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Can pre-entry characteristics account for the ethnic attainment gap? An analysis of a Flemish University

1. Introduction

Since the early sixties, the transition from ‘higher education for the elite’ to ‘higher education for the masses’ has led higher education in European societies to become more diverse, both in terms of socioeconomic and ethnic background. The question remains, however, whether this so-called democratization of higher education has been particularly successful. The importance and necessity of research on this topic can hardly be underestimated, since in knowledge-driven economies one can expect that the highly-skilled will enjoy greater prosperity and more favorable living conditions compared to the lower-skilled (Van Damme, 2014). As Furlong and Cartmel (2009) forcefully argue, debates about higher education cannot be separated from debates about social justice. Despite the increasing importance of higher education for European societies, however, relatively little is known about the performance of ethnic minority students in higher education. Most European research stresses the overall ethnic gap in educational attainment, with a strong emphasis on ethnic inequalities on the secondary school level (e.g. Bauer & Riphahn, 2007; Brinbaum & Cebolla-Boado, 2007; Gang & Zimmermann, 2000; Nielsen, et al., 2003; Phalet, Deboosere, & Bastiaenssen, 2007; Van Ours & Veenman, 2003). This, of course, is not to say that no European research has considered so far whether ethnicity is associated with better outcomes in higher education, controlled for pre-entry characteristics (e.g. for the UK, see Broecke & Nicholls, 2007; Connor, Tyers, Modood, & Hillage, 2004; Cotton, Joyner, George, & Cotton, 2016; Fielding, Charlton, Kounali, & Leckie, 2008; Leslie, 2005; Naylor & Smith, 2004; Richardson, 2008; for the Netherlands, see Hofman & Van den Bergh, 2003; Meeuwisse, Severiens, & Born, 2010; Severiens & Wolff 2008; Severiens, ten Dam, & Blom, 2006; Zorlu, 2013). However, in contrast to Europe, ethnic disparities in higher education performance received much more attention in the US (see e.g. Arbona & Nora, 2007; Borg & Stranahan, 2002; Dennis, Phinney & Chuateco, 2005; Horn, Peter, & Rooney, 2002; Kao & Thompson, 2003; Strayhorn, 2010; Swail, Redd, & Perna, 2003; Warikoo & Carter, 2009).

As in other European countries, most research in Belgium and specifically in Flanders (the Dutch-speaking region in Belgium) assesses the educational performance of ethnic minority groups in lower segments of the education system (e.g. Danhier, Jacobs, Devleeshouwer, Martin, & Alarcon-Henriquez, 2014; Ducquet, Glorieux, Laurijssen, & Van Dorsselaer, 2006; Groenez, Nicaise, & De Rick, 2009; Hermans, 2002; Hirtt, Nicaise, & De Zutter 2007; Jacobs, Rea, & Hanquinet, 2007; Jacobs, Rea, Teney, Callier, & Lothaire, 2009; Levrau, Nouwen, & Clycq 2011; Opdenakker & Hermans, 2006). A principal reason for the lack of studies on ethnic differences in higher education is the limitations of available

data. In most Flemish Universities and University colleges (Hogescholen), administrative data at entry did not account for ethnic origin until very recently. The only information registered was student nationality. As a consequence, the analyses and findings thus far do not fully cover the second generation, which is defined here as people who are born in Belgium but have at least one foreign-born parent (Declercq & Verboven, 2010; Deumeulemeester & Rochat, 1995; Eurostat, 2017; Glorieux, Laurijssen, & Sobczyk, 2015; Rombaut, 2006). Correspondingly, since the presence of ethnic minority groups at the Universities is small, survey data are not ideal when analyzing ethnic differences in academic attainment (Almaci, 2003; Almaci & Van Craen, 2005; De Meester & Mahieu, 2002; Lacante, Almaci, Van Esbroeck, Lens, & De Metsenaere, 2007). As far as we know, the present study is the first to employ educational register data to analyze ethnic differences in higher education attainment at a (Flemish) higher education institution.

The present research is the result of a study of one Flemish University that is nested in a growing superdiverse city/society. The main aim is to explain and clarify differences in academic attainment between ethnic minority students and natives. Using unique administrative data of four consecutive cohorts of first-year students, we consider effects of gender, age, type of secondary education, parental education, scholarship status, first language learned as a child, and educational department. We employ a two-step estimation strategy. *First*, we estimate a linear regression to identify the determinants of academic attainment and to assess whether ethnic differences remain after controlling for these determinants. *Second*, the estimates and the values of the observed characteristics are utilized in a Blinder-Oaxaca decomposition to determine the contribution of each type of characteristic on the observed ethnic differences in academic attainment. The decomposition technique decomposes inter-group differences (for any two groups) in mean levels of an outcome into those due to different observable characteristics or ‘endowments’ across groups and those due to different effects of characteristics or ‘coefficients’ of groups (Blinder, 1973; Oaxaca, 1973). Hence, the technique can provide an answer, for example, to the question of how much of the difference in academic performance between two ethnic groups is due to one group having higher educated parents than the other group, or whether the difference in study success between ethnic minority students and natives can be explained by differences in department choice. Using the decomposition method to analyze ethnic disparities in academic performance is quite unique, as existing research often only estimates a linear regression (pooling ethnic minority students with ethnic majority students, extending the independent variables by an ethnic minority indicator and estimating the respective coefficient), and falls short of quantifying the contribution of various factors to the ethnic attainment gap. In this sense, the paper not only provides new data on the ethnic attainment gap in higher education for Flanders, but also illustrates how decomposition methods could be a useful technique to grasp the underlying factors of the disparities.

This article has seven sections, of which this introduction is the first. In section 2 we briefly summarize the international literature on the performance of ethnic minorities in higher education. In section 3 we provide some background information on the particularity of the Flemish education system and discuss ethnic inequalities in the Flemish education system. In the fourth section we elaborate on the central research issues of this study. In the fifth section, we describe the data and methodology. Section 6 presents descriptive statistics and lays out the results from the regression and decomposition analysis. Section 7 provides a discussion and conclusion. We put things together and critically assess the main results of this study.

2. What is the current situation?

International research generally indicates that study careers of ethnic minority students in higher education are less successful than those of native students. In the broadest sense, their inflow, throughflow and outflow are more problematic. Though perhaps equally competent, they seem to enroll in higher education at lower rates, as they experience all sorts of academic/non-academic thresholds such as socioeconomic, psychological and institutional barriers. When enrolled, their academic achievements are often poorer. They also drop out more frequently and thus do not obtain certification. In the US, for example, previous research shows that ethnic minority students earn fewer credits (Swail Redd, & Perna, 2003) and obtain lower grades compared to native students (Borg & Stranahan, 2002; Dennis, Phiney, & Chuateco, 2005; Horn, Peter, & Rooney, 2002). In the UK, multiple analyses based upon UK-domiciled graduates confirms that ‘black and minority ethnic students’ have significantly lower degree attainment than white students (Broecke & Nicholls, 2007; Connor, Tyers, Modood, & Hillage, 2004; Cotton, Joyner, George, & Cotton, 2016; Fielding, Charlton, Kounali, & Leckie, 2008; Leslie, 2005; Naylor & Smith, 2004; Richardson, 2008 2015). In the Netherlands, findings suggest that ethnic minority students obtain fewer credits (Meeuwisse, Severiens, & Born, 2010; Severiens & Wolff, 2008), have lower completion rates (Van den Berg & Hofman, 2003) and take longer to graduate (Hofman & Van den Bergh, 2003; Severiens, ten Dam, & Blom, 2006; Zorlu, 2013). At the risk of generalizing, we believe it is fair to maintain that the academic career of ethnic minorities can be summarized as ‘*less participation, less retention and less success*’ (Lens, et al., 2015). Below we briefly scan the literature in order to grasp some of the main factors that can explain these ‘problematic study careers’.

Pre-entry factors

Pre-entry factors (e.g. prior attainment, gender, age, socioeconomic background) often go a long way towards explaining the underrepresentation and underperformance of ethnic minority students in higher education (Richardson, 2015). Connor, Tyers, Modood, & Hillage (2004), for instance, claim that the ethnic performance gap is largely attributable to the weaker pre-entry characteristics held by ethnic

minority students, while other researchers (e.g. Broecke & Nicholls, 2007; Van den Bergh & Hofman, 2005) suggest that ethnic-specific disparities in academic performance remain substantive, after correcting for background variables such as gender, age, prior attainment and socioeconomic background. Richardson (2008, p. 45) asserts that *'even when the effects of (...) other variables are taken into account, students from ethnic minority are substantially and significantly less likely to obtain good degrees than are White students'*.

However, as Richardson (2015, p. 287) points out, the variation in the magnitude of ethnic disparities in academic attainment across different institutions and subjects of study *'suggests that they result, at least in part, from the teaching and assessment practices that are adopted in different institutions and in different academic subjects.'* Fielding and colleagues (2008), for example, found evidence of interactions indicating that ethnic group differentials are modified according to gender, age, prior attainment, socioeconomic background, educational department and institution. Richardson (2008) explains that the effects of age, gender and educational department all interacted with ethnicity. It is precisely this interrelationship between different individual and institutional factors which makes it difficult to discern causality with respect to any single factor (Cotton, Joyner, George, & Cotton, 2016).

Study choice

Making a wrong study choice is one of the main reasons why students fail to successfully complete their study program (Verbeek, Lington, & De Jong, 1995). Dutch research illustrates how making a choice of study involves many processes that may differ among ethnic students (De Meester & Mahieu, 2005; Jennissen, 2007; Lacante, Almaci, Van Esbroeck, Lens, & De Metsenaere, 2007; Wolff & Severiens, 2011; Wolff, Rezai, & Severiens, 2010). One of the key differences is that they do not use the same type of information channels that can help to make a good choice. Severiens, Wolff, Meeuwisse, Rezai, & De Vos (2008) and Wolff & Severiens (2011) show that students with a migration background are more often dependent on their social network to make the choice where native students are more eager to make an independent choice and feel less pressure to choose a certain education. So, while native parents are stressing the importance of being 'happy' and therefore provide their children with the freedom to choose, parents of ethnic minority students have a more compelling hand and want their children to choose those educational tracks that are thought to be better in terms of successful and prestigious careers. They encourage their children more to become a physician, engineer or lawyer (see also Støren, 2011). As ethnic minority students report being more strongly influenced by family when choosing a degree program, this can result in lower engagement with the chosen courses and hence with a lower throughflow and outflow (Cotton, Joyner, George, & Cotton, 2016).

Sense of belonging

Next to pre-entry factors and study choice, also the factor of ‘belonging’ needs to be taken into account in order to explain the ethnic performance gap. Severiens & Wolff (2009), for example, emphasize the importance of the social and academic integration of students and the learning environment (class climate) when interpreting the academic attainment of ethnic minority students. In a follow-up study, Meeuwisse, Severiens, & Born (2010) show that the interrelationship between a sense of belonging and academic attainment is different for ethnic minority students compared to their majority counterparts. Other studies confirm how ‘*not fitting in*’ can be an important reason for the ‘dropping out’ of ethnic minority students (Cohen & Garcia, 2005; Hurtado, Cuellar, & Guillermo-Wann, 2011; Swail, Redd, & Perna, 2003). Moreover, Owens & Massey (2011) illustrate how social stigma can have negative effects on the academic performance of pejoratively stereotyped racial-minority group members.

Preparation and Motivation

Cotton and colleagues (2016) show that ethnic minority students are not effectively judging their academic attainment and often overestimate their chances of achieving a good degree. According to these authors this could be indicative of a lack of understanding of the higher education system. They believe this is due to the fact that their family background and social network do not prepare them for higher studies. Research findings, however, also suggest that ethnic minority students are more likely to be extrinsically motivated (reputation of the educational department, future career possibilities), while native students are more likely to be intrinsically motivated (interest in the subject of the courses and possibility of personal development). As already mentioned, ethnic minority students often prefer certain study subjects, such as law, business and medicine, which are regarded as prestigious in their own ethnic community and are supposed to provide a higher income. Being rather extrinsically motivated may go hand in hand with the fact that ethnic minority students have less efficient approaches to learning (syllabusboundness, lack of purpose, unrelated memorizing and fear of failure) which in turn is negatively related to their academic achievement (Ridley, 2007).

3. Ethnic minority students in Flanders

Belgium is a Federal state where the Flemish, French and German-speaking communities hold responsibility for the organization of their respective educational systems. The Flemish higher education system offers a unique framework for the analysis of ethnic differences in academic attainment because of two important reasons. *First*, in contrast to other neighboring European countries (the Netherlands, Germany, France and the UK), the only requirement to enroll in higher education is to possess (any type of) a secondary education degree. No conditions apply in terms of knowledge of the local languages or entry exams. The only exception are the faculties of Medicine and Dentistry, where an entrance exam is required. *Second*, higher education in Flanders is largely financed through public funds, which is a crucial difference with for example the US and the UK (de Dominicis, Pérez, & Fernández-Zubieta,

2011). Most Flemish higher education institutions have relatively low registration fees and additionally possess a rather generous system of student scholarships (OECD, 2016). The upshot is that our focus on the Flemish situation complements the existing literature, which mostly considers countries that impose relatively strict conditions for studying in higher education. After all, in countries where students have to respond to certain criteria prior to their enrollment, ethnic minority students are more likely to be a selected subset, particularly on characteristics for which administrative data of the institutions cannot control (e.g. ability, motivation).

In Flanders, ethnic minority students clearly underachieve compared to native students. The Organisation for Economic Co-operation and Development (OECD) Programme for International Student Assessment (PISA) (2012), for example, has illustrated how ethnic minority children in Flemish secondary education are lagging behind in mathematics skills (De Meyer, Warlop, & Van Camp, 2014). Moreover, Flanders has the largest difference in mathematics scores between the children of immigrants and native students of all OECD countries. This remains even when controlled for socioeconomic background. Not only are ethnic minority students underperforming in the PISA studies, they are also over-represented in less-esteemed educational tracks and thus are underrepresented in both general and higher forms of education (Ducquet, Glorieux, Laurijssen, & Van Dorsselaer, 2006; Heath, Rothon, & Kilpi, 2008). To be more precise, Flanders has four different tracks in secondary education. General secondary education (ASO) prepares students for higher education. Ethnic minorities are typically less represented in the ASO-track. Technical secondary education (TSO) provides theoretical education, but compared to ASO, it offers a more practical touch. Vocational secondary education (BSO) is a study preparing students for a certain profession. Ethnic minorities are overrepresented in the TSO and BSO-track. Finally, there is Art secondary education (KSO) which contains few students in general.

The underperformance of ethnic minority students relative to native students is not equal for all ethnic groups. Minorities whose parents come from less developed non-European countries tend to have substantially lower educational attainment or qualifications. In particular, the position of students with a Turkish or Moroccan background is precarious, as several Flemish studies show that these students face the largest difficulties in secondary schools and have the highest chances of leaving secondary education without qualification (see e.g. Ducquet, Glorieux, Laurijssen, & Van Dorsselaer, 2006; Jacobs, Rea, Teney, Callier & Lothaire, 2009). More successful, although often still somewhat behind the native group, are minorities of European origin. Italian students, for example, are about twice as likely as Turkish or Moroccan students to have tertiary qualifications (Phalet, Deboosere, & Bastiaenssen, 2007).

If the secondary education of ethnic minority students is more vocational and less theoretical, the academic gap between natives and ethnic minority students at the University might be rather obvious.

Therefore, the enduring underrepresentation of ethnic minority students in ASO has stirred the minds of a lot of academics and Flemish politicians (Hirtt, Nicaise, & De Zutter, 2007; Levrau, Nouwen, & Clycq, 2011). However, the question is not only why and how ethnic minority students are underrepresented in ASO, but also whether or not students with a migration background have equal academic performance as their native counterparts when differences in type of secondary education are controlled for. This study is the first to consider the latter question.

4. The Current Research

In order to properly understand ethnic group differences in academic attainment in Flanders, this study decomposes ethnic minority students into four major groups, taking into account their different histories of immigration and educational careers in Flanders. The *first* group includes students from the Netherlands, a neighboring country where, like in Flanders, Dutch is the primary language. The *second* group comprises students with an EU origin (excluding the Netherlands). Inhabitants originating from EU countries make up 8 percent of the total Flemish population, a large portion of which consists of Italian, French, and Eastern European origins (Noppe & Lodewijckx, 2013). The *third* group is an aggregate of students from Turkish and Moroccan origin. Turks and Moroccans are groups that have a relatively long history in Belgium (Timmerman, Fadil, Goddeeris, Clycq, & Ettourki, 2017). In the 1950s and 1960s, guest workers were actively recruited from Morocco and Turkey to work in the heavy industry sectors, such as coal mining and the steel industry. After labor migration was limited in 1974, immigration to Belgium ran mostly via family reunification. In 2011, 4 percent of the inhabitants of Flanders were of Turkish or Moroccan origin (Noppe & Lodewijckx, 2013). Notwithstanding this history and relatively large presence, research has illustrated that their school results are the worst (see section 3). Apart from that, these groups are also prone to stereotypes due to their connection with Islam (see e.g. Vrielink, 2010). The *fourth* group covers students originating from other non-EU countries, which is a very heterogeneous group. This category mostly covers a variety of more recent immigrants from developing countries who frequently entered in the context of family reunification.

Our empirical analysis deals with the following two key questions. The *first* question covers the extent to which disparities occur in first-year academic attainment between native students and ethnic minority students. The *second* question is about the extent to which the disparities can be explained by pre-entry characteristics (age, gender, type of secondary education, parental education, scholarship status, first language, and educational department). When it comes to the first research issue, we expect (in line with the literature section) the first-year academic attainment of ethnic minority students to be significantly lower than that of native students. Subsequently, if attainment gaps between natives and ethnic minority students do occur, we want to gain a better understanding of these gaps on the basis of a decomposition method. If the gaps are not fully explained by observable pre-entry characteristics, future studies should

examine the role of factors that cannot be grasped by educational register data, such as language proficiency, sense of belonging, growth mindset, locus of control, motivation, verbal self-concept, academic and social adjustment, academic achievement stress, diversity climate, and equal treatment. These factors are important because they can provide anchors for specific and targeted policy instruments.

5. Data and Methodology

5.1. Data

In order to analyze the relation between ethnicity and academic attainment we use data from the educational registers of one of the six Flemish Universities. Although these educational registers provide considerable information, there are several important limitations. *First*, because the only prerequisite to inscribe at a Flemish University institution is to have a secondary education degree (only BSO-students require an additional specialization year), educational register data do not include information on prior attainment in secondary education (e.g. a grade-point-average). Only type of secondary education is available. This is an important limitation since previous studies have shown that high school performance differences account for a substantial part of the ethnic attainment gap in higher education (Barrow, Reilly, & Woodfield, 2009; Cliffordson, 2008; Jansen, 2004; McKenzie & Schweitzer, 2001; Naylor & Smith, 2004; Zeegers, 2004). *Second*, when students enroll at the University, they complete the application forms themselves (electronically). As a consequence, the data entered might be incorrect and/or subjective, as we can expect some students to give socially desirable answers on certain questions. It is also possible that students are not sure of certain information (e.g. highest level of education of the parents). *Third*, not all questions are mandatory; the student can choose which questions he/she wants to fill in. This leads to sizeable proportions of missing data for some variables (in this case parental education, see Table 1 in appendix).

Education research generally focuses on success either at the beginning of the University path (enrollment in a higher education institution) or at the end (probability of earning a degree or probability of dropping out from University). However, due to the increasing flexibility in educational programs, researchers should ‘*develop more nuanced accounts of educational success or failure*’ (Strand, 2014, p. 165). Following this argument, we define academic attainment as the ratio between the number of credits taken and the number of credits acquired. In that way we are able to compare the academic attainment of different types of students (who registered for different amounts of credits). Since the introduction of the bachelor-master degree structure in Flemish higher education in 2004-2005, this ratio is the main indicator for the Flemish Government to determine educational outcomes at the tertiary level (De Ridder & Veeckman, 2013).

In this study, we focus on the academic attainment of first-year students which we define as students who enroll for the first time in the first year of higher education in the Flemish community in a Bachelor's program. Typically this is an 18-year old student coming from high school. We have three principal reasons for this focus on first-year students. *Firstly*, the first year of study in higher education is a time of major transition for students. *Secondly*, first-year students are an easy to follow group. They are all enrolled in a Bachelor's programme and generally take 60 ECTS (European Credit Transfer System) credits, unlike students who are more advanced in their study program. *Thirdly*, with the organization of higher education funding in Flanders (e.g. input and output financing, ability to reorient without losing learning credit), much attention from policymakers goes to the achievement rates and factors predicting the academic performance of first-year students (Ministerie van Onderwijs en Vorming, 2009; Pinxten, De Fraine, Van Den Noortgate, Van Damme, Boonen, & Vanlaar, 2014; Smedts, Van Landeghem, & Van Damme 2011). The ratio between the number of credits taken and the number of credits acquired is highly relevant from a policy perspective, as both Universities and University colleges are in large part funded on the basis of the number of students who have been successful in the number of credits that they have taken up.

We obtain the academic attainment of four consecutive cohorts (2010-2011 until 2013-2014) of first-year students who have their principal residence in Belgium and who have completed secondary education in Belgium. In total, our database contains the information of 7,962 students. To categorize ethnic minority students we first look at the birth nationality of the parents. If one of the parents has a foreign birth nationality, the student is placed in the ethnic group corresponding to that nationality. If the birth nationality of both parents is missing then we look at the nationality of the student at the time of enrollment. Table 2 (in appendix) shows that the share of ethnic minority students has remained very constant over our 4-year observation period. On average, ethnic minority students make up 11 percent of the total population of first-year students. As a comparison, in 2014 the share of 18-24 year olds of foreign origin (a person is considered of foreign origin if either the current nationality of the person, the birth nationality of the person, the birth nationality of the father or the birth nationality of the mother is non-Belgian) in Flanders was 25 percent (Laban, 2015). The share of youngsters of foreign origin would be even higher if we focus on the specific superdiverse recruitment area of the University or the city in which the University is located. Hence, we can conclude that ethnic minority students are heavily underrepresented at this Flemish University and that – although our timeframe of four academic years is rather short – this underrepresentation seems to be persistent.

We look at first-year academic attainment in seven different faculties offered by the University central to our research: Applied Economics, Arts, Biomedical Sciences, Law, Medicine, General Sciences or Social Sciences. The focus on a single institution has the merit of reducing inter-institutional

heterogeneity, but any generalizations to the broader Flemish University student population require circumspection.

5.2. Methodology

Our analytical strategy involves two steps. *First*, we estimate a linear regression which relates a students' academic attainment to the ethnic group dummies and the different explanatory variables (gender, age, type of secondary education, parental education, scholarship status, first language, and educational department, with a specification that is quadratic in age). In the first specification, we only add the ethnic group dummies and estimate 'unadjusted' (without controlling for pre-entry characteristics) ethnic attainment gaps. In specifications 2-8 we add the pre-entry characteristics one-by-one so that, in the final specification, we can judge whether 'adjusted' ethnic attainment gaps (controlled for pre-entry characteristics) remain significant for different ethnic groups. Moreover, we are able to interpret the effects of our explanatory variables on first-year academic attainment.

Second, we use the Blinder-Oaxaca decomposition method to decompose the gap in academic attainment between natives and different ethnic groups. As mentioned, the decomposition divides the difference in academic attainment between native students and ethnic minority students into an explained and unexplained part. We estimate the gap for native students with Dutch students, EU students, Turkish and Moroccan students and other non-EU students respectively, i.e. $\bar{Y}_N - \bar{Y}_E$:

$$\bar{Y}_N - \bar{Y}_E = \beta_E(\bar{X}_N - \bar{X}_E) + \bar{X}_N(\beta_N - \beta_E) \quad (1)$$

Where subscript N denotes the native student population, subscript E the ethnic minority student population (Dutch, EU, Turkish and Moroccan and other non-EU), $\bar{X}$ is a row of mean values of the explanatory variables and β is a vector of coefficient estimates. The first term on the right-hand side of the equation $\beta_E(\bar{X}_N - \bar{X}_E)$ measures the gap due to differences in observed pre-entry characteristics (the composition effect, also called the 'explained gap'). The second term $\bar{X}_N(\beta_N - \beta_E)$ measures the gap due to differences in coefficients, or returns to characteristics (the coefficient effect, also called the 'unexplained gap').

In this decomposition exercise, the choice of the reference group has an impact on the estimates outcomes. This is called the index number problem (Cotton, 1988; Neumark, 1988; Reimers, 1983). Several options have been proposed to solve the index number problem. The 'true' non-discriminatory basis should lie somewhere between the native coefficients and the ethnic minority coefficients:

$$\beta^* = \Omega\beta_N + (I - \Omega)\beta_E \quad (2)$$

where Ω is a weighting matrix and I is the identity matrix. International literature has used different weighting schemes in the decomposition analysis of relative inequalities. Oaxaca (1973) proposes using either the coefficients for the majority group as the non-discriminatory basis ($\Omega = I$) or the coefficients for the disadvantaged group ($\Omega = 0$). Reimers (1983) proposes using the mean coefficients ($\Omega = 0.5$), while Cotton (1988) proposes weighting the coefficients by group size. Neumark's (1988) approach is to estimate a pooled model over both groups to obtain β^* .

In this article we apply the estimated coefficients of native students on the distribution of ethnic minority students ($\Omega = I$). Equation (1) refers to the case where native students' coefficients (β_N) are used as the non-discriminatory basis. Neumark (1988) argues that if men are paid competitive wages while women are underpaid, the coefficients of men should be taken as the non-discriminatory wage structure. Similarly, we can argue that the academic attainment of native students is the desirable outcome that ethnic minority students should be able to achieve in a 'fair world'. Moreover, because natives are by far the largest group, one can read this exercise as an 'equal opportunity' simulation (Neumark, 1988). A detailed decomposition can be used to determine how much each characteristic contributes to explaining the gap. For this, we use the Stata command called '*Oaxaca*' (Jann, 2008).

Most applications of the decomposition technique can be found in the labor market/discrimination literature (Oaxaca, 1973; Blinder, 1973). Recently however, this methodology has been applied in the economics of education to evaluate the test score gap between countries (Ammermüller, 2007), private versus public schools (Duncan & Sandy, 2007), male versus female students (Gevrek & Seiberlich, 2014), and indigenous versus non-indigenous students (McEwan, 2004; Sakellariou, 2008; Santibañez, 2016). As far as we know, this methodology has not been used in the context of higher education results, but we believe this methodology can prove to be very useful, as it can shed light on how pre-entry characteristics contribute to the explanation of the ethnic attainment gap.

5.3. Explanatory variables

Our pre-entry characteristics include gender, age, secondary education (type), highest level of education for both parents, scholarship status, first language learned as a child, educational department and year of entry.

As already mentioned in section 3, Flanders has four different tracks in secondary education: ASO, TSO, BSO and KSO. While the level of education differs substantially between the different tracks, all

students are allowed to enroll in a Bachelor's Program. In our analysis, we include a dummy variable to discern ASO students from students with a TSO, BSO or KSO degree.

In line with other studies (Cameron & Heckman, 2001; Van de Werfhorst & Van Tubergen, 2007; Van Ours & Veenman, 2003; Schnepf, 2007), we include the highest educational level of both parents as proxies for the socioeconomic background of the student. A student is considered as having a high educated parent when the parent completed tertiary education.

Additionally, we look at whether the student receives a scholarship from the Flemish Community or from the University itself. It can also be a near-scholarship student who is granted a reduction in the registration fee by the Flemish Community or by the University. A scholarship from the Flemish Community is need-based. Students need to fulfill three types of conditions in order to be eligible for a scholarship: nationality conditions (Belgian nationality or equivalent), study conditions (enrolment in a basic degree program for at least 27 credits) and financial conditions (the yearly income of the family to which the student belongs should not exceed a specific income limit, ranging from € 17 203 to € 64 215 depending on the household type). If the student applies for a scholarship and meets all the requirements, he/she receives a scholarship. In that case, he/she is also eligible for a reduction of the tuition fee. The scholarship is a one-off payment valid for 1 academic year. The amount varies and depends on the family income, whether the student rents student accommodation or not, the number of credits for which the student registers and his specific study history. For 2015-2016 the scholarship amounted to minimum € 256 and maximum € 3,966 for a student who rents a student accommodation. For students who live with their parents the maximum amount is € 2,380.

The 'first language' category contains a dummy indicating if the student's first language he/she learned as a child is a language other than Dutch.

We categorize seven different educational departments: Applied Economics, Arts, Biomedical Sciences, Law, Medicine, General Sciences and Social Sciences. While we recognize the importance of research on the extent to which institutional variables (such as the type of courses, the size of the student group and educational department-dependent types of remediation) affect academic performance, it falls beyond the scope of this study as a result of data limitations. We will come back to this point in the discussion. Again, the data is based on an existing database that does not register, for example, the way students perceive the diversity climate or the social relations with the academic staff and fellow students. Finally, we include dummy variables for the year of entry to control for cohort-related differences.

6. Empirical Results

6.1. Description of pre-entry characteristics

Table 1 (in appendix) offers ethnic group comparisons for the different pre-entry characteristics. To test the significance level of the differences between ethnic minority students and native students, chi-square tests were carried out for categorical variables and t-tests for continuous ones. Below we report the p-values of these tests.

The majority of Dutch students, EU students and Turkish and Moroccan students are second generation; respectively 56 percent, 62 percent and 90 percent of them were born in Belgium. There is a relatively lower share (38 percent) of second generation students from other non-EU countries. This could be explained by referring to the fact that these groups do not have a long immigration history in Flanders.

In all groups, female students are slightly better represented than male students. While differences are not significant, the overrepresentation of females is a little more outspoken for ethnic minority students than for native students. Both EU and non-EU (including Turkish and Moroccan) students are significantly older than native students when enrolling at the University ($p < .05$ for all comparisons), which might point to a longer duration of pre-college education or to a tendency of postponing the immediate enrollment in higher education after graduating from secondary education. Niu and Tienda (2013), for example, have evidence that US-graduates from weaker socioeconomic backgrounds have a higher probability of postponing their college enrollment. However, we found no literature on this for Flanders.

Regarding prior education, ASO is clearly the traditional type of secondary education. Nine out of ten native students graduated from this track. For Dutch students this share is comparable. For other ethnic minority students, however, this share is significantly smaller, being at around 86 percent for EU students ($p < .05$), 83 percent for Turkish and Moroccan students ($p < .05$), and 74 percent for other non-EU students ($p < .001$). Although not shown here, these ethnic minority students more frequently graduated from TSO and BSO compared to native students.

Ethnic minority students clearly have less educated parents compared to natives. Turkish and Moroccan students, in particular, tend to have lower educated parents (respectively 9 percent has a high-educated father and 4 percent has a high-educated mother, compared to 60 and 63 percent for natives; $p < .001$ for both comparisons). Differences are less extreme but remain significant for EU and other non-EU students. For both groups, the share of students with high-educated parents is around 45-49 percent ($p < .001$ for all comparisons). The level of education of Dutch students' parents is most similar to that of natives, only their mothers are less often highly educated ($p < .01$).

Additionally, ethnic minority students have a relatively larger share of scholarship students. Roughly eight out of ten Turkish and Moroccan students receive a scholarship, compared to two out of ten for native students ($p < .001$). EU students (35 percent, $p < .001$) and other non-EU students (57 percent, $p < .001$) are also significantly more likely to receive a scholarship compared to their native counterparts. Only Dutch students have a similar share of scholarship students (26 percent) compared to natives.

Not surprisingly, the first language of many EU students and Turkish and Moroccan students was different from Dutch (respectively 31 percent and 38 percent). For other non-EU students, this share even increases to 60 percent, mirroring the fact that a large share of these students were not born in Belgium.

The choice of educational department clearly differs across ethnic groups. Turkish and Moroccan students are overrepresented in the Department of Economics compared to native students (37 percent versus 25 percent, $p < .01$), while the Arts Department is significantly less popular ($p < .01$). Dutch students more often choose a study in Biomedical Sciences than native students ($p < .01$). Other non-EU students seem to prefer to study Law: 26 percent of other non-EU students choose this department compared to 18 percent of native students ($p < .001$). They choose Medicine less frequently ($p < .01$). EU students more or less resemble native students in their choice of study subject. These findings are in line with the extrinsic motivation thesis as discussed in section 2.

To sum up, most of the numbers in the descriptive analysis are consistent with the existing literature and hence with our expectations. In the next section, we estimate a linear regression which relates a students' academic attainment to the ethnic group dummies and the different pre-entry characteristics.

6.2. Description of the ethnic attainment gap

Table 3 in appendix reports the results (standardized and unstandardized coefficients and robust standard errors) from the linear regression analysis, where the dependent variable is academic attainment – the number of credits obtained in relation to the number of credits taken. The table contains eight specifications: in column (1) only ethnicity is included as an explanatory variable; in column (2) gender is added; in column (3) the specification is extended with age and age squared; in column (4) dummies for type of secondary education are included; in column (5) the regression is extended with indicators for parental education; in column (6) scholarship status is added; in column (7) we include first language in the equation; and in column (8) the specification is extended with department dummies. Since the cohort dummies did not appear to make much difference, and made the models more complicated than needed, we excluded them from the regression.

The intercept in Table 3, column (1) measures the average academic attainment of native students, meaning that on average native students obtain 65 percent of the credits they subscribed for. The coefficients of the different ethnic groups in column (1) measure the ‘unadjusted’ ethnic disparities (without controlling for pre-entry characteristics) in academic attainment, representing 6 percentage points (pp) lower academic attainment for Dutch students, 13 percentage points for EU students, 27 percentage points for Turkish and Moroccan students and 26 percentage points for other non-EU students. Consequently, we have evidence to support our first research issue, namely that the first-year academic attainment of ethnic minority students is significantly lower than that of native students. Only Dutch students have similar academic attainment as native students. Moreover, we observe that the academic attainment gap between natives and EU students is significantly smaller than the gap between natives and non-EU students (both Turkish and Moroccan students and other non-EU students). Adding the remaining explanatory variables (columns (2) to (8)), reduces the ‘adjusted’ academic attainment gap to 4 percentage points for Dutch students, 8 percentage points for EU students and 16 percentage points for Turkish and Moroccan and 14 percentage points other non-EU students respectively. The gap between native students and Dutch students gains statistical significance when we add the type of secondary education in column (4), which is explained by the fact that Dutch students have a slightly higher share of students graduating from the ASO track compared to native students. However, in all other specifications, the coefficient is not significant. The gap for EU, Turkish and Moroccan and other non-EU students remains statistically significant after controlling for all explanatory variables in the equation. This means that being a student from one of these ethnic minority groups is still statistically significant in explaining academic attainment after controlling for important pre-entry characteristics, even though the gap has been significantly reduced.

Turning to pre-entry characteristics, we observe that female students tend to perform better than male students in their first year of higher education. This finding is not surprising, as it is in line with prior research (Barrow, Reilly, & Woodfield, 2009; Kamphorst, Adriaan, Hofman, Jansen, & Terlouw, 2015; McNabb, Pal, & Sloane, 2002). Another strong determinant of academic attainment is the type of secondary education. ASO students perform significantly better than students with a ‘non-traditional’ secondary degree. Students with a degree different from ASO suffer a large penalty of more than 37 percentage points. The fact that ASO students have better results is in line with the expectations, considering that the ASO track is a more theoretical track. Having high-educated parents exerts a positive impact on a students’ first-year academic attainment (in line with Ortiz & Dehon, 2008). Additionally, our findings suggest that students who first learned a language different from Dutch are characterized by relatively lower academic attainment. This result is in line with findings from Woolf, McManus, Potts, & Dacre (2013). Important differences occur on the department level as well. Compared to Economics (which is the reference category), students in Biomedical Sciences, Medicine, Law and Sciences are characterized by relatively higher academic attainment. Only first-year students

in Social Sciences perform worse. Striking is the performance of Medical students, whose academic attainment is almost 18 percentage points higher than that of Economy students, keeping all other variables equal. This finding could be explained by the fact that the Medicine program requires an entrance exam and thus tends to attract more successful students.

The total variance explained by the model (see adjusted R^2 -value in column (8)) is 18 percent. If we compare the relative importance of each coefficient in our regression model, we can conclude that type of secondary education is clearly the most important determinant in the model ($Beta=.284$). Although other authors often use the achievement test as a proxy for prior attainment in secondary education, they support this finding (Barrow, Reilly, & Woodfield, 2009; Cliffordson, 2008; Jansen, 2004; McKenzie & Schweitzer, 2001; Naylor & Smith, 2004; Zeegers, 2004). Gender, parental education, first language and department choice are also important determinants of academic attainment ($Betas>.05$), while age and scholarship status are not. Finally, we can conclude that the effect sizes for Turkish and Moroccan students and other non-EU students are sizeable, while the effect size for EU students is small ($Beta<.05$).

6.3. Trying to understand the ethnic attainment gap

In this section, we try to determine the contribution of each type of characteristic on the observed differences in academic performance by decomposing inter-ethnic differences (with natives as the reference category) in mean levels of attainment outcomes into those due to observable characteristics and those due to unobservable characteristics. The explained difference is the gap one would expect on the basis of the explanatory variables (i.e. the differences in academic attainment due to differences in the pre-entry characteristics of the population). The unexplained difference represents the gap between any ethnic minority group and the native group that is not driven by differences in observed characteristics but by either different returns on characteristics or by explanatory variables that we did not include in the model. As described in section 5.3., the explanatory variables are gender, age, type of secondary education, parental education, scholarship status, first language and department.

Table 4 (in appendix) shows the results of our gap decompositions. We do not discuss the decomposition results of Dutch students because they do not differ significantly from native students regarding their academic attainment. For all other ethnic groups, the explained difference (the composition effect) is significant at the 1 percent level, implying that ethnic differences in pre-entry characteristics predict an advantage for native students over these ethnic minority students in average academic attainment. However, we also find important and significant unexplained penalties for these groups.

For EU students, the first language (explaining 21 percent) and type of secondary education (explaining 12 percent) play a decisive role in explaining the attainment gap with natives. We know from section 6.1 that one of five EU students have a mother tongue different from Dutch, and that EU students more often graduate from a non-ASO track compared to native students. Additionally, they have a relatively lower share of highly educated parents. Hence, parental education is also an important explanatory factor, accounting for approximately 9 percent of the attainment gap with natives. However, half of the attainment gap with natives remains unexplained.

For Turkish and Moroccan students, pre-entry characteristics account for 45 percent of the attainment gap. Parental education plays a crucial role, accounting for 16 percent of the gap. This is hardly surprising, bearing in mind that only a very small share of these students have highly educated parents. The first language (explaining 14 percent) and type of secondary education (explaining 9 percent) also contribute to the explanation of the Turkish and Moroccan gap. But the unexplained part remains significant and is, compared to other ethnic groups, the largest in absolute terms.

Finally, the type of secondary education (explaining 18 percent) is the most important explanatory variable for non-EU students, as they more frequently enter from TSO and BSO tracks than native students. Additionally, first language and parental education account for respectively 20 percent and 7 percent of the gap. As we know from section 6.1, other non-EU students are characterized by a relatively high share of students with a mother tongue different from Dutch (60 percent) and a relatively high share of low educated parents. The unexplained part of other non-EU students stands at 45 percent and is, in absolute terms, higher than the unexplained part of EU students but lower than the unexplained part of Turkish and Moroccan students.

Gender, age, scholarship status and department choice do not contribute significantly to the explanation of the ethnic attainment gap. This holds across all ethnic groups.

To conclude, differences in the pre-entry characteristics between ethnic minority and native students offer an important explanation for the ethnic dissimilarities in academic attainment. However, these characteristics cannot explain the full extent of the gap.

7. Discussion & conclusion

Using unique educational register data, this study investigated whether there are ethnic disparities in first-year academic attainment at a Flemish University. We have illustrated that, although a large portion of ethnic minority students were born in Belgium or immigrated at young ages, significant ‘unadjusted’ ethnic performance gaps exist, ranging from 6 percentage points for Dutch students to 27 percentage

points for Turkish and Moroccan students. In line with other research (Broecke & Nicholls, 2007; Van den Bergh & Hofman, 2005; Richardson, 2008), we found that ethnic attainment gaps persist, even when the effects of important pre-entry characteristics (such as type of secondary education, parental education and first language) are taken into account. Controlled for pre-entry characteristics, we estimated the ‘adjusted’ ethnic attainment gaps to be 4 percentage points for Dutch students, 8 percentage points for EU students, and 16 percentage points for Turkish and Moroccan students and 14 percentage points for other non-EU students.

By using a Oaxaca-Blinder decomposition, we were able to determine how much of the gap between native and ethnic minority students can be explained by differences in the pre-entry characteristics. Results showed that differences in type of secondary education, parental education and first language learned as a child play a significant role in explaining the academic attainment gaps. However, disparities between ethnic groups exist in the extent to which the attainment gap with natives is explained by pre-entry characteristics.

For EU students, the fact that a large portion of EU students learned a first language different from Dutch accounts for one fifth of the attainment gap with natives. The large share of students graduating from non-ASO tracks explains another 12 percent of the gap. However, half of the attainment gap remains unexplained. For Turkish and Moroccan students, low-educated parents are clearly the major factor, accounting for 16 percent of the attainment gap. Next to parental education, relatively high shares of students with a first language different from Dutch also play a significant role. After accounting for pre-entry characteristics, 65 percent of the attainment gap with natives remains unexplained. Finally, for other non-EU students both ‘non-traditional’ secondary education degrees and first language contribute the most in terms of explaining the attainment gap with natives. In the end, 48 percent of the attainment gap with natives remains unexplained.

Our results offer an indication that ethnic minority groups do not enter higher education on the same conditions as natives. The weaker pre-entry characteristics of ethnic minority students account for about half of the attainment gap with natives. However, a significant portion of the gap remains unexplained. Here, we must acknowledge that the examined administrative data do not include some relevant variables that can potentially predict and explain the academic performance, such as language proficiency, sense of belonging, growth mindset, locus of control, motivation, verbal self-concept, academic and social adjustment, academic achievement stress, diversity climate, equal treatment, etc. In order to set this clear, it would be interesting for future studies to combine survey and register data as well as qualitative data in explaining ethnic disparities in academic attainment. At the moment, very few of such mixed method design studies are available (see e.g. Meeuwisse, Severiens, & Born, 2010; Woolf, McManus, Potts, & Dacre, 2013).

Our findings indicate that the under-achievement of ethnic minority students is not just a problem of weaker pre-entry characteristics. The upshot is that more efforts are needed to ensure equal academic attainment for ethnic minority students. As we have argued in the introduction section: higher education is strongly related to social justice. Several promising policy interventions for reducing the gap have already been suggested in the literature (Cotton, Joyner, George, & Cotton, 2016; Severiens & Wolff, 2008; Meeuwisse, Severiens & Wolff, 2010). Given that Western societies are becoming more and more diverse and that some cities increasingly become superdiverse and turn into so-called ‘majority-minority cities’ whereby the old majority group becomes a minority (Crul, 2016), higher education institutions have to make sure that they can attract ethnic minorities students. We believe each University (and University college) needs a permanent monitoring in order to see if the institute attracts these ‘vulnerable’ students and to see whether or not they are making progress in being/becoming a ‘democratic and fair institute’. It would be an exaggeration to claim that our study was a ‘wake-up call’, but after having been informed about the results of the results, the institute has intensified its ‘diversity program’. More specific, the University has now fully embraced the idea that programs that smoothen the transition from secondary to higher education are necessary. Students should be well prepared at the start of their university education and, if necessary, they need to refine their prior knowledge. In order to realize this, the University has continued and even amplified its preparation programs that focus on ethnic minority students. One of the key projects is ‘*Tutoring*’ where university students with a migration background are asked whether they would like to support secondary school students with a migration background. This project thus actively reaches out to specific target groups and starts from the assumption that if a secondary school student with a migration background has been brought into contact with a (in terms of academic achievement) successful ethnic minority student, the chances become higher that he will effectively opt for university studies and will start these studies as a well prepared, motivated and self-confident person. Another key project is ‘*Mentoraatplus*’. Individual students are assigned a mentor. During individual follow-up discussions at key moments throughout the academic year, mentors guide these students through their learning process and adaptation to the new context of the university. The idea here, again, is that students can learn from each other and that creating a network is of fundamental importance. In a follow up research project of the present study, one of the authors has evaluated both projects and has listed a number of ways to improve them. Apart from ‘*Tutoring*’ and ‘*Mentoraatplus*’, there are also specific summer courses that provide the necessary information to high school students so that the first weeks at the University will be less overwhelming. There are (at least for some Faculties) also ‘calibration tests’ so that high school students can test their prior knowledge and skills and thus are informed about their deficits. There is also a pilot project in which students voluntarily help foreign-language newcomers and refugees in secondary education with their studies. In sum, the University will (1) reach out more towards ethnic minority students when in high school, (2) invest in a diversity climate that increases a shared sense of belonging together amongst the

students, (3) strengthen the ties with ethnic student organizations, (4) raise the ‘diversity awareness amongst staff’, (5) reflect on the range, possibility and character of remedial courses and summer schools, (6) invest in (follow up) research in order to evaluate current tools and to find and try out all types of good practices. Chang, et al. (2006) argues that each college/University faces a set of unique circumstances that cannot be easily addressed by ready-made ‘cookbook’ strategies. The upshot is that one of the most important factors, if not the most, is the enduring will of the institute to truly support and ameliorate the achievements of ethnic minority students.

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Appendix

Table 1. Description of pre-entry characteristics of student population, by ethnic group

	Native		Dutch		EU		Turkish & Moroccan		Other non-EU	
	Obs.	Share	Obs.	Share	Obs.	Share	Obs.	Share	Obs.	Share
Second generation	7,120	-	239	62%	194	70%	115	90%	294	38%
Female	7,120	55%	239	58%	194	53%	115	60%	294	59%
Age (mean)	7,120	21.8	239	21.9	194	22.3	115	22.3	294	22.9
Secondary degree other than ASO	7,054	10%	235	8%	191	14%	114	17%	285	26%
Father high educated	6,172	60%	213	56%	179	45%	103	9%	240	48%
Mother high educated	6,309	63%	111	51%	182	49%	103	4%	256	44%
Scholarship status	7,120	23%	239	26%	194	35%	115	81%	294	57%
First language other than Dutch	7,120	5%	239	4%	194	31%	115	38%	294	60%
Economics	7,120	25%	239	24%	194	22%	115	37%	294	25%
Biomedical Sciences		16%		16%		19%		21%		20%
Medicine		6%		6%		5%		3%		2%
Arts		15%		14%		15%		4%		10%
Social Sciences		9%		11%		13%		12%		10%
Law		18%		19%		20%		19%		26%
Science		11%		10%		7%		4%		8%

Table 2. Number and share of ethnic minority students in student population, by year of entry

		<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>
Native	Obs.	1,774	1,609	1,706	2,031
	<i>Share</i>	90%	89%	90%	89%
Dutch	Obs.	57	56	61	65
	<i>Share</i>	3%	3%	3%	3%
EU	Obs.	47	44	41	62
	<i>Share</i>	2%	2%	2%	3%
Turkish and Moroccan	Obs.	21	31	29	34
	<i>Share</i>	1%	2%	2%	2%
Other non-EU	Obs.	73	77	66	78
	<i>Share</i>	4%	4%	4%	3%
Total		1,972	1,817	1,903	2,270

Table 3. Linear regression with dependent variable first-year academic attainment, specifications 1-8

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dutch	-0.059 (0.025) -0.028	-0.061 (0.025) -0.029	-0.057 (0.024) -0.027	-0.063* (0.023) -0.030	-0.034 (0.024) -0.017	-0.033 (0.024) -0.016	-0.035 (0.024) -0.017	-0.037 (0.024) -0.018
EU	-0.126* (0.027) -0.054	-0.125* (0.027) -0.053	-0.115* (0.027) -0.049	-0.107* (0.026) -0.046	-0.114* (0.027) -0.051	-0.110* (0.027) -0.049	-0.088* (0.028) -0.039	-0.083* (0.028) -0.037
Turkish and Moroccan	-0.272* (0.031) -0.090	-0.276* (0.032) -0.091	-0.264* (0.032) -0.087	-0.248* (0.032) -0.082	-0.210* (0.036) -0.069	-0.195* (0.036) -0.064	-0.169* (0.036) -0.056	-0.164* (0.037) -0.054
Other non-EU	-0.263* (0.021) -0.137	-0.266* (0.021) -0.139	-0.238* (0.021) -0.124	-0.188* (0.021) -0.097	-0.198* (0.023) -0.100	-0.187* (0.023) -0.095	-0.141* (0.024) -0.071	-0.138* (0.024) -0.070
Female		0.074* (0.008) 0.102	0.071* (0.008) 0.097	0.064* (0.008) 0.089	0.071* (0.008) 0.100	0.071* (0.008) 0.100	0.072* (0.008) 0.101	0.077* (0.008) 0.107
Age			-0.050* (0.007) -0.327	-0.022* (0.007) -0.128	-0.012 (0.008) -0.065	-0.012 (0.008) -0.064	-0.009 (0.008) -0.049	0.004 (0.008) 0.020
Age square			0.000* (0.000) 0.211	0.000 (0.000) 0.055	0.000 (0.000) 0.001	0.000 (0.000) 0.001	0.000 (0.000) 0.004	-0.000 (0.000) -0.058
Other than ASO				-0.368* (0.013) -0.310	-0.335* (0.015) -0.271	-0.333* (0.015) -0.269	-0.333* (0.015) -0.268	-0.352* (0.015) -0.284
High educated father					0.046* (0.010) 0.064	0.041* (0.010) 0.057	0.041* (0.010) 0.057	0.039* (0.10) 0.054
High educated mother					0.067* (0.010)	0.063* (0.010)	0.061* (0.010)	0.059* (0.010)

Scholarship					0.091	0.086 -0.035* (0.011)	0.083 -0.027 (0.011)	0.081 -0.025 (0.011)
Mother tongue other than Dutch						-0.041	-0.032 -0.094* (0.019)	-0.029 -0.096* (0.019)
Biomedical Sciences							-0.065	-0.067 0.038* (0.013)
Medicine								0.039 0.175* (0.016)
Arts								0.114 0.016 (0.014)
Social Sciences								0.016 -0.066* (0.016)
Law								-0.054 0.050* (0.012)
Sciences								0.053 0.076* (0.015)
Constant	0.654* (0.004)	0.613* (0.006)	1.463* (0.106)	1.066* (0.101)	0.850* (0.114)	0.856* (0.114)	0.812* (0.115)	0.067 0.588* (0.117)
Observations	7,962	7,962	7,962	7,861	6,594	6,594	6,593	6,593
R-squared	0.029	0.039	0.056	0.147	0.153	0.154	0.158	0.178

Note: Robust standard errors in parentheses. Standardized regression coefficients in **bold**. * p<0.01.

Table 4. Linear Oaxaca-Blinder decomposition of academic attainment gap with natives, by ethnic group

	<u>Native</u>	<u>Dutch</u>		<u>EU</u>		<u>Turkish and Moroccan</u>			<u>Other non-EU</u>		
Observations	5,908	202		171		92			220		
Prediction (native student)	0.674										
Prediction (ethnic minority student)		0.634		0.524		0.373			0.409		
Difference		0.041		0.151*		0.301*			0.265*		
Gap explained by:											
Sex	-0.001	-2%		0.001	1%	-0.001	-0%		-0.003	-1%	
Age	0.000	0%		0.002	1%	0.003	1%		0.006	2%	
Type of secondary education	-0.004	-10%		0.018	(*) 12%	0.028	(*) 9%		0.049	* 18%	
Parental education	0.008	* 20%		0.013	* 9%	0.048	* 16%		0.014	* 5%	
Scholarship	0.001	2%		0.002	1%	0.007	2%		0.004	2%	
First language	-0.001	-2%		0.032	* 21%	0.041	* 14%		0.063	* 24%	
Department	-0.001	-2%		0.006	4%	0.008	3%		0.006	2%	
Explained (total)	0.002	5%		0.075	* 50%	0.135	* 45%		0.139	* 52%	
Unexplained (total)	0.039	95%		0.076	* 50%	0.166	* 65%		0.126	* 48%	

Note: (*) p<0.05; * p<0.01.