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Educational mismatches for second generation migrants. An analysis of applied science graduates in the Netherlands

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ABSTRACT

Studies on overeducation and unemployment show that migrants are worse off in the labour market. In this study we focus on university of applied science graduates and compare second generation migrants and Dutch natives in order to look at a homogenous group. We furthermore extend the definition of educational mismatches by including horizontal mismatches. We find that migrants, and in particular non-western migrants, experience ethnic penalties in employment. Non-western migrants are more likely to experience a double mismatch, i.e. a horizontal as well as a vertical mismatch. Furthermore, western migrants are more likely to experience horizontal mismatches than natives. Analyses on whether ethnic penalties persist across the non-western minority show that Antillean migrants have relatively good labour market outcomes whereas Moroccan migrants are the worst off. Furthermore, we find a gender dimension in the educational mismatches for western migrants. While western male migrants only show slight differences in labour market outcomes, western female migrants are less likely to be correctly matched and more likely to be unemployed than their native counterparts. Comparing educational mismatches before and during the recent economic crisis shows that in times of economic downturns, the labour market position of non-western migrants is disproportionately negatively affected.

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1. Introduction

Migrants still have a poorer position in the labour market than natives. In the Netherlands, non-Western migrants suffer unemployment one and a half times more often than Western migrants, and almost three times as often as natives (CBS 2016). To what extent educational mismatches of migrants and their descendants differ from natives is of great importance for researchers as well as policy makers. Educational mismatches, i.e. the difference between the education attained and required for a job, can be seen as a huge ‘brain waste’ as the returns to education tend to be lower than for workers who

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are correctly matched. Previous research shows that mismatches negatively affect job satisfactions (Allen & De Weert 2007; García-Espejo and Ibáñez 2006) and earnings (Hartog 2000; Leuven and Oosterbeek 2011), where the effect on earnings is stronger for migrants than for natives (Joona, Gupta, and Wadensjö 2014).

While other determinants of educational mismatches – such as age, school performance, work experience or occupation-specific characteristics – have been analysed widely, the incidence of mismatches among migrants has not received equal attention. As migrants often show poorer labour market outcomes and suffer ethnic penalties, e.g. in unemployment and wages (Algan et al. 2010; Amuedo-Dorantes & de la Rica 2007; Berthoud 2000; Uhlenhorff and Zimmermann 2014), they might also show higher probabilities of experiencing educational mismatches.

In this paper we explore ethnic penalties in educational mismatches and unemployment for second-generation migrants. Ethnic penalties refer to ethnic differences that cannot be explained by differences in human capital or demographic characteristics (Rafferty 2012; Zwysen and Demireva 2018). We define second-generation migrants as people born in the Netherlands with at least one of their parents born abroad. Additionally, we include unemployment as another possible outcome in the labour market. We thereby contribute to the existing literature in three ways.

First, we look at a homogenous group of natives and migrants. We focus on graduates that attended the same educational system and graduated with the same higher educational degree. Additionally, we focus our analysis on second-generation migrants and Dutch natives and thus compare individuals who were born in the same country. As all individuals obtain the same educational degree, possible differences in labour market outcomes between migrants and natives are not due to differences in the quality of education or language capabilities. In this we follow the approach of several studies in the United Kingdom in the focus on graduates to analyse ethnic penalties in labour market outcomes (Lindley 2009; Rafferty 2012; Zwysen and Longhi 2018).

Second, we include different degrees of education-job mismatches. While determinants of overeducation, i.e. vertical mismatches, have been widely studied, studies on horizontal mismatches are scarce (Hartog 2000; Robst 2007). To our knowledge there is no study that analyses ethnic penalties in horizontal mismatches. Horizontal mismatches impose a problem if occupation-specific skills cannot be transferred to other occupations (Robst 2007). Horizontal mismatches decrease the productivity level and earning in a job (Nordin, Persson, and Rooth 2010) and previous studies show that the wage penalty associated with a horizontal mismatch exceeds the penalty resulting from vertical mismatches (Budría and Moro-Egido 2008; Robst 2007).

Third, we combine educational mismatches and unemployment to capture labour market outcomes. As migrants have been found to be more often unemployed, we analyse the whole workforce and thus include unemployment in order to avoid selection bias.

Using a pooled cross-sectional data set among university of applied science graduates in the Netherlands between 2006 and 2014, we investigate whether an ethnic penalty in labour market outcomes exists. Specifically, we analyse whether a migrant background influences the likelihood of being mismatched or unemployed. The results indicate that even for this relatively homogenous group, and controlling for many observable characteristics, migrants experience ethnic penalties in labour market outcomes. The ethnic penalties are worse for non-western migrants as their likelihood to experience unemployment is higher and they are more likely to experience a double mismatch, i.e. a horizontal

and vertical mismatch at the same time. Western migrants are more likely to experience horizontal mismatches than natives. For western migrants, we furthermore observe a gender dimension, as male western migrants only slightly differ from their native counterparts, while female western migrants are less likely to be correctly matched and more likely to be unemployed. Furthermore, we explore whether ethnic penalties persist across ethnic minority groups differentiating between the four largest non-western minority groups in the Netherlands. Our results show that Antillean migrants show relatively good labour market outcomes whereas Moroccan migrants have the worst labour market outcomes. Comparing educational mismatches before and during the economic crisis indicates that, if macroeconomic conditions worsen, the labour market position of non-western migrants is disproportionately negatively affected. The observed ethnic penalties may reflect discrimination or other structural unobserved differences between migrants and natives.

The paper is organised as follows. In Section 2, we discuss the existing theoretical explanations of education-job mismatches for migrants and to what extent they can explain education-job mismatches among second-generation migrants. Furthermore, we provide an overview of existing empirical research on the topic. Section 3 provides information on University of Applied Sciences in the Netherlands as well as a description of the data and methodology including descriptive information on the sample. The results of our multinomial logistic regression models are discussed in Section 4. The paper concludes in Section 5.

2. Education-job mismatches for migrants

Educational mismatches refer to differences between the education attained and required for a job. Educational mismatches are divided into vertical and horizontal mismatches. Vertical mismatches are mismatches in the level of education.¹ Thus, the level of education is higher than required for a job. Horizontal mismatches are mismatches in content, i.e. the field of education does not match the job. If someone experiences a horizontal as well as a vertical mismatch we speak of a double mismatch.

Table 1 provides an overview of theories on educational mismatches that can help to explain potential differences between migrants and natives. According to human capital theory, human capital acquired through education makes graduates more productive in their job (Allen and De Weert 2007). As formal education is the main channel of acquiring human capital, this means that schooling can compress differences in levels of

Table 1. Theories on educational mismatches for migrants.

Theory	Migration	Migrant group
Human capital	Human capital cannot be perfectly transferred across borders.	First generation
Job search	Search and adjustment process is more difficult for migrants.	First generation
Screening	A foreign diploma is an imperfect signal. Educational mismatches may be due to differences in unobserved ability.	First and second generation
Ethnic penalty	Migrants need a higher education for the same job to counter the disadvantaged position. The disadvantaged position could be caused by discrimination, unobserved differences between natives and migrants, or structural and institutional constraints	First and second generation.

competences. If the education-job match is not optimal, additional learning by training and job experiences would be needed to improve or adjust the initial competences acquired during education. In the case of migration, human capital cannot always be perfectly transferred across borders due to differences in language capabilities or education qualifications. This puts migrants into a disadvantaged position compared to natives (Piracha, Tani, and Vadean 2012). According to the job search theory, educational mismatches are temporary situations which are caused by imperfect information that disappears with experience in the labour markets (Hartog 2000). This search and adjustment process, which eventually makes educational mismatches disappear, is likely more difficult for migrants, especially for those from origin countries that are very different to the country of destination. The human capital and job search theories, however, only help to explain educational mismatches among first generation migrants who are raised and educated in a country different to the destination country.

A theory applicable to first as well as second-generation migrants is the screening theory. The screening theory treats education purely as a signal of unobserved ability. Accordingly, overeducation should not appear right after graduation but more with time in the labour market when employers account for on-the-job performance in their promotion decision. As education acquired abroad most likely only imperfectly works as a signal, this raises the incidence of overeducation for migrants who hold a foreign diploma. Only if structural differences in unobserved abilities among second generation migrants and natives exist, the screening theory would help to understand differences between these two groups.

If none of these theoretical explanations are applicable, and a difference between migrants and natives persists, this is called an ethnic penalty. The term 'ethnic penalty' reflects that ethnic differences cannot be explained by differences in human capital or demographic characteristics (Rafferty 2012; Zwysen and Demireva 2018). In the context of education-job mismatches this means that migrants who face ethnic penalties need a higher education for the same job to counter the disadvantaged position (Piracha and Vadean 2013). Ethnic penalties can be due to unobserved structural differences between migrants and natives, or be caused by ethnic discrimination. Ethnic discrimination can be divided into taste-based and statistical discrimination (Becker 1957). In the labour market context, taste-based discrimination refers to the racial or ethnic preferences of an employer (Zschirnt and Ruedin 2016). These preferences lead to discrimination of groups independent of the information that an employer can acquire about members of this group. Statistical discrimination is at place if employers discriminate based on stereotypes they have about specific groups (Zschirnt and Ruedin 2016). Statistical discrimination results from incomplete information where employers use stereotypes about ethnicity to proxy this information. Whether statistical discrimination takes place is thus dependent on the amount of information available about an applicant. Translating this to ethnic penalties in educational mismatches, one would expect that statistical discrimination may decrease over time as other signals such as work experience are added. Taste-based discrimination on the other hand, would lead to a disadvantaged position of the discriminated group irrespective of time.

Some mechanisms can additionally foster ethnic penalties. A possible mechanism behind ethnic penalties is selection into occupation (Zwysen and Demireva 2018). This might

originate from an unobserved difference in the network of individuals, with migrant co-ethnic networks often already having jobs that are low-paid. On the other hand, occupational segregation may also be the result of discrimination (Zwysen and Demireva 2018).

Another mechanism regards community effects. Segregation may affect the type of work that can be locally found and may be of specific importance for migrants as they tend to rely more heavily on their co-ethnic networks (Zwysen and Demireva 2018).

Most empirical work on the incidences of educational mismatches focuses on first generation migrants and find that educational mismatches are higher among migrants than natives (Battu and Sloane 2002; Chiswick and Miller 2009; Green, Kler, and Leeves 2007). Studies that include second generation migrants show that also among second generation migrants educational mismatches persist (Battu and Sloane 2002; Joonas, Gupta, and Wadensjö 2014; Nielsen 2011). In this paper we follow the approach of several studies in the United Kingdom who explore ethnic penalties among graduates to analyse a rather homogenous group (Lindley 2009; Rafferty 2012; Zwysen and Longhi 2018). These studies find ethnic penalties for all or several minority ethnic groups in the United Kingdom.

3. Data and methodology

3.1. Universities of applied science in the Netherlands

The higher education system in the Netherlands is a binary education system based on a three-cycle degree system, consisting of a Bachelor's, Master's and PhD degree. Research-oriented programmes are traditionally offered by research universities. Universities of applied sciences offer higher professional education programmes. Whereas Dutch bachelor graduates from research universities generally continue their study at the Master level, the majority of Bachelor students from universities of applied sciences enter the labour market upon graduation. Bachelor programmes at universities of applied sciences generally last 4 years and are more oriented towards vocational training in contrast to the 3 year lasting more theoretical Bachelor programmes at research universities.

Access to Bachelor programmes at a university of applied sciences is granted upon a Dutch *havo* (5-year general secondary education) or *vwo* (6-year general secondary education) diploma as well as after graduating from the highest secondary vocational education level. Access may also be granted to students who hold an equivalent international degree.

Currently, there are 36 universities of applied sciences in the Netherlands with around 450,000 students of which close to 430,000 follow a Bachelor programme. In the academic year of 2016/2017, 11 percent of applied science graduates had a western and 12 percent a non-western migration background (CBS 2020).²

3.2. Data and methodology

In this paper, we use survey data collected by the Dutch Research Centre for Education and Labour Market (ROA). The survey, *applied science monitor*, is carried out among applied science graduates. The sample consists of approximately 20,000 applied science graduates per year, which corresponds to a response rate of 40 percent. The sampling

frame is the administrative database of universities of applied science, which contains data on graduate date, type of programme and field of study. 95 percent of the graduates in the Netherlands are enrolled at institutes that take part in the survey.³ Graduates are approached by e-mail and letter approximately 1.5 years after graduation.⁴

We restrict the sample according to the following factors: Firstly, we focus on graduates with a Bachelor education who form the majority of our sample (>95%). Secondly, we focus on full-time students. Part-time students have quite different features than full-time students and already have a job at the start of the study and usually remain in this job after graduation. Thirdly, we exclude students that work abroad at time of survey and focus only on those that were born in the Netherlands and also live and work in the Netherlands at the time the survey is carried out.

To examine mismatches, we use a self-evaluation measure of the match between a graduate's job and education.⁵ The different educational mismatch outcomes are determined by a set of questions in the applied science monitor survey where respondents were asked to indicate the educational level required by the employer as well as whether their current job is in the same field as their education. Comparing the respondents' educational level required for the job to the respondents' actual educational level, a person is defined as vertically mismatched if the education level is higher than the level required for the current job. When asked about the study field required for the job, respondents could choose between the response categories: exclusively my own study field, my own or a related study field, a completely different study field, no specific study field. If respondents indicate one of the former two, they are classified as correctly matched on the content and if they reported one of the latter two, they are classified as being horizontally mismatched. If respondents show a vertical as well as a horizontal mismatch, they are classified as experiencing a double mismatch. Our dependent variable is a categorical variable that indicates whether a person experiences (1) no mismatch, (2) a horizontal mismatch, (3) a vertical mismatch, (4) a double mismatch, or (5) is unemployed. We include unemployment as a fifth category to show the complete picture of labour market outcomes of the survey and to circumvent the problem of selection bias by restricting the sample to employed graduates. A person is defined as unemployed if he or she is currently looking for a job and working less than 1 h a week.⁶

Our main independent variable captures whether a person is a second-generation migrant or not, differentiating between Dutch natives, western and non-western second generation migrants. A second-generation migrant is a person born in the Netherlands with at least one of the parents born abroad. Following the definition of the Dutch Bureau of Statistics, non-western migrants are from Africa, Latin America, Asia (excluding Indonesia and Japan) and Turkey. Western migrants are, accordingly, migrants from Europe (excluding Turkey), North America, Oceania, Indonesia or Japan. As we restrict our analysis to second generation migrants born in the Netherlands, and to shorten the terms describing them, in the remainder of the paper we refer to western second generation migrants as western migrants and non-western second generation migrants as non-western migrants.

Previous empirical research on educational mismatches has identified several individual and sector-specific determinants (see e.g. Boudarbat and Chernoff 2012; Heijke, Meng, and Ris 2003.; Mason, Williams, and Cranmer 2009; Wolbers 2003). These determinants have been found to also affect unemployment propensities (Carmichael and Woods 2000). Firstly, we include age and gender. As previous research has shown contradictory evidence

concerning the effect of age on the probability of a mismatch, we allow for a non-linear relationship. By controlling for gender, we control for different employment profiles of men and women. Secondly, we control for school performance and CV building. We control for the average final grade the respondent received for the study as well as the highest secondary education of the respondent. Prior education is a categorical variable where the respondents indicate their highest prior education, i.e. general secondary education, pre-university secondary education, school-based/work-based secondary vocational education, higher vocational education or other. By including a set of variables on other experiences during the education, we attempt to control for skills students might acquire outside the classroom, which can influence an educational mismatch. The variables concern experience in boards and committees, internships in the Netherlands and abroad, education experience abroad, or other relevant working experience. Thirdly, as previous research indicates that the probability of unemployment and educational mismatches varies by field of study, we control for 27 different fields of study.⁷ We furthermore include year of survey and regional fixed effects to account for potential differences across time and place.⁸

The final sample consists of 77,781 observations from the years 2006–2014 of which 8.5 percent are migrants (4.5 percent western and 4 percent non-western migrants).

Table 2 shows the incidences of mismatches and unemployment for all individuals, as well as for Dutch natives, western migrants, and non-western migrants separately.⁹ Migrants are less often correctly matched than Dutch natives, and show higher occurrences of double mismatches and unemployment. This disadvantaged position is more pronounced for non-western than western migrants. While the majority of all groups is correctly matched, with a difference of 6.30 percentage points for western migrant, and 11.60 percentage points for non-western migrants, migrants are substantially less often correctly matched. The occurrence of unemployment is more than twice as high for non-western migrants than Dutch natives (11.73 percent vs. 4.70 percent). Furthermore, western (9.98 percent) and non-western migrants (11.59 percent) are also more often experiencing double mismatches than Dutch natives (8.48 percent). Western migrants show the highest occurrence of horizontal mismatches and Dutch natives show the highest occurrence of vertical mismatches.

4. Results

Table 3 presents the results of the multinomial logit regression reported in average marginal effects. Our results show that non-western migrants clearly experience ethnic penalties. Compared to Dutch natives, they are 5.3 percent less likely to be correctly matched,

Table 2. Incidence of mismatches.

	Total		Dutch		Western migrants		Non-western migrants	
	Obs.	%	Obs.	%	Obs.	%	Obs.	%
No mismatch	52,243	63.79	48,420	64.55	1,899	58.16	1,924	52.97
Horizontal mismatch	9,066	11.07	8,070	10.76	490	15.01	506	13.93
Vertical mismatch	9,486	11.58	8,794	11.72	337	10.32	355	9.77
Double mismatch	6,943	8.48	6,196	8.26	326	9.98	421	11.59
Unemployed	4,166	5.09	3,527	4.70	213	6.52	426	11.73

1.6 percent more likely to experience a double mismatch, and 5.7 percent more likely to be unemployed. Western migrants are also less likely to be correctly matched than Dutch natives (2.8 percent) and more likely to be unemployed (1.2 percent) but the size of the coefficients is smaller. The migrant status also matters when it comes to single mismatches, i.e. single horizontal or vertical mismatches. Compared to Dutch natives, western migrants are 1.8 percent more likely to experience a horizontal mismatch. Non-western migrants are less likely to experience a single vertical mismatch. While this may seem puzzling at first sight, this originates from the increased likelihood of non-western migrants to experience a double mismatch, i.e. a vertical and horizontal mismatch at the same time. A double mismatch means that a person can neither utilise generic nor sector-specific skills.

The individual control variables are in line with previous research. Age significantly affects all labour market outcomes. The older the respondent the poorer his or her labour market outcomes. Gender only affects the likelihood of a mismatch but not the

Table 3. Multinomial logit regression results, average marginal effects.

	Type of mismatch				
	(1) No	(2) Horizontal	(3) Vertical	(4) Double	(5) Unemployed
Migrant background					
<i>Dutch native</i>	Ref.	Ref.	Ref.	Ref.	Ref.
<i>Western migrant</i>	-0.028*** (0.008)	0.018** (0.006)	-0.008 (0.006)	0.006 (0.005)	0.012** (0.004)
<i>Non-western migrant</i>	-0.053*** (0.008)	0.008 (0.005)	-0.028*** (0.005)	0.016*** (0.005)	0.057*** (0.005)
Age	-0.013*** (0.001)	0.006*** (0.001)	-0.005*** (0.001)	0.006*** (0.001)	0.005*** (0.000)
Gender					
<i>Male</i>	Ref.	Ref.	Ref.	Ref.	Ref.
<i>Female</i>	-0.033*** (0.004)	-0.011*** (0.003)	0.028*** (0.003)	0.014*** (0.002)	0.001 (0.002)
GPA	0.029*** (0.001)	-0.001 (0.001)	-0.010*** (0.001)	-0.013*** (0.001)	-0.005*** (0.001)
Highest education					
<i>General sec. education</i>	Ref.	Ref.	Ref.	Ref.	Ref.
<i>Pre-university sec. education</i>	0.025*** (0.005)	0.002 (0.003)	-0.009** (0.003)	-0.012*** (0.003)	-0.006** (0.002)
<i>School-/Work-based sec. vocational education</i>	0.026*** (0.004)	-0.023*** (0.003)	0.036*** (0.003)	-0.028*** (0.002)	-0.012*** (0.002)
<i>Higher vocational education</i>	0.060*** (0.009)	-0.014* (0.006)	-0.012* (0.006)	-0.025*** (0.005)	-0.009* (0.004)
<i>Other</i>	0.039* (0.016)	0.000 (0.011)	-0.003 (0.011)	-0.030*** (0.008)	-0.006 (0.007)
Experience during study					
<i>Other (Yes)</i>	0.034*** (0.003)	-0.007** (0.002)	0.009*** (0.002)	-0.026*** (0.002)	-0.011*** (0.002)
<i>Student/Board committee (Yes)</i>	0.021*** (0.004)	0.014*** (0.003)	-0.022*** (0.003)	-0.005 (0.003)	-0.008*** (0.002)
<i>Education abroad (Yes)</i>	-0.010 (0.007)	0.018*** (0.004)	-0.020*** (0.005)	-0.003 (0.004)	0.015*** (0.003)
<i>Internship abroad (Yes)</i>	0.000 (0.005)	0.006 (0.003)	-0.003 (0.003)	-0.007* (0.003)	0.003 (0.002)
<i>Internship in the Netherlands (Yes)</i>	0.035*** (0.008)	0.002 (0.005)	-0.026*** (0.007)	-0.008 (0.005)	-0.003 (0.004)
Year FE	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes
Regional FE	Yes	Yes	Yes	Yes	Yes
Observations	77,781	77,781	77,781	77,781	77,781

Robust standard errors in parentheses, *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

likelihood of being unemployed. Compared to their male counterparts, female applied science graduates are less likely to be correctly matched and more likely to experience a double mismatch or a vertical mismatch. Only the likelihood of experiencing a horizontal mismatch is smaller for women. A higher GPA positively affects a respondent’s labour market outcomes. A higher average grade increases the likelihood of getting a job as well as getting a job on the correct level. Compared to general secondary education, all other previous educations decrease the likelihood of being unemployed or experiencing a double mismatch and increase the likelihood of being correctly matched. Most of the variables capturing additional experiences during the studied have a positive effect on labour market outcomes. However, the effect seems to be stronger for experience acquired within the Netherlands than abroad. Being a member of a student committee, doing an internship in the Netherlands and other relevant work experiences increase the likelihood of being correctly matched. Doing an internship abroad does, however, not affect the likelihood of a correct match. Acquiring some of the education abroad seems to have a negative effect on labour market outcomes as it increases the likelihood of a single mismatch as well as unemployment, and only decreases the likelihood of a single vertical mismatch.

4.1. Gender differences

Table 4 shows the coefficients of the multinomial logit regression model where we differentiate by gender. Our results suggest that the occurrence of educational mismatches has a gender dimension mostly for western migrants. While male western migrants only differ from male Dutch natives in a higher likelihood of experiencing horizontal mismatches, female western migrants are 3.1 percent less likely to be correctly matched and 1.7 percent more likely to be unemployed than female Dutch natives. For non-western migrants the gender differences are less pronounced. While non-western migrant women are somewhat more likely to experience educational mismatches, among men

Table 4. Multinomial logit regression results by gender, average marginal effects.

	Type of mismatch				
	(1) No	(2) Horizontal	(3) Vertical	(4) Double	(5) Unemployed
Men					
Migrant background					
<i>Dutch native</i>	Ref.	Ref.	Ref.	Ref.	Ref.
<i>Western migrant</i>	-0.019 (0.012)	0.024** (0.008)	-0.009 (0.008)	0.001 (0.007)	0.003 (0.006)
<i>Non-western migrant</i>	-0.032* (0.013)	0.000 (0.009)	-0.027** (0.009)	0.021*** (0.006)	0.037*** (0.005)
Observations	32,951	32,951	32,951	32,951	32,951
Women					
Migrant background					
<i>Dutch native</i>	Ref.	Ref.	Ref.	Ref.	Ref.
<i>Western migrant</i>	-0.031** (0.011)	0.012 (0.006)	-0.006 (0.008)	0.008 (0.006)	0.017*** (0.005)
<i>Non-western migrant</i>	-0.047*** (0.010)	0.017** (0.006)	-0.030*** (0.008)	0.016** (0.006)	0.045*** (0.004)
Observations	44,830	44,830	44,830	44,830	44,830

Robust standard errors in parentheses, *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

In both specifications we furthermore control for age, GPA, highest education achieved, experiences during study, Year FE, Sector FE, and Regional FE.

non-western migrants are more likely to be unemployed. However, there is no difference in the significance of the coefficients between non-western migrant men or women.

4.2. Differences among ethnic minority groups

Existing research suggests that the experience among ethnic minority groups may also differ (Berthoud 2000; Lindley 2009). Our results already illustrate differences in the experience of ethnic penalties for western and non-western migrants. As our previous results show a general effect for non-western migrants, Table 5 shows the results for the four largest ethnic minority groups in the Netherlands to explore potential diversity in the ethnic penalties for different groups. These groups are migrants from the Netherlands Antilles (including Aruba), Surinam, Morocco and Turkey. Previous research in the Dutch context has shown that ethnic penalties in unemployment are highest for Moroccan migrants (Andriessen and Dagevos 2007). Furthermore, Turkish and Moroccan migrants show worse outcomes in the quality of their job as they more often have temporary employment contracts (Andriessen and Dagevos 2007). No existing studies have analysed educational mismatches by ethnic minority groups in the Netherlands.

The results show that ethnic penalties persist across ethnic minority groups. All migrant groups are less likely to be employed, and all but Antillean migrants are less likely to be correctly matched. In line with previous research on employment, Moroccan migrants are experiencing the biggest problems in the study-work transition. Moroccan and Turkish migrants are twice as likely to be unemployed as the other non-western migrants groups. Also, Moroccan and Surinamese migrants are considerably less likely to be correctly matched. Antillean migrants, on the other hand, do relatively well compared to other non-western migrants.

While we look at second generation migrants, there are considerable differences in labour market outcomes between the first generation migrants of above mentioned groups. This mainly regards differences between Antillean and Surinamese migrants on

Table 5. Multinomial logit regression results for ethnic migrant groups, average marginal effects.

	Type of mismatch				
	(1) No	(2) Horizontal	(3) Vertical	(4) Double	(5) Unemployed
Migrant background					
<i>Dutch native</i>	Ref.	Ref.	Ref.	Ref.	Ref.
<i>Western migrant</i>	−0.028*** (0.008)	0.018** (0.006)	−0.008 (0.006)	0.006 (0.005)	0.012** (0.004)
<i>Antillean</i>	−0.045 (0.0281)	0.037 (0.020)	−0.033* (0.016)	0.001 (0.016)	0.040* (0.009)
<i>Surinamese</i>	−0.066*** (0.015)	0.018 (0.010)	−0.017 (0.009)	0.018* (0.009)	0.047*** (0.009)
<i>Moroccan</i>	−0.064** (0.019)	−0.006 (0.012)	−0.038*** (0.011)	0.023 (0.012)	0.085*** (0.014)
<i>Turkish</i>	−0.039* (0.016)	0.001 (0.011)	−0.050*** (0.009)	0.015 (0.010)	0.074*** (0.012)
<i>Other non-western migrant</i>	−0.048*** (0.014)	0.001 (0.009)	−0.014 (0.010)	0.015 (0.009)	0.046*** (0.009)
Year FE	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes
Regional FE	Yes	Yes	Yes	Yes	Yes
Observations	77,781	77,781	77,781	77,781	77,781

Robust standard errors in parentheses, *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

We control for age, GPA, highest education achieved, experiences during study, Year FE, Sector FE, and Regional FE

the one hand, and Moroccan and Turkish migrants on the other (Kee 1995). Immigrants from the (former) Dutch colonies (Antillean and Surinamese) often could acquire Dutch citizenship by birth and often speak the language (Kee 1995; Zorlu and Hartog 2012). The majority of Turkish and Moroccan migrants came as guest workers in the 1960s and 70s to fill low-skilled job positions in the Netherlands (Kee 1995). These differences between first generation migrants may lead to unobserved differences among second generation migrants that can partially explain the worse labour market positions of Moroccan and relatively good labour market position of Antillean migrants. Additionally, discrimination towards specific minority ethnic groups is a likely factor to explain the variation in ethnic penalties across migrant groups (Rafferty 2012).

4.3. The effect of the economic crisis

Macroeconomic conditions have been found to affect the occurrence of unemployment and educational mismatches (Wolbers 2003). The time span of our data set includes one major global economic event, which is the economic and financial crisis that started with the bankruptcy of Lehman Brothers in 2008. The Netherlands experienced two severe economic downturns in the aftermath of the crisis – mainly in 2009 and 2012/2013 which is referred to as the ‘double-dip recession’ (CBS 2018). The unemployment rate in the Netherlands gradually increased from 2008 to 2014 and only started to decrease again thereafter (CBS 2018). What has been understudied so far is the extent to which the pressure on the labour market may affect migrants disproportionately, and accordingly worsens existing ethnic penalties. Table 6 therefore presents the results of multinomial logistic regressions split up between the pre-crisis period (2006–2008) and the crisis period (2009–2014).

The results show that, while the difference between Dutch natives and western migrants remain the same before and during the crisis, non-western migrants are over-proportionally affected by the worsening macroeconomic conditions since 2009. The decreased

Table 6. Multinomial logit regression results before and after the economic crisis, average marginal effects.

	Type of mismatch				
	(1) No	(2) Horizontal	(3) Vertical	(4) Double	(5) Unemployed
Pre-Crisis (2006-2008)					
Migrant background					
<i>Dutch native</i>	Ref.	Ref.	Ref.	Ref.	Ref.
<i>Western migrant</i>	-0.034* (0.014)	0.018 (0.010)	-0.005 (0.009)	0.005 (0.007)	0.016* (0.006)
<i>Non-western migrant</i>	-0.030* (0.014)	0.022* (0.010)	-0.024** (0.008)	0.005 (0.008)	0.028*** (0.007)
Observations	24,693	24,693	24,693	24,693	24,693
Crisis (2009-2014)					
Migrant background					
<i>Dutch native</i>	Ref.	Ref.	Ref.	Ref.	Ref.
<i>Western migrant</i>	-0.024* (0.010)	0.017* (0.007)	-0.010 (0.007)	0.006 (0.006)	0.011* (0.005)
<i>Non-western migrant</i>	-0.062*** (0.010)	0.001 (0.006)	-0.031*** (0.006)	0.021*** (0.006)	0.070*** (0.007)
Observations	53,088	53,088	53,088	53,088	53,088

Robust standard errors in parentheses, *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$
 In both specifications we furthermore control for age, gender, GPA, highest education achieved, experiences during study, Year FE, Sector FE, and Regional FE

likelihood to be correctly matched and the increased likelihood to be unemployed more than doubled in this period. In the pre-crisis period, non-western migrants were 3.0 percent less likely to be correctly matched, whereas during the crisis period this amounted to 6.2 percent. Furthermore, before the crisis, non-western migrants were 2.8 percent more likely to be unemployed than Dutch natives, and during the crisis they were 7.0 percent more likely. Besides, only in the period since 2009, non-western migrants are more likely to experience a double mismatch. Before the crisis, there was no significant difference between non-western migrants and Dutch natives.

4.4. Sensitivity analysis

To control for qualification heterogeneity our analysis includes average grades and extra-curricular activities. However, there may be a problem of endogeneity as these variables may include an ethnic penalty for the same reason we find an ethnic penalty in labour market outcomes. Discrimination or unobserved structural differences between natives and migrants may influence grades, finding an internship, or other extra-curricular activities. In such a case our results would underestimate the ethnic penalties. Therefore, we exclude these variables from the specification as robustness check. The results can be found in Table 7.

Table 7 shows that the results are robust to the exclusion of these variables. Immigrants show worse labour market outcomes with increased likelihoods of experiencing double mismatches and being unemployed. The size of the coefficients is higher as we no longer control for other reasons for qualification heterogeneity.

5. Conclusion and discussion

In this paper, we analyse whether the migrant background of second generation migrants increases the likelihood of experiencing an educational mismatch or unemployment even when comparing a relatively homogenous group. We use cross-sectional data on recent

Table 7. Multinomial logit regression results reduced equation, average marginal effects.

	Type of mismatch				
	(1) No	(2) Horizontal	(3) Vertical	(4) Double	(5) Unemployed
Migrant background					
<i>Dutch native</i>	Ref.	Ref.	Ref.	Ref.	Ref.
<i>Western migrant</i>	-0.058*** (0.009)	0.039** (0.006)	-0.013* (0.006)	0.015** (0.005)	0.016** (0.004)
<i>Non-western migrant</i>	-0.092*** (0.008)	0.030 (0.006)	-0.022*** (0.005)	0.024*** (0.005)	0.059*** (0.005)
Age	-0.014*** (0.001)	0.006*** (0.001)	-0.001*** (0.001)	0.005*** (0.001)	0.005*** (0.000)
Gender					
<i>Male</i>	Ref.	Ref.	Ref.	Ref.	Ref.
<i>Female</i>	-0.051*** (0.003)	-0.030*** (0.002)	0.060*** (0.002)	0.017*** (0.002)	0.003* (0.002)
Year FE	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes
Regional FE	Yes	Yes	Yes	Yes	Yes
Observations	81,627	81,627	81,627	81,627	81,627

Robust standard errors in parentheses, *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

university of applied science graduates in the Netherlands from 2006 to 2014. By comparing second-generation migrants with Dutch natives who finished the same educational level in the same country, we eliminate differences due to quality of education or language capabilities that are often provided as explanations for ethnic penalties in the labour market.

Our results show that non-western migrants clearly experience ethnic penalties. Compared to natives, they are less likely to be correctly matched, more likely to experience a double mismatch and more likely to be unemployed. Western migrants are also less likely to be correctly matched than Dutch natives and more likely to be unemployed but the size of the coefficients is smaller. In line with previous research we find that migrants experience ethnic penalties in labour market outcomes (Battu and Sloane 2002; Chiswick and Miller 2009; Green, Kler, and Leeves 2007; Joon, Gupta, and Wadensjö 2014; Lindley 2009; Rafferty 2012; Zwysen and Longhi 2018). While previous studies have focussed on unemployment and vertical mismatches, the results of our study highlight the importance of including horizontal mismatches when studying ethnic penalties in labour market outcomes. Western migrants are more likely to experience horizontal mismatches than natives, and Western migrants are more likely to experience a horizontal and vertical mismatch at the same time. Previous research illustrates that horizontal mismatches decrease the productivity level and earnings (Nordin, Persson, and Rooth 2010) and the associated wage penalty exceeds the penalty resulting from vertical mismatches (Budría and Moro-Egido 2008; Robst 2007). In this light, the higher likelihood of a double mismatch in comparison to a decreased likelihood of a single vertical mismatch is the worse labour market outcome.

Looking at gender, we find that western female migrants have significant worse labour market outcomes than western male migrants. For non-western migrants, the gender differences are small. Looking at differences within the group of non-western migrants, we find that the four distinguished migrant groups all experience labour market disadvantages but that Moroccan migrants are hit the hardest and Antillean migrants have the least disadvantage. Furthermore, we find that the economic crises negatively affected the labour market outcome of non-western migrants. This indicates that they suffered from the crisis to a greater extent.

Previous research has shown that educational mismatches reduce the returns to education, i.e. earning and job satisfaction. It is, therefore, important that policymakers try to reduce the ethnic penalties in educational mismatches and unemployment.

While we show that ethnic penalties persist also among a relatively homogenous group, which rules out some of the existing explanations for ethnic penalties that co-exist next to the explanation of discrimination, we cannot ultimately say whether the ethnic penalty we observe is caused by discrimination or unobservable differences in personal traits. By controlling for various individual characteristics such as average grades or previous education, we aim to control for many differences in ability. After controlling for these characteristics, we still find a clear impact of being a migrant on the probability of experiencing a mismatch and being unemployed. As pointed out in section 2, structural differences in unobserved ability and personal traits are a potential explanation for educational mismatches occurring over time when on-the-job performance is taken into account. While we cannot assume that discrimination is the only explanation for the observed ethnic penalty, using information on recent graduates who are interviewed about 1.5 years

after graduation makes us confident to assume that part of the ethnic penalty found in this paper can be accounted to discrimination.

We control for qualification heterogeneity that could lead to differences in labour market outcomes among applied science graduates such as field of study, average grade, and extra-curricular activities. Future research could unpack the relation between ethnic penalties and qualification heterogeneity further, by analysing how ethnic penalties vary across these control variables.

Notes

1. Vertical mismatches are divided into over- and undereducation where overeducation refers to a level of education acquired that is higher than the required level for the job and undereducation to an acquired level lower than required in the job. In this paper, we focus on the effects of overeducation. If we talk about vertical mismatches, we refer to overeducation.
2. The share of western migrants among research university graduates is higher (21 percent), while the share of western migrants in lower secondary education is smaller (6 percent). Non-western migrants show similar shares of graduates across research university graduates (13 percent) as they show across applied science graduates. The share of non-western migrants who graduate with a lower secondary education degree is higher (20 percent) (CBS 2020). Note that these numbers include first generation graduates as well as those who out-migrate after graduation.
3. A few, mostly private institutes, are not connected to the survey.
4. Graduates from the arts sector are excluded in our analyses as they have a different questionnaire and thus, cannot be compared with the other sectors.
5. Using the self-evaluated measure is also referred to as the subjective method. Educational mismatches have also been tested via expert classification (objective method) and, for overeducation, in average years of schooling (empirical method). See Visintin, Tjijdens, and Van Klaveren (2015) for a discussion of the different methods.
6. This definition follows the ILO definition of unemployment.
7. Those 27 categories are: educational studies, educational studies in general subjects, teacher occupational subjects, pedagogic, art, social and cultural education, communicational studies, journalism, business administration, marketing and commercial economics, accountancy and finance, business economics and human resource management, law, environment studies, computer science, mechanical engineering, electrical engineering, chemistry, civil engineering, agriculture, nursery and medical diagnostics, physiotherapy, social work, leisure and facility management, logistics, remaining, university: education
8. Regional effects refer to the home address of the respondent. In this paper we report results for regional effects at the provincial level. The results are robust to changing this to broader (North, East, South, West) or more refined (RPA-clusters) regional levels. The corresponding tables can be made available by the authors upon request.
9. Summary statistics of the control variables can be found in [Table A1](#) in the Appendix. As shown in [Table A1](#), there are no substantial differences in the control variables between Dutch natives, western migrants and non-western migrants.

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Disclosure statement

No potential conflict of interest was reported by the author(s).

Data availability statement

The data that support the findings of this study are available from the Research Centre for Education and the Labour Market (Maastricht University). Restrictions apply to the availability of these data, which were used under licence for this study. Data are available from the authors only with permission of the Research Centre for Education and the Labour Market (Maastricht University).

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Appendix

Table A1. Frequencies of control variables by migrant background.

	Total		Dutch		Western migrants		Non-western migrants	
	Obs.	%	Obs.	%	Obs.	%	Obs.	%
Mismatch								
<i>No</i>	52,243	63.79	48,420	64.55	1,899	58.16	1,924	52.97
<i>Horizontal</i>	9,066	11.07	8,070	10.76	490	15.01	506	13.93
<i>Vertical</i>	9,486	11.58	8,794	11.72	337	10.32	355	9.77
<i>Double</i>	6,943	8.48	6,196	8.26	326	9.98	421	11.59
<i>Unemployed</i>	4,166	5.09	3,527	4.70	213	6.52	426	11.73
Age (average)	81,734	24.89	74,849	24.84	3,261	25.55	3,624	25.37
Gender								
<i>Male</i>	34,243	41.87	31,506	42.07	1,362	41.74	1,375	37.87
<i>Female</i>	47,541	58.13	43,384	57.93	1,901	58.26	2,256	62.13
Grade (average)	79,762	24.89	74,849	24.84	3,261	25.55	3,624	25.37
Highest educational level before								
<i>General sec. education</i>	42,447	51.87	38,861	51.85	1,741	53.34	1,845	50.85
<i>Pre-university sec. education</i>	12,670	15.48	11,851	15.81	541	16.57	278	7.66
<i>School-/Work-based secondary education</i>	22,480	27.47	20,305	27.09	808	24.75	1,367	37.68
<i>Higher vocational education</i>	3,394	4.15	3,165	4.22	141	4.32	88	2.43
<i>Other</i>	847	1.03	764	1.02	33	1.01	50	1.38
Experience during study								
<i>Other (Yes)</i>	40,975	50.08	37,629	50.22	1,628	49.97	1,718	47.34
<i>Student/Board Committee (Yes)</i>	14,646	17.90	13,539	18.07	540	16.57	567	15.62
<i>Education abroad (Yes)</i>	5,486	6.70	4,808	6.42	333	10.22	345	9.51
<i>Internship abroad (Yes)</i>	13,334	16.30	12,104	16.15	654	20.07	576	15.88
<i>Internship in the Netherlands (Yes)</i>	77,959	95.31	71,538	95.50	3,021	92.7	3,400	93.72