Educational differences between native-born and immigrant youth in Western societies. A study of the influence of institutional and individual factors on the basis of PISA data from 2000, 2003, and 2006

Authors

Prof. Dr. Roland Verwiebe
University of Vienna
Institute of Sociology
Social Stratification and Quantitative Methods
Rooseveltplatz 2
A-1090 Vienna, Austria

Phone: +43 (1) 4277-49220
Fax: +43 (1) 4277-9492
Email: roland.verwiebe@univie.ac.at

Bernhard Riederer
University of Vienna
Institute of Sociology
Social Stratification and Quantitative Methods
Rooseveltplatz 2
A-1090 Vienna, Austria

Phone: +43 (1) 4277-48128
Fax: +43 (1) 4277-9492
Email: bernhard.riederer@univie.ac.at

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1   Introduction

The educational opportunities of children and young people with an immigrant background have in recent years become a major research topic in sociology. More and more studies show that this category of persons suffers marked disadvantages in the education system in Western societies. This paper addresses the issue by means of a multi-level analysis of 15 countries on the basis of the PISA data from 2000, 2003, and 2006. The focus is on educational differences between native-born and immigrant youth.

On the theoretical level, the paper draws on studies on migration as well as studies which deal with educational inequalities. With respect to migration our sample includes traditional immigration countries such as Canada and Australia. Germany, Austria, Belgium and Switzerland are examples of continental European countries where labour immigration was particularly important in the 1960s and 1970s. In the United Kingdom, France and the Netherlands, post-colonial immigration has played a major role, which is also reflected in immigration and integration policy. Russia represents a novel form of an emerging Eastern European immigration system. The Scandinavian system with its comparatively liberal immigration policy is also represented (by Sweden, Denmark, Norway). Regarding educational inequality, we use studies concerned with the role of the educational system in the reproduction of inequalities as well as more recent studies dealing with the importance of the family context. The latter go more deeply into the cultural capital and/or occupational status of the parents, and the family learning environment. The school context (including type of school, class size) and language skills are also important from a theoretical standpoint.

Methodologically, the study is based on multi-level analyses that allow the influence of individual, contextual, and institutional factors to be taken into account. At the same time, our analyses show how the educational opportunities of immigrant children have changed in recent years. To this end, we have used the available waves of the PISA study (2000, 2003, 2006). We have placed the data on students' literacy skills (reading literacy) at the centre of our study, because language competence is of particular importance for the integration of immigrants and for their everyday life. Moreover, reading skills are the only skills which can be compared between all three waves of the PISA study. Our analytic strategy comprises three steps: First, we examine existing educational differences between native-born and immigrant students. Second, we reveal the major factors that contribute to the – often lower -

skills of immigrant children. Third, we analyse how effects of certain factors upon educational achievements have changed with time in different ways in different countries.

2   Educational inequality and migration

Educational systems are of great importance for the inequality dynamics of modern societies. Arguably a key function of the educational system, strongly justified by functionalist classics as early as in the 1940s (Davis and Moore, 1945), is the selection of individuals for higher education and their subsequent assignment to positions important to modern society.[1] Not all education systems in modern societies perform this selection function in the same way. The degree of stratification in a given system is – if one follows the proposal by Allmendinger (1989; 2009) – of major significance. According to Allmendinger, the stratification of an educational system can be measured by the degree of selectivity in transitions to higher educational levels (i.e., how many students from a cohort reach the highest formal educational degree). In highly stratified systems, one can observe for example a parallel structure of elementary schools and grammar schools, transitions between the levels of the school system are selective, and early tracking is the rule. Empirical examples for highly stratified educational systems are Germany, Austria and Belgium. In those countries, children from lower classes will very unlikely attend secondary schools that qualify the students for university entrance or some other form of post-secondary education (e.g. Duru-Bellat et al., 2008; Haller, 2008; Kristen, 2000). Against that background, we assume that highly stratified education systems – and this is our first hypothesis – can be expected to have a particularly negative impact on the educational achievements of students from immigrant households (H1).

Besides theses differences based on the degree of stratification of educational systems, we expect to observe differences in the educational achievements of students in the countries under study related to a number of other crucial macro variables. In the research it is discussed that educational expenditures as well as the overall level of socio-economic development have an impact on skills of students and skill differences among them (for the contours of the debate see Ammermüller and Lauer, 2009). Theoretically speaking, with increasing spending on education, better conditions in the school system can be expected which can lead to better educational performances of immigrant children and lower differences between non-immigrant and immigrant students (H2). With rising social prosperity, one can also expect better conditions for education and thus lower differences in the educational performances

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[1] Based on these considerations, sociology has for many decades studied the performance and educational aspirations of primary and secondary school children. The PISA study, which provides the basis for the empirical analyses of this paper, was ultimately designed in accordance with this functionalist logic. "PISA is the most comprehensive … effort to date to assess student performance. … PISA is based on a dynamic model of lifelong learning in which new knowledge and skills necessary for successful adaption to a changing world are continuously acquired throughout life. … The term 'literacy' is used to encapsulate this broader conception of knowledge and skills" (OECD, 2001).

between non-immigrant and immigrant students (H3). Furthermore, we use the average reading scores of all PISA non-immigrant respondents as a macro-level variable for the overall quality of the school system, thereby accounting for cross-national performance differences caused by country effects that do not necessarily pertain to immigration-related characteristics (compare Levels et al., 2008: 842). Our underlying hypothesis (H4) states that the quality of the school system is a decisive factor for the educational opportunities; students with migration background should be able to perform better in high quality school systems (Ammer-müller and Lauer, 2009). Finally, we include the share of migrants in the total population in our analysis as a macro variable as this factor has an impact on social integration of societies as a whole. We will test whether the educational inequalities between native-born and immigrant schoolchildren are greater in countries with a high overall proportion of migrants in the total population (H5).

Researchers have intensively discussed not just the influence that education systems have on society as a whole – following on from these debates, many authors have also examined the influence that different types of schools and school qualities have on the distribution of educational opportunities (e.g. Browning and Heinesen, 2007; Dearden et al., 2002; Heinesen and Graversen, 2005; Rivkin et al., 2005). These contextual characteristics are important in explaining educational outcomes. Thus, the resources available in schools and the quality of the educational programs which these resources facilitate, play a major role in students' educational success (H6). In private schools, for example, one can therefore expect a higher level of educational attainment than is the case in most state schools. It can be assumed that especially children from lower classes (working class and/or migration background) will perform better in schools where a sufficient amount of resources is available (Ammermüller and Lauer, 2009).

It is recognized that, in addition to these macro- and meso effects, individual effects also contribute to the distribution of educational opportunities. Most researchers agree on the observation that social background / social class has long been a relevant factor in the allocation of educational opportunities. The opportunities for children from working-class households to attain a high-school diploma or a university degree have not improved significantly during the last decades (Müller and Kogan, 2010; Reimer and Pollak, 2009).[2] Social class is thus still a significant factor in educational inequalities, in our case measured through the achievement

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[2] The educational expansion of Western societies in the second half of the 20th century has benefited above all children from middle-class households headed by white-collar workers, civil-servants and the self-employed. It has improved the educational opportunities of all strata, yet without eliminating stratum-typical inequalities. Although one has to consider, according to Entorf und Minoiu (2005), existing differences between countries in this context. The influence of socio-economic context is more pronounced in Germany, the U.S. and U.K. than in the Scandinavian countries or Canada. Migrants thus find themselves (e.g. in Germany) in an unfavourable situation in which language problems go hand in hand with a poorer socio-structural position.

differences between non-immigrant and immigrant students (H7). The influence of class is already perceptible at the level of the family, when decisions are made in favour of a certain educational path, a particular type of school, and even a specific school. Especially with schoolchildren, the decision in favour of a particular type of school is strongly influenced by the parents' own educational background and their occupational status (c.f. Schneider, 2008: 512).[3] Other class-specific effects on achievement at school are the result of different learning environments. According to Barone (2006), the chances of success in the education system are also dependent on the extent to which parents are able to mobilize their cultural capital (H8) – for example, through the family's own cultural resources, or access to tutoring. The language spoken at home is very likely another crucial factor for the educational achievements of migrant students (H9), as it is shown in a number of recent studies (e.g. Entorf and Minoiu, 2005). One hast to note that the lack of language skills, poor learning conditions, and sub-optimal family and school environment frequently occur often in conjunction (Allmendinger et al., 2008: 54, 58). Moreover, we can expect to find differences between students based on gender (OECD, 2009b). Female students will quite likely perform better in school than male students, even after controlling for the effects of status and cultural capital of the parents (H9).

Researchers make a further distinction between young people who belong to the first generation and young people who belong to the second generation of immigrants (Levels and Dronkers, 2008; Levels et al., 2008; Marks, 2005; Portes et al., 2005). The latter group is usually assumed to have better opportunities for integration in the education system and the labour market. On this view, it would be plausible in the framework of our study to assume that the education gap between native-born schoolchildren and second-generation migrant schoolchildren proves to be less significant than that between native-born schoolchildren and first-generation migrant schoolchildren (H10). The grandchildren of workers who migrated in the 1960s and 70s to the Western societies under study could thus be expected to achieve better results in the PISA test than the children of migrants who arrived more recently.

For the empirical study of the present contribution, countries were chosen that allow one to take into account the varying traditions of migration, varying compositions of migration populations as well as different migration and integration policies that exist in Western socie-

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[3] Pfeffer (2008) argues that the parental context is especially relevant in countries showing a high degree of educational stratification. This is the case because, with the early selection process and the multiplicity of possible pathways, the parents' strategic know-how and educational capital is crucial. Stanat and Christensen (2006) show in a study of 17 countries that significant differences in students academic performance largely emerge in the context of an immigration background (for the EU, see also Mau and Verwiebe, 2010: 171ff.; for the United States see NCES, 2007: 15). The greatest differences were to be found in Austria, France and Germany, and the smallest in traditional immigration countries such as Australia and Canada (Stanat and Christensen, 2006).

ties (Bade et al., 2011; Castles and Miller, 2009; Fassmann et al., 2009; Fassmann and Münz, 1994; OECD, 2009c).

Canada, Australia, New Zealand exemplify the traditions of classic emigration countries. Here we are dealing with societies where the conditions for integration are commonly considered very good even if the proportion of foreign-born inhabitants (up to 20% of the population) is relatively high. By the second generation at the latest, there are few observable differences between locals and immigrants in the education system or the labour market. The Korean community in the U.S. or the Indian community in Canada can serve as examples. In countries like Norway, Sweden and Denmark one finds a moderate proportion of the population with foreign citizenship (around 5%). The integration of migrants is oriented towards assimilation and the integration into the educational system and labour market is actively promoted (Kjeldstadli, 2011). Given these conditions, one can safely assume that migrants in these countries are afforded better educational opportunities than their counterparts in continental Europe, for example. In Great Britain, France and the Netherlands (countries with a post-colonial migration systems), one finds a slightly higher proportion of the population with foreign citizenship (between four and seven percent) than in Scandinavia. It is crucial to Great Britain, France and the Netherlands that, before they actually arrive in their destination country, many immigrants have already undergone a social and cultural orientation with respect to their host societies, and existing immigrant networks also facilitate the integration of new arrivals. Those groups often have a good command of the language of their destination countries and also possess to some extent the same rights as citizens (Lucassen and Lucassen, 2011; Lunn, 2011; Meurs et al., 2008; Moch, 2011).

In Germany, Belgium, Austria and Switzerland, the proportion of foreigners and of inhabitants born abroad in the total population is high by European standards. The main causes of immigration are the labour migrations of the 1960s and 1970s, which brought numerous immigrants from Turkey, Yugoslavia, Spain, Portugal, Greece and Italy. As a result, ethnic minorities have developed. Not infrequently, these groups are only partly integrated into society and are confronted with manifold disadvantages. Even in the second and third generations, in the labour market and the education system, one encounters forms of ethnic segmentation and entrenched structural inequalities between the 'native' population and immigrant groups (Bender and Seifert, 1998; Hahn, 2011; Kogan, 2004; Kogan and Kalter, 2006; Kristen, 2008; Kristen and Granato, 2007; OECD, 2007; Riphahn, 2003). Finally, Russia represents a new Eastern European migration system and is regarded as a specific "reference case".[4] In Russia, there has been a slight increase in the proportion of

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[4] Russia epitomizes a new kind of Eastern European migration system. One has to point out that, in recent decades, the countries of Eastern Europe have emerged predominantly as sources of migration, and to a lesser extent

foreigners in recent years (similar to the Czech Republic and Hungary, for example). However, by Western standards, one finds a low proportion of foreigners (2.5%), which is comparable with the Czech Republic, Hungary, Slovenia or Finland. Moreover, ethnic minorities and the return migration of ethnic Russians from the Baltic countries and other former states of the Soviet Union play a relatively important role in the population structures and structures of migration (Russian Federal State Statistics Service, 2010).

3   Data, methods, variables

3.1   Data

The PISA study was an examination of school performance across the OECD conducted in 2000, 2003 and 2006. The goal of the study is to measure the general and occupationally relevant knowledge of 15-year old students in three areas: reading, mathematics and natural science. The main focus of the PISA studies lies in the mastery of processes, the understanding of concepts and the ability to deal with different situations within a field (OECD, 2003). Reading skills are the only skills which can be compared between all three waves of the PISA study. Thus, we will treat only reading here. Based on all three waves of the PISA data, we conduct multilevel analyses using data on immigrant students in 15 western countries. The wave from the year 2000 includes data on 11,954 students at 2,496 schools. In 2003 our data set comprises data on 14,513 students at 2,886 schools, and in 2006 data on 16,362 students at 3,014 schools.

3.2   Method

In order to analyse educational inequality in Western societies, we use multilevel models. Multilevel analyses allow a consideration of several distinct analytical levels in one and the same step of analysis. Estimations of standard errors of regression coefficients for macrolevel variables are more reliable than in simple regression analysis, where the number of cases on the microlevel instead of the number of cases on the macrolevel is considered for the estimation of standard errors on the macrolevel (Hadler, 2004; Hox, 1995; Langer, 2009). In addition, it is still possible to determine whether coefficients are invariant across national samples. In random intercept models, only the intercepts (fixed effects) are allowed to differ between countries. Regression lines for single nations have different starting points but show the same slopes. In random coefficient models, the regression coefficients of independent variables are also allowed to vary between countries (random effects). Thus, the regression lines have country-specific slopes. The analytic strategy of comparing random intercept models with random slope models allows testing of the invariance of effects of independent variables between countries. If random slope models do not significantly differ from random intercept models, the assumption of country-specific slopes can be rejected.

as target countries for migration flows. However, that picture has changed to some degree during the last decade.

In the following analyses, we draw on data from three PISA waves (2000, 2003, 2006) on students with immigrant backgrounds in fifteen countries. We distinguish three levels of analysis: the country level, the level of the schools, and that of the students themselves. In the first step of the analysis, an empty model was estimated, which as yet contains no explanatory variables. Then variables were added successively at the level of the students, the schools, and finally at the country level. Finally, we freed up certain slopes to test whether effects of independent variables differ across countries.

In order to be able to compare the strength of the estimated coefficients, all the variables were standardized. In the process, we took into account the distinction between the three levels and the fifteen countries. The values of a variable at the school level or at the student level were divided by the respective standard deviation of the national samples (on the advantages of this approach, see Horn, 2007). In order not to lose sight of differences in level between the countries, the respective mean of the overall sample was subtracted from the individual values. In calculating the mean values and standard deviations, we drew on the number of cases at each level (the schools or students). Variables at the country level were z-transformed, factoring in the number of cases (15 countries). The multilevel analyses were carried out using the program Stata SE 11.0, employing the procedure "xtmixed" with restricted maximum likelihood estimation (for details, see Rabe-Hesketh and Skrondal, 2008)

3.3 Variables

3.3.1 Dependent variable

The values for the dependent variable reading proficiency are a result of item response modeling. They are random numbers drawn from the distribution of scores that could reasonably be assigned to each student (based on actual test scores) and are considered to be valid estimates of student population parameters (for details see OECD 2009a, OECD 2009b).[5] The OECD transforms plausible values into a scale with a mean of 500 and a standard value of 100 over all OECD countries. We use this scale to represent reading proficiency in descriptive analyses. In multilevel analyses, however, we use the median value of the five plausible values, centered using the total sample mean and standardized with the respective standard deviations of the respective national samples. Higher values indicate higher reading proficiency.

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[5] To measure the reading proficiency of 15-year olds, the PISA study used a five-point scale ranging from a 1 for recognition of basic information to a 5 for demonstration of the ability to completely understand and critically assess the text (OECD, 2003).

3.3.2 Independent variables

Nation level and school level

At the country level, we consider (1) the number of parallel existing schools types as an indicator of the stratification of the education system, (2) the average figure for the reading performance of native-born students for the years 2000, 2003 and 2006 as an indicator for overall quality of the school system as discussed in the theoretical part of the paper, (3) the level of socio-economic development based on GDP per capita for the years 2000, 2003 and 2006 in U.S. dollars, (4) expenditure on education as a percentage of GDP in 2000, 2003, and 2006, and (5) the number of foreigners as a percentage of the total population (see Table 1 in annex).

At the school level, two variables are included in the analysis. A first distinction is made between public and private schools, and secondly whether grade 12 is offered by the school in question. In the German-speaking world, the higher grades are only offered by those schools providing an education that is meant to lead to higher education. In comparison to others, these schools should provide a higher quality education. The inclusion of this parameter is intended to facilitate an approximate control of the impact of the quality of specific kinds of schools on student performance.

Student level

The effects of social class are analysed based on three different variables in our study. We use parental education classified via the ISCED scheme. Indices were constructed by taking the highest level for father and mother using the following categories: (0) None, (1) ISCED 3A (upper secondary) and/or ISCED 4 (non-tertiary post-secondary), (2) ISCED 5B (vocational tertiary), (3) ISCED 5A, 6 (theoretically oriented tertiary and post-graduate). Additionally, we use the occupational data for both of the students' parents in a specific way: The highest occupational level of parents is the higher ISEI score of either parent or the ISEI score of the only available parent.

The three variables home educational resources, cultural possession of the family and use of private tuition can be regarded as indicators of cultural capital (Barone, 2006). Home educational resources: this is an index that was scaled using a weighted maximum likelihood estimation based on a one-parameter item response model (for details see OECD 2009a, OECD 2009b), although in the case of items with more than two response categories, the model of graded scores (Partial Credit Model) was used. The index includes the availability of the following resources in the student's home: a desk to study at, a quiet place to study, a computer to use for school work, educational software, his/her own calculator, books to help with school work, and a dictionary. A negative value of the original index means that the

students responded less positively than the average for all students in OECD countries. Accordingly, a positive value means that the student gave a more positive response than the average in OECD countries. For the interpretation of coefficients in our multi level analyses it has to be considered that we centered the variable using the average of our sample of students from 15 nations. Cultural possession of the family is also an index based on a WLE estimate. The index includes the availability of the following resources in the student's home: classic literature, books of poetry, and works of art (e.g., paintings). The use of private tuition to help with schoolwork is used as a dummy variable, coded 0/1 (1 = student indicated that she/he has employed a private tutor in the past three years, 0 = other responses). The language spoken at home is another crucial factor for educational achievements. We use a dummy variable which measures whether the test language is spoken at home (value 0) or not (value 1), assuming that speaking any official language at home is a sign of successful integration.

As suggested in the theoretical part of the paper, gender is also included in the analysis as a dummy variable (0 = male, 1 = female). Moreover, we differentiate in our analysis between first-generation immigrants (value 0) and second-generation immigrants (value 1). First-generation students were born outside the country of assessment, and their parents were also born in a different country. Second-generation students were born in the country of assessment, but their parents were born in a different country. Second-generation students have had all their schooling in the country of assessment. Finally, the age of the students is used as a control variable measured in months. As the PISA study exclusively focuses on 15 and 16 year-old students, the age in months may also be understood as proxy for the grade the students are enrolled in.[6]

4 Descriptive Findings

Against this backdrop, we will present in this section the disparate performance of European educational systems and the selectivity of their distribution of educational opportunities, differentiated based on ethnic background, and examining reading proficiency scores from the PISA test. We will compare the school performance of students with and without a migrant background, considering only those countries where at least 2.5% of families are migrants.

In 2006, Belgium showed the greatest disparities in reading proficiency (106 points, which amounts to roughly 1.5 proficiency levels) between children from migrant backgrounds and children from households where at least one parent speaks the native language as his/her mother tongue (see right side of Table 1). The next-greatest disparities were in Denmark,

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[6] Data on the grade was also collected in the PISA study. However, the respective variable partly shows a very high number of missing cases (42.5% of pupils in 2003). Information about age is available for almost every pupil.

Germany, Sweden and the Netherlands. In all these countries, considerable differences in skill level (80-90 points = 1 proficiency level) were evident between native students and those from migrant households. Within Europe, the narrowest achievement gaps between migrant and native-born children were found in Great Britain and Russia. In Britain many immigrants speak English as a second language, so that disadvantages caused by lack of fluency are far less severe and hence have less of an impact on the children's educational performance than they do elsewhere. Thus, the UK is an example for a successful integration policy in the educational sphere – despite an increased influx of both European and non-European migrants during the 1990s. The case of Russia is not so much different. A large group of immigrant students come from other states of the former Soviet Union and it is highly likely that they speak Russian very well. This might explain the low differences between immigrant and non-immigrant students. Interestingly, as hypothised, the classic emigration countries (e.g. Canada, Australia, New Zealand) with their successful integration policies show also very little educational inequalities between between immigrant and non-immigrant students.

Table 1 also shows the differences in the reading scores between native-born students and migrant students from the first and second generation. With a few exceptions – Belgium and Denmark in 2000, Germany in 2003 – the difference in performance between native-born schoolchildren and first-generation migrants is greater than that between native-born students and second-generation migrants. Second-generation migrants have grown up in the country in question and therefore, compared to those from the first generation, they should be more familiar with the language and customs of the country.

As already mentioned, the differences between the performance of native-born students and migrants are much less marked in countries classified as having traditional migration systems (Australia, Canada, New Zealand). To a certain extent, second-generation migrants even have better reading skills than the native-born students (especially e.g., in Canada in 2003). In the other countries under study, the native-born students showed better reading skills than the migrants. Rather small differences, especially for the second generation, are found in Great Britain. The greatest differences in performance are found in the countries of continental Europe in which labour migration traditionally plays a large role (Germany, Austria, Switzerland, Luxembourg). In comparison to other countries, these countries are also characterized by a highly-stratified school system. Similarly large differences are found in Belgium.

In addition to the differences as such, the changes over time are also relevant. While the differences in performance diminished in certain countries – for example in New Zealand, Australia and Switzerland between 2000 and 2006 – in other countries the differences certainly fluctuated, but without showing a clear trend. In Austria, for example, the differences between

native-born students and first-generation migrants diminished, whereas those between native-born students and second-generation migrants increased. This could possibly be due to a change in the countries of origin of the migrants coming to Austria. In the 1990s, a large proportion of immigrants came from the former Yugoslavia, while in recent years the immigrants have been EU citizens, especially Germans (OECD, 2007, 2009c). This may have a major effect on performance, especially in reading.

Those descriptive results are in line with the considertaions of Schnepf (2007: 543f.) for example, who argues that immigration countries can be divided into two groups: English-speaking countries with generally low immigrant disadvantage and Continental European countries with relatively high immigrant disadvantages in educational achievements. Similarly, Entorf and Minoiu (2005) draw a distinction between traditional countries of immigration (e.g. Australia, Canada, the U.S.), with often highly-qualified migrants, and countries like Sweden, the Netherlands and Germany which are destinations for labour migration. In Canada, Australia, the UK and the U.S., immigrant students quite often have better language skills than immigrant students in Sweden, the Netherlands and Germany.

5   Multilevel analysis

Most studies focus on a small number of countries in order to analyze the integration of immigrants in detail. This research delivers great insights but is unable to test explanations on observed cross-national similarities and differences. Therefore, there is a need for tests of hypotheses involving macro-level characteristics (Levels and Dronkers, 2008: 1405). Multilevel analyses are able to provide such tests.

Random intercept models

Table 2 gives an overview of the calculated random intercept models. The starting point is the empty model, in which the three levels are considered. In model 1, independent variables at student level are included. In Model 2, independent variables at school level are added. Finally, model 3 is comprised of variables at the country level. This full model explains 26% to 31% of the variance of the reading proficiency of migrants.

Table 3 shows the coefficients of model 3 for all three surveys. At the country level, there are significant effects of the average value for the native-born students and the number of school types. Corresponding with our hypothesis 1, the higher the number of school types, the lower the reading proficiency of students with immigration backgrounds. Highly stratified systems have a negative impact on the educational opportunities of young people from immigrant households. In line with hypothesis 4, the better the reading performance of native-born students, the better is that of migrant students. The qualities of the respective educational

system and its schools therefore also have an effect on the performance of migrants (Ammermüller and Lauer, 2009). And, it has to be noted, that, since the average performance of native-born students is controlled for, it is all the more remarkable that the number of school types – as an indicator of the stratification of the school system – still shows up as an additional factor in the performance of migrant students. Interestingly, there are no significant effects to be found for per capita GDP, for public spending on education, or for the percentage foreigners in the population. Our corresponding hypotheses have to be dropped. Money alone cannot guarantee success at school. Nor does a higher proportion of foreigners mean a poorer performance for schools. Instead, it depends on the specific design of the educational system (Ammermüller and Lauer, 2009).

At the school level, in turn, there are two significant effects to be found. Students who attend private schools show better educational achievements than students attending government schools. Similarly, respondents from schools that offer Grade 12 show a higher level of performance than respondents whose schools do not offer Grade 12. The quality and facilities of a school have a noticeable influence on student performance. These results support our hypothesis 6 that the school quality on the meso level is of major importance for students' educational success.

At the individual level, a major factor in the performance of migrant students is social class. As assumed in the theoretical part of the paper, children whose parents have a higher level of education have better reading skills. The mother's level of education seems to be more decisive than that of the father, since, in accordance with traditional parenting roles, it is mostly mothers who take care of the children. Along with those factors, however, the strongest impact on students' reading performance comes from the occupational status of the parents. The higher the status of the parental home is, the better are the immigrant student's educational achievements. The relevance of status differences is also reflected in the results for the variables with which we measured the influence of cultural capital on immigrant student's achievements: reading performance improves in step with the level of home educational resources and cultural possessions in the family home. Private tuition has a curious effect – at first glance, at least: migrants who declare that they have received help from a private tutor actually perform worse than those who have not received private tutoring. The tutoring, however, is not limited to language competence: students also receive tutoring in other subjects. Therefore, this effect could be interpreted as follows: respondents who receive private tutoring are generally speaking weaker students who have a real need to catch up. Taken together, these results clearly support our hypotheses 7 and 8. Social class and the extent to which parents are able to utilise their cultural capital in order to provide a good learning environment and support play an important role for students' chances of success in

the educational system. Similarily to Entorf and Minoiu (2005: 372) and in correspondence with our hypothesis 9, we can show that the language spoken at home is absolutely crucial. Educational achievements of migrant students improve significantly when the language spoken at home is the test language as opposed to a different language.

Moreover, the results show, corresponding with hypothesis 10, that girls perform better than boys in the school systems of the Western societies under study. Finally, regarding the distinction between first and second-generation migrants, it is clear that second-generation migrants have higher educational achievements than those from the first generation. This is in line with our hypothesis 10 and hardly seems surprising, since the former have grown up in the test country and have been enrolled in the respective school system from the beginning, while the latter came to a new country and most first-generation migrants have first to become accustomed to the school system and to everyday life.

Random slope models

Along with the random intercept models, two random slopes models were calculated, which will not be presented in detail at this point. The starting point in each case is Model 3. First, in addition to the effects in Model 3, we examined whether the effect of the parents' status varies beyond countries. No marked effects showed up, however. The corresponding random slope model differed significantly from the random intercept model only in 2003, but not in 2000 and 2006. Pfeffer's (2008) thesis concerning the relevance of the parental context (in this case, the status of the parents), particularly in countries where the education system has a high degree of stratification, is not confirmed by our calculations.

We get quite a different picture when we look at the findings on the distinction between first and second-generation migrants (see Figures 1 to 3). Likelihood ratio tests indicate that the respective Random Slope Model differs significantly for all three surveys from the respective Random Intercept Model (2000: LR Chi2 (1) = 21.57, p <.001; 2003: LR Chi2 (1) = 27.41, p < .001; 2006: LR Chi2 (1) = 49.22, p <.001).

Our analyses show that second-generation migrants have better reading skills particularly in those nations that belong to the traditional immigration system (and especially in Canada). In the continental European countries characterised by labour migration (such as Germany), second-generation migrants – controlling for all the effects discussed so far – do not perform much better than first-generation migrants. This allows cautious conclusions regarding the integration policies of the various countries, policies which are in turn bound up with the respective immigration systems.

Moreover, all the fixed effects discussed above seem to be rather stable over time. But the comparison of the slopes for different points in time reveals some interesting patterns. In Sweden, after controlling for the above mentioned factors, there remains only a small difference in reading scores between second-generation migrants and first-generation migrants in 2000. In 2003 and 2006, however, second-generation migrants show much a better reading performance than first-generation migrants. Quite similar, there are no pronounced differences between second-generation migrants and first-generation migrants in Belgium in 2000. But second-generation migrants show higher reading scores than first-generation migrants in 2003 and 2006. It may be possible that authorities in Belgium successfully reacted to the negative results of the first PISA wave in 2000. However, it has to be noted, that this result does only show up if other characteristics of first-generation migrants and second-generation migrants are controlled for.

In contrast to results with Sweden and Belgium, differences between first-generation migrants and second-generation migrants changed to the disadvantage of second-generation migrants in Austria. In Austria, second-generation migrants do better than first-generation migrants in 2000. In 2003, the advantage of second-generation migrants becomes smaller. In 2006, however, second-generation migrants show lower reading proficiency than first-generation migrants. As already mentioned above, this could possibly be due to a change in the countries of origin of the migrants coming to Austria. In the 1990s, a large proportion of immigrants came from the former Yugoslavia, while in recent years the immigrants have been EU citizens, especially Germans.

6   Conclusion

One of the central themes of research and debate on inequality and social stratification is the unequal distribution of education in modern societies. Education is also one of the most important means for the social advancement and integration of immigrants. However, in most Western countries, there are major and stable differences in educational attainment between native-born students and immigrant students. Clearly, the research of the last decade shows that the educational opportunities of children from migrant backgrounds tend be particularly poor (cf. Marks, 2005; Ours and Veenman, 2003; Valverde and Vila, 2003) regardless of an increasing attention of the topic in public and political debates.

Turning to the findings of our study, we can suggest that differences between native-born and immigrant students are less pronounced in traditional immigration countries such as Canada and Australia where second-generation immigrants do at least as well as native-born students. On the other hand, central European countries with traditional labour migration such as Germany and Austria show quite pronounced differences: On average, immigrant students do

not attain the reading scores of native-born students. Most pronounced was the difference in Belgium. The greatest disparities across ethnic groups exist in those states which can be considered destination countries for more recent European labour immigration and countries receptive to political and civil-war refugees (Baumert and Schümer, 2001: 394). Roughly speaking, immigration countries can be divided into two groups: English-speaking countries with generally low immigrant disadvantage and Continental European countries with relatively high immigrant disadvantages in educational achievements (Entorf and Minoiu, 2005; Schnepf, 2007). In addition, the local-immigrant gap in educational achievement could be explained by differences in socio-economic composition between locals and immigrants, given that some countries firm immigration controls select immigrants based on social characteristics (Levels et al., 2008: 848) which leads to lower differences between immigrant and non-immigrant population in terms of socio-economic composition.

Those theoretical ideas provided the background for our multi-level analyses in which we attempted to find out about the impact of factors at the country level, at school level, and at the individual level on the educational achievements of immigrant students. According to our results, the quality of the educational system and its schools showed quite impressive effects upon the educational performance of migrants. Although the general quality of national school systems was controlled for, the stratification of the school system showed major effects on the reading proficiency of immigrant students. The more stratified a national school system is, the lower the students' reading proficiency. However, the per capita GDP and public spending on education are less important. Taken together, money cannot guarantee success at school. Rather, the specific design of the educational system seems to be decisive for migrants' educational success.

On the individual level, social background (which produces the respective learning environments) proved to be very important for the reading proficiency of immigrant students. Factors like cultural capital play a role, as does the social status of parents. In addition, the effect of being a second-generation immigrant was not comparable across countries. Briefly summarized, second-generation students had higher reading proficiency in all three waves of the study in traditional immigration countries such as Canada and New Zealand, but not in countries such as Germany, Austria, Denmark, Russia, or Belgium. This result is particularly notable if one considers that country-specific differences still exist even though the multi-level regression analysis included a long list of other explanatory variables. In addition, some interesting patterns of changes in differences between first-generation migrants and second-generation-migrants could be revealed. Our results point to the relevance of the consideration of changes in the countries of origin of the migrants and possible changes in education poli-

cies. Though our research is of preliminary character regarding these aspects, this evidence seems worth pursuing more systematically in future research.

To conclude, we think our study contributes to a better understanding of educational differences between native-born and immigrant youth in Western societies, and adds relevant insights to the existing knowledge of factors that contribute to the reading proficiency of immigrant students, though much work still remains to be done. At the very least, scholars (and politicians) should rethink the stratification of school systems, the provision of adequate learning environments, as well as the usefulness - or uselessness - of existing education and integration policies.

7 Literature

Allmendinger, J. (1989): Career Mobility Dynamics. A Comparative Analysis of the United States, Norway, and West Germany. Berlin: Edition Sigma.

Allmendinger, J. et al. (2008): Soziologische Bildungsforschung, pp. 47-70 in: Tippelt, R. / Schmidt, B. (eds): Handbuch Bildungsforschung. Wiesbaden: VS Verlag für Sozialwissenschaften.

Allmendinger, J. / Hinz, T. (2009): Occupational Careers Under Different Welfare Regimes: West Germany, Great Britain and Sweden, pp. 234-251 in: Heinz, W. et al. (eds): The Life Course Reader. Individuals and Societies Across Time. Frankfurt/Main: Campus.

Ammermüller, A. / Lauer, C. (2009): School quality and educational outcomes in Europe, pp. 47-66 in: Dolton, P. et al. (eds): Education and inequality across Europe. London: Edward Elgar.

Bade, K. et al. (eds) (2011): The Encyclopaedia of Migration. Cambridge: Cambridge University Press.

Barone, C. (2006): Cultural Capital, Ambition and the Explanation of Inequalities in Learning Outcomes: A Comparative Analysis. Sociology 40 (6): 1039-1058.

Baumert, J. / Schümer, G. (2001): Familiäre Lebensverhältnisse, Bildungsbeteiligung und Kompetenzerwerb, pp. 323-407 in: Baumert, J. et al. (eds): PISA 2000. Basiskompetenzen von Schülerinnen und Schülern im internationalen Vergleich. Opladen: Leske + Budrich.

Bender, S. / Seifert, W. (1998): Migrants in the German Labour Market, pp. 95-117 in: Kurthen, H. et al. (eds): Immigration, Citizenship, and the Welfare State in Germany and the United States. London: Jai.

Browning, M. / Heinesen, E. (2007): Class Size, Teacher Hours and Educational Attainment. Scandinavian Journal of Economics 109 (2): 415–438.

Castles, S. / Miller, M. J. (2009): The Age of Migration (4th Edition). New York: Guilford.

CIA (2009): The World Factbook. www.cia.gov/library/publications/the-world-factbook. 01/01/2010.

Davis, K. / Moore, W. E. (1945): Some Principles of Stratification. American Sociological Review 10 (2): 242-249.

Dearden, L. et al. (2002): The Effect of School Quality on Educational Attainment and Wages. The Review of Economics and Statistics 84 (1): 1–20.

Duru-Bellat, M. et al. (2008): Patterns of Social Inequalities in Access to Higher Education in France and Germany. International Journal of Comparative Sociology 49 (4–5): 347–368.

Entorf, H. / Minoiu, N. (2005): What a Difference Immigration Policy Makes: A Comparison of PISA Scores in Europe and Traditional Countries of Immigration. German Economic Review 6 (3): 355-376.

Fassmann, H. et al. (eds) (2009): Migration and Mobility in Europe: Trends, Patterns and Control. Aldershot: Edward Elgar.

Fassmann, H. / Münz, R. (eds) (1994): European Migration in the Late Twentieth Century. Aldershot: Edward Elgar.

Hadler, M. (2004): Die Mehrebenen-Analyse: Ihre praktische Anwendung und theoretische Annahmen. Österreichische Zeitschrift für Soziologie 29 (1): 53-74.

Hahn, S. (2011): Austria, pp. forthcoming in: Bade, K. J. et al. (eds): The Encyclopaedia of Migration. Cambridge: Cambridge University Press.

Haller, M. (2008): Die österreichische Gesellschaft:Sozialstruktur und sozialer Wandel. Frankfurt/Main: Campus.

Heinesen, E. / Graversen, B. K. (2005): The Effect of School Resources on Educational Attainment: Evidence From Denmark. Bulletin of Economic Research 57 (2): 109-143.

Hox, J. J. (1995): Applied Multilevel Analysis. Amsterdam: TT-Publications.

Kjeldstadli, K. (2011): Scandinavia, pp. forthcoming in: Bade, K. J. et al. (eds): The Encyclopaedia of Migration. Cambridge: Cambridge University Press.

Kogan, I. (2004): Last Hired, First Fired? The Unemployment Dynamics of Male Immigrants in Germany. European Sociological Review 20 (5): 445-461.

Kogan, I. / Kalter, F. (2006): The Effects of Relative Group Size on Occupational Outcomes: Turks and Ex-Yugoslavs in Austria. European Sociological Review 22 (1): 35-48.

Kristen, C. (2000): Ethnic Differences in Educational Placement: The Transition from Primary to Secondary Schooling. MZES Arbeitspapiere 32. Mannheim: MZES.

Kristen, C. (2008): Primary school choice and ethnic school segregation in German elementary schools. European Sociological Review 24 (4): 495-510.

Kristen, C. / Granato, N. (2007): The educational attainment of the second generation in Germany. Social origins and ethnic inequality. Ethnicities 7 (3): 343-366.

Langer, W. (2009): Mehrebenenanalyse: Eine Einführung in Forschung und Praxis. Wiesbaden: VS Verlag für Sozialwissenschaften.

Levels, M. / Dronkers, J. (2008): Educational Performance of Native and Immigrant Children from Various Countries of Origin. Ethnic and Racial Studies 31 (8): 1404-1425.

Levels, M. et al. (2008): Immigrant Children's Educational Achievement in Western Countries: Origin, Destination, and Community Effects on Mathematical Performance. American Sociological Review 73 (5): 835-853.

Lucassen, J. / Lucassen, L. (2011): The Netherlands, pp. forthcoming in: Bade, K. J. et al. (eds): The Encyclopaedia of Migration. Cambridge: Cambridge University Press.

Lunn, K. (2011): Great Britain, pp. forthcoming in: Bade, K. J. et al. (eds): The Encyclopaedia of Migration. Cambridge: Cambridge University Press.

Marks, G. N. (2005): Accounting for Immigrant Non-Immigrant Differences in Reading and Mathematics in Twenty Countries. Ethnic and Racial Studies 28 (5): 925-946.

Mau, S. / Verwiebe, R. (2010): European Societies. Mapping Structure and Change. Bristol: Policy Press (forthcoming).

Meurs, D. et al. (2008): Discrimination despite integration: Immigrants and the second generation in education and the labour market in France, pp. 247-269 in: Bonifazi, C. et al. (eds): International Migration in Europe. New Trends and New Methods of Analysis. Amsterdam: Amsterdam University Press.

Moch, L. P. (2011): France, pp. forthcoming in: Bade, K. J. et al. (eds): The Encyclopaedia of Migration. Cambridge: Cambridge University Press.

Müller, W. / Kogan, I. (2010): Education, pp. 217-290 in: Immerfall, S. / Therborn, G. (eds): Handbook of European Societies. Social Transformations in the 21st Century. Dodrecht: Springer.

NCES (2007): Highlights From PISA 2006: Performance of U.S. 15-Year-Old Students in Science and Mathematics Literacy in an International Context. Washington: NCES.

OECD (2001): Knowledge and Skills for Life. First Results from the OECD Programme for International Student Assessment (PISA) 2000. Paris: OECD.

OECD (2003): The Pisa 2003 Assessment Framework. Paris: OECD.

OECD (2004): Education at a Glance. Paris: OECD.

OECD (2006): Education at a Glance. Paris: OECD.

OECD (2007): International Migration Outlook. Paris: OECD.

OECD (2009a): Education at a Glance. Paris: OECD.

OECD (2009b): Equally prepared for life? How 15-year-old Boys and Girls Perform in School. Paris: OECD.

OECD (2009c): International Migration Outlook. Paris: OECD.

Ours, J. C. v. / Veenman, J. (2003): The Educational Attainment of Second-Generation Immigrants in The Netherlands. Journal of Population Economics 16 (4): 739-753.

Pfeffer, F. T. (2008): Persistent Inequality in Educational Attainment and its Institutional Context. European Sociological Review 24 (5): 543–565.

Portes, A. et al. (2005): Segmented assimilation on the ground: the new second generation in early adulthood. Ethnic and Racial Studies 28 (6): 1000-1040.

Rabe-Hesketh, S. / Skrondal, A. (2008): Multilevel and Longitudinal Modeling Using Stata. College Station, TX: Stata Press.

Reimer, D. / Pollak, R. (2009): Educational Expansion and Its Consequences for Vertical and Horizontal Inequalities in Access to Higher Education in West Germany. European Sociological Review 25 (Advance Access published June 11, 2009): 1-16.

Riphahn, R. T. (2003): Cohort effects in the educational attainment of second generation immigrants in Germany: An analysis of census data. Journal of Population Economics 16 (4): 711-737.

Rivkin, S. G. et al. (2005): Teachers, Schools, and Academic Achievement. Econometrica 73 (2): 417-458.

Russian Federal State Statistics Service (2010): Census 2002 - Population Statistics. http://www.fsgs.ru/wps/portal/english. 03/03/2010.

Schneider, T. (2008): Social Inequality in Educational Participation in the German School System in a Longitudinal Perspective: Pathways into and out of the most Prestigious School Track. European Sociological Review 24 (4): 511–526.

Schnepf, S. V. (2007): Immigrants' educational disadvantage: an examination across ten countries and three surveys. Journal of Population Economics 20 (3): 527-545.

Stanat, P. / Christensen, G. (2006): Where Immigrant Students Succeed: A Comparative Review of Performance and Engagement in PISA 2003. Paris: OECD.

Valverde, J. R. / Vila, M. R. (2003): Internal Migration and Inequalities. The Influence of Migrant Origin on Educational Attainment in Spain. European Sociological Review 19 (3): 299-317.

Figures and tables

Table 1: Differences in reading scores between native students and first and second generation immigrant students

Nation	Natives *minus* 1st Generation Immigrants			Natives *minus* 2nd Generation Immigrants			Natives *minus* Immigrants (1st & 2nd Generation)		
Year of PISA Study	2000	2003	2006	2000	2003	2006	2000	2003	2006
Australia	18	12	-1	3	4	-7	11	8	-4
Canada	27	18	19	-2	-11	0	12	5	9
New Zealand	31	25	19	29	21	7	30	24	15
United Kingdom	72	36	44	21	0	7	36	12	23
France	77	80	45	42	47	36	48	55	39
Netherlands	87	62	65	72	50	61	78	54	62
Norway	62	68	63	46	59	42	57	64	53
Sweden	73	89	68	40	20	29	58	54	46
Denmark	71	44	79	94	58	64	80	51	71
Belgium	90	115	102	112	84	81	106	98	91
Austria	93	77	48	62	73	79	81	76	61
Germany	89	84	70	74	98	83	84	91	77
Luxembourg	104	69	69	75	46	61	89	58	65
Switzerland	112	93	85	54	54	48	86	76	65
Russian Federation	6	35	4	10	20	10	8	28	7
Total	44	49	28	18	30	21	31	40	24

Source: PISA 2000, 2003, 2006; own calculations.

Table 2: Model comparison (random intercept models)

| Variables at level of	Base model			Model 1			Model 2			Model 3		
Nation		-			-			-			included	
School		-			-			included			included	
Student		-			included			included			included	
Random Components	2000	2003	2006	2000	2003	2006	2000	2003	2006	2000	2003	2006
SD Random intercept at country level	.35	.36	.28	.42	.35	.24	.45	.34	.26	.33	.14	.16
SD Random intercept at school level	.58	.58	.61	.42	.44	.48	.41	.44	.46	.41	.44	.46
SD Residual at student level	.82	.82	.80	.76	.76	.73	.76	.75	.73	.76	.76	.73
R^2	-	-	-	.19	.22	.24	.18	.22	.26	.26	.31	.30

Source: PISA 2000, 2003, 2006; own calculations.

Table 3: Coefficients of the random intercept model (model 3)

| Level	2000	2003	2006
Nation			
Stratification of school system	-.19	-.10 †	-.14 *
Quality of the School System	.27 *	.29 ***	.12 *
Expenditure for education as percentage of GDP	-.20	-.04	.02
GDP per capita in USD	-.11	-.06	-.05
Foreign population (% of total population)	-.05	-.04	-.04
School			
School is private school (0/1)	.08 ***	.05 ***	.04 **
Grade 12 found in school (0/1)	.07 ***	.05 ***	.16 ***
Student			
ISCED Father	.01	.01	.06 ***
ISCED Mother	.07 ***	.03 **	.03 ***
Highest ISEI parents	.16 ***	.15 ***	.14 ***
Home educational resources	.12 ***	.13 ***	.08 ***
Cultural possession of the family	.08 ***	.08 ***	.07 ***
Use of private lessons (0/1)	-.12 ***	-.03 ***	-.11 ***
Language spoken at home other than test language (0/1)	-.10 ***	-.08 ***	-.08 ***
Women (0/1)	.13 ***	.15 ***	.14 ***
Second generation (0/1)	.10 ***	.08 ***	.07 ***
Age in months	.04 ***	.03 ***	.02 ***
Constant	-.63 ***	-.05	-.04

Source: PISA 2000, 2003, 2006; own calculations. † $p < .06$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 1: Illustration of random intercepts and random slopes for first vs. second generation immigrants with PISA 2000 (Empirical Bayes predictions)
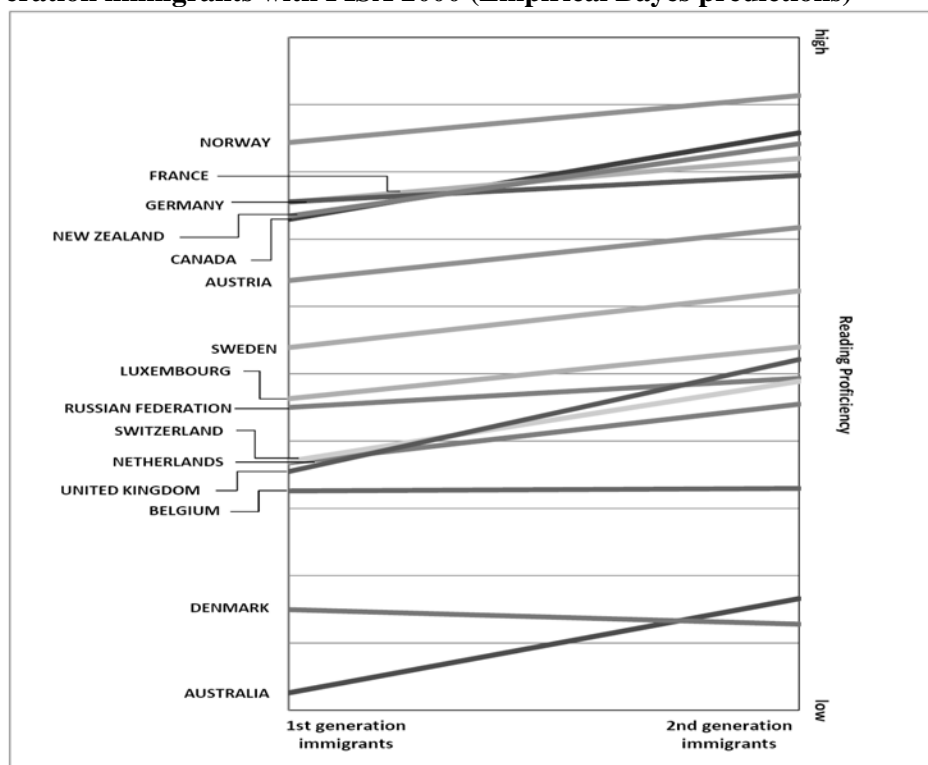
Source: PISA 2000; own calculations.

Figure 2: Illustration of random intercepts and random slopes for first vs. second generation immigrants with PISA 2003 (Empirical Bayes predictions)
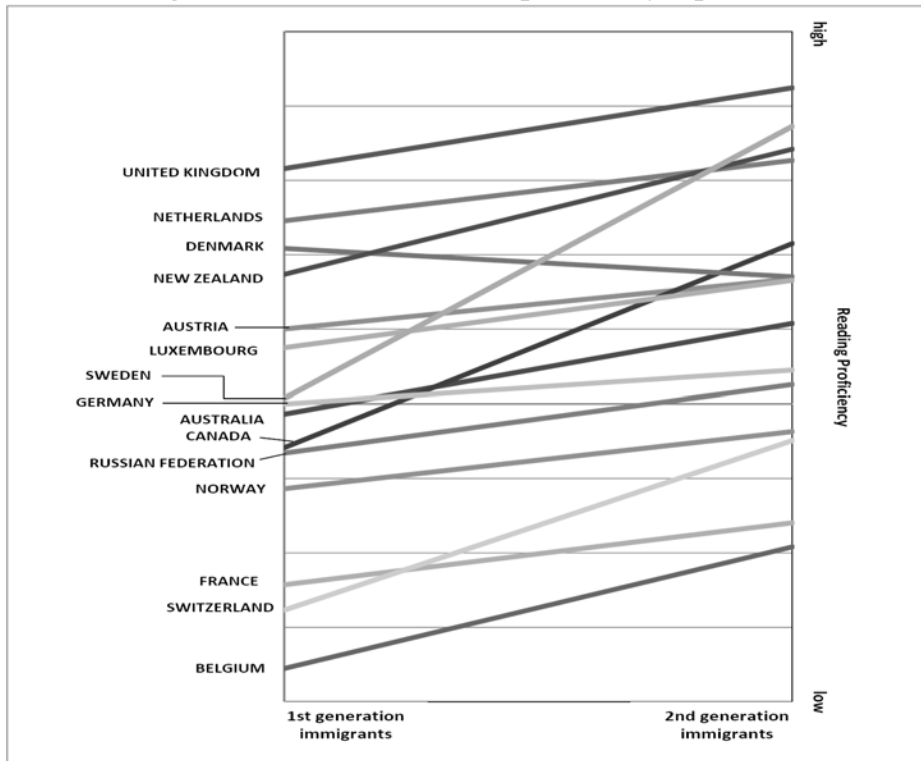
Source: PISA 2003; own calculations.

Figure 3: Illustration of random intercepts and random slopes for first vs. second generation immigrants with PISA 2006 (Empirical Bayes predictions)
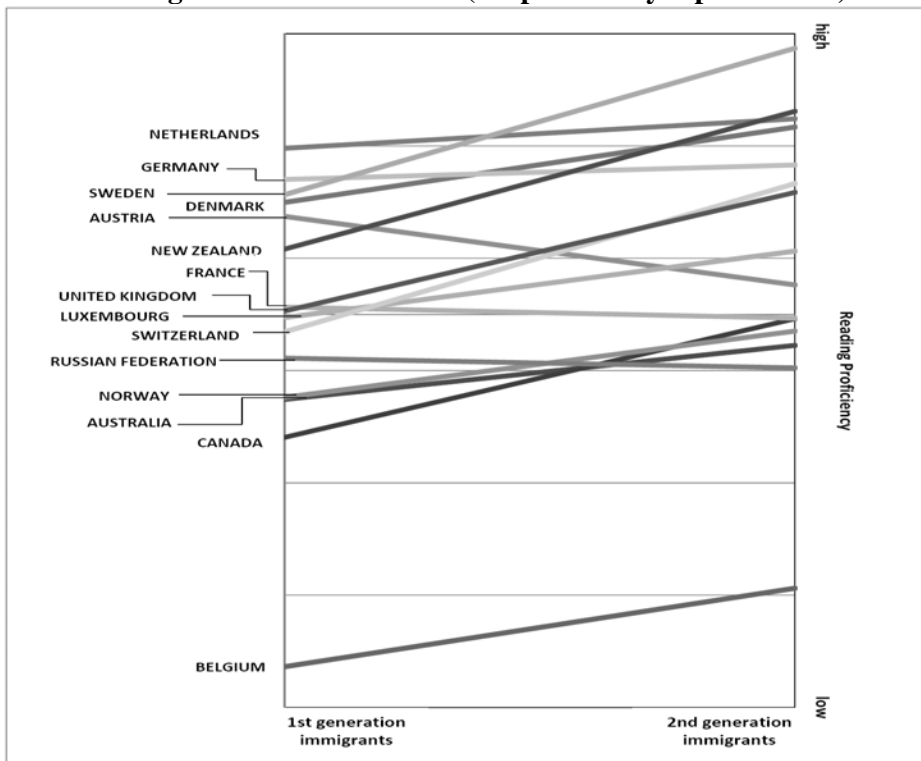

Source: PISA 2006; own calculations.

Appendix

Table 1: Country characteristics

Nation	Stratifi-cation (number school types)	Quality of schools (mean PISA reading score of native stu-dents)			Expenditure on educa-tional institutions as percentage of GDP[1]			GDP per capita in USD			Foreign population (percentage of total population)[5]		
		2000	2003	2006	2000[2]	2003[3]	2006[4]	2000	2003	2006	2000	2003	2006
Australia	1	532	530	514	5.6	5.8	5.7	20867	27356	37434	7.4	7.4	7.7
Austria	4	516	502	499	5.7	5.6	5.4	24195	31557	39131	8.8	9.4	9.9
Belgium	4	523	524	515	6.1	6.1	6.0	22623	29868	37384	8.4	8.3	8.8
Canada	1	539	534	532	5.9	5.9	6.5	23220	27021	38440	5.3	5.3	6.0
Denmark	1	504	497	500	8.3	8.3	8.0	29993	39707	50702	4.8	5.0	5.1
France	1	512	506	495	6.0	5.9	5.6	22548	29923	36547	5.6	5.6	5.8
Germany	4	508	517	510	4.5	4.7	4.4	23114	29582	35270	8.9	8.9	8.2
Luxembourg	4	475	501	504	3.7	3.8	3.4	46278	64426	89564	37.3	38.6	41.6
Netherlands	4	542	525	515	5.0	5.4	5.5	24270	33136	40167	4.2	4.3	4.2
New Zea-land	1	539	528	526	6.7	6.8	6.3	13654	20165	25179	17.2	19.2	21.2
Norway	1	510	505	491	6.7	7.5	6.6	37165	48785	66964	4.0	4.3	5.1
Russian Federation	4	463	447	441	2.9	3.7	3.9	1775	2984	6932	1.0	1.0	1.0
Sweden	1	523	522	514	7.2	7.3	6.8	27287	33960	42553	5.4	5.3	5.4
Switzerland	1	514	515	515	5.7	6.0	5.5	34249	43969	51033	19.3	20.0	20.3
UK	1	529	509	499	4.5	5.2	5.5	24151	30304	38850	4.0	4.7	5.8

Sources: CIA (2009), Horn (2007: 12), OECD (OECD, 2004, 2006; 2009a), Russian Federal Statistics Service (2010).
[1] Data for Russia includes only public and not private expenditure.
[2] Luxembourg and New Zealand 2001 instead of 2000; for Switzerland in tertiary education only public expenditure.
[3] Canada 2002 instead of 2003.
[4] Canada 2005 instead of 2006.
[5] New Zealand: Foreign-born population; Russia: Data for 2001 used for all three analyses.