

**Research Master in Sociology and Demography**

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The effect of parental education and school ethnic and social composition on migrants' educational achievement: evidence on Turkish adolescents in five European countries

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**MASTER THESIS**

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# The effect of parental education and school ethnic and social composition on migrants' educational achievement: evidence on Turkish adolescents in five European countries

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*Abstract.* This contribution attempts to explain which conditions promote or hamper immigrant students' educational success, specifically analyzing the unique impact of parental education and school ethnic and social composition, providing evidence on Turkish students in Belgium, Germany, Netherlands, Finland and Denmark. Using data from the Programme for International Student Assessment (PISA) of 2012, Turkish students' reading scores are measured and compared cross countries and relatively to natives in their country of residence. A considerable effect of parental education is found, however it does not explain differences in educational outcomes between Turkish and natives. Moreover, school environment, in term of composition of the student body, resulted able to influence students' performance, regardless of their individual background. Differences are found among countries of residence, however in all the five European countries under study, Turkish students considerably lag behind their native peers in term of reading grades.

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## Introduction

After War World II most European countries have experienced a rapid increase in immigration and the issue of migrants' socio-cultural integration has become particularly prominent in social science.

One main concern is immigrants' downwards assimilation, i.e. immigrant groups entering the social hierarchy at the bottom (Crul & Vermeulen, 2003).

In many Western societies, educational attainment is one of the most important predictors of further socio-economic integration, such as participation in the labor market and occupational status (Muller & Kogan, 2010). Several studies on social inequalities and education (e.g. Boudon, 1974; Lucas, 2001) found evidence that educational achievement during compulsory schooling is determinant for students' possibilities and choice of continuing into higher education, therefore, in regards to migrants, educational achievement is considered one of the most important indicator of their long-term integration in the society (Cebolla-Boado & Finotelli, 2015). During the past two decades, research on migrants' educational performance in Europe has grown considerably, particularly focusing on analyzing the gaps between natives and the second generation (e.g. Alba, et al., 1994; Van Ours & Veenman, 2003; Phalet, et al., 2007; Dronkers & Fleischmann, 2010). Most

research revealed a significant intergenerational improvement of the second generation relatively to their immigrant parents, however in most countries, they still seem to lag behind their native peers. Using data from the Programme for International Student Assessment (PISA) of 2012, this study aims at measuring and compare immigrant students' educational achievement in different European countries and welfare systems, to understand which conditions promote or hamper their integration, analyzing the unique impact of some micro and macro level variables, namely parental education and school ethnic and social composition.

Indeed many studies on education inequality and intergenerational mobility (e.g. Boudon, 1974; Shavit & Blossfeld, 1993; Lucas, 2001) underline the fundamental role of parental education on their offsprings educational achievement, however, it is not clear whether it has the same impact on immigrant and natives.

In addition, at the macro-level, school composition in term of ethnicity and social origins, is said to be playing a fundamental role determine educational success.

Yet, to what extent individual students performance is influenced by ethnic and social composition of the school, controlling for individual social background?

To avoid differences attributable to different cultural capital and aspirations of origin groups, the analysis is conducted comparing migrants from the same country of origin, Turkey, in five European countries, namely Belgium, Germany, the Netherlands, Finland and Denmark.

Turkish residing in these five countries have similar migration histories, come from the same regions of Turkey, and mostly share the same religion and traditions, making this group comparable across countries. Furthermore, they are considered one of the toughest groups to integrate because of the sharp contrast between their culture and the Western European lifestyle (Crul & Vermeulen, 2003).

The analysis is set up as follows. First, the general features and the position of Turkish immigrants in Belgium, Germany, the Netherlands, Denmark and Finland are described, then, is provided an overview of the different welfare and education systems and integration policies of the five countries of destination in order to understand possible cross countries differences in the educational outcomes of Turkish students.

It follows a brief literature review on the main theories and previous finding on the effect of parental education and school social and ethnic composition on immigrant students' educational performance, and, thereafter, the formulation of the main hypothesis.

Afterwards data, variables, and methodology are presented, and are given the results of a preliminary descriptive analysis and multilevel analysis. Turkish students' educational performance is evaluated and compared across countries in absolute terms, and relatively to natives in their

country of residence, particularly focusing on the different impacts of parental education and school ethnic and social composition. In the last section, then, the results are discussed and some conclusions are drawn. The main findings are in line with the hypothesis formulated.

## **Turkish migrations in Europe**

Turkish is the largest immigrant group in Western Europe, numbering around 4 million people, residing in a large number of European countries (Crul & Vermeulen, 2003; Republic of Turkey, 2016).

After World War II, highly industrialized western countries were in need of low-skilled labor and recruited a vast number of so called “guest workers” from the European periphery. A considerable number of labor migrants came from Turkey (Castles & Miller, 1993; Crul & Vermeulen, 2003).

After the new Constitution of 1961, in fact, the new Turkish government evaluated the “export of surplus of labor power” as an aspect of its development policy in terms of return flow of remittances and reduction of unemployment (Icduygu & Tekelioglu, 1995).

Hence, different official bilateral agreements on labor migration were signed between Turkey and many European countries, beginning with Germany in 1961, Belgium and Netherlands in 1964 and Denmark in 1973 (Icduygu & Tekelioglu, 1995).

The peak of labor migration took place between 1970 and 1973. From 1973 the economic recession following the oil crisis diminished the demand of labor and in 1974 an official migration stop was declared. The economic crisis and industrial restructuring of the early 1980’s put many Turkish men out of work, however only few of them returned to Turkey and a considerable migration flow continued on the basis of family reunification (Crul & Vermeulen, 2003; Crul & Doornik, 2003; Jakobsen & Smith, 2003; Timmerman, et al., 2003; Worbs, 2003).

Finland at that time did not sign any official agreement with Turkey, however, from the 1980’s a considerable number of Turkish migrants reached the country, most of them arriving from other European countries after the economic recession and a considerable proportion married Finnish women (Icduygu & Tekelioglu, 1995; Wahlbeck, 2007).

Beside labor migration and family reunification, from the 1980’s Europe, especially Germany, the Netherlands and the Nordic Countries, received significant groups of refugees and asylum seekers who fled political persecution in Turkey or escaped from the armed conflict between Kurds and Turks begun in 1978. However, their social background did not differ substantially from the labor migrants’ (Crul & Vermeulen, 2003; Kilpi-Jakonen, 2010; Glazar & Strielkowski, 2012).

Turkish migrants’ social background is similar across European countries, they came mostly from rural areas of central Turkey or along the Black sea coast, and they had really little education since

these areas in Turkey at the time did not offer more than a general primary school, and most women only completed few years of schooling. Normally they have a strong muslim background and very predetermined gender roles (Crul & Vermeulen, 2003).

Generally speaking, most turkish children in Europe grew up in unfavorable circumstances. Family income is often very low by European standards and many families live in cramped accommodations. They mostly speak turkish at home, live really closed to their communities, watch turkish channels in television, practice muslim religion and marry partners from their origin country. Usually they live in big cities and they are concentrated in some neighborhoods and segregated in neighborhood schools, where children from migrant backgrounds are in the majority (Crul & Vermeulen, 2003). However, despite their similar migration patterns and costumes, their integration in terms of educational achievement might vary across countries according to their different educational systems and school integration policies.

## **Education systems and school integration policies**

Previous research on migrant's educational performance suggests that the contextual properties of origin groups and destination countries have specific effects on individuals' educational attainment (Levels, et al., 2008).

Differences in immigrant student's educational outcomes attributable to destination countries are due to heterogeneous immigration and education policies and, more broadly, to the different welfare systems (Levels, et al., 2008; Cebolla-Boado & Finotelli, 2015).

According to the influential Esping-Andersen (1990) classification of the welfare regimes Finland and Denmark belong to the social-democratic cluster while Belgium, Germany and the Netherlands to the conservative welfare regime. Social-democratic systems are characterized by universal benefits based on citizenship, equal access to benefits and services of the highest standards, and a minor role for private welfare markets, while in conservative regimes, social policies are based on occupational status, with substantial differences in benefit levels, aiming at preserving community hierarchy and status differentials.

Education systems and school integration policies partly reflect the general principles of the two welfare regimes.

It is not possible in this context to go through all the features of the education system of the five analyzed destination countries, however it is important to summarize some of their main aspects.

In Denmark and Finland most education and training is publically funded. There are no tuition fees at any level of education. In basic education also school materials and school meals are free of charge and, in addition, there is a well-developed system of study grants and loans. It follows that

most children, immigrants and natives, attend public schools (Finish National Board of Education, 2016; Education for all Denmark, 2016).

Belgium and the Netherlands are committed to the principle of freedom of choice in education.

In both countries public schools are free of charge, however freedom of education, in Belgium constitutionally guaranteed, comprises freedom of choice, but also the right to autonomously establish schools. Moreover, Dutch society is traditionally founded on denominational pluralism and the system permits and encourages the establishment of schools following particular religious or pedagogic principles giving them equal state funding as public schools. Consequently, in both countries the number of private schools more than doubles public ones (Crul & Doornik, 2003; Geyer, 2009; I Amsterdam, 2016).

In Germany education is a function of the federal states, and there are differences from state to state, however some generalizations are possible. The majority of German students attend public schools, but there are also many private schools. Primary and secondary education are predominantly half-day school, presuming parental support for homework after school. In all the federal states have been established different schools for students with “special needs”, staffed with specially trained teachers and generally with smaller size classes than the regular schools. Many immigrants, especially if they have difficulties with the German language and they happen to repeat more than one school year, usually are advised to attend one of those schools (Worbs, 2003; How to Germany, 2016).

Belgium, the Netherlands and Germany have selective educational systems, with selection at the lower secondary stage into academic schools or vocational training while Denmark and Finland, have predominantly comprehensive systems, with selection after secondary school. There is evidence that early tracking, often sees immigrants selected into vocational training instead of academic schools, precluding their future possibilities (Heath, et al., 2008).

The growing number of immigrant children enrolled in schools led countries to promote policies aiming at their educational integration.

In Germany since 1964 school attendance for children of migrants worker was made obligatory at the Federal level and a preparatory training in German Language have been established in many Federal States (Worbs, 2003).

In the Netherlands, from the 1990's the government launched a set of policies aiming at migrant's educational integration, among those the Educational Priority Policy (1985), which instituted a strong financial support to schools with high percentages of migrants. As a consequence, in the Netherlands schools with many immigrant students have far more generous budget than schools

with few immigrants. The extra budget is mostly spent in creating smaller classes and instituting Dutch language courses (Crul & Doornik, 2003).

In Belgium there are some regional discrepancies in educational integration policies. Historically the Flanders declared multicultural norms whether Wallonia opted for more general anti-exclusion policies (Phalet, et al., 2007). Nevertheless, in both regions several policies have been issued, mostly encouraging and promoting intercultural education, and instituting the allocation of extra teaching periods and support for language acquisition (Timmerman, et al., 2003).

Denmark and Finland in the last decades have elaborated extensive integration plans. However, for what regards education, the main focus in integration policy has been given to learning Danish or Finish as a second language (Seppelin, 2010; Jørgensen, 2014).

### **Hypotheses 0: Destination effect**

There is evidence that different welfare and education systems influence students' educational outcomes (Heath, et al., 2008). In principle, conservative welfare systems, aiming at preserving status differentials, could slow down immigrants' integration, while social-democratic regimes should be more inclusive for all students. However, in regards to immigration, countries with generous universal welfare benefits have been restricting access to citizenship and applying restrictive policies that leave immigrants legally precarious and socially excluded (Mipex, 2014). Moreover, countries' specific education system and policies can promote or hamper students' integration.

For example, a well-developed system of study grants and loans, the availability of language support for minority students, smaller class size and more generous school budgets, may contribute in promoting foreign students' integration.

On the other hand, a great number of private schools may cause the concentration of students with higher socio-economic status in certain schools, contributing to social segregation (OECD, 2012), or, the predominantly half-day school in Germany, presuming parental support for homework after school, may penalize immigrant children, whose parents often work full time or are not fluent in German and not able to help their children with the homework.

Therefore, *Turkish students' educational achievement, as well as the impact of the different explanatory variables, are expected to vary among destination countries (Hypothesis 0).*

This research, lacking some fundamental data, as, for example, students' grants and loans provided by the welfare systems or the time spent with teachers, and being limited at comparing five countries, will not be able to assess the unique impact of the different welfare systems and of all the above presented policies on students' individual outcomes, however, in the comparison, it is



important to take them into account, since they could be a fundamental part of the explanation of cross countries differences (Levels, et al., 2008; Cebolla-Boado & Finotelli, 2015).

## **The effect of parental education on students' performance**

The influence of parental education on the educational achievement of their offsprings is a widely studied and undeniable fact in sociology (see e.g. Boudon, 1974; Shavit & Blossfeld, 1993; Lucas, 2001).

As introduced, the majority of Turkish migrants residing in the European countries under analysis was recruited from the lowest socio-economic strata and had very little education. Their low social background is supposed to be one of the main reasons of their children's educational disadvantage. Van Ours & Veenman, (2003) in a study on the educational attainment of the second generation in the Netherlands, concluded that the difference in educational level of the parents is driving the difference in educational attainment between second generation immigrants and native Dutch people, and therefore, that the second generation is worse off because their parents on average have a lower level of education.

However, there is mixed evidence whether parental education has the same effect on immigrant children and natives.

According to most theories within the sociology of education, the main mechanism through which family educational background has an effect on students' school performance is by developing competencies in their children (Kilpi-Jakonen, 2010; Camilleri & Nascimbeni, 2012).

Though, it is not yet clear whether education obtained in the country of origin is a good indicator of these parental abilities and resources as education in the country of destination, especially when comparing areas where education is scarce and sometimes unavailable, such as Turkish rural areas, with center and northern European countries, where education has been made available to growing sections of the resident population (Heath, Rothon, & Kilpi, 2008; Kilpi-Jakonen, 2010).

There may be aspects of parental human capital that could help their children succeed in education which may differ between immigrant and native parents, as for example a good knowledge of the education system. Therefore, even a high level of education in the country of origin may not be equal to that gained in the destination country due to differences in country-specific human capital (Heath, Rothon, & Kilpi, 2008; Kilpi-Jakonen, 2010).

### **Hypotheses 1: Different impacts of parental education**

A significant effect of parental education on Turkish students is expected. However, due to the lack of country specific human capital, the impact of Turkish parents educational level is expected to be

less determinant for students' success, compare to the educational level of native parents. Thus, *a negative interaction is expected between immigrant origins and parental education (Hypothesis I)*.

## **School ethnic and social composition and educational outcomes**

The rapid increase of immigrant children in European schools, have been followed by rising schools' ethnic segregation.

In the Netherlands and in the Belgian Flanders, school segregation reached a considerable high level, to the point that the phrase “concentration school” came into use (Van Houtte & Stevens, 2009). This unequal distribution of immigrant students among schools is mostly attributed to the mentioned principle of freedom of education (Geyer , 2009; Van Houtte & Stevens, 2009), which imply also freedom of school choice, allowing parents and students to choose or avoid schools with a certain social and ethnic composition (Van Houtte & Stevens, 2009).

In Germany, Denmark and Finland, instead, the decision of which school attend is mainly based on residential location, therefore residential segregation is one of the central conditions leading to school segregation (Kristen, 2008). Moreover, in Germany many immigrant students end up attending “special needs schools” and, therefore, being segregated (Worbs, 2003; Roseveare & Jørgensen, 2005; Kristen, 2008).

Does the proportion of minority students at school have an impact on students' educational achievement?

School ethnic composition is said to affect student's achievement in two principal ways. Classes with many immigrant students are likely to have a higher proportion of students with language problems and low school performance, therefore, teachers may adapt their teaching and lower their expectations and standards, turning down learning opportunities of the whole student body (Fekjær & Birkelund, 2007). The other mechanism is related to peer-groups. Peers affects academic motivation, therefore, if there is a high proportion of low motivated immigrant students, this might influence the peer environment and lower educational aspiration of students in general (Fekjær & Birkelund, 2007; Lee, 2007).

One of the most famous studies of ethnic inequality in educational opportunities in the U.S., the 1966 Coleman's report, found evidence that racial composition in school affected individual outcomes, namely, students who went to predominantly white schools performed better on achievement tests (Coleman, 1966). Yet, the effect of ethnic composition was to a large degree explained by better educational background and higher educational aspirations in schools with few minority students.

There are only few studies on school ethnic composition in Europe, among those, Fekjær & Birkelund (2007), studied the effect of school composition in Oslo, Norway, and observed a similar tendency to that described by Coleman (1966). They revealed a strong relationship between ethnic composition and parental academic composition, i.e. that schools with high proportion ethnic minorities also have high proportion of students with parents with low levels of education and so that school composition in terms of parental education has an effect on educational outcomes, independent of ethnic composition.

### **Hypotheses 2: The influence of school ethnic and social composition**

Therefore, in line with the presented theory, *a high proportion of immigrant students in the school, lowering both teachers' and students' expectations and aspirations, is expected to have a negative effect on students' individual performance, however this negative effect is supposed to disappear when controlling for the proportion of highly educated parents of the students in the school (Hypothesis 2).*

## **Data and methods**

The Programme for International Student Assessment (PISA) is a triennial international survey conducted by the OECD, which aims at evaluating education systems worldwide by testing the skills and knowledge of 15-year-old students in more than 70 economies. Students' knowledge and skills in reading mathematics and science are formally tested using paper-based tests, lasting two hours for each student (OECD, 2016). Moreover, students answer a questionnaire with information about themselves, their homes, their school and learning experiences. School principals are also given a questionnaire that covers the school system and the learning environment (OECD, 2016).

The survey asks respondents about their country of birth and the country of birth of their parents making it possible to identify immigrant and, specifically, Turkish students.

This study has been developed using data from the student and school questionnaires of the last PISA survey of 2012.

The total sample size of the five destination country is of N=32896, N=1013 Turkish students, N=24547 native students, and N=7336 other immigrants clustered in a total of N=1347 schools.

## **Presentation of the variables**

### **Dependent variable**

The dependent variable selected in order to measure students' educational achievement is the reading test score, since good reading abilities are at the base of further integration. According to the 2012 PISA report published in 2014, those who fail to show basic levels of reading literacy tend to be coupled with low levels of engagement with school in general (OECD, 2014).

The dataset reports five plausible values for each student test score, however, for simplicity in this analysis only the first plausible value for each student has been considered.

To test the two main hypotheses, the analysis requires individual level variables and school level variables.

### **Individual level variables**

#### COUNTRY OF ORIGIN

The variable describing students' origins is coded in three categories: native, Turkish or other immigrant. Other immigrant includes other non-western immigrants as well as immigrants from other Western European countries. Have been defined as Turkish or other immigrants those with at least one Turkish or immigrant parent.

#### PARENTAL EDUCATION LEVEL

The level of education of father and mother in the PISA questionnaire are measured with the ISCED scale (International Standard Classification of Education). Since many sociologists (e.g. Couch and Dunn, 1997; Dearden , et al., 1997) have argued about the different impact of mother and father's education, the two variables are analyzed separately to account for possible differences. The two variables have been coded in three categories: low (ISCED level 0 to 3), middle (ISCED level 4 i.e. completed secondary education) and high (ISCED 5, 6 and 7, i.e. completed tertiary education).

To account for compositional differences, have been introduced control variables for the following individual level characteristics:

#### FIRST VS. SECOND GENERATION

First generation immigrant define those born abroad with at least one parent born abroad, while second generation immigrant those born in the destination country with at least one parent born abroad.

Since the analysis measures educational attainments of 15 years old pupils, first and second generation immigrant have been included. First generation immigrants who migrated before the age of 15 could be fluent in the destination country language and have received some of their compulsory education in the country of residence. However, according to the existing literature (e.g. Alba & Nee, 2003; Crul & Vermeulen, 2003; Heath, et al., 2008; Papademetriou, et al., 2009; Camilleri & Nascimbeni, 2012), differences are expected between first and second generation children, namely first generation immigrants are expected to face a greater disadvantage than second generation immigrants.

## GENDER

According to the 2012 PISA report, girls outperform boys in reading almost everywhere. This gender gap is particularly large in some high-performing countries, where almost all underperformance in reading is seen only among boys. Therefore, a control for gender has been added using a dummy variable with boys as reference group.

## LANGUAGE

From the perspective of assimilation theories, the acquisition of the official language of the country is regarded as a crucial factor for the structural integration of immigrants in the society (Esser, 2006). Certainly language abilities play a fundamental role for succeeding in education, especially in reading.

It follows that individuals who do not speak the country language at home are expected to experience some disadvantage in the reading test.

Language abilities are measured with a variable describing if the respondent speaks the test language at home or not, with yes has reference category.

## OCCUPATIONAL PRESTIGE

Occupational prestige is measured with the International Occupational Prestige Scale, from 0 to 100. To give a more meaningful interpretation to the results, the variable has been centered on its mean value. An high parental occupational prestige is associated with a high educational attainment of the offsprings.

Social-economic status has long been a fundamental explanatory variable in the sociology of education and it has repeatedly been shown to have direct effects on educational attainment and participation (Shavit & Blossfeld, 1993; Lucas, 2001; Papademetriou, et al., 2009; Camilleri & Nascimbeni, 2012). In some circumstances, immigrant parents, despite of their level of education, may have had to take low-level jobs in the country of destination due to the lack of social network, not fluency in the country's language and other related problems, therefore, in order to have a correct understanding of the socio-economic background of immigrant children it is necessary to control for their parent's occupational prestige (Heath, et al., 2008).

## **School level variables**

### ETHNIC COMPOSITION OF THE SCHOOL

Ethnic composition of the school is a measure of the proportion of immigrants per school. Lacking of a variable indicating the real proportion of immigrants per school, it has been calculated from the number of immigrant per school participating in the sample.

The variable has been generated using a dummy variable describing the immigration status of the student (0 native and 1 immigrant) and calculating its mean for each school. Since the mean is calculated between 0 and 1, the results reveal the proportion of immigrants for each school.

#### ACADEMIC CAPITAL

Parental academic capital of the school is described through a variable measuring the proportion of highly educated parents of the student body for each school.

First, a variable measuring the highest parental level of education has been created using a dominant approach (i.e. considering the parent with the highest level of education), then, as for the ethnic composition of the school, has been created another dummy variable describing whether one of the parents have higher education or not, and has been calculated the mean for each school, obtaining the proportion of highly educated parents for school.

At the school level have been introduced variables controlling for school's characteristics.

#### CLASS SIZE

Reducing class size has been a frequent measure taken by country boards to help migrants integration (see section on Education systems and school integration policies). Smaller class sizes are generally perceived as allowing teachers to spend more time with each student and less time in classroom management, thereby providing better instruction and ensuring higher performance. In this respect, class size may be viewed as an indicator of the quality of a school system (OECD, 2012). According to the PISA report on education indicators of 2012, reducing class size is not, on its own, a sufficient policy lever to improve the performance of education systems, and is a less efficient measure than increasing the quality of teaching. However, a control for class size has been added. To give a more meaningful interpretation to the results, the variable has been centered on its mean value.

#### PUBLIC VS. PRIVATE

Public or private school is measured with a binary dummy variable with public schools as reference category.

As introduced in the section relative to the educational system, in Belgium and the Netherlands the majority of the students attend private schools, while in Germany Denmark and Finland, the number of students attending public schools is greater. Results from PISA show that, in most countries, privately managed schools tend to have more autonomy, better resources, and perform better on the PISA reading scale than publicly managed schools. However, indeed, in most PISA-participating countries and economies, the average socio-economic background of students who

attend privately managed schools is more advantaged than that of those who attend public schools (OECD, 2012).

### **Analytic strategy**

In order to test if micro and macro-level variables (parental education and school ethnic and academic composition) have an effect on a micro-level dependent variable (reading test score), controlling for other macro and micro level variables, a multilevel model is required (Robson & Pevalin, 2016). Hierarchical linear models explicitly recognize the clustering of individuals and adjust for the correlation among individuals who share the same context to correct for their lack of independence (Lee, 2007).

In order to measure and compare students' performance in absolute terms, in a first stage will be run a set of hierarchically organized models keeping together the total sample with the five destination countries.

The null model only includes the intercept term in order to get the total amount of within schools and among schools variation in the reading scores and a measure of the error terms. In Model 1, two variables controlling for country of destination and origin will be added in order to measure differences in students' performance across countries and by country of origin (native, Turkish or other immigrant). Model 2 adds an interaction term between country of destination and origin to assess Turkish students' differences in reading score across countries. In Model 3 then, are introduced two of the main explanatory variables of this analysis: parental education, its interaction with the student origins, and school ethnic composition. Academic capital will be added in the next model in order to be able to observe ethnic and academic capital effects separately. Successively in Model 4 all the other control variables will be added.

In a successive stage, since the small number of destination countries observed do not allow to add a third level of analysis, five separate models, with the same hierarchical logic, will be run for each destination country in order to evaluate Turkish students' performance relatively to their native peers in their country of residence and examine the specific explanatory power of the selected variables in each country.

## Results

### Descriptive analysis

**Tab. 1 Mean reading score by country of residence and origin (standard dev. in parentheses)**

	Native	Turkish	Other immigrants	All	Average gap between natives and Turkish
<b>Belgium</b>	524.8 (92.5)	422.4 (104.9)	474.9 (105.6)	512.4 (100.7)	102.4
<b>Germany</b>	524.8 (87.3)	459.2 (88.9)	491.6 (91.3)	507.5 (91.3)	65.6
<b>Netherlands</b>	515.6 (91.8)	446.3 (87.2)	479.3 (92.3)	506.3 (94.3)	69.3
<b>Finland</b>	528.3 (90.5)	468.0 (96.0)	468.8 (108.1)	510.9 (100.4)	60.3
<b>Denmark</b>	503.9 (81.1)	421.7 (82.1)	456.3 (89.3)	483.9 (89.0)	82.2
<b>All</b>	521.3 (89.6)	437.3 (92.5)	469.4 (100.0)		84

(Source PISA 2012)

Table 1, showing the mean values of reading scores by country of residence and origin, gives relevant preliminary results.

The country where natives obtain the highest mean score is Finland, followed by Belgium, Germany, the Netherlands and last Denmark.

In absolute terms, it looks that the country where Turkish reach the highest average reading score is Finland, followed by Germany, the Netherlands, Belgium and finally, the lowest, Denmark.

It can be clearly noticed that in all the five residence countries there is a considerable gap between natives and Turkish students. On average for the five countries the difference is of 84 points.

The biggest gap is seen in Belgium, where the average difference between natives and Turkish is of 102,4 points, and the narrowest is reported in Finland, of 60.3 average points, followed by Germany, of 65.6 average points, which are also the country where Turkish perform better in absolute terms.

#### **Parents' highest level of education**

In order to understand whether this gap is a direct consequence of a different parental educational level, table 2 and 3 illustrate the highest level of education reached, respectively by mother and father, in percentage, by origin groups.

For the entire sample the 23% of mothers and 29% of fathers are low educated. However, among Turkish the low educated mothers are the 64% while among natives only the 19%. A similar difference is reported among fathers: 58% of Turkish fathers are low educated against the 23% of native fathers.



**Tab. 2 Highest level of education of the mother by origin (column percentages)**

	<b>Natives</b> N=23625	<b>Turkish</b> N=892	<b>Other immigrants</b> N=6658	<b>Total</b> N=31175
<b>Low</b>	19.33	63.57	30.91	23.07
<b>Medium</b>	23.60	17.04	18.77	22.38
<b>High</b>	57.07	19.39	50.32	54.55

Pearson chi2(4) = 1.3e+03 Pr = 0.000

**Tab. 3 Highest level of education of the father by origin (column percentages)**

	<b>Natives</b> N=23,067	<b>Turkish</b> N=863	<b>Other immigrants</b> N=6,307	<b>Total</b> N=30,237
<b>Low</b>	26.28	58.40	32.93	28.58
<b>Medium</b>	21.39	18.19	18.46	20.68
<b>High</b>	52.33	23.41	48.61	50.73

Pearson chi2(4) = 520.4585 Pr = 0.000

Among natives the 57% of mothers and 52% of fathers are highly educated, while among Turkish immigrants, only the 19% of mothers and the 23% of fathers have a tertiary level of education.

Differences in educational level among groups are statistically significant, parental level of education seems to differ considerably among natives and Turkish parents.

The bar charts reported in the appendix (Figures 1-4) show the level of education, in percentage, of native and Turkish mothers and fathers by country of residence.

In Belgium, Finland, and Denmark, more than 60% of native mothers have received higher education. In Netherlands the percentage is around 40%. While the percentage of low educated native mothers, in these four countries does not reach the 20%.

Germany stands out, less than 30% of native mothers are higher educated and around the 40% is low educated.

Among Turkish mothers, in Belgium, Germany, Netherlands and Denmark the great majority (more than 50%) is low educated and less than 20% received tertiary education, in Finland instead there are as much low as highly educated mothers, the percentages are about 40% and 40%.

For fathers the scenario is similar. The majority of native fathers are higher educated while Turkish fathers low educated. Two exceptions are seen in Denmark where the percentage of natives father low educated is almost the same of the tertiary educated and the Netherlands where high educated Turkish fathers are almost as much as the low educated.

### **Schools' ethnic and social composition**

Table 4 and 5 show respectively the proportions of immigrants and highly educated parents per school, by country of residence and in the total sample.

The proportion of immigrants per school appears similar across countries. The mean value of immigrants per school goes from 11% in the Netherlands to 26% in Denmark. Observing the minimum and maximum values of the variable, it seems that in the five observed countries there is a considerable level of school ethnic segregation since there are schools with 0 immigrants and others that reach the 90% of immigrants per school. However, it is to remember that this proportion has been calculated from the ratio of the total number of natives and immigrants per school in the sample.

**Tab.4 Proportion of immigrant per school by country**

	<b>N of schools</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min</b>	<b>Max</b>
<b>Belgium</b>	287	0.16	0.20	0	0.86
<b>Germany</b>	230	0.14	0.16	0	0.90
<b>Netherlands</b>	179	0.11	0.15	0	0.85
<b>Finland</b>	311	0.13	0.15	0	0.67
<b>Denmark</b>	341	0.26	0.25	0	0.90
<b>All</b>	1348	0.16	0.12	0	0.90

(Source: PISA 2012)

Also the distribution of highly educated parents seems to be uneven among schools, going from schools with no students with tertiary educated parents to schools with the 95% of students with highly educated parents. The average goes from 20% of students with tertiary educated parents per school in Germany, to the 64% in Finland.

**Tab.5 Proportion of highly educated parents per school by country**

	<b>N of schools</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min</b>	<b>Max</b>
<b>Belgium</b>	287	0.46	0.21	0	0.92
<b>Germany</b>	230	0.20	0.15	0	0.74
<b>Netherlands</b>	179	0.41	0.15	0.07	0.82
<b>Finland</b>	311	0.64	0.13	0	0.95
<b>Denmark</b>	341	0.48	0.18	0	0.91
<b>All</b>	1348	0.44	0.15	0	0.95

(Source: PISA 2012)

## Multilevel analysis

Table 6 shows Models 0 to 4, addressing the students' reading grades. Looking at the model fits (LL change), it can be seen that all model changes are significant, moreover both Aikaike (AIC) and Bayesian (BIC) information criterions decrease in each successive model, suggesting that the model fit is improving. The interclass correlation coefficient (ICC) for the Null Model (only with the

intercept) is 0.38, meaning that schools account for 38 percent of the variability of grades. This gives empirical support for using a multilevel model instead of an ordinary regression model.

The random effects portion of the model indicates a large amount of both within and between schools variation. The unexplained variance in grades between students from the same schools (within school variance) is greater than the variance between schools.

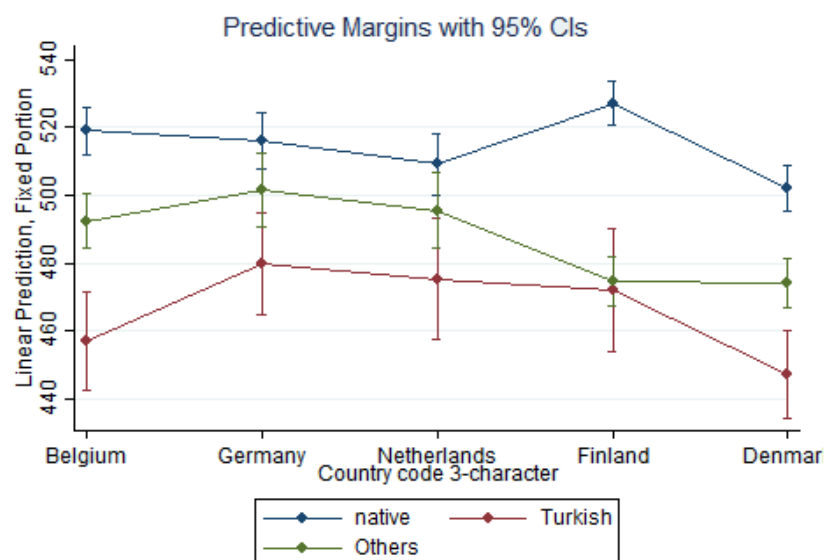
However, a large amount of variance between school is reported, indicating that the composition of the schools in term of the individual variables observed vary considerably.

In Model 1 can be observed the effect of countries of residence and origin on reading scores.

In Belgium, Germany and Finland, students have significantly higher scores than students in Denmark (reference category), and in the whole sample, Turkish students have reading scores 51.6 points lower than natives.

In Model 2, since the interaction is estimated as a deviation from the main effect, the coefficient related to country of residence and origin have a different meaning. Native students in Belgium, Germany and Finland obtain significantly higher scores than Danish students, and, in Denmark, Turkish and other immigrant scored significantly lower than natives.

Observing the interaction terms, it appears that, despite students in Belgium obtain significantly higher scores than students in Denmark, Turkish students in Belgium scored significantly lower than native students in Denmark. Same is for immigrant students in Finland; instead, surprisingly, immigrant students in Germany and the Netherlands received significantly higher scores than Danish students. However, this is not the case for Turkish students.



The above margin plot illustrates the interaction (not controlling for other individual and school characteristics). In each country of residence Turkish lag behind their native peers. Denmark is the country where both Turkish and natives had lower reading scores. The highest predicted score for

natives is observed in Finland, while for Turkish in Germany. Moreover, it seems that in Finland, in contrast with the other destination countries, Turkish students do not perform worst than other immigrants.

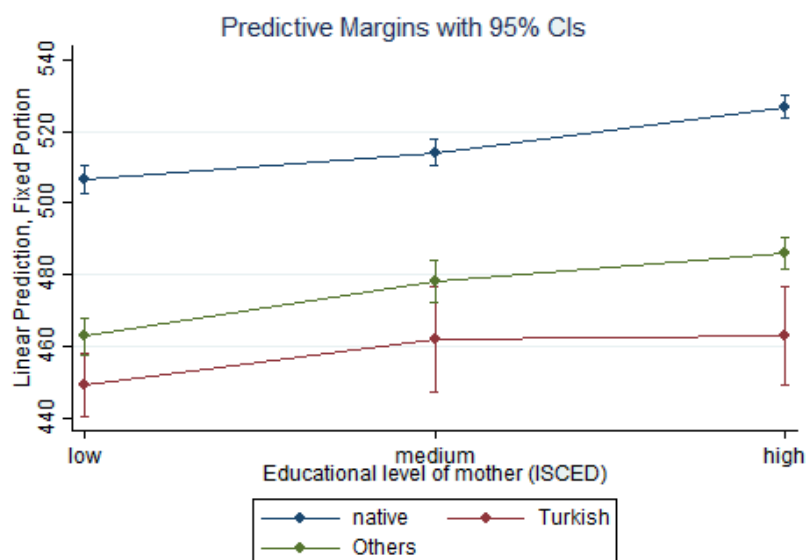
In Model 3 the interaction have been dropped in order to have a more simple and straightforward interpretation of the variables and constant.

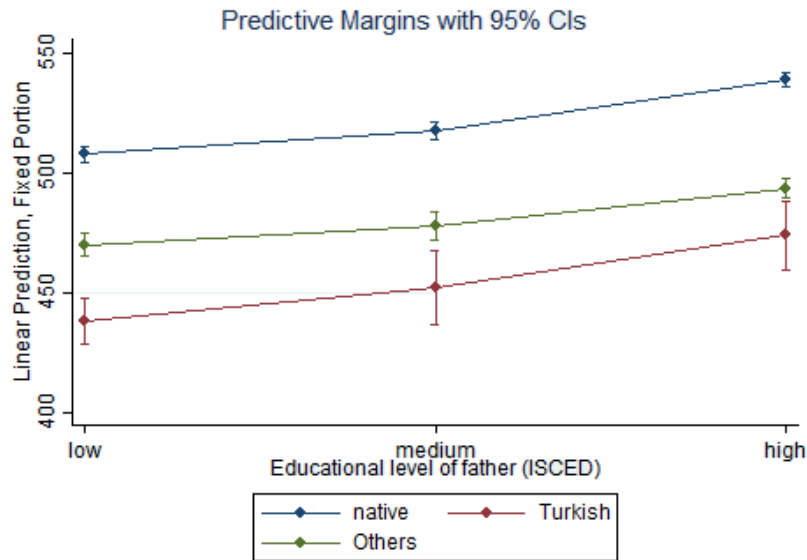
Some of the main explanatory variables of this analysis, parental education, its interaction with the student origins, and school ethnic composition, are introduced.

Controlling for these variables, only students in Germany are seen to scored significantly better than students in Denmark.

The model suggests that among students with low educated parents, Turkish and other immigrants have significantly lower scores than natives. Among natives, students with medium and high educated mother and/or fathers, have significantly better scores than those with low educated parents. Comparing the model with and without interactions, it appears that the two interactions between parent’s higher level of education and origin are not statistically significant since both AIC and BIC increase in the model with the interactions and the LL change is not significant.

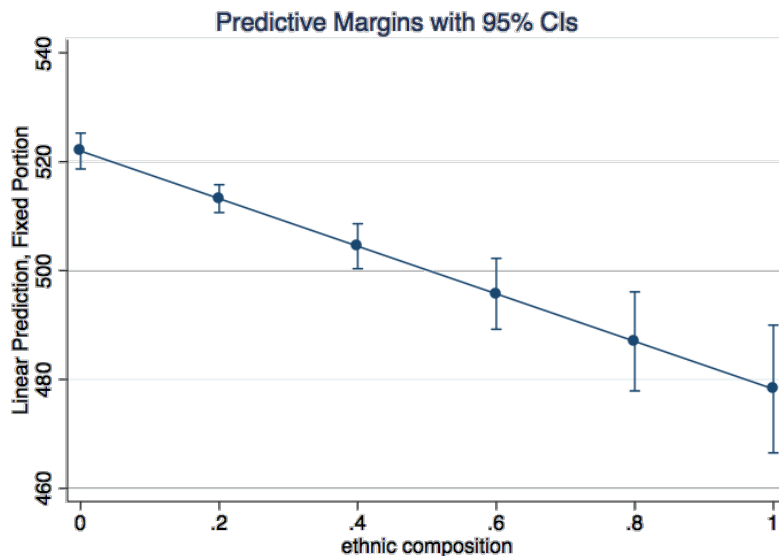
As it can be easily observed from the following margin plots, education of mother and father have a positive effect on both native and Turkish students, however, among students with high educated parents, as well as among those with medium and low educated parents, Turkish obtained considerably lower scores than natives as hypothesized.





Finally, the coefficient related to the proportion of immigrant at school is negative and significant, meaning that at a higher percentage of immigrants at school, reading scores get lower.

The following graph shows the predicted individual reading scores for growing proportion of immigrants per school at the 95% confidence interval. It can be clearly observed that at a higher percentage of immigrant students at school, reading scores decrease.



In the final model academic capital, as well as individual and school level control variables are added.

Controlling for those individual and school level characteristics, students in Belgium and Germany obtain significantly higher scores than students in Denmark, while in the Netherlands significantly lower.

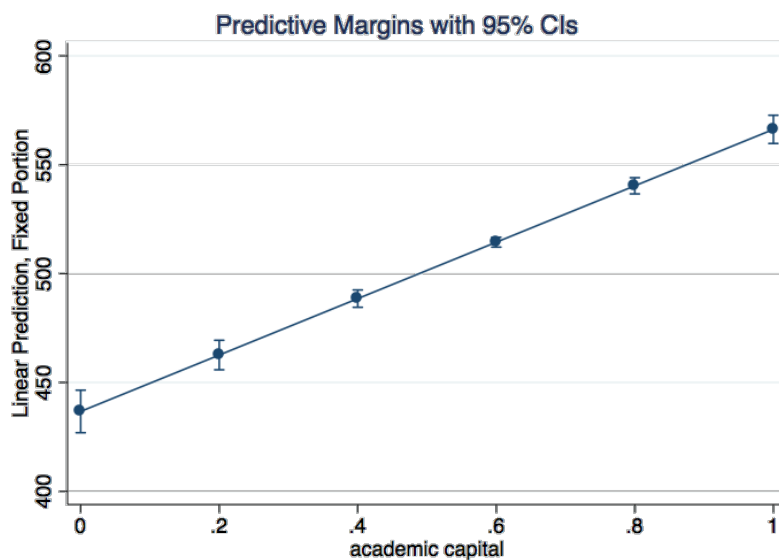
Among students with low educated parents, Turkish students still seem to have significantly lower reading scores than natives.

Moreover, the interaction term between having Turkish origin and a high educated mother, become negative and significant. This means that Turkish students with highly educated mothers scored in the test significantly worse than native students with low educated mothers.

All the other individual level control variables operate as expected.

Students in private schools seem to obtain higher reading results than students in public schools. Surprisingly class size is significant and positive indicating that, in contrast to the theory, students in bigger classes receive higher scores.

Finally, as expected, a high proportion of students with high educated parents per school is positively associated with higher individual reading scores and the negative effect of a high proportion of immigrant at school lost significance as expected. The graph show an inverse tendency relatively to the proportion of immigrant at school.



Over all, 50% of the variance among schools is explained by school level variables, namely private or public schools, class size, and proportion of immigrants and academic capital. While only the 14% of the variance among students is explained by the observed individual level variables.

**Tab. 6 Multilevel linear regression on reading scores**

	Null Model	Model 1	Model 2	Model 3	Model 4
<b>Country of residence (Ref. Denmark)</b>					
Belgium		16.31*** (4.790)	17.34*** (4.892)	8.874 (4.602)	22.97*** (3.748)
Germany		15.84** (5.331)	14.28** (5.435)	12.30* (5.131)	29.45*** (4.559)
Netherlands		7.399 (5.596)	5.529 (5.690)	-2.372 (5.416)	-13.58** (4.461)
Finland		19.31*** (4.649)	25.03*** (4.740)	8.523 (4.485)	6.061 (3.565)
<b>Origin (Ref. Native)</b>					
Turkish		-51.63*** (3.443)	-50.04*** (6.391)	-44.29*** (4.864)	-20.08*** (4.926)
Other immigrants		-32.32*** (1.283)	-26.16*** (2.596)	-33.32*** (2.716)	-9.570** (2.918)
<b>Residence x Origin (Ref. Denmark x Native)</b>					
Belgium x Turkish			-17.08* (9.597)		
Belgium x Other immigrants			-0.819 (3.747)		
Germany x Turkish			14.46 (10.52)		
Germany x Other immigrants			14.06** (5.334)		
Netherlands x Turkish			17.32 (10.65)		
Netherlands x Other immigrants			14.33** (4.665)		
Finland x Turkish			-7.875 (10.97)		
Finland x Other immigrants			-24.90*** (3.381)		
<b>Mother level of education (Ref. Low)</b>					
Medium				5.949*** (1.721)	4.153* (1.647)
High				15.05*** (1.544)	7.005*** (1.509)
<b>Father level of education (Ref. Low)</b>					
Medium				3.152 (1.643)	0.775 (1.570)
High				11.17*** (1.372)	3.883** (1.339)
<b>Origin x education mother (Ref. Native x Low)</b>					
Turkish x Medium				2.378 (9.049)	1.270 (8.728)
Turkish x High				-11.73 (8.897)	-16.99* (8.530)
Other immigrants x Medium				5.533 (3.762)	0.730 (3.603)

Other immigrants x High				2.679 (3.135)	-2.102 (3.025)
<b>Origin x education father</b> ( <i>Ref. Native x Low</i> )					
Turkish x Medium				4.075 (8.910)	4.279 (8.580)
Turkish x High				14.18 (8.543)	8.849 (8.217)
Other immigrants x Medium				5.161 (3.675)	2.470 (3.515)
Other immigrants x High				0.226 (2.993)	-1.169 (2.860)
<b>Generation</b> ( <i>Ref. Native</i> )					
Second generation					-10.45*** (2.345)
First generation					-36.63*** (2.630)
<b>Speaking a foreign language at home</b>					-17.02*** (1.644)
<b>Female</b>					33.40*** (0.887)
<b>Parental occupational status</b> (centered)					0.613*** (0.0250)
<b>Proportion of immigrants at school</b>				-61.75*** (8.398)	-9.324 (6.723)
<b>Academic capital</b>					129.6*** (7.945)
<b>Class size</b> (centered)					3.793*** (0.314)
<b>Private school</b>					10.04** (3.097)
<b>Constant</b>	509.4*** (1.709)	505.5*** (3.301)	503.9*** (3.368)	505.7*** (3.887)	407.8*** (5.898)
<b>Sigma_u</b> (Between group variance)	3283.9*** (74.66)	3000.2*** (68.91)	3020.5*** (69.35)	2644.1*** (61.68)	1312.4*** (32.75)
<b>Sigma_e</b> (Within group variance)	5428.8*** (24.34)	5280.5*** (23.68)	5249.2*** (23.54)	5217.0*** (23.40)	4758.9*** (21.37)
<b>ICC</b>	0.377	0.362	0.365	0.336	0.216
<b>N</b>	26176	26176	26176	26176	26176
<b>AIC</b>	302522.7	301739.4	301614.1	301321.5	297238.2
<b>BIC</b>	302547.2	301813.0	301753.0	301501.3	297483.3
<b>LL</b>	-151258.3	-150860.7	-150790.0	-150638.8	-148589.1
<b>df_m</b>	0	6	14	19	27

Standard errors in parentheses \* p<0.05, \*\* p<0.01, \*\*\* p<0.001 (Source: PISA 2012)



### **Multilevel analysis by country of residence**

In table 7 and 8 the multilevel analysis is conducted separately for each country of residence.

In table 8 can be found the null models, only with the intercepts, for each one of the five countries.

The interclass correlation coefficients are higher for Belgium, Germany and the Netherlands (0.57, 0.60 and 0.65) and considerably lower for Finland and Denmark (0.10 and 0.16) meaning that in Belgium, Germany and the Netherlands school accounts respectively for the 57%, 60% and 65% of the variability of grades, while in Finland and Denmark only of the 10% and 16%.

However for all the five countries the ICC is high enough to give empirical support for using a multilevel model instead of an ordinary regression model.

In the same way, for Belgium, Germany, and the Netherlands  $\sigma_u$ , or the unexplained variance between schools, is far greater than the variance within schools ( $\sigma_e$ ), and the opposite tendency is seen for Finland and Denmark where the variance within schools is more prominent.

Looking at the model fits (LL change), we find that all model changes are significant, and both Aikaike (AIC) and Bayesian (BIC) information criterions decrease from table 8 to 7, suggesting that the the full models fit the data better than the empty ones.

In table 7 are reported the five complete models, with all the control variables.

The significant coefficients related to Turkish origin suggest that in Belgium, Germany and Denmark, among students with low educated parents, students with Turkish origin obtained relatively lower grades than natives.

Among natives, students with medium or high educated mothers obtained significantly higher scores relatively to students with low educated mothers, in Germany, Finland and Denmark, while students with high educated fathers only scored significantly higher in Denmark. It seems then that among natives in Germany and Finland, mother education is more relevant than father's for students' success.

Comparing the models with and without interactions between parents' higher level of education and origin, appears that all interaction terms are not statistically significant since for all the five countries both AIC and BIC increase and the LL change is not significant.

beside for Germany, where it appears that immigrants with medium and high educated mothers scored significantly better than natives with low educated parents. But this is not the case for Turkish students.

The control individual variables seem to operate as expected: in all the five countries females have significantly higher reading scores than males and speaking a foreign language at home is negative and significant. Also second generation immigrants seem to do better than the first generation in most countries, and a high parental occupational status is positively associated with higher scores.

Despite all the controls, a high proportion of immigrants at school in Belgium and Germany remain negative and significant. Instead, a high proportion of students per school with highly educated parents is positively associated with higher scores in all countries.

Surprisingly, in contrast to the theory, class size is positive and significant in all countries, meaning that in bigger classes students received higher grades.

In Belgium and, unexpectedly, in Denmark, students in private school seem to do significantly better than students in public schools.

**Tab. 7 Multilevel linear regression on reading scores by country of residence**

	BELGIUM	GERMANY	NETHERLA NDS	FINLAND	DENMARK
<b>Origin (Ref. Native)</b>					
Turkish	-36.30*** (8.942)	-35.93*** (10.36)	7.941 (12.73)	-11.94 (17.17)	-17.16* (8.675)
Other immigrants	-6.273 (5.457)	-14.98* (6.921)	7.850 (8.459)	-10.30 (6.124)	-1.785 (5.605)
<b>Mother level of education (Ref. Low)</b>					
Medium	7.108* (3.140)	5.221 (2.952)	4.699 (3.935)	3.612 (4.268)	-3.346 (4.044)
High	4.024 (3.195)	-2.155 (3.133)	5.333 (4.073)	11.64*** (3.298)	8.182** (3.001)
<b>Father level of education (Ref. Low)</b>					
Medium	-2.739 (2.822)	-3.158 (3.405)	0.298 (3.562)	-1.219 (4.138)	-0.822 (3.980)
High	-4.836 (2.906)	0.0422 (3.022)	1.355 (3.671)	5.168 (2.681)	10.18*** (2.689)
<b>Origin x education mother (Ref. Native x Low)</b>					
Turkish x Medium	-8.946 (13.89)	8.475 (17.54)	-8.901 (16.81)	13.33 (31.41)	11.45 (21.23)
Turkish x High	-32.36 (20.41)	15.74 (18.67)	-32.58 (18.35)	-41.94 (24.19)	-11.14 (15.39)
Other immigrants x Medium	-1.802 (6.019)	19.13* (8.615)	-15.62 (8.349)	-4.594 (7.963)	2.792 (8.714)
Other immigrants x High	-5.077 (5.679)	18.13* (9.034)	-11.95 (8.545)	-7.530 (6.247)	-0.112 (5.593)
<b>Origin x education father (Ref. Native x Low)</b>					
Turkish x Medium	7.847 (13.74)	11.49 (17.66)	-12.56 (17.63)	-17.71 (32.01)	14.57 (20.19)
Turkish x High	30.16 (17.85)	27.75 (14.94)	-21.60 (17.23)	31.20 (24.15)	-0.238 (16.35)
Other immigrants x Medium	5.109 (5.798)	2.292 (9.695)	5.345 (8.354)	5.991 (7.741)	-2.185 (8.106)
Other immigrants x High	1.095 (5.452)	-7.069 (8.443)	1.509 (8.095)	5.019 (5.587)	-5.630 (5.378)
<b>Generation (Ref. Native)</b>					
Second generation	-7.383 (4.264)	3.690 (6.151)	-6.485 (5.607)	-29.71*** (5.445)	-14.42** (5.034)
First generation	-18.51*** (4.125)	-11.24 (11.66)	-10.61 (8.026)	-56.56*** (5.553)	-38.62*** (6.558)

<b>Speaking a foreign language at home</b>	-12.31*** (2.163)	-18.16** (6.771)	-13.14* (5.320)	-23.17*** (3.841)	-7.614* (4.547)
<b>Female</b>	17.03*** (1.690)	30.70*** (2.132)	20.97*** (1.869)	53.03*** (1.838)	30.67*** (1.950)
<b>Parental occupational status (centered)</b>	0.607*** (0.0470)	0.307*** (0.0664)	0.230*** (0.0551)	0.754*** (0.0507)	0.692*** (0.0540)
<b>Proportion of immigrants at school</b>	-34.30* (14.64)	-76.71** (23.94)	-34.09 (28.51)	5.611 (11.85)	1.003 (8.090)
<b>Academic capital</b>	170.4*** (15.82)	161.3*** (20.82)	170.4*** (28.27)	73.72*** (16.86)	63.98*** (11.45)
<b>Class size (centered)</b>	4.049*** (0.753)	4.753*** (0.740)	7.925*** (1.121)	1.849*** (0.532)	1.753*** (0.459)
<b>Private school</b>	26.35*** (5.686)	-25.12 (13.59)	4.046 (8.835)	6.894 (7.055)	8.543* (4.219)
<b>Constant</b>	411.9*** (11.64)	436.8*** (9.443)	369.3*** (18.12)	438.5*** (13.49)	440.4*** (7.827)
<b>Sigma_u</b> (Between group variance)	1480.8*** (75.20)	1989.6*** (114.9)	2504.1*** (149.3)	515.9*** (32.80)	471.0*** (33.05)
<b>Sigma_e</b> (Within group variance)	3944.0*** (35.07)	2924.6*** (40.56)	2800.4*** (34.68)	6391.9*** (52.31)	4989.8*** (49.26)
<b>ICC</b>	0.273	0.405	0.472	0.0747	0.0863
<b>N</b>	6611	2801	3421	7778	5473
<b>AIC</b>	74151.8	30804.0	37387.7	90612.7	62483.8
<b>BIC</b>	74328.6	30958.4	37547.3	90793.7	62655.6
<b>LL</b>	-37049.9	-15376.0	-18667.9	-45280.4	-31215.9
<b>df</b>	23	23	23	23	23

Standard errors in parentheses \* p<0.05, \*\* p<0.01, \*\*\* p<0.001 (Source: PISA 2012)

**Tab. 8 Null Models**

	<b>Belgium</b>	<b>Germany</b>	<b>Netherlands</b>	<b>Finland</b>	<b>Denmark</b>
<b>Constant</b>	512.0*** (4.671)	513.4*** (5.106)	506.2*** (6.019)	518.5*** (2.084)	496.8*** (2.168)
<b>Sigma_u</b> (Between group variance)	5668.4*** (259.3)	4839.1*** (262.9)	5610.7*** (324.4)	955.9*** (55.22)	1094.2*** (62.17)
<b>Sigma_e</b> (Within group variance)	4272.9*** (37.91)	3225.0*** (44.62)	2959.7*** (36.57)	8067.2*** (65.95)	5743.4*** (56.63)
<b>ICC</b>	0.570	0.600	0.655	0.106	0.160
<b>N</b>	6611	2801	3421	7778	5473
<b>AIC</b>	75209.3	31328.4	37798.2	92742.0	63552.1
<b>BIC</b>	75229.7	31346.2	37816.6	92762.9	63571.9
<b>LL</b>	-37601.7	-15661.2	-18896.1	-46368.0	-31773.0
<b>df</b>	0	0	0	0	0

Standard errors in parentheses \* p<0.05, \*\* p<0.01, \*\*\* p<0.001 (Source: PISA 2012)

## **Conclusion and discussion**

The analysis showed that in all the five European countries under study, Turkish students considerably lag behind their native peers in term of reading grades. Since good reading abilities are at the base of educational success, and thereon of further integration in the labor market, this matter is of remarkable concern.

Analyzing the impact of parental education, has been found that it does have a considerable positive effect on their offspring's educational achievement for both natives and Turkish students. However, as hypothesized, not of the same magnitude. In contrast to those theories blaming that immigrant students are worse off because their parents on average have a lower level of education, results showed that among students with low educated parents, Turkish students have significant lower reading achievement, even when controlling for individual and school level characteristics. Furthermore, in the case of Turkish students, mother's education does not seem to have a positive impact on students, since model 4 in table 6 showed that, taking into account students and school characteristics, Turkish students with high educated mothers have lower achievement than natives with low educated mothers.

Confirming hypothesis 1, it seems that education obtained in the country of origin is not a good indicator of parental abilities and resources of developing competences in their children as education in the country of destination, probably due to differences in country specific human capital. In simple words, Turkish parents, despite both highly educated, could not be able to help their children developing reading abilities in the country's language as native parents.

However, analyzing the effect of parental education in each of the residence countries, it resulted that in Belgium, Germany, and Denmark, among students with low educated parents, Turkish students have lower scores relatively to their native peers, while in the Netherlands and Finland there are not significant differences. It is possible that other factors not measured by this analysis supply for immigrant parents lack of country specific human capital, as, for example, the provision of good quality language support and extra teaching periods for foreign students. Unfortunately, this analysis is not able to evaluate the impact of those provisions, it would be interesting for further research to investigate more deeply on those cross countries differences.

This study also found a considerable effect of school composition on students' individual reading scores. School environment, in term of composition of the student body, resulted able to influence students' performance, regardless of their individual background.

Confirming hypothesis 2, students enrolled in schools with a high proportion of immigrants have lower reading scores, however this seem to be related to the lower parental academic capital of

schools with high proportions of foreign kids, since the negative effect of ethnic composition disappear when controlling for the proportion of highly educated parents of the student body.

When analyzing each country separately, however, the negative effect of school ethnic composition in Belgium and Germany remain significant despite controlling for parental academic capital.

The analysis of the interclass correlation coefficients and variance showed that in Belgium, Germany and the Netherlands school accounts for great percentages of the variability of grades, while in Finland and Denmark these percentages are far smaller.

In the same way, for Belgium, Germany, and the Netherlands the unexplained variance between schools, is far greater than the variance within schools, and the opposite tendency is seen for Finland and Denmark where the variance within schools is more prominent. This reflects characteristics of the two welfare system, the conservative, where students attend different schools, publics or privates, according to their ethnicity and social status and therefore schools differ considerably from each other in terms of student body composition, and the social-democratic regime, where the great majority of schools are public and free for all students, and so less selective in terms of social and ethnic composition and more homogeneous.

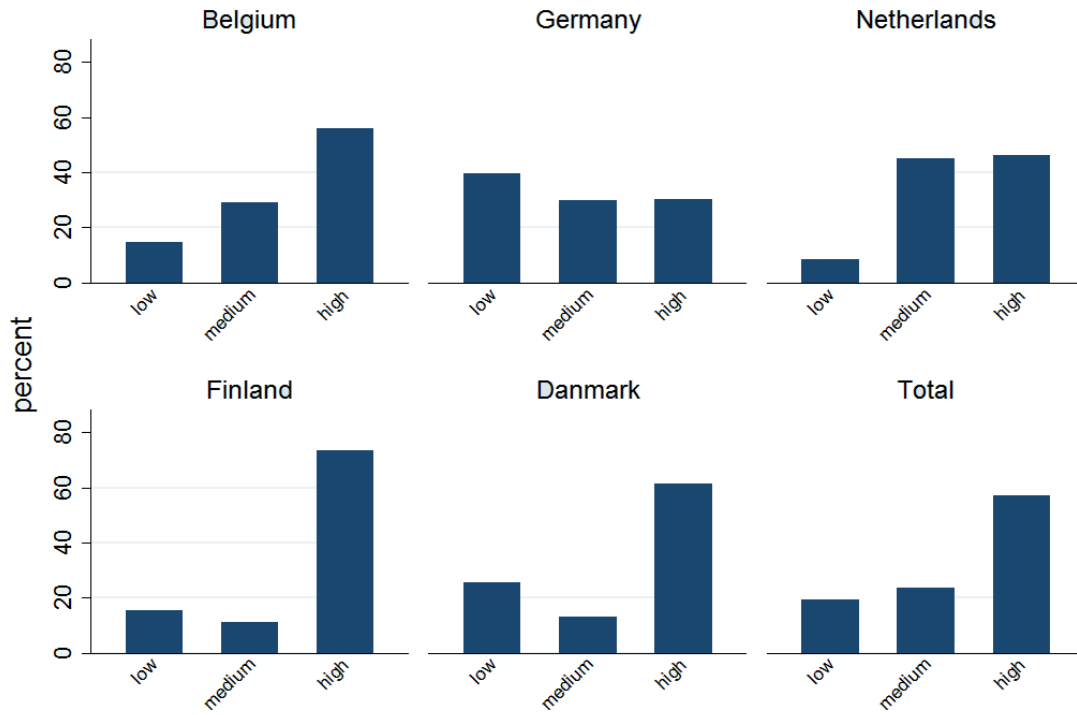
In a comparison cross countries, it appears that Turkish students perform best in Germany and Finland, which are also the countries where they seem to be closer to their native peers.

Due to data limitation, this contribution is not able to go more in deep in the explanation of those national differences, however it shows that there are relevant differences across countries which may be explained analyzing the impact of countries' specific policies and practices, and therefore that countries welfare provisions do influence migrants educational outcomes. Further research is required to better explain those differences.

# APPENDIX

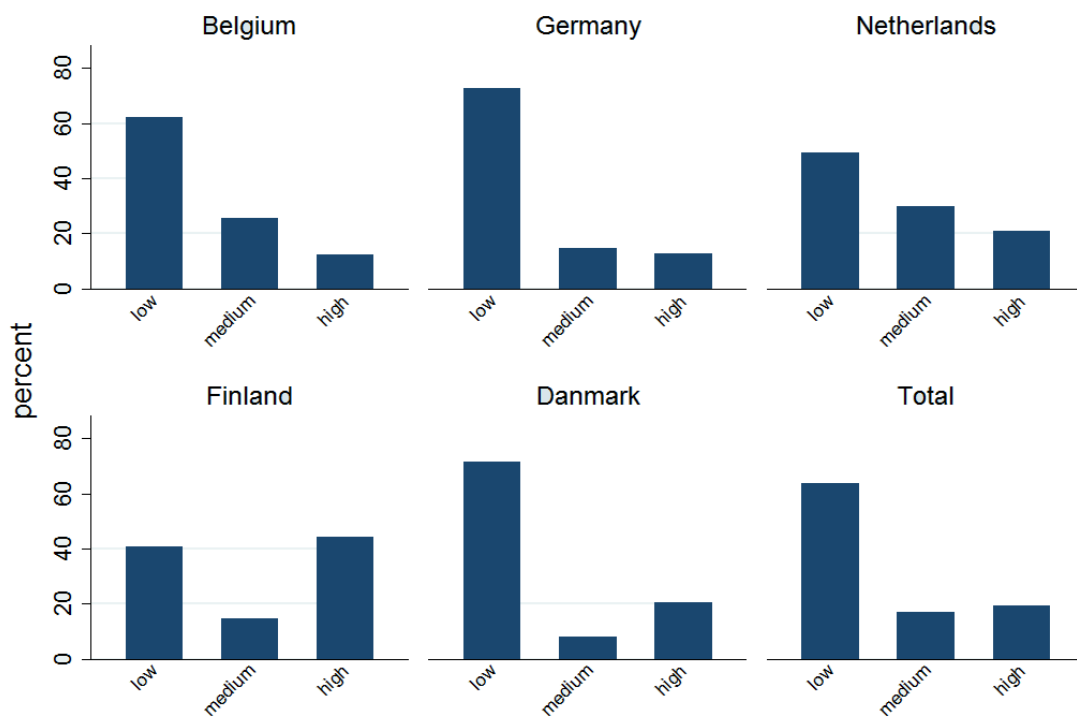
## Mother highest level of education by country

Fig.1 NATIVE MOTHERS



Graphs by Country code 3-character

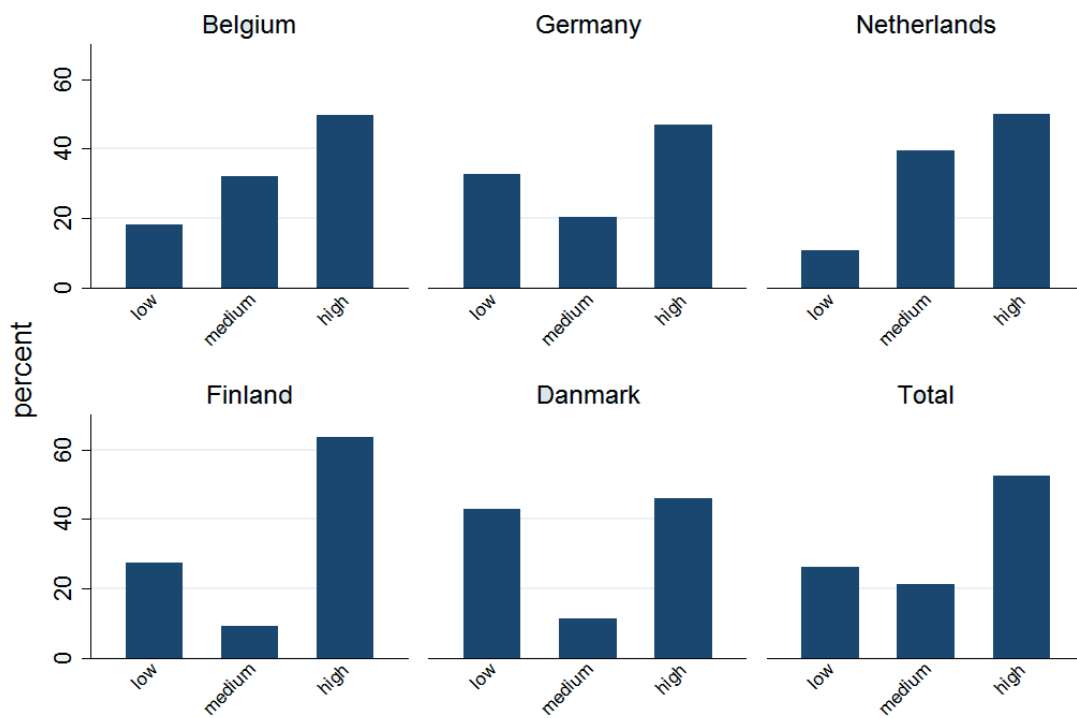
Fig. 2 TURKISH MOTHERS



Graphs by Country code 3-character

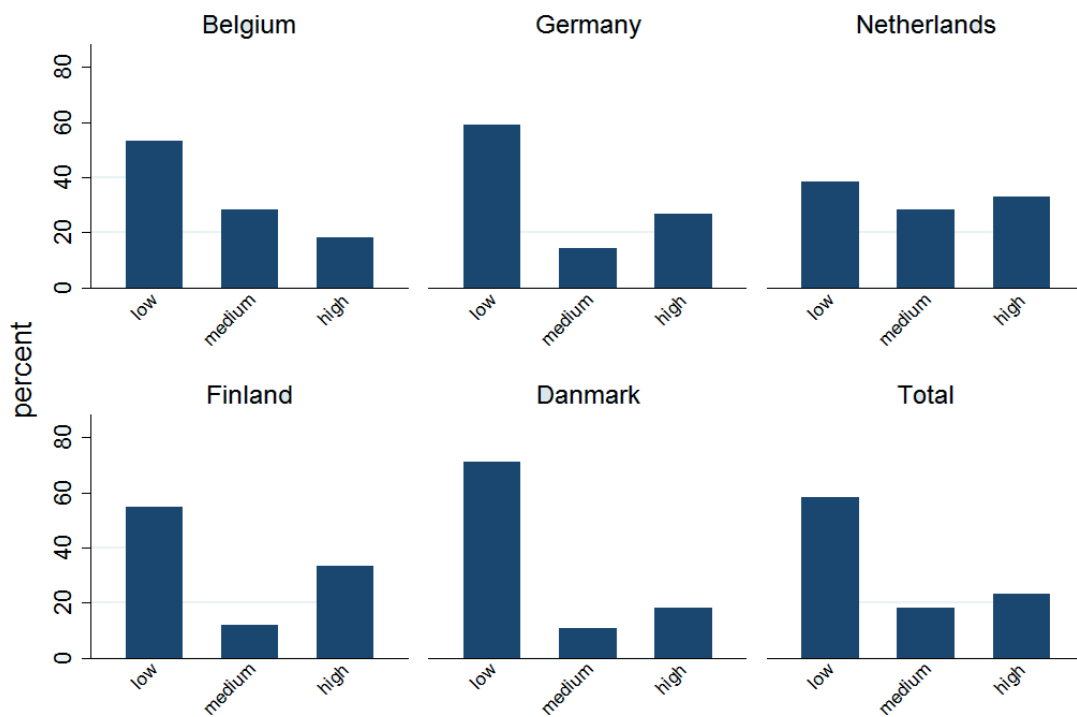
### Father highest level of education by country

Fig. 3 NATIVE FATHERS



Graphs by Country code 3-character

Fig. 4 TURKISH FATHERS



Graphs by Country code 3-character

## Descriptive statistics of control independent variables

### Sample size

	Native	Turkish	Other immigrants	All
Belgium	6470	223	1728	8421
Germany	3195	221	618	4034
Netherlands	3575	144	667	4386
Finland	6474	82	2151	8707
Denmark	4833	343	2172	7348
All	24547	1013	7336	32896

(Source PISA2012)

### Individual level variables

#### Gender

	Female	Male	N
Natives	12404	12143	24547
Turkish	469	544	1013
Other immigrants	3502	3734	7336
All	16475	16421	32896

(Source PISA2012)

#### Language spoken at home

	Test language	Other	N
Natives	22,644	1354	23998
Turkish	391	470	861
Other immigrants	3738	2790	6528
All	26773	4614	31387

(Source PISA2012)

#### Generation

	First	Second	Native	N
Natives	/	/	24481	24481
Turkish	78	917	/	995
Other immigrants	1872	5387	/	7259
All	1950	6304	24481	32735

(Source PISA2012)

#### Parental occupational status

	N	Mean	Std. Dev.	Min	Max
Natives	24007	55.6	20.5	11	89
Turkish	901	37.3	19.1	11.7	88.7
Other immigrants	6707	48.7	22.5	11	89
All	31925	53.5	21.3	11	89

(Source PISA2012)

### School level variables

#### Class size by country of residence

	N of schools	Mean	Std. Dev.	Min	Max
Belgium	287	19.6	4.2	13	28
Germany	230	24.8	5.1	13	53
Netherlands	179	24.8	4.1	13	28
Finland	311	19.3	3.4	13	28
Denmark	341	21	4	13	53
All	1348	21.4	4.7	13	53

(Source PISA2012)

#### Percentage of public and private schools per country of residence

	Public	Private	N schools
Belgium	31.4	68.6	287
Germany	93	7	230
Netherlands	32.3	67.7	179
Finland	94.2	5.8	311
Denmark	79.4	20.6	341
All	68.4	31.6	1348

(Source PISA2012)



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