

DEPARTMENT OF ECONOMICS

**School achievement and failure of
immigrant children in Flanders**

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SCHOOL ACHIEVEMENT AND FAILURE OF IMMIGRANT CHILDREN IN FLANDERS

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Abstract

15% of the total Belgian school population has an immigrant background. PISA 2009 results show that Belgium – despite being in the top 15 performers of all OECD participants - has one of the highest performance differences in Europe between children with and without an immigrant background. Furthermore, second generation immigrant children are doing worse than first generation immigrant children. This paper explores the determinants of school achievement, school failure and sorting of children with an immigrant background, using a new large survey of Flemish school children. The theoretical framework is based on the education production function literature and specific empirical socioeconomic literature on immigrant children, suggesting that personal factors, family conditions, school, peers, neighborhood, type of acculturation and history of migration matter to explain school achievement and failure. The empirical results show that unexplained differences between students with a Flemish, Turkish and Moroccan background remain after controlling for personal and background influences. A key finding is the large impact of innate ability and individual effort for all groups.

JEL classification: I21; I28

Keywords: school performance; immigrant children; Flanders

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1 Introduction

1.1 *Key challenges for the Flemish educational system*

Many European educational systems are facing a threefold challenge: (i) coping with an increase in the demand for education particularly in urban areas, (ii) educating an increasingly diverse population and (iii) dealing with the gap in educational attainment among various ethnic groups.

In Belgium, the school population with an immigrant background increased from about 12% in 2000 to over 15% in 2009 in Belgium, a number between that of Germany (18%) and France (14%). Main Belgian urban areas such as Brussels, Antwerp and others are preparing for substantial increases in the number of nursery, primary and secondary school pupils, predominantly with an immigrant background, requiring investment in new school buildings, reopening decommissioned schools and recruiting additional staff.

Also, the diversity of the school population is growing and is challenging teachers and school administrators. For example, in recent years the Antwerp school system registered more than 100 different nationalities.

Another important challenge is the gap between educational attainment among various ethnic groups. For example, PISA 2009 results for Belgium show a 70 point difference in reading performance of students with an immigrant background compared to those without an immigrant background. This difference is among the highest in Europe. PISA 2000 results were even more worrying showing a gap of 100 point - a European record. These results contrast sharply with the consistently high ranking of Belgium in subsequent PISA studies.

1.2 *Purpose of the paper*

The purpose of this paper is to probe into explaining attainment differences between students with an immigrant background and with Flemish roots, using recent survey data of the Flemish secondary school population. This paper is part of a major research program¹ to understand the various educational, social and anthropological processes of acculturation and of school performance of children with a Moroccan, Turkish, Polish or Chinese backgrounds in Flanders.

¹ For a description of the SBO project, the research groups involved and working papers, see the website www.oprit14.be (in Dutch)

The focus of this paper is on the likelihood of repeat years and of sorting in the Flemish educational system, particularly looking at attainment differences between children with an Eastern European, North-African (Morocco and other Maghreb), Turkish, Asian (Chinese and other) and African (Congolese, Rwandese) background and children with Flemish roots. The paper aims to explain such attainment differences by personal, family, school and environmental characteristics using multivariate analysis.

1.3 Grades and sorting in the Flemish school system

There is no central examination in the Flemish (and Belgian) school system. Schools are fairly autonomous in grading individual students. So, there is no reliable and comparable measure of student performance such as secondary school grades. Hence, the focus here is on repeat years and sorting.

The Flemish school system consists of subsidized (mostly Catholic) schools (4/5 of pupils) and state schools (1/5 of pupils) with free parental school choice. Compulsory education is to age 18, higher than in many other EU countries. The system is basically a subsidized voucher system. School subsidies (direct subsidies and right to hire a number of staff at the government's expense) essentially depend upon the number of pupils attending a school (or school group). A minimum subsidy guarantees parental choice between subsidized and state education at the local level.

Schools are regulated by making finance conditional on minimal quality norms and minimal educational standards. These standards are set and overviewed by the Flemish government. Schools autonomously evaluate pupils annually and if a pupil does not meet minimum standards, he/she will not get a pass grade and is refused access to the next year of study. Some students decide to repeat the same year at the same or at a different school. Others repeat the year but switch from one type of secondary education to another or switch schools. A repeat years implies an opportunity cost for the individual as well as for society, repeat years is used as an indicator of failure (and no repeat years of attainment).

The Flemish secondary school system sorts pupils after junior high school (2 years of secondary education) into general secondary (GSE), technical secondary (TSE), vocational secondary (VSE) and other tracks such as art school or special needs schools. GSE is the track *par excellence* preparing for university and higher education. TSE prepares for professional higher education or the labor market. VSE prepares for the labor market. The process of sorting is self-governed by parents and students, with schools and special consulting services informing and advising pupils about their potential. All pupils with a certificate of secondary education, whatever track they took, get access to higher education and university (with some exceptions

such as medical school and art school). It is widely known that GSE is a superior preparation for university and higher education, offering the best chances of a successful passage in higher education, compared to TSE (except for technical higher education) and BSE. Almost none of the students with a BSE track attempts higher education and the chances of passing the first year of higher education of those who do are slim. Hence, sorting – or the likelihood of choosing a GSE track after junior high school – is another strong indicator of educational attainment in the Flemish system as it is an important determinant of higher education opportunities.

2. Theoretical perspectives and literature

The theoretical perspective draws on two strands of the literature i.e. literature on educational production functions and literature that deals more specifically with educational performance of immigrant children. A systematic and extensive survey is not attempted here. Some references highlighting key aspects of the theoretical framework are retained and discussed here.

2.1. Factors affecting educational attainment

In line with the theory of educational production functions (e.g. Haveman & Wolfe, 1995), educational outcomes (drop-out, grades or test scores, repeat years, sorting) depend on a wide range of factors. Key categories are personal factors (talent, gender, age, health, psychological traits), family context (socioeconomic status, parental human capital, intact family or not, the presence of siblings), school environment (average school SES, school quality, school size, expenditure per pupil, governance) and neighborhood (housing quality, friends and peers, social control). The above list of specific factors is not exhaustive.

For students with an immigrant background specific factors such as migration history, immigrant cohort and mode of incorporation into society, knowledge of language and mainstream customs, type of acculturation which may be dissonant, selective or assimilative come into play (Portes & Rumbaut, 2001).

2.2. Education production function

There is an extensive literature on the so-called “education production function”, mostly focusing on the determinants of test results and exam performance. Most of this literature is for the US and some for the UK and other European countries. This earlier literature is surveyed extensively elsewhere - for example (Bradley & Taylor, 2004). In general, educational

attainment is impacted by earlier attainment, personal, family, school, peer group and neighborhood factors.

2.2.1. Pupil characteristics

Important personal characteristics that influence educational outcome are a pupil's earlier attainment, gender, ability, effort and ethnicity.

A large number of empirical studies show that cognitive and non-cognitive ability is a powerful determinant of wages, schooling and success in many areas of social and economic life (Heckman, 1995) (Heckman, Stixrud, & Urzua, 2006). Divergences between cognitive and non-cognitive ability show up at early ages and are correlated with family background. Paternal education (especially maternal human capital) is a key factor (F., Heckman, Lochner, & D.V., 2006). Several studies find a close link between test scores at early age and later exam results (Robertson & Symons, 2003) (Murnane, Willet, & Levy, 1995) (Borghans, Duckworth, Heckman, & ter Weel, 2008). However, the correlation between early test scores and parental human capital reduces their value as an efficient proxy of innate ability.

In many empirical studies, gender has a significant effect on educational attainment. Females often outperform males. Plausible explanations – especially in the context of immigrant children – are more parental control and more protective upbringing of females, with females more likely to conform to parental expectations (Portes & Rumbaut, 2001: p64)

More specific for immigrant children is the importance of age at immigration (Stiefel, Schwartz, & Conger, 2010) (Bohlmark, 2008), more specific whether or not the age of arrival is in the critical period of language acquisition (Bleakly & Chin, 2008).

2.2.2. Family

The importance of family context is empirically shown by many studies (Coleman, 1966) (Hanushek, 1986) (Loeb & Bound, 1996) (Feinstein & Symons, 1999). Genes matter as studies on differences between biological children and adopted children show (Sacerdote, 2007) (Bjorklund, Lindahl, & Plug, 2006). Parental (particularly maternal) human capital – education and health – has a systematic positive effect on educational attainment (Domingues Dos Santos & Wolff, 2011) (Colding, 2006). Family resources, care and adult attention tend to be larger in intact families with both parents present.

2.2.3. School

The literature on the effect of school quality – such as class size, school size, teacher quality - is vast and as yet inconclusive. Of particular relevance is the literature on effects of

Catholic schools on student performance as subsidized Catholic schools cater for well over ¾ of all secondary school pupils in Flanders. Several studies for the US and the UK find evidence of superior educational outcomes of pupils attending Catholic schools (Evans & Schwab, 1995), (Neal, 1997), (Nguyen & Taylor, 2003), (Sander & Krautman, 1995), but others do not find any positive effects (Goldhaber, 1996). Of particular interest is a comparative study of student achievement in the Flemish community of Belgium, France, New Zealand, Ontario and the US, showing substantial effects of private subsidized school (almost all Catholic schools) on student scores in mathematics tests, after controlling for the effects of family, school and peer inputs (Toma, 1996).

The evidence of effects of class size, teacher quality and expenditure per pupil is mixed. Some studies conclude that the effects of more inputs and higher expenditure per pupil – within a rather broad range of actual levels - are non existent (Hanushek, 2003) (Haveman & Wolfe, 1995). Others find supporting evidence for more equal outcomes from more equal financing (Card & Payne, 2002).

Also the verdict on school size and student attainment is still out with some studies suggesting no relationship (Luyten, 1994) while others find a U shaped relationship indicative of some optimal scale (Bradley & Taylor, 1998), confirming findings on cost-effectiveness of secondary school (Smet & Nonneman, 1998)

2.2.4. Peer group and neighborhood

It is well known that peer groups influence school achievement. If peer groups are valuing school achievement, belonging and fitting in means working for good school results. Some studies find substantial peer group effects (e.g. Robertson & Symons, 2003) (Feinstein & Symons, 1999). Other studies confirm peer effects of immigrant concentration in schools (usually negative impacts) on reading and math skills of natives and non natives ((Jensen & Rasmussen, 2011) (Ohinata & van Ours, 2011). Neighbourhood effects – especially in the context of immigration with clustering of ethnic groups often occurring - seem important. Most findings show a negative impact of immigrant concentration but some studies report a positive influence on attainment for some immigrant groups (Cardak & McDonald, 2004).

2.1. Integration & assimilation

All the standard factors included in an educational production function are relevant to explain school performance of pupils with an immigrant background. However, some specific elements come into play and the empirical literature on educational attainment of immigrant children in Europe is growing (Park & Sandefur, 2010), (Dustmann & Theodoropoulos,

2010), (Domingues Dos Santos & Wolff, 2011), (Colding, Husted, & Hummelgaard, 2009) (Brinbaum & Kieffer, 2009), (Cebolla Boado, 2008), (Bauer & Riphahn, 2007), (Tasiran & Tezic, 2006), (Jacobsen & Smith, 2006).

Ethnic background is embodying a wide range of values and attitudes which may or may not be conducive to academic performance. For example, gender roles may differ – with some cultures emphasizing a traditional role for women but others promoting equality and female autonomy.

The history of immigration may have effects on children's early education. For example, one study shows that paternal migration affects time allocation of children as a father's migration might lead to financial hardship and induce children to reduce hours of study and increase hours of work (Antman, 2011).

Another factor is different process of integration and assimilation. A very useful framework on integration and assimilation of immigrants is the theory of “segmented assimilations” put forward by Portes and Rumbaut (Portes & Rumbaut, 2001). Extensive qualitative and quantitative empirical analysis on US immigrants shows different patterns of assimilations with processes and outcomes varying across immigrant minorities. Some immigrants experience “rapid assimilation”, with the first generation achieving a socio economic status similar to natives and their children achieving educational credentials comparable to that of native peers. Others undergo a process of “selective acculturation” with the first generation predominantly being working-class and embedded in strong co-ethnic communities. The second generation attains middle-class status through sustained effort and education and later generations get on a track of acculturation but with preservation of different elements from their ethnic background. Some migrants experience “dissonant acculturation”. Typical for such process is that first generations have predominantly working-class status with weak co-ethnic communities. Acculturation of the second generations is problematic, dissonant, reactive and even adversarial. Such form of acculturation leads to dismal outcomes for the young. Youthful solidarity often traps them in a situation of adversity towards mainstream institutions, such as education. It ends up in a second (and further) generation with low educational achievement, failure to reach middle-class status and occupations, ending up on marginal working class communities, characterized with high unemployment and other social problems. These patterns broadly describe patters that can be observed in the Flemish and Northwestern European context. For example, immigrants in Flanders (Belgium) from the old EU-15 are on a “rapid assimilation” track with second and later generations barely distinguishable from the population with long term Flemish roots. Immigrants from Central and Eastern European countries – such as for example from Poland, the Czech Republic or Slovakia – go through a process closely resembling “selective acculturation”. The process of integration

of large groups Turkish or Moroccan immigrants has characteristics of “dissonant acculturation”. Hence, differences in student performance attributed to ethnic background may be caused by different types of integration.

3. Hypothesis and methodology

In this analysis, educational attainment in the Flemish context is approximated by two variables: (i) the likelihood a pupil repeated one or more school years by the time he/she attains the 5th year of secondary education and (ii) the likelihood of being sorted into the GSE track offering the best prospects for university and higher education.

Based on the literature, a production function approach with the standard set of explanatory factors – as far as they can be approximated by variables in the data set - is used. Similar to this literature (Bradley & Taylor, 2004: 391) a functional relationship of the following type is assumed:

$$A=f(\text{PERSONAL, FAMILY, SCHOOL, PEERS, NEIGHBORHOOD, ETHNICITY})$$

with A education attainment explained by a vector of personal factors (ability, gender, effort,...), family background indicators (intact family, parental education, working parents), school characteristics (non state school), peers (type of friends, neighborhood) and ethnicity (Belgian, CEEU, other EU, Turkish, Moroccan, Asian, African).

Based on the predominant findings in the literature it is expected that the effects on the likelihood of non repeat years and of sorting in the GSE track is positively affected by ability, female gender, effort, intact family, the level of parental education, by working parents, non state schools, diversity of friends at school and a diversified neighborhood.

With respect to ethnicity, it is expected that CEEU, other EU immigrants, (most) Asian and (most) African immigrants barely distinguishable from the Flemish as these groups tend towards “rapid assimilation” or “selective acculturation”. Performance differences for Turkish and Moroccan immigrants are expected to be substantial as the process of acculturation seems far more difficult, aptly described as “dissonant acculturation”.

As “no repeat year” and “GSE” are defined as binary variables (if “no repeat year” =1 , else = 0) and (if in GSE = 1, else = 0) binary probit estimates are presented for the educational production function ((Maddala & Lahiri, 2009: 333).

In addition to the educational production function, an estimate is presented of the relationship between the self-reported grade in primary school (5 categories from less than 50% = 1 to more than 80% = 5) on the one hand, and gender, family background and ethnicity on the

other hand. This equation is estimated by OLS after using a logistic transformation on the dependent variable (namely $\log(y/(y^*-y))$ with $y^*=5$). All estimates are done with the open source econometric software GRETL (GRETLL).

4. Data and variables

3.1. Data source (SBO survey)

A recent data set is used here. The data were collected by HIVA (KU Leuven). In 2010 all pupils in the second grade (2nd, 2rd and 4th year of secondary education) in the cities of Antwerp, Genk and Gent were invited to participate in a self-completion questionnaire. The total population comprises about 20000 students in 160 schools of which 11015 students completed the questionnaire. The data set is very rich containing personal characteristics, school track, family background and several psychological profiles. For a full description of the SBO questionnaire and an extensive analysis of descriptive statistics, the reader is referred to the project website www.oprit14.be and the working papers – especially WP4 and WP5 – posted there.

3.2. Variables

Two outcome variables are directly derived from the questionnaire i.e. (i) whether or not a student at the time of the survey (5th year of secondary education) ever had a repeat year (yes=1, no=0) and (ii) the track he is currently enrolled in (GSE=1 and others =0).

Three variables on personal characteristics are constructed from the survey. Gender (GENDER) is straightforward (female = 1, male = 0). Innate ability is approximated by self-reported grades at the end of primary school. A variable (GRADEPR) is constructed with values 1 to 5 corresponding to the categorical survey answers “less than 50%, 50-60%,...,more than 80%”. Daily effort (in hours) put into study (TIMEINPUT) has a value of 1/4 to 4 corresponding to categorical survey answers “less than 0,5 hours daily” up to more than 3 hours daily”.

Proxies for family background are whether or not both parents are present (INTACT = 1 if so, else = 0), the level of education of father (EDUDAD) and mother (EDUMUM) taking a value of 1 (= primary education) to 5 (higher education), the employment status of father (WKDAD) and mother (WKMUM) – a binary variable equal to 1 if part-time or full-time working -, and whether or not the home language is Dutch (1=yes, 0=else).

A binary variable for the type of school (NONSTATE) is defined with value 1 if subsidized (predominantly Catholic) and 0 if a state school. Information on the ethnic characteristics of the school and peers is defined by a variable (SIMSCHFR) taking the values 1 up to 5

corresponding to consecutive quintiles (e.g. 1= if less than 20% of school friends,...5=more than 80%) at school are of a similar ethnic group. A similar variable (NEIGH) corresponding to quintiles indicates if the neighborhood is predominantly of the same ethnicity (1= if less than 20% ,... 5= if more than 80%).

Finally, ethnicity is defined by the place of birth of mother by dummy variables and grouped into Belgian (BEMUM), Central and Eastern European i.e. Poland and other CEE (EEUMUM), other European (EUMUM), Turkish (TURKMUM), Moroccan and other Maghreb (MOROCCOMUM), Chinese and other Asian (ASIANMUM), Congo and Rwanda (AFRICANMUM). An additional “ethno cultural” variable is defined to distinguish between Moroccan Berbers and other (BERBER). A list of variables and definitions is in Table 1. (All tables are at the end of the paper).

3.3. Descriptive statistics

For an extensive analysis of descriptive statistics on the original sample, see (Wets & Vandenbroucke, 2011).

Figure 1. Differences in non repeat and GSE sorting

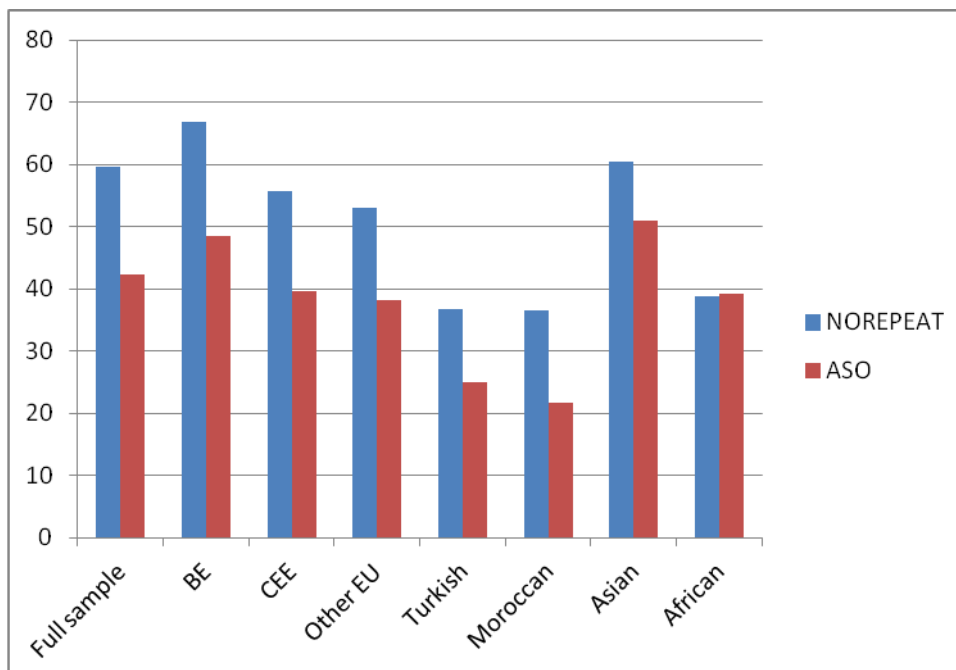
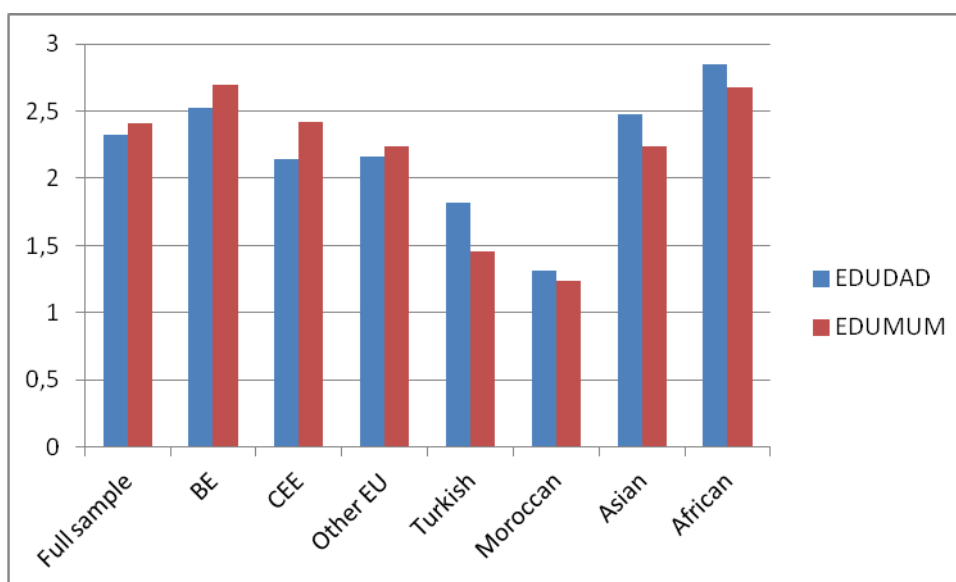


Figure 1 shows the differences in attainment between different ethnic groups compared, based on the sample surveyed (n=11015). On average 60% of all pupils have not repeated a year by the time they reach the 5th year of secondary education. The differences in schooling delays

between ethnic groups are striking: two thirds (66.8%) of students with a Belgian born mother had no repeat years but almost two thirds of all students of Moroccan descend had to repeat one or more years. Also sorting is dramatically different. On average 4 out of 10 students opt for a GSE track, preparing for higher education. At the high end, about 1 in 2 students of Belgian and Asian mothers go for GSE, compared with 1 in 4 for pupils with a Turkey born mother and 1 in 5 for pupils with a Morocco born mother. This confirms PISA and other data on the large gap in student attainment between students with Flemish roots and students with an immigrant background.

Clearly such differences are related to different social backgrounds as illustrated by figure 2 showing difference between groups in the average level of schooling of parents.

Figure 2. Parental education level



The correlation between indicators of educational attainment (figure 1) and parental human capital (figure 2) is obvious comparing both figures. However, multivariate analysis offers more complete insight of determining factors.

4. Estimates and discussion

4.1. Likelihood of no repeat year

4.1.1. Full sample results

In Table 2a probit estimates on the likelihood of a repeat year are reported. The model in column (1) uses the full range of defined explanatory variables and a set of dummies for

ethnic background. The model in column (2) controls for auto regression with insignificant variables of model (1) omitted.

The coefficients of a probit model cannot be interpreted straightforward as the marginal effect of a variable on the probability of non repeat or GSE sorting as the marginal effect depends upon the slope of the probit function at a specific point. The marginal effect equals the estimated coefficient of a variable times the normal probability density value of the probability or $dp/dx = \beta \cdot \phi(p)$. (Hill, Griffiths, & Lim, 2012: 590). Interesting probability points at which to evaluate the marginal effect are the approximate values of p corresponding to the average non repeat of pupils with Flemish roots (or others with comparable non repeat and GSE) – $p \sim 2/3$ ($\phi=0.498$) and values of p in the neighborhood of the value corresponding to pupils with minority roots (Turkish, Moroccan) $p \sim 1/3$ ($\phi=0.422$). For practical purposes, this implies that to roughly estimate the marginal effect of a variable on the probability of non repeat equals the estimated coefficient of the variable multiplied with about 0.4 for minorities (Turks, Moroccans) and about 0.5 (for others).

Probit estimates on NOREPEAT (Table 2a) show that – after controlling for pupil, family, school and peer effects – there is no significant difference between pupils with a Belgian born mother (the reference group), a EU born mother, a CEE born mother or an Asian mother. However, even after controlling for other factors, the difference in likelihood of non repeat between children with a Turkish, Moroccan and African born mother is higher compared with the reference group (Belgian born mother) respectively about +0.10 for Turks, +0.15 for Moroccans and close to +0.20 for Africans.

Almost all variables expected to be relevant based on theory and other empirical studies show up to have the expected sign and are rather precisely estimated (and significantly different from zero at the 5% level). Girls do better than boys; good grades in primary school and effort put into study does help to avoid repeat; family circumstances (intact family, well educated parents at work) are conducive to better attainment as well as attending a non state school and having peers with a similar ethnic background. Living in an ethnic neighborhood and not speaking Dutch at home does not help.

Looking at the impact of variables rather than at their statistical significance (as argued by McCloskey et al (McCloskey & Ziliak, 1996)) shows some interesting results. Taking into account the range of values of a variable and the value of its marginal effect, innate ability – approximated with the self reported grade at primary school – far out has the largest impact on the probability of non repeat. For example, the difference in probability of non repeat between top and bottom grade in primary school is about +0.75! However, it may be argued that these grades at primary school are a weak approximation of innate talent as they are probably also linked to family human capital and social background. To evaluate this, logistic regressions

(OLS after logistic transformation of the dependent variable with a asymptote of 5) explaining grade in primary school by gender and family background variables for the different ethnic subsamples were estimated. Results are shown in Table 4. For some groups there seems indeed to be an effect of parental human capital or circumstances, but in general this effect is not that prominent to invalidate primary school grades as an imperfect but reasonable approximation of innate ability.

Another variable with an important potential impact on non repeat is effort put into study. The regressions show that putting more time into study pays. The gain in probability of non repeat from minimum school effort (1/4 hour daily) to a daily effort of 3 hours is at least +0.20 up to +0.25. Finally, growing up in an intact family and going to a non state school also has a substantial effect on attainment with an order of magnitude of +0.10.

Speaking another language at home than Dutch has a substantial downward effect on the likelihood of non repeat. It lowers the probability of non repeat with about -0.14.

4.1.2. Subsample results

In Table 2b probit estimates are reported for different (relevant) subsamples. The full sample model above pointed to significant differences between pupils of Flemish, Turkish, Moroccan and African descent. Sample size for pupils with an African immigrant background is too small (n= 96) to justify a separate analysis and were omitted in the table.

Subsample estimates confirm the major findings from the full sample estimates. For all subgroups – Flemish, Turks and Moroccans - gender, grade at primary school (proxy for ability) and time input are very important to avoid repeat years. The impact of these variables is (statistically) similar for all groups, except for the effect of time input for the Turkish subsample which is more than double that for the other groups.

In all subsamples, a better educated mother is conducive to better achievement and living in an ethnic neighborhood is detrimental for achievement, whatever the ethnic background of students.

For Flemish students, the education of the father, speaking Dutch at home and going to a non state school is helpful; having a working mother and predominantly only Flemish friends is not. Except for gender, grade at primary school, time input, mother's education and the neighborhood, no other variables seem to matter for minority groups, except for the difficult to explain negative effect of father's education in the case of Turks.

In sum, the key finding here is the consistent importance for all groups of ability (grade at primary school), effort (time put into studying), gender, mother's education and the neighborhood.

4.2. Likelihood of GSE

4.2.1. Full sample results

Table 3a reports on probit estimates for the probability of being in a GSE track. After controlling for personal, family, school and neighborhood characteristics (as far as proxies are available), there is no significant difference between Belgians, Central and Eastern Europeans and other EU. This also holds for the Turkish and African subgroup. Apparently no specific other factors for these groups seem to be active, a finding that differs from the NOREPEAT results. Students with a Moroccan born mother have a slightly lower probability (marginal effect ~ -0.07) of getting into GSE than the Flemish reference group. The probability of GSE sorting for students with an Asian born mother is substantially higher ($\sim + 0.19$) than the Flemish reference group.

Results for the main explanatory factors are similar to the findings for non repeat with most determinants having the expected sign with relatively precise estimates of the coefficients. The prominence of grade at primary school as the prime selector variable is striking. Grade at primary school in the context of sorting has a double function: as a proxy for ability but also as a signal. Grade at primary school is a plausible proxy for scholastic abilities, but is also used as a key input in the decision process of parents, schools, advisors and students when choosing the type of secondary schooling track (GSE, TSE, VSE or other). The large coefficient (marginal impact of about $+0.3$) of primary school grades supports the dominance of this variable in sorting.

4.2.2. Subsample results

In Table 3b subsample probit estimates for GSE are presented. Although from the full sample regression the Turkish subgroup seemed indistinguishable from the mainstream group, a subsample estimate is done for the Turkish subgroup as well as for Moroccan and Asian students.

Most variables of importance in terms of marginal effects and statistical significance reappear in the subsample estimates for pupils with a Flemish background. This is not the case for children with a migrant background. The only consistently positive and very important effects on sorting for GSE are grades at primary school. Sorting seems to be based essentially on the grade at primary school for all groups, mainstream as well as minority groups. This finding supports view that educational sorting in Flanders is fairly meritocratic rather than merely socially reproductive.

However, the marginal effects in each group differ substantially. These differences indicate that sorting choices are subject to other influences such as the advice of teachers and professionals. Further analysis of this process of choice is certainly warranted.

5. Conclusion

In line with PISA 2009 findings, this recent Flemish SBO-survey shows important gaps in educational attainment – measured by repeat years and sorting for GSE - between ethnic groups in Flanders. Schooling delays (the likelihood of repeat years) between ethnic groups are striking: two thirds (66.8%) of students with a Belgian born mother had no repeat years but almost two thirds of all students of Moroccan descent had to repeat one or more years. Also sorting is very different between different ethnic groups. On average 4 out of 10 students opt for a GSE track, preparing for higher education. At the high end, about 1 in 2 students with a Belgian or Asian mothers go for GSE, compared with 1 in 4 for pupils with a Turkish born mother and 1 in 5 for pupils with a Moroccan born mother.

The probit regressions show that most factors found important in the empirical literature for other countries or regions are also relevant in the Flemish case: gender, ability, personal effort, parental education, family resources, language skills and peer effects matter for attainment. After controlling for personal, family, school and neighborhood factors as defined earlier, differences in educational attainment – i.e. the likelihood of no repeat years and the likelihood of sorting in GSE - between students with a Flemish, European and Asian background disappear. However, for students with a Moroccan and Turkish immigrant background some ethnic specific effect remains. This is indicative of specific yet unidentified explanatory variables. Further empirical analysis and qualitative empirical research may shed light on such specific factors or mechanisms.

A key finding is the substantial marginal impact of effort and ability. Effort – time put into schoolwork – has an important effect on the likelihood of non repeat years. Ability seems to be the key variable in sorting for GSE, supporting the view that the Flemish educational system is not merely socially reproductive but rather meritocratic. Also, the systematic positive effect on attainment of non state schools is striking.

An important finding – that needs further analysis - is the differential impact of ability (measured by grade at primary school) on sorting for GSE between students with a Flemish and a minority (Turkish and Moroccan) background. The impact of ability is substantially larger for pupils with a Flemish background compared to pupils with a Turkish and Moroccan background. This suggests that students with the same ability but with different ethnic backgrounds - and after controlling for several other influences – have different educational

opportunities. The underlying choice and advisory process of sorting for GSE is an important topic for further research.

Another line for further analysis is the inclusion of school and neighborhood information, extraneous of the sample. In this analysis school characteristics are limited to readily available within sample information such as whether the school is a state or non state school. However, schools are identifiable and linking the survey data to a school data base offers possibilities to include additional school characteristics (school size, teacher/pupil ratio, etc.) and estimate their effects. Analogous, as postal codes (home) are available for each student in the survey, the survey could be linked to more objective local area and neighborhood characteristics.

As usual, several caveats should be kept in mind in looking at the results. Proxies for some variables – such as self reported grades in primary school as a measure of innate ability – are subject to serious measurement error. Sample self-selection in the survey cannot be excluded. Interaction effects are not included in the present analysis but could be explored further. Unidentified or yet unmeasured omitted variables – especially for minority groups – is probably the reason why there still is an ethnicity effect after controlling for the usual influences.

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Table 1. List of variables

NOREPEAT	No repeat year by 5 th year of SE = 1, else = 0
ASO	GSE track = 1, else = 0
GRADEPR	Self reported grade at primary school 1= less than 50%, 2= 50-60%,...5= more than 80%
GENDER	Female = 1, male = 0
TIMEINPUT	Average time per day on study (from ¼ hour daily to 3.5 hours or more)
INTACT	Intact family (both parents present) = 1, else = 0
EDUDAD	Education of the father 1 = no primary, 2 = primary, 3 = lower SE, 4 = higher, SE 5 = higher education
EDUMUM	Education of the mother (see above)
WKDAD	Working father (full time or part time) =1, else = 0
WKMUM	Working mother (see above)
HOMENL	HOMENL=1 if home language is Dutch, 0= if other
NONSTATE	NONSTATE = 1 if subsidized school (Catholic or other), 0 if state school
SIMSCHFR	Friends at school of similar ethnicity (1=<20%, 2=20-40%,...5=80-100%)
NEIGH	Neighborhood predominantly of same ethnicity (1=<20%, 2=20-40%,...5=80-100%)
BERBER	If Berbers spoken at home = 1, else = 0
BEMUM	Mother born in Belgium = 1, else = 0
EEUMUM	Mother born in Poland or other CEE = 1, else = 0
EUMUM	Mother born in other EU = 1, else = 0
TRUKMUM	Mother born in Turkey = 1, else = 0
MOROCCOMUM	Mother born in Morocco = 1, else = 0
ASIANMUM	Mother born in China or other Asian country = 1, else = 0
AFRICANMUM	Mother born in Congo or Rwanda = 1, else = 0

Table 2a. Probit estimates - Dependent variable: NOREPEAT – full sample

	(1)	(2)
const	-2,264** (0,1065)	-2,217** (0,1029)
GENDER	0,1836** (0,03141)	0,1793** (0,03132)
GRADEPR	0,4247** (0,01741)	0,4250** (0,01734)
TIMEINPUT	0,1431** (0,01804)	0,1434** (0,01798)
INTACT	0,2403** (0,03520)	0,2339** (0,03493)
EDUDAD	0,03067** (0,01262)	0,02996** (0,01258)
EDUMUM	0,02541* (0,01322)	0,02740** (0,01309)
WKDAD	0,1541** (0,04592)	0,1552** (0,04550)
WKMUM	0,04531 (0,03739)	
HOMENL	-0,3150** (0,04241)	-0,3074** (0,03979)
NONSTATE	0,2247** (0,03303)	0,2284** (0,03287)
SIMSCHFR	0,06576** (0,01177)	0,06305** (0,01154)
NEIGH	-0,03578** (0,01197)	-0,03631** (0,01189)
EEUMUM	0,1056 (0,08806)	
EUMUM	-0,04485 (0,08106)	
TRUKMUM	-0,1811** (0,07145)	-0,2084** (0,06851)
MOROCCOMUM	-0,2861** (0,07190)	-0,3240** (0,06841)
ASIANMUM	0,1159 (0,09975)	
AFRICANMUM	-0,4834** (0,1422)	-0,4898** (0,1396)
n	8000	8039
Adj. R ²	0,1658	0,1651
lnL	-4375	-4400

Table 2b. Probit estimates - Dependent variable: NOREPEAT – subsamples

	Belgian	Turkish	Moroccan
const	0,2125 (0,1347)	0,03259 (0,5361)	0,2313 (0,4428)
GENDER	0,4698** (0,03851)	0,2939** (0,1208)	0,3258** (0,1184)
GRADEPR	0,1574** (0,02211)	0,1044* (0,06343)	0,2250** (0,06054)
TIMEINPUT	0,2470** (0,02336)	0,5653** (0,06117)	0,1870** (0,05976)
INTACT	0,03448 (0,04113)	-0,03382 (0,2269)	-0,002797 (0,1969)
EDUDAD	0,02948* (0,01583)	-0,09149* (0,05073)	-0,007904 (0,04391)
EDUMUM	0,1106** (0,01642)	0,1855** (0,05953)	0,1039** (0,05143)
WKDAD	0,07593 (0,06696)	0,1109 (0,1294)	0,06115 (0,1228)
WKMUM	-0,2650** (0,04755)	-0,03002 (0,1330)	0,03550 (0,1610)
HOMENL	0,2352** (0,05350)	0,2008 (0,3858)	-0,2036 (0,2814)
NONSTATE	0,08832** (0,04106)	-0,04277 (0,1210)	-0,1165 (0,1192)
SIMSCHFR	-0,05307** (0,01491)	0,05584 (0,04977)	0,03319 (0,04661)
NEIGH	-2,550** (0,01535)	-2,086** (0,04459)	-1,888** (0,04265)
BERBER			0,1053 (0,1311)
n	5685	491	525
Adj. R ²	0,1605	0,0700	0,1062
lnL	-2900	-307,9	-313,5

Standard errors in parentheses

* indicates significance at the 10 percent level

** indicates significance at the 5 percent level

For logit and probit, R² is McFadden's pseudo-R²

Table 3a. Probit estimates - Dependent variable: ASO – full sample

	(1)	(2)
const	-4,270** (0,1250)	-4,317** (0,1184)
GENDER	0,06776** (0,03227)	0,07035** (0,03197)
GRADEPR	0,7083** (0,02051)	0,7125** (0,02026)
TIMEINPUT	0,2614** (0,01869)	0,2564** (0,01844)
INTACT	0,2095** (0,03656)	0,2053** (0,03598)
EDUDAD	0,1012** (0,01285)	0,1015** (0,01269)
EDUMUM	0,09450** (0,01350)	0,09487** (0,01324)
WKDAD	0,09821** (0,05010)	0,1048** (0,04921)
WKMUM	0,1587** (0,03899)	0,1685** (0,03785)
HOMENL	-0,05393 (0,04484)	
NONSTATE	0,06584* (0,03463)	0,07620** (0,03424)
SIMSCHFR	0,03534** (0,01230)	0,03624** (0,01133)
NEIGH	-0,05163** (0,01261)	-0,05328** (0,01226)
EEUMUM	0,1322 (0,09183)	
EUMUM	0,06550 (0,08560)	
TRUKMUM	-0,07570 (0,07987)	
MOROCCOMUM	-0,1400* (0,07819)	-0,1700** (0,07113)
ASIANMUM	0,4316** (0,1042)	0,3920** (0,1005)
AFRICANMUM	-0,06800 (0,1472)	
n	8024	8156
Adj. R ²	0,2546	0,2540
lnL	-4142	-4213

Table 3.b. Probit estimates - Dependent variable: ASO - subsamples

	Belgian	Turkish	Moroccan	Asian
const	-4.806** (0.1581)	-10.09 (2990)	-2.273** (0.4978)	-3.680** (0.7047)
GENDER	0.04623 (0.03887)	0.1715 (0.1404)	0.06179 (0.1270)	0.2912 (0.2128)
GRADEPR	0.7795** (0.02572)	0.6506** (0.08123)	0.4694** (0.07268)	0.5352** (0.1116)
TIMEINPUT	0.3273** (0.02374)	0.1863** (0.07207)	0.08983 (0.06351)	0.2727** (0.1219)
INTACT	0.1991** (0.04252)	0.5543** (0.2827)	0.08165 (0.2106)	0.1416 (0.2340)
EDUDAD	0.1102** (0.01580)	0.1436** (0.05899)	0.01741 (0.04653)	0.2176** (0.07787)
EDUMUM	0.09436** (0.01651)	0.05471 (0.06688)	-0.03817 (0.05488)	-0.03076 (0.07938)
WKDAD	0.1176 (0.07298)	0.1273 (0.1527)	0.1034 (0.1308)	0.1435 (0.2595)
WKMUM	0.1854** (0.04905)	0.01401 (0.1519)	0.08593 (0.1704)	-0.2340 (0.2101)
HOMENL	-0.04453 (0.05672)	6.107 (2990)	0.2704 (0.3074)	0.4262 (0.2774)
NONSTATE	0.03862 (0.04265)	-0.02597 (0.1396)	-0.07454 (0.1280)	0.3851* (0.2133)
SIMSCHFR	0.07218** (0.01550)	-0.1742** (0.05796)	-0.1553** (0.04996)	-0.1302 (0.08193)
NEIGH	-0.06080** (0.01603)	0.03230 (0.05221)	-0.03452 (0.04619)	0.07826 (0.07103)
BERBER			-0.1833 (0.1393)	
n	5700	493	527	197
Adj. R ²	0.2745	0.2357	0.1219	0.2053
lnL	-2858	-221.2	-269.7	-107.4

Standard errors in parentheses

* indicates significance at the 10 percent level

** indicates significance at the 5 percent level

For logit and probit, R² is McFadden's pseudo-R²

Table 4. Logistic estimates on GRADEPR

		Logistic estimates					
		Dependent variable: GRADEPR					
	(1)	(2)	(3)	(4)	(5)	(6)	
const	-3,238** (0,01022)	-3,487** (0,09532)	-3,347** (0,09275)	-3,365** (0,07682)	-3,249** (0,09599)	-3,251** (0,1142)	
GENDER	-0,006297 (0,006630)	0,04538 (0,04464)	0,01947 (0,02814)	0,02093 (0,03089)	0,07747 (0,05089)	0,02854 (0,06042)	
EDUDAD	0,02072** (0,002711)	0,01614 (0,01748)	0,03082** (0,01178)	0,01494 (0,01135)	0,007282 (0,01800)	-0,008620 (0,02057)	
EDUMUM	0,02781** (0,002848)	0,04271** (0,01849)	0,009265 (0,01360)	0,04107** (0,01278)	0,01369 (0,01802)	0,06726** (0,02391)	
HOMENL	-0,04521** (0,009490)	0,07774 (0,06746)	-0,08751 (0,08671)	-0,05362 (0,07280)	-0,06503 (0,06829)	-0,09612 (0,07735)	
NEIGH	-0,01672** (0,002703)	0,003180 (0,01586)	0,01081 (0,01022)	0,006390 (0,01115)	-0,002767 (0,01730)	-0,03133 (0,02073)	
BERBER				0,04999 (0,03310)	-0,04862 (0,2049)		
n	5950	284	518	558	207	106	
Adj. R ²	0,0811	0,0322	0,0156	0,0254	-0,0028	0,1068	
lnL	-291,9	-121	-140,1	-222,1	-70,36	-21,78	

Standard errors in parentheses

* indicates significance at the 10 percent level

** indicates significance at the 5 percent level