the level of discrimination against immigrants differs internationally, a destination effect occurs: in countries where immigrants are not subject to discrimination, the future expectations of the same immigrant groups will probably be higher. Kao and Thompson (2003) provide corroborating evidence for the assumption that the way in which immigrant pupils deal with expectations of future discrimination also depends on their origin. In the United States, African-American pupils more often refrain from pursuing an academic career when they expect to be discriminated against (Ogbu 1991). In comparison, South-Asian American pupils appear to experience expectations of discrimination as an incentive to perform better at school (Sue and Ozaki 1990). When we assume that different origin groups are subject to different levels of discrimination within countries as well as between countries, we may establish that the specific combinations of origins and destinations are of importance as well. Van Tubergen and Kalmijn (2004) point out that these community effects can partly explain variations in the language proficiency of immigrants. These examples show that the extent to which immigrants obtain human capital at school is co-dependent on origin, destination and community effects. In the following paragraphs, we will formulate hypotheses covering these three types of effects.[2]

DESTINATION EFFECTS

The scholastic achievement of immigrants can be influenced by characteristics of the destination country in numerous ways. National governments can adopt various policies with regard to the integration of immigrants. Which policies a government adopts partly depends on its core ideology. Left-wing political parties usually hold more tolerant views towards cultural pluriformity, and hence formulate less stringent demands on the cultural integration of immigrants. This tolerance is mirrored in integration policy typical of left-wing

[2] We aimed to hypothesize about as many relevant effects as possible. However, sufficient data was not available for all the effects we tried to model. Also, we had to deal with problems regarding the small number of destination countries, which further limited the number of variables we could use.

governments. For example, laws that encourage positive action are meant to stimulate the economic integration of minorities into the higher socio-economic strata of society. From a human capital point of view however, these measures may prove to be counterproductive, as they might reduce the incentive to perform well at school. Van Tubergen and Kalmijn (2005) point out that the longer left-wing parties play a dominant role in the government of a country, the less immigrants in the country gain proficiency in the national language. In analogy, we hypothesize that *the longer left-wing parties carry government responsibilities in a country, the less well immigrant pupils in this country perform at mathematics* (hypothesis 1).

Traditional immigrant receiving countries, such as Australia and New Zealand, have a long and thorough experience with the influx of immigrants (Massey et al. 1998). During the last century, these countries have tried to restrict this influx through specific policy measurements, like the so-called 'point system'. To gain access to these countries, immigrants must meet specific requirements regarding their socio-economic status and their proficiency in the national language. The best-qualified immigrants have the highest chances of admission (Borjas 2001). Through these measurements, governments are able to influence the composition of the immigrant groups in their countries. Adult immigrants in such countries are on average better educated and more skilled than comparable migrants in countries without selection policies. We assume that these adults will be able to socially reproduce human capital, and therefore expect that *immigrant pupils in traditional immigrant receiving countries perform better at mathematics than immigrant pupils in relatively young immigrant receiving countries* (hypothesis 2).

ORIGIN EFFECTS

Countries of origin differ in their cultural, economic and political constitution; these differences affect migrants' chances of integrating into the societies of whatever their destination country may be. Immigrant groups are known to have different cultural views on the evaluation of success and performance. Kao and Thompson (2003) acknowledge a line of reasoning that can be traced back to Max Weber's The Protestant Ethic, in which such cultural differences play an important role when explaining variation in the scholastic achievement of different immigrant groups. At this point, we are primarily concerned with the question to what extent differences in Christian, Islamic and Hindu cultures translate into different performance prospects at school. Through this, we aim to explain why immigrants from West-Asia and North-Africa perform less well at school wherever they migrate to, and why immigrants from South-East Asia perform well at school (Levels and Dronkers 2006). It is too early to explicitly formulate hypotheses on the direction of such effects. We therefore test the explorative hypothesis that *the mathematical performance of immigrant pupils varies across different origin groups, and that this variance can be explained when taking into account differences in the religious composition of the origin countries* (hypothesis 3).

Since most immigration is economically motivated, the economic situation in origin countries may also have an effect. We would argue that people, who leave their country in order to improve their economic situation, will invest much effort to reach this goal in their country of destination. We expect that economically motivated migrants will encourage their children more keenly to perform well at school and be successful in life, and therefore that *the worse the economic situation in a country of origin is, the better immigrant pupils originating from this country will perform at mathematics* (hypothesis 4).

A third relevant origin effect may derive from the various levels of political stability in the countries of origin. Politically motivated migrants are not so much attracted by the expected better conditions in their destination countries, but are more or less pushed away by threats experienced in their country of origin. This has consequences for the way they perceive goals in their countries of destination. If fugitives expect their stay to be temporary,

they may be less motivated to prepare for participation in the labour market of their destination country. We expect that if *the political situation in a country of origin is less stable, immigrant pupils originating in this country will perform less well at mathematics* (hypothesis 5).

COMMUNITY EFFECTS

The third type of macro-level hypotheses concerns the effects of immigrant communities, as defined by the specific combination of origin and destination countries (Van Tubergen 2004). For two reasons, we expect the relative size of immigrant communities from different countries of origin in different countries of destination to have an effect. Firstly, as we have seen the group-specific social capital of South-Asian Americans enables adults to monitor and police the behaviour of their children, thereby ensuring high levels of educational performance (Zou and Bankston 1998). The extent to which groups members are able to monitor and police effectively, depends directly on the community size. The larger a community, the less effective its social control is. Secondly, when an immigrant community is larger, the need for integration decreases. The necessity to adapt to cultural and social norms of destination societies is less urgent in larger immigrant communities, whose members can rely on internal social ties. For both reasons, we expect that *the larger the relative size of an immigrant community, the less well immigrant pupils from this country will perform at mathematics* (hypothesis 6)

We also expect an influence based on the extent to which immigrant communities are comparable to the indigenous inhabitants of destination countries, both in cultural and socio-economic terms. The extent to which immigrant groups have access to cultural and socio-economic resources comparable to those of natives can be seen as an indication of their integration into their destination societies. We expect that the less well immigrant communities are integrated into their destination societies, the less well their pupils will perform at school. To test this, we hypothesize that *the greater the cultural* (hypothesis 7) *and socio-economic* (hypothesis 8) *distance between immigrant communities and the native population is, the less well pupils from these communities will perform at mathematics.*

DATA

As mentioned earlier, we use a macro-level perspective to explain differences in the educational performances of immigrants. Such effects can be studied using three different research designs. The first type of design compares multiple origin groups in a single destination country. For example, Mare (1995) found that Asians in America have the highest chance of making progress in school, followed by whites. Blacks, Hispanics and Native Americans are less likely to progress in school. Since results in one country cannot be generalized to other countries of destination, Schnepf (2006) and Marks (2005) compared multiple destination countries. However, given the unequal distribution of migrants from different countries of origin over the various destination countries, an analysis of the role of education for the integration of immigrants without controlling for origin-effects will most likely lead to flawed conclusions. For a rigid test of macro-level hypotheses a design that incorporates both origin and destination effects is needed. In this study, we apply a so-called 'double comparative design' (Van Tubergen 2004; Van Tubergen, Maas and Flap 2004), which enables the simultaneous analysis of multiple origin groups within multiple destination countries and allows for a disentanglement of the different macro-level effects.[3] The double comparative design necessitates the use of large-scale datasets, containing sufficient numbers of destination countries, countries of origin and respondents. To meet the demands of a

[3] A major disadvantage of this design is that, by definition, natives cannot be introduced into the equation.

double comparative design, the data-set would ideally contain sufficiently large numbers of destinations countries, with sufficiently large numbers of immigrant respondents whose origins are known. Also, measurements of relevant variables should be accurate and cross-nationally standardised, so that measurements between destination countries can be compared. Since it is generally assumed that with regard to educational performance, longitudinal data is preferable to cross-sectional data, the ideal data set would also be longitudinal.

Although not perfect, the 2003 data from the Project for International Student Assessment (Organisation for Economic Co-operation and Development 2004a), is the first and only existing dataset that comes close to meeting the above-mentioned requirements. The OECD instigated the PISA-project in order to measure how well young adults in the OECD-countries are prepared to meet the challenges of today's knowledge-based societies when they reach the end of obligatory education (Organisation for Economic Co-operation and Development, 2004b). To accomplish this, the OECD tri-annually interviews 15-year-old pupils from its member states and partner states, testing their knowledge and skills in mathematical literacy, reading and science. The questionnaire is almost fully standardised, therefore data from different nations and of different test years can be compared. The survey was held in large numbers of countries, and in each of these countries sufficiently large numbers of respondents are drawn. Also, for the first time in 2003, PISA respondents were asked about their country of birth and the countries of birth of their parents. The PISA 2003 data therefore meets the requirements for analysis using a double comparative design.

However, the PISA-datasets have proved to have some drawbacks as well. The OECD has allowed participating states to influence the level of specificity with which respondents answer the questions, thereby ensuring that countries are able to identify their most important immigrant groups. Germany for example included Russia, former Yugoslavian countries, Greece, Italy, Poland and Turkey as possible countries of birth; students in Scotland could select China, India or Middle-Eastern, African, Caribbean and several European countries as their possible countries of birth. Canada, France, Hungary, Iceland, Poland, Portugal, Spain, Sweden and the United States did not ask for the countries of origin of respondents, but only distinguished between natives and non-natives. The Czech Republic, Finland, Italy, and Norway only allowed for categories that were insufficiently specified for our research questions. Consequently, these countries were not analysed. In order to be able to consider origin effects, it is obviously essential that a country of origin can be unambiguously established. This proved to be the case in 12 destination countries: Australia, Austria, Belgium, Denmark, Germany, Greece, Ireland, Latvia, Luxembourg, New Zealand, Switzerland and Scotland. By making additional assumptions, The Netherlands could also be included in the data set, bringing the final number of destination countries to N_D=13.[4]

We assigned one country of origin to all respondents, based on their own country of birth and the countries of birth of their parents. In order to do that, we adopted several decision rules regarding missing values and priorities of the various possible countries of birth. First, in all destination countries, the category 'other countries' was a possible answer. Since this categorisation is too broad, we recoded these answers into missing values. If respondents scored a missing value on only one of the three countries of birth, we decided to use information that we did have. For example, if the value of just one of the items (e.g. the country of birth of the father) referred to a single country, whilst the other two variables (the countries of birth of the respondent and his or her mother) did not, we decided to use the

[4] In the Netherlands pupils were asked if their parents were born in a European or a non-European country. Since the highest proportion of European immigrants in the Netherlands originates from Germany, and the highest proportion of non-European Dutch immigrants come from Turkey, we coded immigrants accordingly. This procedure enables us to use the Netherlands as a destination country, but also reduces the variation in origin countries, leading to a stricter test of hypotheses.

variable specifying a particular country to determine the origin country. If two out of the three variables referred to the same country, this country was used as the country of origin. If the known countries of birth referred to different countries, we would let parental countries of birth prevail over the respondent's country of birth, and the mother's country of birth over the father's country of birth.[5] In total, we identified N_O=48 countries of origin. Combining the different countries of origin and destination, a total number of N_C=624 communities was possible. Since not all origin groups are present in all destination countries, our dataset factually contains N_C=94 different immigrant communities. Subsequently, all respondents that could be identified as immigrants were selected. All respondents, of whom at least one of their parents was born abroad, were identified as immigrants. Pupils who were born abroad, but whose parents were born in their country of destination, were *not* seen as immigrants but as children of returned expats. In total, the final number of immigrants was established to be N_I=7459. The distribution of immigrants over the various countries of origin, destination and origin-destination communities is depicted in table 1.

Table 1 about here

MEASUREMENT OF MATHEMATICAL PERFORMANCE

Our dependent variable is based on the PISA-measurement of mathematical literacy. This variable is measured through 85 items, testing not only the extent to which pupils possess basic mathematical knowledge, but also the ability to use this mathematical knowledge in encountering and dealing with everyday problems. Respondents were presented with a selection of these items; item response modelling was used to calculate five plausible values on general mathematical literacy, as well as five plausible values on mathematical literacy in four sub-dimensions. Together, the plausible values on general mathematical literacy provide an unbiased estimate of the answers on all the mathematical items (OECD 2004). Our dependent variable is the mean score of the five plausible values on general mathematical literacy. The OECD mean of this score is 500, with a standard deviation of 100.

MACRO-LEVEL VARIABLES

To establish the *government influence left-wing parties* have had in the countries of destination in the years preceding 2003, we made use of the World Bank Political Indicators (Beck et al. 2001). Using information on party preferences concerning greater or lesser state control of the economy, these indicators place governing parties to the left, centre or right of a classic left-right scale. For each destination country in our data, we examined the presence of left-wing parties in the government between 1978 and 2003. For each separate year, we rated governments as (1) if they where completely constituted by left-wing parties, as (0,5) if a coalition with a right-wing or centrist party was formed and as (0) if a government did not include any left-wing party. We used the sum of the 26 year-scores to establish the presence of left-wing parties in the governments of our destination countries. To identify countries as *traditional immigrant receiving countries*, we constructed a dichotomous variable. Australia and New-Zealand are scored (1); all the other countries of destination are scored (0). Finally, in order to control for the effects of international differences in the level of mathematical ability of native pupils, we used the PISA-score on mathematical literacy to calculate the *average mathematical literacy of native pupils* per destination country.

To account for the religious composition of origin countries, we constructed dummy variables identifying countries to be *predominantly Christian, predominantly Islamic, or predominantly Hindu*. We also included a dummy for countries in which *no predominant*

[5] More elaborate information on adopted decision rules is available from the authors.

religion could be distinguished. Since all of our destination countries have a predominantly Christian population, we used the dummy for predominantly Christian origin countries as a reference. If Christian, Islamic, or Hindus adherents make up for over 50 percent of a country's population, we coded these religions to be dominant in that country. Information is obtained from the World Values Surveys (Inglehart et al. 2004) and the CIA (2006). As an indicator of the economic development of origin countries, we used the *GDP per capita in 1000 US Dollars* in 2003 (World Bank 2005). We measured the *political stability* in origin countries by the Government Indicator on this subject (Kaufmann, Kraay and Mastruzzi 2005). This item represents the perceived chance that governments will be overthrown by unconstitutional or violent means. It follows a standard normal distribution; a higher score refers to a higher level of political stability.

The *relative group size* of an immigrant community is calculated as the number of immigrants from a specific country of origin per thousand inhabitants of a specific destination country. To establish these proportions, census data from the national statistical bureaus of the destination countries were used. This item has a range from 0 (not all the origin groups are present in all the countries of destination) through 290 (the Russian immigrants in Latvia). In order to establish the *cultural distance* between immigrant communities and the native population in destination countries, we calculated the differences in the average scores of both groups on the PISA-index of cultural possessions. This index, composed by weighted likelihood estimation, measures the presence of literature, poetry and art at home. The *socio-economic distance* is estimated in a similar fashion, by calculating the differences in the average parental education levels of natives and immigrants from each country of origin in each country of destination. We used the education level of the best-educated parent to construct this variable.

VARIABLES ON INDIVIDUAL CHARACTERISTICS

To take composition effects into account, we control for a number of relevant individual characteristics. The socio-economic background is measured through three variables. To indicate the *parental education level*, we use the level of education of the best-educated parent, measured by the ISCED scale (United Nations Educational, Scientific and Cultural Organization. 1997). We also control for the *parental occupational status*, using the score of the parent with the highest occupational status on the ISEI-index (Ganzeboom et al. 1992). We also take into account the PISA-index of home possessions of *material capital*, such as computers, televisions and mobile phones. The possession of *cultural capital* is measured by the PISA-index on cultural possessions of the family. To control for differences between first and *second-generation* migrants, we used information on the countries of birth of respondents and their parents to construct a dichotomous variable. Pupils who weren't born in the destination country and whose parents were also born abroad were defined as first-generation migrants and were coded (0). Pupils, who were born in their destination countries but whose parents were born elsewhere, were seen as second-generation migrants and were coded (1) on this item. In addition to this, we used a dummy variable to identify pupils with *one native parent* (1); pupils with two non-native parents represent the reference group (0). We also included a dummy for pupils who speak a *foreign language at home* (1). Pupils who speak one of the national languages of their destination country at home are the reference category (0). To control for the effects of belonging to a *two-parent family*, a dummy variable is used; pupils from a two-parent family score (1) on this variable. Finally, we control for gender-effects, by taking into account a dummy variable separating *boys* (1) from girls (0). In Table 2 descriptive statistics on all used variables are presented.

Table 2 about here

ANALYSES

In table 3, we present an overview of the observed average mathematical literacy scores by country of origin and of destination.[6] This table gives an impression of the diversity of mathematical literacy of immigrants from different countries of origin in different countries of destination. The average math score of all immigrants in our data is 481, almost 20 points lower than the OECD mean and almost 40 points lower than the overall native mean. The variable scores of immigrants from different origin countries indicate the existence of origin effects. Immigrants from Albania have the lowest mathematical literacy (409); immigrants from Vietnam (564) and China (563) have the highest mathematical literacy. The table also indicates variance between countries of destination, which implies destination effects. Immigrants in Greece (402) and Denmark (437) have the lowest math scores. In Scotland (555), New Zealand (548) and Australia (527), immigrants reach the highest levels of mathematical literacy; in these countries, immigrants perform even better than native pupils do. Finally, table 3 provides an indication of the existence of community effects. For example, Turkish immigrants in Switzerland (437) on average score 24 points higher on the scale of mathematical proficiency than Turkish immigrants in Germany (413). In both countries, Turkish immigrants score below the overall immigrant mean, but in Switzerland the difference is much smaller.

Table 3 about here

To analyse this data in a double comparative design, multilevel regression is appropriate. By using individual-level techniques, such as OLS, on a large number of respondents, standard errors as to macro-level effects will be underestimated and consequentially, parameters could unjustly lead to significant effects (Hox 1992; Snijders and Bosker 1999). Multilevel regression techniques solve this problem by calculating macro-level effects at the appropriate N's, thereby controlling for intra-level correlations (Snijders and Bosker 1999). Standard multilevel regression assumes that lower level units (e.g. individuals) are nested in just one higher level (e.g. destination countries or origin countries). However, in the PISA 2003 dataset, individuals are nested in three higher levels at the same time: immigrant students are nested in countries of destination, countries of origin and communities. To analyse such complexly structured data, cross-classified multilevel regression is the appropriate method (Snijders and Bosker 1999). We use Markov Chain Monte Carlo (MCMC) estimation techniques from the statistical analysis program MLwiN to estimate models (Browne 2003). To illustrate how we applied cross-classified multilevel regression in this study, we will shortly discuss the models we used. The first model is an empty model, which contains only variance components for the different levels and does not contain any predictors. The data is structured as nested in three higher levels at the same time, i.e. immigrants *i* from country of origin *j* live in country of destination *k* and are a part of community *l*. The dependent variables used in this study (mathematical and reading ability) are linear. For such data, the level-1 model can be described by the following function:

$$Y_{ijkl} = \pi_{0jkl} + e_{ijkl} \quad (1)$$

under the following assumptions: $e_{ijkl} \sim N(0, \sigma^2)$

In this function,

Y_{ijkl} is the value of the dependent variable for immigrant *i* from country of origin *j* in country of destination *k* and part of community *l*;

[6] For another but analogous analysis with reading as dependent variable with comparable but unequal results see appendix I.

π_{0jkl} is the mean value of the dependent variable for immigrants in cell *jkl*, that is, immigrants from country of origin *j* in country of destination *k* and part of community *l*;

e_{ijkl} is the random individual effect, that is, the deviation of the individual score from the cell mean. These deviations are assumed to be distributed normally, with mean 0 and a within-setting variance σ^2.

The level-2 model can be described as:

$$\pi_{0jkl} = \theta_p + b_{00j} + c_{00k} + d_{00l} \quad (2)$$

under the following assumptions: $b_{00j} \sim N(0, \tau_{b00})$; $c_{00k} \sim N(0, \tau_{c00})$; $d_{00l} \sim N(0, \tau_{d00})$

In this equation,

θ_p is the overall mean;

b_{00j} is the random main effect of country of origin *j*, assumed to be distributed normally with mean 0 and variance τ_{b00};

c_{00k} is the random main effect of country of destination *k*, assumed to be distributed normally with mean 0 and variance τ_{c00}.

d_{00l} is the random main effect of community *l*, assumed to be distributed normally with mean 0 and variance τ_{d00}.

By substitution of the second equation into the first, the following overall cross-classified multilevel function:

$$Y_{ijkl} = \theta_p + b_{00j} + c_{00k} + d_{00l} + e_{ijkl} \quad (3)$$

constitutes the variance component model for the data we use. This model can be used to assess the different variances between countries of origin, between countries of destination, between communities and between immigrants. By adding to this model predictors at the appropriate level, it is possible to explain these variances. When adding individual level predictors to the first equation, the level-1 model can be described as:

$$Y_{ijkl} = \pi_{0jkl} + \sum_{p=1}^{P} \pi_{pjkl} a_{pijkl} + e_{ijkl} \quad (4)$$

with: $e_{ijkl} \sim N(0, \sigma^2)$; $i = 1, \ldots, n_{jkl}$ individuals in cell *jkl*; $j = 1, \ldots, J$ countries of origin; $k = 1, \ldots, K$ countries of destination; $l = 1, \ldots, L$ communities.

We can include *p* predictors a_{pijkl} at the individual level (e.g. generation status, sex, cultural capital, socio-economic background and the like), with $p = 1, \ldots, P$. In addition, we can also include predictors at the higher levels. It is possible to include random slope effects, but in this study, we only assume the predictors' intercepts to be random. When adding fixed effects to the second equation, the level-2 model becomes:

$$\pi_{0jkl} = \theta_p + \sum_{q=1}^{Q} \beta_{pq} X_{pqk} + \sum_{r=1}^{R} \gamma_{pr} W_{prj} + \sum_{s=1}^{S} \delta_{ps} Z_{psl} + b_{p0j} + c_{p0k} + d_{p0l} \quad (5)$$

In this equation:

X_{pqk} are *q* predictors regarding country of origin, with $q = 1, \ldots, Q$;

W_{prj} are *r* predictors regarding countries of destination, with $r = 1, \ldots, R$;

Z_{psl} are *s* predictors regarding communities, with $s = 1, \ldots, S$;

β_{pq} are the fixed effects of predictors regarding countries of origin;

γ_{pr} are the fixed effects of predictors regarding countries of destination;

δ_{ps} are the fixed effects of predictors regarding communities.

By combining the latter two equations, the cross-classified multilevel model we use in this study becomes:

$$Y_{ijkl} = \theta_p + \sum_{q=1}^{P} \pi_{pjkl} a_{pijkl} + \sum_{r=1}^{Q} \beta_{pq} X_{pqk} + \sum_{s=1}^{R} \gamma_{pr} W_{prj} + \sum_{s=1}^{S} \delta_{ps} Z_{psl} + b_{p0j} + c_{p0k} + d_{p0l} + e_{ijkl} \quad (6)$$

MULTILEVEL RESULTS

In table 4, the results of our analyses are presented. The variance component model is not included in this table; the total variance in this empty model equals Ω= 9.352,62. Almost 78% of this variance is at the individual level and 10% is at the destination level. Countries of origin and communities both account for 6% of the variation in this model.

The first model in table 4 only contains individual effects. We use this model to control for composition effects. The effects in this model are in line with common literature findings. The education level (b=1,78) and the occupational status (b=0,96) of the parents both contribute in a positive way to the educational performance of their children. The possession of material capital has a strong positive effect (b=31,84) on mathematical literacy. The negative effect of cultural resources (b= -7,68) may seem surprising, but is in line with earlier findings using this data (Levels and Dronkers, 2006). As expected, second generation migrants perform better than first generation migrants (b= 7,85). Also, immigrant children who have a native parent perform better than children of two immigrant parents (b= 9,56). Speaking a foreign language at home hinders scholastic achievement (b= -9,79). Finally, children who are part of a two-parent family score better than children from other family forms (b= 12,98), and boys prove to be more mathematically literate than girls (b= 11,41). The variance components in model 1 give an impression of the variance at the respective macro-levels when composition-effects are controlled for. The largest proportion of unexplained variance (87 percent) exists at the individual level. However, when controlled for composition effects, 4 percent of the variance at the destination level, 5 percent of the variance at the origin level and 4 percent of the variance at the community level remains unexplained.

In model 2 we examine which characteristics of countries of destination have an effect on immigrants' mathematical literacy. When considering these variables, the destination level variance is reduced by 42 percent in comparison to model 1. Contrary to what we expected under hypothesis 1, the presence of left-wing parties in the government proves to have no significant effect on the scholastic achievement of immigrants (b= -1,04). In this model, we also test whether or not immigrants perform better in traditional immigrant receiving countries. As could be expected, this proves to be the case (b= 26,73). Please note that this positive effect does not seem to be caused by the selection of skilled and talented immigrants in these countries; we control for these effects by taking the individual socio-economic characteristics of the parents into account. We cannot refute our second hypothesis.

In our third model, the effects of various religious worldviews are tested. By taking the dummies on dominance of religions into account, variance at the origin level reduces by no less than 57 percent, which offers strong support for our third hypothesis. Immigrants from predominantly Islamic countries perform worst than immigrants from predominantly Christian countries (b= -22,87), and immigrants from countries without a predominant religion perform better than immigrants from predominantly Christian countries (b= 15,39). Immigrants from predominantly Hindu countries do not deviate from immigrants from predominantly Christian countries. Model 4 shows that the level of economic development (b= 0,02) and the level of political stability (b= 6,60) of their origin country do not influence the scholastic performance of immigrants. Our fourth and fifth hypotheses are therefore not confirmed. By modelling these characteristics however, the deviance between immigrants

from predominantly Islamic and predominantly Christian countries disappears. Additional analyses that are not presented here, indicate that the level of political stability offers the best explanation for this.[7]

In model 5, community effects are tested. This model shows that, contrary what we expected under hypothesis 6, the relative group size of immigrant communities has no significant effect on the scholastic achievement of group members. The cultural (b= -20,01) and socio-economic (b= -0,98) distance have a negative effect on the mathematical performance of community members. Both variables account for a relatively large reduction in unexplained variance at the destination level. Apparently, there are major international differences in the way immigrant communities relate to native populations, both in their cultural and socio-economic make-up. These findings imply that cultural and socio-economic differences offer an important explanation of cross-national differences in the scholastic achievement of immigrants.

In our sixth and final model, the significant effects from the previous models are tested simultaneously. In this model, the effect of the dummy for traditional immigrant receiving countries remains significant (b= 25,09). Also, the cultural distance between immigrant groups and natives stays relevant (b= -25,09). In this model, the level of political stability in origin countries is not modelled, but the deviance between immigrants from Islamic countries and those of Christian countries is insignificant. In this final model, the unexplained variance at the origin level has been reduced to one-third of its original size, and the unexplained variance at the destination level has been marginalized. This implies that living in a traditional immigrant receiving country and the cultural distance of immigrant communities from the native population offer a substantial explanation for international differences in the mathematical literacy of immigrants, as well as the differences between origin groups.

CONCLUSION AND DISCUSSION

In this paper, we have tried to explain the mathematical achievement of immigrant-pupils from different origins in different destination countries with different macro-level characteristics. Previous analyses using the same data revealed that the scholastic achievement of immigrants differs by countries of destination as well as countries of origin. In a cross-classified multilevel analysis, we examined which characteristics of destination countries, countries of origin and communities are relevant.

To explain destination effects, we examined the effect of the number of years left-wing political parties shared government responsibility in these countries. Since these effects were marginal, we conclude that left-wing governments neither hinder nor facilitate the educational performance of immigrants. The historical experience destination countries have in dealing with the influx of immigrants proves to be of importance: in traditional immigrant receiving countries, like Australia and New-Zealand, immigrants perform better at school. Since we controlled for the individual socio-economic characteristics of the parents, we conclude that composition effects due to restrictive immigration policies do not cause this better performance. It seems that the socio-economic and cultural distance of immigrant communities from the native population are smaller in these countries. Our findings suggest that immigrants in traditional immigrant receiving countries, such as Australia and New-Zealand, have better chances of integrating into society, perhaps because in these countries immigrants are deemed more valuable for the economy and the native population is more accustomed to adopting immigrants. We could interpret these results as a positive side-effect of strict immigration policy: immigrants who make it through the tough selection procedure might immediately be seen as assets to society, whereas immigrants in countries who do not

[7] Additional analyses available from the authors.

have a restrictive immigration policy have to prove their value over and over again. However, Van Tubergen (2004) shows that in these countries, immigrants attain lower levels of economic status. Another explanation for this might lie in the personal historical connection with immigration some people regarded as natives have in these countries. Since a large proportion of inhabitants of traditional immigrant receiving countries derive from ancestors who at some point in history have migrated themselves, it is conceivable that the native population in these countries identifies with immigrants more strongly.

To explain differences in the performances of immigrants from different countries of origin, we offered explanations regarding the political, economic and cultural characteristics of origin countries. The religious-cultural composition of origin countries proved to offer the best explanation. We found that on average, immigrants from predominantly Islamic countries do worse at school than immigrants from countries with a predominantly Christian population. We offer two explanations for these findings. First, the political stability of origin countries seems to explain these differences. Second, the cultural distance between immigrants from Islamic countries and immigrants from Christian countries might offer an explanation. In future analyses with more countries, we hope to clarify these findings.

Finally, we examined the extent to which characteristics of immigrant communities from a certain country of origin in a certain country of destination influence the scholastic achievement of community members. We showed that if communities show greater resemblance to the native population of a destination country, both culturally and socio-economically, pupils from these communities perform better at school. We conclude that the smaller the socio-economic and especially cultural distance between immigrant communities and natives in a destination country, the better children from these communities perform at school. Differences in the way immigrant communities relate to natives can explain international differences in the way immigrant pupils perform at school. We also conclude that these measurements do not explain all variance at the community level, which implies that other factors are at work here.

An important improvement to this study can be made by using more elaborate data. PISA 2003 is the first, and to our knowledge the only, large cross-national data-set that contains information on the origin of first- and second-generation migrants. However, due to the reluctance some major countries in the gathering of information, we had to work with relatively small numbers of destination countries. Important immigrant-receiving countries such as the United States, Canada and France could not be analysed, since in these countries information on the countries of origin was not sufficiently specified. Only by using information from a larger number of countries, are more robust tests of hypotheses on macro-level effects possible. We therefore launch a plea for more specified information on the origin of immigrants in future cross-national data gathering, such as PISA.

REFERENCES

Alba, Richard and Victor Nee. 1999. "Rethinking Assimilations Theory for a New Era of Immigration." Pp. 137-60 in *The Handbook of International Migration*, edited by C. Hirschman, P. Kasinitz and J. DeWind. New York: Sage.

Beck, Thorsten., George Clarke, Alberto Groff, Philip Keefer and Patrick Walsh. "New tools in comparative political economy: The Database of Political Institutions." *World Bank Economic Review* 15:165-176.

Becker, Gary S. 1964. *Human Capital*. New York: National Bureau of Economic Research.

Becker, Gary S. and Barry R. Chiswick. 1966. "Education and the Distribution of Earnings." *American Economic Review* 56:358–59.

Borjas, George J. 2001. "Immigration Policy: A Proposal." Pp. 17-20 in *Blueprints for an Ideal Legal Immigration Policy*, edited by R.D. Lamm and A. Simpson. Washington, DC: Centre for Immigration Studies.

Browne, William J. 2003. *MCMC Estimation in MlWin*. London: Centre for Multilevel Modelling.

Caplan, Nathan, Marcella H. Choy and John K. Whitmore. 1991. *Children of the boat people. A study of educational success.* Ann Arbor: University of Michigan Press.

Castles, Stephen and Mark J. Miller. 1998. *The Age of Migration: International Population movements in the Modern World*. London: Macmillan

Central Intelligence Agency 2006. *Field listings – religion. World Factbook* [online]. Retrieved September 1, 2006 (www.cia.gov/cia/publications/factbook/fields/2122.html).

Coleman, James S. 1990. *Foundations of Social Theory*. Cambridge/London: Harvard University Press.

Chiswick, Barry R. 1978. "The effect of Americanisation on the Earnings of Foreign-born Men. *Journal of Political Economy* 86:897-921.

---------. 1991. "Speaking, Reading, and Earnings among Low-Skilled Immigrants." *Journal of Labor Economics* 9:149-70.

Chiswick, Barry R. and Paul W. Miller. 1996. "Ethnic Networks and Language Proficiency among Immigrants." *Journal of Population Studies* 9:19-35.

Dronkers, J. and Levels M. 2005. "Migranten en school segregatie in hoogontwikkelde landen. [Migrants and school segregation in highly developed countries]" Pp. 23-52 in *Onderwijs en ongelijkheid: grenzen aan de maakbaarheid,* edited by S. Karsten and P. Sleegers. Antwerpen/Apeldoorn: Garant. English version available from www.eui.eu/Personal/Dronkers/English/Meijnen.PDF

Ganzeboom, Harry B.G., Paul de Graaf, Donald J. Treiman and Jan de Leeuw. 1992. A standard international socio-economic index of occupational status. *Social Science Research* 21:1-56.

Hox, Joop. 2002. *Multivariate Analysis. Techniques and Applications*. Mahwah NJ/London: Lawrence Erlbaum.

Inglehart, Ronald et al. 2004. *World Values Surveys and European Values Surveys*, 1981-1984, 1990-1993, 1995-1997 and 1999-2000 [Data file]. Produced by the Institute for Social Research. Distributed by the Inter-university Consortium for Political and Social Research, Ann Arbor, USA.

Kalmijn, Matthijs. 1996. "The socio-economic Assimilation of Caribbean American Blacks." *Social Forces* 74:911-30.

Kalmijn, Matthijs and Gerbert Kraaykamp. 1996. "Race, Cultural Capital and Schooling: an Analysis of Trends in the United States." *Sociology of Education* 69:22-34.

Kao, Grace and Jennifer S. Thompson. 2003. "Racial and ethnic stratification in educational achievement and attainment." *Annual Review of Sociology* 29:417-442.

Kaufmann, Daniel, Aart Kraay, and Massimo Mastruzzi. 2005. *Governance Matters IV: Governance Indicators for 1996-2004*. Washington D.C.: The World Bank.

Levels, Mark and Jaap Dronkers. 2006. "Verschillen in wiskundekennis in hoog ontwikkelde

landen van Europa, Australië en Nieuw-Zeeland tussen eerste en tweede-generatie migrantenleerlingen uit verschillende herkomstregio's en autochtone leerlingen. [Differences in educational performance between first and second-generation migrant-pupils coming from various regions and that of native pupils in Europe and the Pacific Rim.]" In: *Over kansen, competenties en cohesie, edited by* S. Waslander and R. Bosman. Assen: Van Gorcum. English version available from www.eui.eu/Personal/Dronkers/English/Peschar.PDF

Mare, Robert D. 1995. "Changes in Educational Attainment and School Enrollment." Pp.

155-213 in *State of the Union: America in the 1990s, edited by* R. Farley. Volume I: Economic Trends. New York: Russell Sage Foundation.

Marks, Gary N. 2005. "Accounting for immigrant non-immigrant differences in reading and mathematics in twenty countries." *Ethnic and Racial Studies* 28:925-946.

Massey, Douglas S., Joaquin Arango, Graeme Hugo, Ali Kouaouci, Adela Pellegrino and J. Edward Taylor. 1998. *Worlds in Motion: Understanding International Migration at the End of the Millennium*. New York: Oxford University Press.

Mincer, Jacob. 1958. "Investment in Human Capital and Personal Income Distribution." *Journal of Political Economy* 66:281–302.

Organisation for Economic Co-operation and Development. 2004a. 2003 Programme for International Student Assessment data file. Paris: Organisation for Economic Co-operation and Development [producer and distributor] .

————. 2004b. *Learning for tomorrow's world-first results from Pisa 2003*. Paris: Organisation for Economic Cooperation and Development.

Ogbu, John U. 1991. "Immigrants and involuntary minorities in comparative perspective". Pp. 3-33 in: *Minority Status and schooling, edited by* M.A. Gibson and J.U. Ogbu. New York: Garland.

Park, Robert E. and Ernest W. Burgess, [1921] 1969. *Introduction to the Science of Sociology (3d edition).* Chicago: University Press of Chicago.

Portes, Alejandro. 1999. "Conclusion: Towards a new world- the origins and effects of transnational activities". *Ethnic and Racial Studies* 22:463-477.

Portes Alejandro and Rubén Rumbaut. 1996. *Immigrant America: a Portrait*. Berkeley: California University Press.

Schnepf, Sylke V. 2006. "How Different are Immigrants? A Cross-Country and Cross-

Survey Analysis of Educational Achievement". In *Immigration and the Transformation of Europe*, edited by C. Parsons and T. Smeeding. Cambridge: Cambridge University Press.

Snijders, Tom A. and Roel J. Bosker. 1999. *Multilevel Analysis: An Introduction to Basic and Advanced Multilevel Modelling*. London: Sage Publications.

Sue, Stanley and Sumie Okazaki. 1990. "Asian-American educational achievements: a phenomenon in search of an explanation." *American Psychologist* 45: 913-920.

United Nations Educational, Scientific and Cultural Organization. 1997. "*International Standard Classification of Education ISCED 1997"*. Paris: United Nations Educational, Scientific and Cultural Organization.

Van Tubergen, Frank. 2004. *The Integration of Immigrants in Cross-National Perspective. Origin, Destination, and Community Effects*. Utrecht: ICS.

Van Tubergen, Frank and Matthijs Kalmijn. 2005. "Destination-Language Proficiency in Cross-National Perspective: A Study of Immigrant Groups in Nine Western Countries." *American Journal of Sociology* 110:1412-1457.

Van Tubergen, Frank, Ineke Maas, and Henk Flap. 2004. "The Economic Incorporation of Immigrants in 18 Western Societies: Origin, Destination, and Community Effects." *American Sociological Review* 69:704-727.

Worldbank. 2005. *GDP per capita constant 2000 US$* [online]. Retrieved December 28, 2005 (http://www.worldbank.org/data/databytopic/gdp.html).

Zhou, Min and Carl L. Bankston III. 1998. *Growing up American. How Vietnamese children adapt to life in the United States*. New York: Russell Sage Foundation

Table 1. Numbers of immigrants, by countries of destination and countries of origin

	Countries of destination													
Countries of origin	AU	AT	BE	CH	DE	DK	EL	IE	LV	LU	NL	NZ	SC	N
Albania		11		255			195							461
Argentina								1						1
Australia												46		46
Bangladesh													3	3
Bosnia Herzegovina					14	21		1						36
Brazil								2						2
Bulgaria							8							8
Canada								2						2
China	129							2				73	9	213
The Congo			91											91
Denmark								2						2
Germany	45			94				6			65			210
Estonia								2						2
Philippines	136							1						137
France			236	96				3						335
Georgia								1						1
Greece	49				7									56
Hungary		8												8
India	99							4				38	7	148
Italy	73			283	33			4		120				513
Croatia					11									11
Lebanon	131													131
Libya								1						1
Lithuania								3						3
Macedonia					3									3
Morocco			146											146
The Netherlands	27		65					1						93
New Zealand	238							3						241
Nigeria								5						5
Ukraine									114					114
Pakistan						31		2					24	57
Poland		11	36		99			1						147
Portugal				206						603				809
Romania		20						1						21
Russia							99	7	238					344
Serbia Montenegro		272		403	15									690
Slovenia		6												6
Slovakia		6												6
Spain				80				1						81
Czech Republic		4												4
Turkey		137	137	146	188	49					372			1.029
United Kingdom	457							136				125	191	909
United States								9						9
Vietnam	126							1						127
Belarus									123					123
Zimbabwe								1						1
South-Africa								4				67		71
Sweden								2						2
N (total)	1.510	475	711	1.563	370	101	302	209	475	723	437	349	234	7.459

Source: PISA, 2003

Table 2. Descriptive statistics of variables (N=7.459)

	Minimum	Maximum	Mean	Standard deviation
Independent variable				
Mathematical literacy	151.07	789.56	480.73	96.38
Destination variables				
Average native mathematical literacy	445.50	554.90	522.33	22.57
Government influence of left-wing parties	0.00	19.00	10.43	4.23
Traditional immigrant receiving country	0.00	1.00	0.25	0.43
Origin variables				
Predominantly Christian population	0.00	1.00	0.60	0.49
Predominantly Islamic population	0.00	1.00	0.23	0.42
Predominantly Hindu population	0.00	1.00	0.02	0.14
No predominant religion	0.00	1.00	0.15	0.36
GDP per capita (in USD 1000)	0.08	34.79	9.40	9.37
Political stability	-2.35	1.42	0.16	0.87
Community variables				
Relative group size	0.00	290.00	37.87	53.28
Cultural distance	-1.61	1.33	-0.14	0.28
Socio-economic distance	-39.74	20.98	-6.15	7.30
Individual variables				
Parental education level	0.00	6.00	3.87	1.887
Parental occupational status	16.00	90.00	44.69	16.29
Material capital	-3.79	1.94	-0.17	0.91
Cultural capital	-1.28	1.35	-0.27	0.96
Second generation	0.00	1.00	0.48	0.50
One native parent	0.00	1.00	0.06	0.24
Foreign language spoken at home	0.00	1.00	0.36	0.47
Two-parent family	0.00	1.00	0.72	0.49
Boys	0.00	1.00	0.51	0.50

Source: PISA 2003

Table 3. Average mathematical literacy of immigrant and native pupils per country of destination and country of origin (N=7.459)

	Countries of destination													
Countries of origin	AU	AT	BE	CH	DE	DK	EL	IE	LV	LU	NL	NZ	SC	Total
Albania		424		412			403							409
Argentina								535						535
Australia												535		535
Bangladesh													583	583
Bosnia Herzegovina					466	451		555						460
Brazil								384						384
Bulgaria							393							393
Canada								478						478
China	570							475				556	555	563
The Congo			450											450
Denmark								607						607
Germany	529			528				516			507			521
Estonia								404						404
The Philippines	502							548						502
France			460	521				506						478
Georgia								438						438
Greece	470				463									469
Hungary		555												555
India	577							496				534	525	561
Italy	503			472	420			495		473				473
Croatia					460									460
Lebanon	471													471
Libya								528						528
Lithuania								427						427
Macedonia					412									412
Morocco			453											453
The Netherlands	502		530					518						521
New Zealand	508							552						508
Nigeria								460						460
Ukraine									472					472
Pakistan						447		606					483	468
Poland		554	493		496			585						500
Portugal				473						445				452
Rumania		441						492						443
Russia							400	535	495					468
Serbia Montenegro		459		456	466									458
Slovenia		509												509
Slovakia		512												512
Spain				477				624						479
Czech Republic		551												551
Turkey		433	429	437	413	424					484			447
United Kingdom	539							502				551	565	541
United States								520						520
Vietnam	565							515						564
Belarus									490					490
Zimbabwe								575						575
South-Africa								525				549		548
Sweden								571						571
Mean (immigrants)	527	456	459	462	442	437	402	505	488	449	488	548	555	481
Mean (natives)	523	521	547	535	528	518	446	505	487	507	555	530	520	520
Mean (all)	524	514	540	520	520	516	442	505	487	495	547	531	523	516

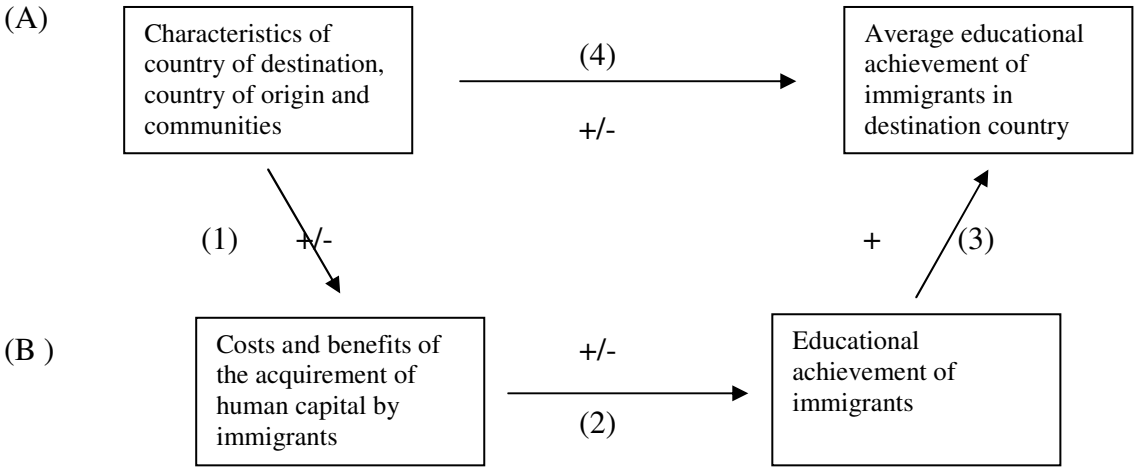
Notes: AU=Australia; AT=Austria; BE=Belgium; CH=Switzerland; DE=Germany; DK=Denmark; EL=Greece; IE=Ireland; LV=Latvia; LU=Luxembourg; NL=The Netherlands; NZ=New-Zealand; SC=Scotland
Source: PISA 2003.

Table 4. Macro- and micro-level effects on mathematical literacy of immigrants

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intercept	424.91**	302.33**	423.45**	420.52**	429.68**	422.28**
	(7.43)	(112.85)	(8.35)	(10.32)	(7.27)	(6.84)
Macro-level effects						
Average native mathematical literacy		0.24				
		(0.21)				
Government influence of left-wing parties		-1.04				
		(0.97)				
Traditional immigrant receiving country		26.73*				25.09**
		(13.86)				(9.21)
Predominantly Christian population (ref.)			-	-		-
Predominantly Islamic population			-22.87**	-13.00		-9.82
			(9.20)	(13.02)		(10.11)
Predominantly Hindu population			18.55	32.99		12.46
			(17.38)	(23.41)		(18.03)
No predominant religion			15.39*	17.23*		11.73
			(8.49)	(9.46)		(8.34)
GDP per capita (in USD 1000)				0.02		
				(0.62)		
Political stability				6.60		
				(6.61)		
Relative group size					0.08	
					(0.07)	
Cultural distance					-20.01*	-25.09**
					(10.60)	(10.37)
Socio-economical distance					-0.98*	-0.52
					(0.50)	(0.49)
Micro-level effects						
Parental education level	1.78**	1.83	1.78	1.80**	1.74**	1.73**
	(0.62)	(0.62)	(0.61)	(0.61)	(0.61)	(0.61)
Parental occupational status	0.96**	0.96	0.96	0.96**	0.95**	0.95**
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Material capital	31.84**	31.66**	31.84**	31.73**	31.87**	31.81**
	(1.65)	(1.65)	(1.65)	(1.68)	(1.65)	(1.68)
Cultural capital	-7.68**	-7.54**	-7.74**	-7.70**	-7.93**	-7.98**
	(1.49)	(1.49)	(1.49)	(1.50)	(1.49)	(1.48)
Second generation	7.85**	7.58**	7.78**	7.85**	7.84**	7.90**
	(2.23)	(2.23)	(2.23)	(2.24)	(2.23)	(2.23)
One native parent	9.56**	9.57**	9.45**	9.38**	8.77**	9.20**
	(4.25)	(4.30)	(4.30)	(4.24)	(4.29)	(4.23)
Foreign language spoken at home	-9.79**	-9.66**	-9.51**	-9.64**	-9.13**	-8.89**
	(2.61)	(2.62)	(2.61)	(2.62)	(2.61)	(2.63)
Nuclear family	12.98**	12.94**	13.03**	13.01**	13.04**	13.06**
	(2.10)	(2.08)	(2.09)	(2.11)	(2.09)	(2.16)
Boys	11.41**	11.44**	11.42**	11.38**	11.41**	11.40**
	(1.84)	(1.85)	(1.85)	(1.84)	(1.85)	(1.85)
Variance components						
Destinations	266.66	154.25	380.75	288.36	141.56	38.76
	(241.12)	(218.86)	(291.47)	(264.36)	(136.68)	(81.56)
Origins	364.94	235.73	115.74	254.37	385.38	133.04
	(196.76)	(163.24)	(154.69)	(191.07)	(183.12)	(129.90)
Communities	257.98	316.80	294.52	241.27	165.75	283.60
	(116.42)	(134.11)	(115.51)	(123.54)	(89.64)	(106.77)
Individuals	6191.26	6191.29	6193.16	6195.48	6192.79	6196.72
	(102.45)	(100.72)	(100.75)	(101.64)	(100.76)	(101.80)
Deviance (MCMC)	86291.79	86292.51	86294.75	86296.43	86294.31	86296.34

Note: the presented data are cross-classified multilevel regression coefficients with standard deviations in parentheses. Source: PISA, 2003. N_D=13, N_O=48, N_C=94, N_I=7459. ** 0 not in 90% CI;* ** = 0 not in *95% CI* .

Figure 1. Macro- and micro-level propositions: effects of destination country on the educational achievement of immigrants



Appendix I: Reading achievements as dependent variable

Table I.1. Average reading literacy of immigrant and native pupils per country of destination and country of origin (N=7.459)

	Countries of destination													
Countries of origin	AU	AT	BE	CH	DE	DK	EL	IE	LV	LU	NL	NZ	SC	Total
Albania		368,2		377,2			423,9							396,7
Argentina								476,8						476,8
Australia												549,7		549,7
Bangladesh													560,7	560,7
Bosnia Herzegovina					444,9	447,7		575,7						450,2
Brazil								353,6						353,6
Bulgaria							403,5							403,5
Canada								510,0						510,0
China	541,7							430,4				506,0	498,1	526,6
The Congo			434,5											434,5
Denmark								627,7						627,7
Germany	532,6			506,3				500,2			493,8			507,9
Estonia								375,4						375,4
The Philippines	509,2							498,3						509,1
France			441,2	495,5				514,7						457,4
Georgia								438,1						438,1
Greece	477,0				447,5									473,4
Hungary		540,2												540,2
India	566,6							496,1				529,5	504,1	552,2
Italy	505,0			450,0	415,9			495,7		449,3				455,8
Croatia					436,9									436,9
Lebanon	477,1													477,1
Libya								564,8						564,8
Lithuania								370,3						370,3
Macedonia					391,4									391,4
Morocco			439,3											439,3
The Netherlands	499,7		510,9					510,7						507,7
New Zealand	500,7							535,1						501,1
Nigeria								465,2						465,2
Ukraine									476,2					476,2
Pakistan						447,8		532,3					474,6	462,1
Poland		513,2	473,2		479,7			556,1						481,2
Portugal				454,6						416,8				426,5
Rumania		432,8						614,2						441,5
Russia							430,6	536,6	489,8					473,7
Serbia Montenegro		439,6		425,6	447,1									431,6
Slovenia		508,2												508,2
Slovakia		490,3												490,3
Spain				454,5				534,6						455,5
Czech Republic		494,5												494,5
Turkey		394,9	416,6	419,6	398,7	414,7					470,7			430,3
United Kingdom	539,3							514,4				562,4	554,1	541,9
United States								530,9						530,9
Vietnam	557,3							543,0						557,2
Belarus									492,8					492,8
Zimbabwe								612,9						612,9
South-Africa								516,5				551,7		549,7
Sweden								613,6						613,6
Mean (immigrants)	524,0	430,1	443,2	436,0	427,6	431,7	425,6	511,6	487,3	422,2	474,1	543,3	542,4	467,9
Mean (natives)	526,4	508,7	525,4	509,2	520,0	495,1	471,6	517,8	494,4	500,5	527,9	529,2	512,8	513,1
Mean (total)	525,8	500,2	517,8	494,1	511,1	493,6	468,3	517,5	493,6	483,5	521,5	530,6	515,5	507,7

Source: PISA, 2003

Table I.2: Cross-classified regression of characteristics of destination countries, origin countries, immigrant communities and individuals on the reading literacy of immigrants; N_D=13, N_O=48, N_C=94,N_I=7459 [a]

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intercept	429,89** (8,57)	506,70** (220,24)	433,18** (8,96)	426,87** (10,85)	436,01** (8,32)	429,10** (6,45)
Destination effects						
Average native reading literacy		-0,14 (0,42)				
Government influence of left-wing parties		-1,36 (1,24)				
Traditional immigrant receiving country		46,28** (15,33)				37,37** (7,77)
Origin effects						
Predominantly Christian population			0,00 (-)	0,00 (-)		0,00 (-)
Predominantly Islamic population			-28,17** (8,59)	-20,52** (9,67)		-14,97* (8,12)
Predominantly Hindustani population			12,62 (17,14)	23,42 (17,65)		1,59 (15,29)
No predominant religion			6,63 (7,75)	10,73 (8,61)		8,20 (7,36)
GDP per capita (in USD 1000)				0,33 (0,53)		
Political stability				3,62 (5,21)		
Community effects						
Relative group size					0,06 (0,07)	
Cultural distance					-13,44 (10,60)	
Socio-economical distance					-1,36** (0,51)	-1,61** (0,41)
Individual effects						
Parental education level	2,41** (0,61)	2,45** (0,63)	2,40** (0,63)	2,43** (0,62)	2,34** (0,63)	2,41** (0,62)
Parental occupational status	0,90** (0,07)	0,90** (0,07)	0,89** (0,07)	0,89** (0,07)	0,87** (0,07)	0,87** (0,07)
Material capital of the family	32,86** (1,69)	32,66** (1,69)	33,79** (1,68)	32,68** (1,69)	32,74** (1,68)	32,41** (1,67)
Cultural capital of the family	-6,06** (1,53)	-5,94** (1,52)	-6,06** (1,52)	-6,03** (1,52)	-6,13** (1,52)	-5,84** (1,51)
First or second generation	12,21** (2,25)	11,97** (2,26)	12,24** (2,24)	12,21** (2,25)	12,22** (2,24)	12,26** (2,24)
One native parent	18,56** (4,28)	18,82** (4,29)	18,52** (4,28)	18,18** (4,33)	18,12** (4,28)	18,91** (4,31)
Foreign language spoken at home	-6,65** (2,48)	-6,75** (2,49)	-6,69** (2,48)	-6,36** (2,50)	-6,12** (2,48)	-6,48** (2,46)
Nuclear family	13,24** (2,10)	13,19** (2,14)	13,37** (2,13)	13,35** (2,13)	13,38** (2,13)	13,48** (2,13)
Boy	-34,91** (1,87)	34,93** (1,86)	-34,94** (1,88)	-34,92** (1,87)	-34,94** (1,88)	-34,89** (1,87)
Variance components						
Destinations	532,20 (351,33)	198,99 (298,06)	575,02 (342,69)	580,27 (374,17)	359,90 (232,22)	46,74 (93,17)
Origins	276,88 (175,73)	160,58 (144,55)	55,63 (106,92)	67,05 (109,53)	127,61 (123,61)	32,06 (61,86)
Communities	243,31 (115,91)	361,70 (131,03)	277,16 (93,47)	268,58 (97,46)	253,74 (108,83)	295,10 (89,34)
Individuals	6.358,30 (105,00)	6.357,25 (105,25)	6.360,52 (105,29)	6.357,84 (103,40)	6.358,60 (105,34)	6.358,44 (103,34)
Deviance (MCMC)	86.489,12	86.486,83	86.490,66	86.490,51	86. 488,41	86.491,21

* *0 not in 90% CI;* ** = 0 not in *95% CI* [a] Standard deviations in parentheses Source: PISA, 2003

Appendix II: Determining the origin of immigrants

To determine the country of origin of respondents, we adopted a set of decision rules on how to deal with different countries of birth, and with missing values. These rules, summarized in table III.1, are:

- If all three countries of birth were missing, we coded the country of origin as missing;
- If all three countries of birth were the same, this country was used as the country of origin;
- If two countries of birth were the same country, we used this country as the country of origin;
- If none of the three countries were missing values, but all were different countries, we used the country of birth of the mother;
- If information on one of the three countries of birth was missing, and the two known countries were different, we let the country of birth of the parents prevail over the country of birth of respondents, and the country of birth of the mother over that of the father;
- If two of the countries of birth were missing, we decided to rely on the information I did have, and determined the known country of birth was the country of origin.

Table II.1: Determining the country of origin based on the countries of birth of respondents and their parents

Respondent's country of birth	Father's country of birth	Mother's country of birth	Respondent's country of origin
MIS	MIS	MIS	MIS
A	A	A	A
B	B	B	B
C	C	C	C
A	A	B/C/MIS	A
B/C/MIS	A	A	A
A	B/C/MIS	A	A
A	B	C	C
A	C	B	B
B	A	C	C
B	C	A	A
C	A	B	B
C	B	A	A
MIS	A	B	B
MIS	B	A	A
A	MIS	B	B
B	MIS	A	A
A	B	MIS	B
B	A	MIS	A
A	MIS	MIS	A
MIS	A	MIS	A
MIS	MIS	A	A

Appendix III: Macro-Characteristics of destination and origin countries and immigrant communities

Table III.1: Characteristics of destination countries

Destination country	Presence of left-wing parties in government	Traditional immigrant receiving country [b]	Mathematical ability natives [c]	Reading ability natives [c]
Australia	13	1	522,9	526,4
Austria	14	0	521,4	508,7
Belgium	10	0	547,2	525,4
Denmark	10	0	518,1	495,1
Germany	5	0	528,2	520,0
Greece	19	0	445,5	471,6
Ireland	5,5	0	505,1	517,8
Latvia	0	0	486,6	494,4
Luxembourg	10,5	0	506,6	500,5
The Netherlands	5	0	554,9	527,9
New-Zeeland	8	1	529,6	529,2
Switzerland	13	0	534,5	509,2
Scotland	7,5	0	520,2	512,8

[a] Source: Beck et al. (2001) [b] Source: Massey et al. (1998) [c] Source: PISA (2003)

Table III. 2: Characteristics of origin countries

Countries of origin	Political Stability [a]	GDP per capita in US$ 1000 (constant) [b]	Predominantly Christian [c]	Predominantly Islamic [c]	Predominantly Hindustani [c]	No predominant religion [c]
Albania	-0,5000	1,3211	0	1	0	0
Argentina	-0,6400	6,4527	1	0	0	0
Australia	1,1600	21,1263	1	0	0	0
Bangladesh	-0,6500	0,3688	0	1	0	0
Bosnia Herzegovina	-0,7500	1,2902	0	0	0	1
Brazil	0,1100	3,5598	1	0	0	0
Bulgaria	0,5600	1,7495	1	0	0	0
Canada	1,1000	23,9502	1	0	0	0
China	0,0600	0,9827	0	0	0	1
The Congo	-2,3500	0,0846	1	0	0	0
Denmark	1,2600	30,2039	1	0	0	0
Germany	1,0200	22,9003	1	0	0	0
Estonia	1,0200	4,5876	0	0	0	1
The Philippines	-0,6100	1,0081	1	0	0	0
France	0,7100	22,7225	1	0	0	0
Georgia	-1,7100	0,7288	1	0	0	0
Greece	0,7600	11,0065	1	0	0	0
Hungary	1,1100	4,9388	1	0	0	0
India	-0,9300	0,4774	0	0	1	0
Italy	0,8500	19,0268	1	0	0	0
Croatia	0,4800	4,5607	1	0	0	0
Lebanon	-0,6300	4,0065	0	1	0	0
Libya	0,3400	6,8331	0	1	0	0
Lithuania	1,0300	3,7261	1	0	0	0
Macedonia	-0,9400	1,6947	1	0	0	0
Morocco	-0,1800	1,2336	0	0	0	1
The Netherlands	1,3000	23,2938	0	0	0	1
New Zealand	1,3700	14,2822	1	0	0	0
Nigeria	-1,5600	0,3308	1	0	0	0
Ukraine	0,1200	0,7372	0	0	0	1
Pakistan	-1,4000	0,5320	0	1	0	0
Poland	0,7300	4,4628	1	0	0	0
Portugal	1,4200	10,4850	1	0	0	0
Rumania	0,3400	1,8665	1	0	0	0
Russia	-0,5200	1,9830	0	0	0	1
Serbia Montenegro	-0,8600	1,1588	1	0	0	0
Slovenia	1,3400	10,1449	1	0	0	0
Slovakia	0,9900	4,0808	1	0	0	0
Spain	0,6300	14,4079	1	0	0	0
Czech Republic	1,0700	5,6886	0	0	0	1
Turkey	-0,6600	2,8577	0	1	0	0
United Kingdom	0,6900	25,2263	1	0	0	0
United States	0,2100	34,7888	1	0	0	0
Vietnam	0,4800	0,4435	0	0	0	1
Belarus	0,1800	1,2646	1	0	0	0
Zimbabwe	-1,6200	0,4792	1	0	0	0
South-Africa	-0,2300	3,1177	0	0	0	1
Sweden	1,4100	27,6620	1	0	0	0

[a] Source: Kaufmann et al. (2005) [b] Source: Worldbank (2005) [c] Sources: CIA (2006); Inglehart et al. (2005)

Table III. 3: Characteristics of communities; relative origin group size

	AU[1]	AT[2]	BE[3]	DK[4]	DE[5]	EL[6]	IE[7]	LV[8]	LU[9]	NL[10]	NZ[11]	CH[12]	SC[13]
Albania	-	0,0	-	-	-	36,9	-	-	-	-	-	0,0	-
Argentina	-	-	-	-	-	-	0,0	-	-	-	-	-	-
Australia	-	-	-	-	-	-	-	-	-	-	17,1	-	-
Bangladesh	-	-	-	-	-	-	-	-	-	-	-	-	0,2
Bosnia Herzegovina	-	-	-	3,8	2,0	-	0,3	-	-	-	-	-	-
Brazil	-	-	-	-	-	-	0,3	-	-	-	-	-	-
Bulgaria	-	-	-	-	-	3,6	-	-	-	-	-	-	-
Canada	-	-	-	-	-	-	1,0	-	-	-	-	-	-
China	8,7	-	-	-	-	-	1,4	-	-	-	10,6	-	0,7
The Congo			3,0										
Denmark	-	-	-	-	-	-	0,2	-	-	-	-	-	-
Germany	5,9	-	-	-	-	-	2,2	-	-	23,7	-	20,2	-
Estonia	-	-	-	-	-	-	0,0	-	-	-	-	-	-
The Philippines	6,0	-	-	-	-	-	1,0	-	-	-	-	-	-
France	-	-	15,9		-	-	1,7	-	-	-	-	9,6	-
Georgia	-	-	-	-	-	-	0,0	-	-	-	-	-	-
Greece	6,5	-	-	-	4,3	-	-	-	-	-	-	-	-
Hungary	-	3,9	-	-	-	-	-	-	-	-	-	-	-
India	6,0	-	-	-	-	-	0,9	-	-	-	5,6	-	2,1
Italy	11,7	-	-	-	7,3	-	1,0	-	27,9	-	-	41,7	-
Croatia	-	-	-	-	2,9	-	-	-	-	-	-	-	-
Lebanon	4,2	-	-	-	-	-	-	-	-	-	-	-	-
Libya	-	-	-	-	-	-	0,0	-	-	-	-	-	-
Lithuania	-	-	-	-	-	-	0,5	-	-	-	-	-	-
Macedonia	-	-	-	-	0,0	-	-	-	-	-	-	-	-
Morocco	-	-	21,2	-	-	-	-	-	-	-	-	-	-
The Netherlands	4,5	-	11,8	-	-	-	0,9	-	-	-	-	-	-
New Zealand	21,5	-	-	-	-	-	0,6	-	-	-	-	-	-
Nigeria	-	-	-	-	-	-	2,4	-	-	-	-	-	-
Ukraine	-	-	-	-	-	-	-	26,0	-	-	-	-	-
Pakistan	-	-	-	3,5	-	-	0,9	-	-	-	-	-	2,5
Poland	-	5,2	3,0	-	4,0	-	0,6	-	-	-	-	-	-
Portugal	-	-	-	-	-	-	-	-	94,8	-	-	22,0	-
Rumania	-	4,9	-	-	-	-	1,5	-	-	-	-	-	-
Russia	-	-	-	-	-	6,6	0,7	290,0	-	-	-	-	-
Serbia Montenegro	-	17,8	-	-	6,9	-	-	-	-	-	-	26,6	-
Slovenia	-	2,6	-	-	-	-	-	-	-	-	-	-	-
Slovakia	-	2,0	-	-	-	-	-	-	-	-	-	-	-
Spain	-	-	-	-	-	-	1,2	-	-	-	-	10,5	-
Czech Republic	-	6,8	-	-	-	-	-	-	-	-	-	-	-
Turkey	-	15,6	12,5	9,9	22,8	-	-	-	-	22,0	-	11,0	-
United Kingdom	56,7	-	-	-	-	-	63,4	-	-	-	62,0	-	90,9
United States	-	-	-	-	-	-	5,5	-	-	-	-	-	-
Vietnam	8,8	-	-	-	-	-	0,0	-	-	-	-	-	-
Belarus	-	-	-	-	-	-	-	39,0	-	-	-	-	-
Zimbabwe	-	-	-	-	-	-	0,4	-	-	-	-	-	-
South-Africa	-	-	-	-	-	-	1,6	-	-	-	0,8	-	-
Sweden	-	-	-	-	-	-	0,3	-	-	-	-	-	-

1 Australia: proportions per 30 June 2003. Source: Australian Bureau of Statistics (2003); 2 Austria: proportions per 15 May 2001. Source: Statistik Austria (2006); 3 Belgium: proportions per 1 January 2002. Source: FOD Dienst Vreemdelingenzaken (2002); 4 Denmark: proportions per 1 January 2003. Source: Statistics Denmark (2003); 5 Germany: proportions per 31 December 2003. Source: Statistisches Bundesamt (2005); 6 Greece: proportions in 2001. Source: General secretariat of national statistical service of Greece (2006); 7 Ireland: proportions per 28 April 2002. Source: Central Statistics Office (2006); 8 Latvia: proportions in 2003. Source: Central Statistical Bureau of Latvia (2006); 9 Luxembourg: proportions per 15 February 2001. Source: Luxembourg National Institute of Statistics and Economic Studies (2003); 10 The Netherlands: proportions per 1 January 2005. Source: Garssen, J., H. Nicolaas & A. Sprangers (2005); 11 New Zeeland: proportions per March 2001. Source: Statistics New Zealand (2006); 12 Switzerland: proportions per 31 December 2003. Source: Bundesamt für Statistik (2004); 13 Scotland: proportions per 29 April 2001. Source: General Registre Office for Scotland (2003)

Table III.4: Characteristics of communities; socio-economic distance

Countries of origin	Countries of destination												
	AU	AT	BE	DK	DE	EL	IE	LV	LU	NL	NZ	CH	SC
Albania	-	19,1831	-	-	-	11,2950	-	-	-	-	-	15,3236	-
Argentina	-	-	-	-	-	-	-4,7427	-	-	-	-	-	-
Australia	-	-	-	-	-	-	-	-	-	-	-3,6216	-	-
Bangladesh	-	-	-	-	-	-	-	-	-	-	-	-	6,9799
Bosnia Herzegovina	-	-	-	7,1255	9,6390	-	5,2573	-	-	-	-	-	-
Brazil	-	-	-	-	-	-	-2,6577	-	-	-	-	-	-
Bulgaria	-	-	-	-	-	14,1585	-	-	-	-	-	-	-
Canada	-	-	-	-	-	-	-4,2427	-	-	-	-	-	-
China	1,5756	-	-	-	-	-	15,7573	-	-	-	1,8620	-	-5,6868
The Congo	-	-	0,9587	-	-	-	-	-	-	-	-	-	-
Denmark	-	-	-	-	-	-	-2,7427	-	-	-	-	-	-
Germany	-2,9689	-	-	-	-	-	-7,7427	-	-	2,1494	-	-5,8261	-
Estonia	-	-	-	-	-	-	-3,2427	-	-	-	-	-	-
The Philippines	3,4165	-	-	-	-	-	-0,7427	-	-	-	-	-	-
France	-	-	4,3375	-	-	-	-8,4094	-	-	-	-	-3,4297	-
Georgia	-	-	-	-	-	-	5,2573	-	-	-	-	-	-
Greece	6,6411	-	-	-	11,8290	-	-	-	-	-	-	-	-
Hungary	-	-10,3624	-	-	-	-	-	-	-	-	-	-	-
India	-5,7904	-	-	-	-	-	-24,7002	-	-	-	-6,1157	-	-2,2582
Italy	4,9172	-	-	-	12,1605	-	3,7573	-	4,5982	-	-	8,4342	-
Croatia	-	-	-	-	8,4784	-	-	-	-	-	-	-	-
Lebanon	9,2472	-	-	-	-	-	-	-	-	-	-	-	-
Libya	-	-	-	-	-	-	-39,7427	-	-	-	-	-	-
Lithuania	-	-	-	-	-	-	20,9806	-	-	-	-	-	-
Macedonia	-	-	-	-	2,5047	-	-	-	-	-	-	-	-
Morocco	-	-	10,4065	-	-	-	-	-	-	-	-	-	-
The Netherlands	2,4423	-	-1,3344	-	-	-	10,2573	-	-	-	-	-	-
New Zealand	2,2631	-	-	-	-	-	1,2573	-	-	-	-	-	-
Nigeria	-	-	-	-	-	-	-27,7427	-	-	-	-	-	-
Ukraine	-	-	-	-	-	-	-	1,4419	-	-	-	-	-
Pakistan	-	-	-	9,3645	-	-	-10,7427	-	-	-	-	-	-1,0476
Poland	-	0,5467	-0,0422	-	8,1620	-	-22,7427	-	-	-	-	-	-
Portugal	-	-	-	-	-	-	-	-	16,6097	-	-	14,7623	-
Rumania	-	2,2961	-	-	-	-	-1,5727	-	-	-	-	-	-
Russia	-	-	-	-	-	4,9026	-28,4570	0,1521	-	-	-	-	-
Serbia Montenegro	-	10,6899	-	-	5,0154	-	-	-	-	-	-	14,0877	-
Slovenia	-	-9,1957	-	-	-	-	-	-	-	-	-	-	-
Slovakia	-	-3,8624	-	-	-	-	-	-	-	-	-	-	-
Spain	-	-	-	-	-	-	-10,7427	-	-	-	-	7,8146	-
Czech Republic	-	-9,8624	-	-	-	-	-	-	-	-	-	-	-
Turkey	-	12,8642	10,9160	10,8111	12,2340	-	-	-	-	7,3745	-	14,1803	-
United Kingdom	-3,1977	-	-	-	-	-	-3,4533	-	-	-	-3,6271	-	-5,9956
United States	-	-	-	-	-	-	-7,6316	-	-	-	-	-	-
Vietnam	8,2041	-	-	-	-	-	4,2573	-	-	-	-	-	-
Belarus	-	-	-	-	-	-	-	2,6925	-	-	-	-	-
Zimbabwe	-	-	-	-	-	-	5,2573	-	-	-	-	-	-
South-Africa	-	-	-	-	-	-	-9,4927	-	-	-	-5,6923	-	-
Sweden	-	-	-	-	-	-	-2,2427	-	-	-	-	-	-

Source: PISA (2003)

Table III. 5: Characteristics of communities; cultural distance

Countries of origin	Countries of destination												
	AU	AT	BE	DK	DE	EL	IE	LV	LU	NL	NZ	CH	SC
Albania	-	0,0315	-	-	-	0,5316	-	-	-	-	-	0,0927	-
Argentina	-	-	-	-	-	-	1,6111	-	-	-	-	-	-
Australia	-	-	-	-	-	-	-	-	-	-	-0,1866	-	-
Bangladesh	-	-	-	-	-	-	-	-	-	-	-	-	-0,0925
Bosnia Herzegovina	-	-	-	0,6884	-0,0258	-	0,0444	-	-	-	-	-	-
Brazil	-	-	-	-	-	-	0,1836	-	-	-	-	-	-
Bulgaria	-	-	-	-	-	0,6451	-	-	-	-	-	-	-
Canada	-	-	-	-	-	-	-0,7833	-	-	-	-	-	-
China	0,0364	-	-	-	-	-	0,0444	-	-	-	0,1472	-	-0,2764
The Congo	-	-	0,1244	-	-	-	-	-	-	-	-	-	-
Denmark	-	-	-	-	-	-	-0,2999	-	-	-	-	-	-
Germany	-0,2936	-	-	-	-	-	0,0224	-	-	-0,2742	-	-0,3619	-
Estonia	-	-	-	-	-	-	-0,2999	-	-	-	-	-	-
The Philippines	0,1584	-	-	-	-	-	1,0113	-	-	-	-	-	-
France	-	-	0,0546		-	-	-0,1851	-	-	-	-	-0,3460	-
Georgia	-	-	-	-	-	-	1,0113	-	-	-	-	-	-
Greece	0,3943	-	-	-	0,5455	-	-	-	-	-	-	-	-
Hungary	-	-0,5598	-	-	-	-	-	-	-	-	-	-	-
India	-0,1777	-	-	-	-	-	-0,2999	-	-	-	0,1651	-	-0,1057
Italy	0,2794	-	-	-	0,2846	-	-0,2999	-	0,3633	-	-	-0,0191	-
Croatia	-	-	-	-	0,1678	-	-	-	-	-	-	-	-
Lebanon	0,5371	-	-	-	-	-	-	-	-	-	-	-	-
Libya	-	-	-	-	-	-	0,0444	-	-	-	-	-	-
Lithuania	-	-	-	-	-	-	0,4595	-	-	-	-	-	-
Macedonia	-	-	-	-	1,3345	-	-	-	-	-	-	-	-
Morocco	-	-	0,2947	-	-	-	-	-	-	-	-	-	-
The Netherlands	-0,1322	-	0,0656	-	-	-	-1,6111	-	-	-	-	-	-
New Zealand	0,2406	-	-	-	-	-	-1,2888	-	-	-	-	-	-
Nigeria	-	-	-	-	-	-	-0,3687	-	-	-	-	-	-
Ukraine	-	-	-	-	-	-		-0,1105	-	-	-	-	-
Pakistan	-	-	-	0,7011	-	-	0,1836	-	-	-	-	-	0,2640
Poland	-	0,0688	0,0325	-	0,2331	-	-1,6111	-	-	-	-	-	-
Portugal	-	-	-	-	-	-		-	0,4391	-	-	0,2422	-
Rumania	-	0,0716	-	-	-	-	-1,6111	-	-	-	-	-	-
Russia	-	-	-	-	-	0,3491	-0,9999	-0,1385	-	-	-	-	-
Serbia Montenegro	-	0,4491	-	-	0,3774	-	-	-	-	-	-	0,1682	-
Slovenia	-	-0,1863	-	-	-	-	-	-	-	-	-	-	-
Slovakia	-	0,5731	-	-	-	-	-	-	-	-	-	-	-
Spain	-	-	-	-	-	-	-1,6111	-	-	-	-	0,2236	-
Czech Republic	-	-0,8529	-	-	-	-	-	-	-	-	-	-	-
Turkey	-	0,3975	0,4571	0,6116	0,2862	-	-	-	-	0,3898	-	0,0816	-
United Kingdom	-0,1146	-	-	-	-	-	-0,1142	-	-	-	-0,1712	-	-0,5574
United States	-	-	-	-	-	-	-2,3691	-	-	-	-	-	-
Vietnam	0,2439	-	-	-	-	-	-1,6111	-	-	-	-	-	-
Belarus	-	-	-	-	-	-	-	-0,1222	-	-	-	-	-
Zimbabwe	-	-	-	-	-	-	-0,6442	-	-	-	-	-	-
South-Africa	-	-	-	-	-	-	-0,0582	-	-	-	-0,0007	-	-
Sweden	-	-	-	-	-	-	-0,7833	-	-	-	-	-	-

Source: PISA (2003)