

IZA DP No. 9353

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Discussion Paper No. 9353  
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## ABSTRACT

### **Wage Gaps between Native and Migrant Graduates of Higher Education Institutions in the Netherlands\***

In the Netherlands the share of immigrants in the total population has steadily increased in recent decades. The present paper takes a look at wage differences between natives and migrants who are equally educated. This reduces potential skills biases in our analysis. We apply a Mincer equation in estimating the wage differences between natives and migrants. In our study we analyze only young graduates, so that conventional human capital factors cannot explain the differences in monthly gross wages. Therefore, we focused on “otherness” factors, such as parents’ roots to find an alternative explanation. Our empirical results show that acquiring Dutch human capital, Dutch-specific skills, language proficiency, and integration in the long-term (second-generation with non-OECD background) are not sufficient to overcome wage differences in the Dutch labor market, especially for migrants with parents from non-OECD countries.

JEL Classification: F22, I2

Keywords: immigration, education, wage

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\* Piet Rietveld passed away on November 1, 2013.

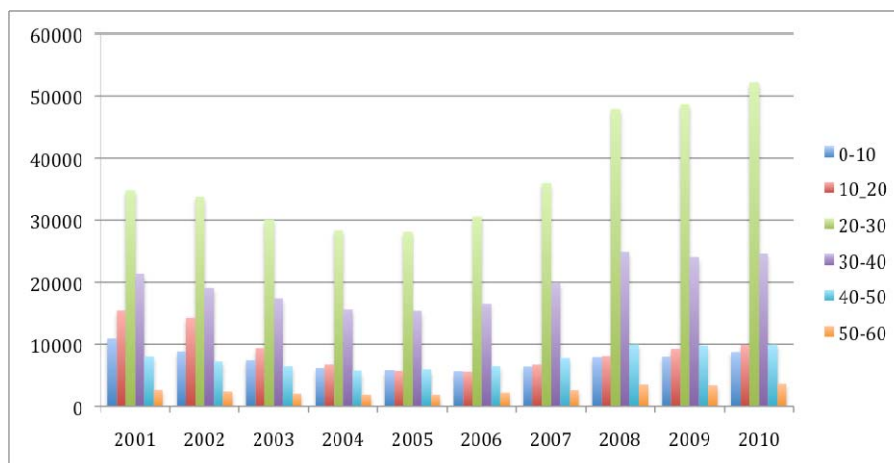
## 1. Introduction

The share of foreign-born population has greatly increased in recent years in most developed countries. This has prompted much research on the social and economic impacts of immigrants on the host society. Such impacts may refer to job creation (or loss), wage changes, welfare and growth effects, trade and tourism flows, or new business formation. A broad review of migration impact assessment matters can be found in Nijkamp et al. (2012). An important and recurrent question is whether a migration inflow may widen the wage differences between natives and migrants. The present paper will examine in particular the wage gap between natives and migrants with a higher education diploma in the Netherlands.

In the Netherlands, the share of immigrants in the total population has risen substantially in recent decades. Figure 1 below describes the immigration situation over the past ten years. As can be seen, the share of younger immigrants is higher compared to the older categories. This indicates that migrants who migrated to the Netherlands during that period were mostly young people. Especially, the 20-30 age group is large, and their share increases as we move toward 2010. Some of these migrants have completed their education in their country of origin; others in the Netherlands<sup>1</sup>. With reference to Eurostat 2010, there appeared to be 1.8 million foreign-born residents in the Netherlands, corresponding to 11.1 per cent of the total population. Of these, 1.4 million (8.5 per cent) were born outside the EU and 0.428 million (2.6 per cent) were born in another EU Member State.

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<sup>1</sup> Migrants coming from non-OECD countries may find that their university or college degree is not considered equivalent to a Dutch degree. Therefore, they need to re-study and refresh the degree obtained in their homeland.



**Figure 1:** Immigration and age categories, on average, from 2001 to 2010 in the Netherlands  
Source: CBS 2013.

Immigration and the immigrants' economic impact on the host society have long been a sensitive topic in the economic literature. As migrants are heterogeneous in terms of skills and social demographic characteristics, their impact on the host country labor market can also be different. There is much evidence of a wage gap between migrant workers and native workers (Groot, 2013; Behtoui, 2004).

The aim of the present paper is, first, to examine the gross salary of students who have graduated from Dutch higher professional education, and then to make a comparison between migrants and natives in the Dutch labor market. In doing so, we borrow the Mincer equation for graduates of Dutch higher professional education. Moreover, this paper contributes to the emerging list of studies on wage differences between migrants and natives in the following ways. First of all, in our analysis the role of skill bias is suppressed: natives and migrants in our sample have largely obtained the same degrees for a higher education institution. Secondly, we also control for parents' roots, and our empirical results reveal that wage discrimination is related to the individuals' roots. Graduates from non-OECD countries are receiving relatively low wages. Furthermore, immigrants who invest in their education at later ages earn lower wages; therefore, age structure plays likely a role in the payment of different wages in the labor market.

After reviewing the literature on wage differences between immigrants and natives, the paper presents interesting empirical results, by using data from Maastricht University for 2007 to 2010 on graduates of higher professional education. We found that there is no wage difference between natives and second-generation migrants, but the wage gap between first-generation migrants and natives is -3 per cent. Furthermore, we also find that migrants coming from outside the OECD zone receive a lower gross salary in comparison with OECD zone migrants. This study demonstrates also that the most important factor in the wage gap between immigrants and natives is in fact not strongly related to their human capital endowment, but probably more to the effect of being “otherness”.

The remaining part of the paper is organized as follows. Section 2 provides a literature review. Section 3 describes our data set and offers a descriptive analysis. Section 4 presents the empirical results, and Section 5 concludes.

## **2. Literature review**

In recent years, special attention has been devoted to the impact of immigrants in general and highly educated and skilled immigrants, in particular. Several studies (see Groot, 2013; Friedberg, 2000) have revealed that, although developed countries are in desperate need of skilled and highly educated immigrants, immigrants and even the children of immigrants (also called the second-generation) are not enjoying equal job opportunities and wages.

According to human capital theory, the difference in labor market outcome is related to an individual's investment in education and job trainings (Becker and Becker, 1993; Mincer, 1974). Education and job training increase an individual's productivity, which in turn has a positive impact on a person's earning. On the basis of this theory, individuals with the same labor supply characteristics are expected to have the same wage and employment opportunity. Furthermore, the conventional human capital model cannot fully explain the differences in terms of wage and employment opportunities between migrants and natives. Some additional adjustments have

sometimes been added to the model, for example, individuals' investments in human capital, and whether this was accumulated in the country of origin or the country of destination. The same holds true for the years of work experience, especially if they are from non-OECD countries (Coulon, 2001; Friedberg, 2000), lack of host country's specific skills, language and knowledge. In due time, however, after immigrants have lived for a number of years in the host country, they steadily acquire the host country's specific knowledge and language. Consequently, their labor market performance will increase, and in the course of time their wage difference in comparison to natives tends to diminish (Friedberg, 2000; Borjas, 1985; Chiswick, 1978). In our study, we focus on immigrants who have graduated from Dutch higher education institutions, and therefore they have the same educational qualifications as the natives. If that were the only relevant factor, there would not be a wage difference between immigrants and natives, and in particular between second-generation immigrants and natives.

At the same time, the concept of social capital indicates that social ties produce transferable values, and can lead people toward better employment opportunities and possibly higher paid jobs. According to Bourdieu and Wacuant (1992, p 119) "social capital is the sum of the resources that accrue to an individual or a group by virtue of possessing a durable network of more or less institutional relationships of mutual acquaintance and recognition." This entails two important elements of social capital: 1) the strength of a social network (total number of connections) that one can depend on, and 2) the sum of the resources (capital, human and cultural) that each social network possesses. Studies find that a person with a better connected network has more chances in job-matching channels, which may also be associated with higher incomes (Granovetter, 1995; Sprengers et al., 1988). As personal relationships are homogeneous in different groups (e.g. ethnic, religious), job opportunities acquired via personal relationships can cause inequalities in society (Behtoui, 2004). Campbell et al. (1986) indicate that networks are essentially resources and, like many other resources, they are not distributed evenly. Sprengers et al. (1988) studied 242 Dutch men, aged 40-55, who became unemployed in or before 1978. He

concludes that those with better social capital found a job within a year, especially those with access to social capital through weak ties. Furthermore, Lin et al. (1981) found that a persons who use information from—and enjoys the influence of—powerful, wealthy or prestigious people are more likely to find a better job than those without such connections.

There are two neoclassical economic models that can explain the labor market gaps between immigrants and natives from the demand side. The first is the *taste model* developed by Becker (1957), and the second is *statistical discrimination* pioneered by Phelps (1972) and Arrow (1973). According to Becker’s model, discrimination is fundamentally a problem of taste, meaning that there is a disamenity value in employing a person, while, according to Phelps and Arrow, it is due to lack of information about the productivity of individuals. This gives the firms an incentive to use observable characteristics, such as race, gender, etc., to infer the expected productivity of applicants. However, the second model is not free of criticism (for an overview, see Aigner and Cain, 1977). As it is difficult to measure discrimination empirically<sup>2</sup> in the labor market, scholars adopt the conventional discrimination measure namely the effect of “otherness” on wage and employment to explain the differences between immigrants and the natives (Chiswick, 1978 ; Behtoui, 2004). Foreign background is negatively related to employment and wages, especially for those outside the OECD circle (Miles, 1993).

In this paper, we divide the immigrants first into first and second generation, and then into two groups namely: those with roots in OECD countries, and those with roots in non-OECD countries. The motivation behind this selection is the cultural similarity of OECD countries to the Netherlands, and cultural distance between non-OECD countries and the Netherlands. Through this distinction we may be able to capture the possible risk of suffering from discrimination (Miles, 1993). Furthermore, having a foreign background is associated with lower wages and employment, especially for those from non-OECD countries (Behtoui, 2004). And

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<sup>2</sup> The reason is that factors such as race, skin colour, hair colour etc. may have a significant impact on discrimination behaviour, but in our empirical study we cannot control for them.



finally, we also examine the effect of having a foreign born father or mother from OECD or non-OECD countries for the second generation migrants to test the Chiswick (1977) and the related Behtoui (2004) hypothesis. In our study, we focus on highly educated migrants who have completed their studies together with natives in the same year, and then entered the labor market. Thus, we have hardly any skill bias in our analysis. Before presenting the empirical results, we discuss the data set and present some descriptive analyses. The next section presents a brief description of the data we used.

### **3. Data source and descriptive analysis**

Our data originates from the Research Center for Education and the Labor Market (ROA) of Maastricht University in cooperation with DESAN Research Solutions. The survey is based on the cohort of students (in higher professional education)<sup>3</sup> who graduated in the period 2006/2007 to 2009/2010 after their higher professional training. Graduates were surveyed approximately 18 months after they had completed their studies, and information was collected not only on their discipline of study and other aspects of their background, but also on their current job. Together with this, spatial information was also collected. The average response rate was 37 per cent for each year. Furthermore, we focus on graduate students who had obtained their degree and have a full-time job. We dropped from our analysis those graduates who had part-time jobs, were self-employed, were still students, and whose answer sheets had missing information.

For the students who have graduated from higher education, data are available on a series of variables including: personal characteristics (such as gender, age and ethnicity), subject of study, mode (full-time vs. part-time), degree results at the time of graduation, whether individuals are employed in small firms (1-9 employees), medium-size firms (10-99 employees), or large firms ( $\geq 100$  employees), while graduates were also asked to give information about their place of

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<sup>3</sup> This does not include university graduates.

residence, for instance: where they lived when they were 16 years old; where they lived during their course of study; and where they were living now. Through an analysis of these questions, we were able to generate four variables, namely: those who lived in Noord Holland, Zuid Holland, Utrecht (NH, ZH, U); moved to (NH, ZH, U); left (NH, ZH, U), and moved in-between (NH, ZH, U). Each of the aforementioned provinces (Noord Holland, Zuid Holland, Utrecht) hosts one of the major Dutch cities (Amsterdam, Rotterdam, The Hague, and Utrecht); these cities are all located in Dutch Randstad.

Table 1 presents the personal characteristics of graduates with a higher professional education. The gender composition is 53 per cent male and the mean age of the graduates is 27 years. The share of second-generation migrants is higher (8.6 per cent) compared to first-generation (3.4 per cent). We also added three dummies to capture the differences between natives, OECD nationals and non-OECD nationals. As can be observed from Table 1, the share of non-OECD (7.6 per cent) nationals is higher compared to OECD nationals (4.4 per cent).

**Table 1:** Personal characteristics of the alumni higher professional training.

<b>HBO graduates</b>	<b>Mean</b>	<b>Std. Dev</b>	<b>Min</b>	<b>Max</b>	<b>Obs</b>
Age (years)	26.93	5.89	20	50	26257
Gender (male)	0.53	0.499	0	1	26257
Migrants	0.120	0.325	0	1	26257
1 <sup>st</sup> generation migrants	0.034	0.181	0	1	26257
2 <sup>nd</sup> generation migrants	0.086	0.280	0	1	26257
Native	0.880	0.325	0	1	26257
OECD nationals	0.044	0.206	0	1	26257
Non-OECD nationals	0.076	0.264	0	1	26257

Regarding the graduation score, Table 2 presents descriptive statistics for natives, and first- and second-generation migrants. The share of the first-generation migrants in the high graduation marks is slightly higher than that of the second-generation. This suggests that the first-generation migrants is more talented than the second-generation migrants. A possible reason for higher marks of the first-generation migrants might be that some of these students came into the

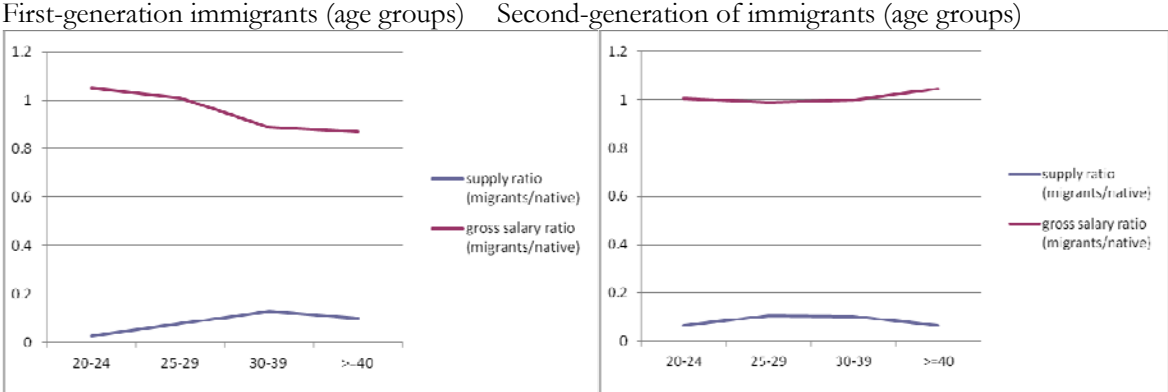
Netherlands already with a degree from their country of origin, and, because their original degree is not considered to be equivalent to a Dutch degree, they have to re-study for a couple of years.

**Table 2:** Graduation scores

	Native	First-generation migrants	Second-generation migrants
		Mean	
Graduation score6_7*	0.492	0.512	0.551
Graduation score7.5_8.5	0.479	0.459	0.427
Graduation score9_10	0.029	0.029	0.022

\*Graduation score 6-7 is the reference category.

Figure 2 below shows the ratio of supply and wages for natives-immigrants in different age categories of graduates with a higher professional education. As expected, the supply ratio of first-generation migrants is low in the younger age groups (20-24), but, interestingly, they get higher wages. As we move further along the age line, the supply ratio of first-generation migrants to native increases, and the wage ratio gets below 1, indicating that older migrants are not paid as much as natives of the same age in the labor market. For the second-generation immigrants, there is no wage difference with natives, and even at older ages, the second-generation migrants receive slightly higher wages compared to natives.



**Figure 2:** Higher professional education alumni immigrant/ native, wages and supply by age category

**4. Estimation of the Mincer equation**

The Mincer equation (Mincer, 1974) is often used in economics to analyse wage variation. This equation relates wages to a series of personal, work, and regional characteristics, and performs

well in explaining the positive relationship between ability (proxied by years of education) and earnings. In the Mincer equation, it is assumed that the logarithm of earnings is a nonlinear function of experience, and, according to the model, it can be measured as age minus years of schooling, minus the school starting age (5 years). In this study we do not have information on total years of education. Therefore, we use age and age squared as proxies for experience. Furthermore, we also include the subject of study in the form of 7 dummies for graduates with a higher professional training<sup>4</sup>. We next introduce a dummy variable taking a value of 1, if the individual is responsible for controlling other employees i.e. he/she is a ‘supervisor’, and 0 otherwise. Furthermore, to control for the language of the graduates, we use a dummy, taking the value of 1 if a language other than Dutch is spoken inside the household.

The regression equation for graduates with higher professional education is written as:

$$\log(w_{i,t}) = X_{i,t}\beta + Z_{i,t}\gamma + \epsilon_{i,t} \quad (1)$$

where  $(w_{i,t})$  is the gross monthly salary of individual (i) in year (t);  $X_{i,t}$  represents the explanatory variables that include the graduation score<sup>5</sup>, age (a proxy for experience), age-squared to capture nonlinear effects, dummies for gender, field of study, and residential location;  $Z_{i,t}$  is a dummy for immigrant status; and  $\epsilon_{i,t}$  is the error term. We use residential and time fixed effects to cope with spatial and temporal heterogeneity.

We applied four steps in the Mincer estimations. In the first variant, we include the main variables, while in the second variant we separate age and age squared for the first- and the second-generation immigrants. In the third variant, we add the interaction between the first- and second-generation migrants with different firm sizes. And, finally, in the fourth variant we add dummies for the field of study.

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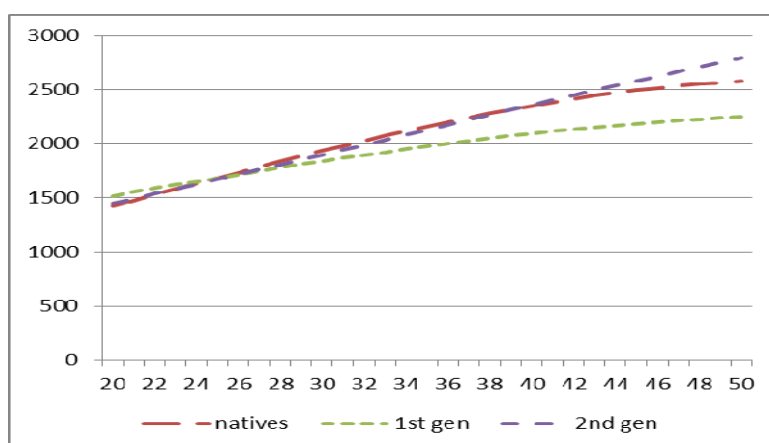
<sup>4</sup> For more information on the descriptive statistics, we refer to Appendix A.

<sup>5</sup> For details see Footnote 2.

## 5. Empirical evidence

Table 3 shows the empirical results. There is a wage gap between the genders (male and female) who are equally educated; male graduates receive 8 per cent more gross salary per month than their female counterparts, but the outcome improves a bit (7 per cent) when we control for the field of education. We have only considered full-time jobs and therefore, the gender difference cannot be explained by the difference in working hours.

The age variable, which is used as a proxy for experience, is positively related to our dependent variable, and is highly significant in all three variants. The estimated coefficients are comparable with the values generally found in the literature. Furthermore, as the descriptive analysis shows (Section 2), the first-generation migrants experience a difference in their gross salary per month if they graduate at later ages. To capture this age effect, we separated the age and age squared for the first- and the second-generation immigrants, and the interpretation of our result is presented in Figure 3 below. As can be observed from Figure 3, there is no significant wage difference in age category between the second-generation immigrants and the native graduates. On the other hand, if we compare native graduates with the first-generation immigrants, we can observe that the older the age category of the first-generation immigrants, the lower the wages. This indicates that, for the first-generation immigrants who are investing in their human capital at later ages, the return to their education gets smaller compared to the natives and the second-generation immigrants of the same age.



**Figure 3:** Natives and immigrants age and gross salary (in euros per month)

The human capital measure indicates that talented graduates receive higher wages in the labor market compared with our reference case (where the graduation score is below 7.5). Graduating with marks between 9 and 10, increases the monthly gross salary by 5 per cent compared to our reference category, *ceteris paribus*. For those who graduated with scores between 7.5-8.5, the difference is 3 per cent.

The social structure variable, which contains various variables of interest, indicates that first-generation migrants earn lower wages, leading to a 3 per cent wage gap between natives and the first-generation migrants. Our finding for the first-generation migrants is in line with the literature: that is, the wage gap is mostly related to language and social skills (Chiswick, 1978). Our result confirms previous study findings: for example Algan et al. (2010) find for France, Germany and the United Kingdom that first-generation migrants who are living and working in the above-mentioned countries earn significantly less than the natives, and for those who come from developing countries, their wage gap increases further. Our empirical result for non-OECD countries indicates that the wage gap between graduates from OECD members and non-OECD countries is 1 per cent. Furthermore, a possible reason for the wage difference between OECD and non-OECD graduates could be that graduates from non-OECD countries accept lower paid jobs to remain in the Netherlands. This is confirmed by a recent study by Bijwaard and Wang

(2013) who find that graduate students from less developed countries accept low paid jobs to remain in the country and to find better job opportunities.

An important factor that affects wages according to the efficiency wage theory is the size of the firm (Akerlof, 1982; Bulow and Summers, 1986). Our empirical finding shows that wages increase with firm size. Medium-sized and large firms pay respectively, 2 and 6 per cent more gross salaries than our reference category (small firms). The second-generation immigrant earns higher wages in both medium-sized and large firms compared to the second-generation immigrant graduates employed in small firms. Furthermore, employees with more responsibility receive higher wages compared to those without.

As indicated above in the data section (Section 2), we created four variables for residential location to determine whether residential location has an impact on the gross salary of these graduates. The results indicate that those who lived in the provinces Noord Holland, Zuid Holland and Utrecht (NH, ZH, U) receive 4 per cent more gross salary compared to our reference variable (which refers to those living and continuing to live in other provinces). Furthermore, those who are moving into the mentioned provinces are also receiving higher wages and their gross monthly salary increases by 3 to 4 per cent. Interestingly, for those graduates who are moving between the aforementioned provinces, their gross monthly salary increases by 6 per cent in comparison to our reference variable. Venhorst (2012) studied the wages of college and university graduates in the Netherlands, and found that wages are higher for those graduates who work in larger labor markets and expensive regions. Furthermore, those who move away from the aforementioned provinces, have a higher gross salary compared with the reference group. These results are in line with the literature that indicates that those graduates who change their location fare better than those who do not change location (Abreu et al. 2011).

**Table 3:** Mincer regression for wages of graduates of higher education (dependent variable: natural log of individual monthly gross salary)

	Variant-I	Variant-II	Variant-III	Variant-IV
Age	0.0538(0.00208)***	0.0554(0.00222)***	0.0554(0.00222)***	0.0560(0.00220)***
Age (sq)	-0.000497(3.2e-05)***	-0.000516(3.38e-05)***	-0.00052(3.38e-05)***	-0.00052(3.33e-05)***
Gender (male=1)	0.0842(0.00238)***	0.0840(0.00238)***	0.0840(0.00238)***	0.0682(0.00272)***
Non-Dutch (language)	0.000889(0.00742)	0.00727(0.00742)	0.00717(0.00743)	0.00577(0.00742)
<b>Human capital (graduation score)</b>				
Score 9_10	0.0484(0.00746)***	0.0489(0.00744)***	0.0489(0.00744)***	0.0499(0.00737)***
Score 7.5_8.5	0.0289(0.00236)***	0.0285(0.00236)***	0.0286(0.00236)***	0.0308(0.00239)***
<b>Social structure</b>				
1 <sup>st</sup> gen migrants	-0.0320(0.00946)***	0.437(0.158)***	0.461(0.167)***	0.439(0.157)***
2 <sup>nd</sup> gen migrants	-0.00283(0.00646)	0.271(0.122)**	0.23(0.124)5*	0.259(0.121)**
1 <sup>st</sup> gen migrant age		-0.0237(0.00973)**	-0.0239(0.00974)**	-0.0241(0.00967)**
2 <sup>nd</sup> gen migrant age		-0.0185(0.00783)**	-0.0186(0.00781)**	-0.0178(0.00777)**
1 <sup>st</sup> gen migrant age(sq)		0.000246(0.000143)*	0.000249(0.000143)*	0.000255(0.000142)*
2 <sup>nd</sup> gen migrant age(sq)		0.000293(0.000118)**	0.00029(0.000118)**	0.00028(0.000117)**
Non_OECD	-0.0120(0.00720)*	-0.00904(0.00716)	-0.00852(0.00715)	-0.0101(0.00712)
<b>Firm size &amp; position</b>				
Medium-sized firm	0.0170(0.00571)***	0.0170(0.00570)***	0.0149(0.00594)**	0.0223(0.00570)***
Large firm	0.0573(0.00552)***	0.0569(0.00550)***	0.0550(0.00573)***	0.0582(0.00549)***
Supervisor position	0.0642(0.00336)***	0.0635(0.00336)***	0.0635(0.00336)***	0.0596(0.00334)***
1 <sup>st</sup> gen migrant*med_firm			-0.0302(0.0416)	
1 <sup>st</sup> gen migrant*large_firm			-0.0189(0.0402)	
2 <sup>nd</sup> gen migrant*			0.0457(0.0221)**	
med_firm				
2 <sup>nd</sup> gen			0.0362(0.0211)*	
migrant*large_firm				
<b>Residential location</b>				
Lives in (NH, ZH,U)	0.0444(0.00257)***	0.0440(0.00257)***	0.0439(0.00257)***	0.0426(0.00256)***
Left (NH, ZH,U)	0.0192(0.00922)**	0.0188(0.00926)**	0.0189(0.00925)**	0.0194(0.00918)**
Moved to (NH, ZH,U)	0.0332(0.00434)***	0.0352(0.00434)***	0.0353(0.00434)***	0.0319(0.00432)***
Moved between (NH, ZH,U)	0.0579(0.00786)***	0.0573(0.00785)***	0.0573(0.00785)***	0.0551(0.00779)***
<b>Field of education</b>				
Education				0.0840(0.0290)***
Technical studies				0.141(0.0289)***
Economics				0.122(0.0289)***
Health				0.113(0.0292)***
Social behavior/culture				0.0881(0.0291)***
Agriculture				0.0857(0.0294)***
<b>Time fixed effect</b>				
Constant	Yes 6.517(0.0326)***	Yes 6.488(0.0346)***	Yes 6.490(0.0347)***	Yes 6.367(0.0450)***
Observations	25,452	25,452	25,452	25,452
R-squared	0.399	0.401	0.401	0.407

Robust standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1: the reference categories are: female, graduation score lower than 7.5, natives, OECD, small firm, other positions, other provinces, language and arts.

We also controlled for the field of education, and our results indicate that those who are involved in technical studies are paid the highest (17 per cent) compared with our reference category (language and arts). All coefficients for the field of study are positive and significant, which indicates that graduates of language and arts courses are employed in less well paid jobs.



Taking into account the conventional discrimination measures applied by Chiswick (1977), having a native-born mother contributes more to language skills than a native-born father, and, as a result, individuals can earn higher wages. However, Behtoui (2004), with reference to a Swedish case, finds that since fathers can occupy higher positions in the labor market than mothers, a native-born father can pass on a more valuable social network to the children than a native-born mother. We have tested both hypotheses by categorizing individuals' parents as originating from either OECD or non-OECD countries. Through this distinction we can observe the difference in culture, language and quality of the parents' education and its impact on the productivity of individuals in the labor market.

**Table 4:** Mean of the first- and second-generation immigrants, according to their parents' roots

<b>First-generation immigrants Observations</b>	<b>Mean</b>	<b>Number of</b>
Dutch parents*	0.963	24003
Both parents from OECD	0.008	24003
Both parents from non-OECD	0.027	24003
Father from OECD	0.001	24003
Mother from OECD	0.001	24003
<b>Second-generation immigrants</b>		
Dutch parents *	0.913	25369
Both parents from OECD	0.009	25369
Both parents from non-OECD	0.019	25369
Dutch father+ OECD mother	0.014	25369
Dutch father+ non-OECD mother	0.018	25369
Dutch mother+ OECD father	0.012	25369
Dutch mother + non-OECD father	0.013	25369
OECD father + non-OECD mother	0.001	25369
Non-OECD father+ OECD mother	0.001	25369

\* Indicates the reference category in our regression

Table 4 above shows the share of each category of immigrants in terms of their parents' roots (i.e. country of origin). In the first-generation immigrants, the share of graduates from non-OECD countries is higher compared with the other categories (OECD, father from OECD, mother from OECD), and this share is the second highest for the second-generation immigrants. This is not surprising because, after the Second World War, the Netherlands hosted a large number of guest workers from non-OECD countries. Table 4 also shows that the share of

children born from marriages between Dutch nationals (both male and female) and non-OECD nationals is relatively higher compared with the share of marriages with OECD nationals.

Table 5 presents the results concerning the wages of higher education graduates correcting for their parents' roots. We estimated the wages in two variants, but because of space limitation, we only report here the parents' roots variables. The first variant does not control for field of education, while the second does. Our result for the second generation of immigrants indicates that, if individuals have a native father or a native mother in combination with a non-OECD national mother (-2.6 per cent) and an OECD father (-2.5 per cent), they are earning lower wages compared to our reference category (where both parents are Dutch nationals). The results suggest that having either a native father or mother and access to their social capital does not affect the labor market outcome of these young graduates compared with the case where both parents are natives. The difference between having a native mother or a native father is very small in our estimation, but still our result confirm Behtoui's (2004) results that graduates with a native father perform (the difference is between 0.0045 to 0.0059 per cent) better than a native mother, even though they probably would speak a different language at home.

The difference between those young graduates who have roots in OECD countries and those with roots in non-OECD countries shows that having non-OECD parents decreases their wages by 2 per cent compared with the reference case (where both parents are Dutch natives), *ceteris paribus*. The finding for OECD and non-OECD parents captures the culture and language differences on the one hand, and parents' quality of education, on the other.

The first-generation immigrants follow a pattern that is similar to what we have just described for the second-generation migrants. Young graduates with roots in non-OECD countries experience labor market disadvantages which are twice as high as those of young graduates with roots in OECD countries. Furthermore, this also highlights the effect of being "otherness" due to one's name and family name. We may conclude that acquiring Dutch human capital, Dutch-

specific skills, language proficiency, and integration in the long term (second-generation) does not remove discrimination in the labor market, especially for people from non-OECD countries.

**Table 5:** Annual earning according to parents' roots

	Variant-I	Variant-II
<b>First-generation immigrants</b>		
Both parents from OECD	-0.0208 (0.0151)	-0.0236(0.0150)
Both parents from non-OECD	-0.0523 (0.00886)***	-0.0567 (0.00882)***
Father from OECD	0.00420(0.0384)	-9.70e <sup>-05</sup> (0.0387)
Mother from OECD	-0.0887(0.0831)	-0.0901(0.0797)
<b>Second-generation immigrants</b>		
Both parents from OECD	0.0191(0.0115)*	0.0181(0.0115)
Both parents from non-OECD	-0.0165(0.00847)*	-0.0204(0.00850)**
Dutch father+ OECD mother	-0.0119(0.0105)	-0.0143(0.0104)
Dutch father+ non-OECD mother	-0.0198(0.00880)**	-0.0220(0.00880)**
Dutch mother + OECD father	-0.0257(0.00994)***	-0.0265(0.00986)***
Dutch mother + non-OECD father	-0.000589(0.0108)	-0.00102(0.0108)
OECD father + non-OECD mother	-0.0276(0.0354)	-0.0327(0.0339)
Non-OECD father+ OECD mother	0.0260(0.0681)	0.0202(0.0665)
Time fixed effect	Yes	Yes
Constant	6.520(0.0326)***	6.399(0.0436)***
Observations	25,452	25,452
R-squared	0.399	0.406

Robust standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 \*, the reference category is Dutch parents. Included variables are; age, age-square, gender, medium-size firm, large-firm, supervisor position, graduation score lives in(NH,ZH,U), left (NH,ZH,U), moved (NH,ZH,U), moved between (NH,ZH,U), field of study (only on the second variant), and time-fixed effect.

### *Robustness check*

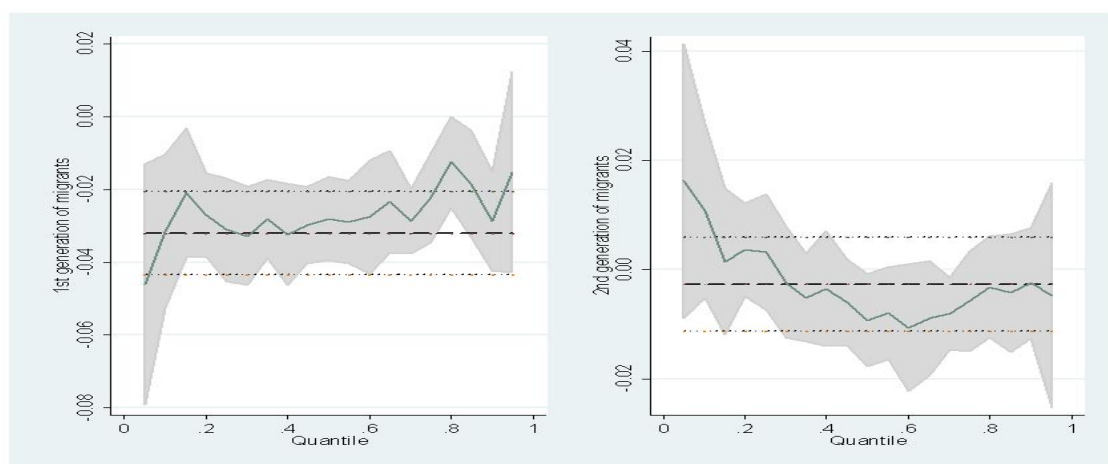
In order to check the robustness of our OLS regression on the wage difference between the first- and second-generation immigrants and natives, we employed two different methods; firstly, we dropped some of the variables such as: different firm sizes, graduation scores and supervisor position from our analysis, because there may be a case of endogeneity of these variables with our dependent variable. Table 6 presents our results in two variants, in the first variant, the dependent variable is monthly gross salary, while in the second variant it is gross-hourly wage. As can be observed, the results are similar to the ones we found in Table 3. Secondly, we ran a quantile regression. The quantile regression appears to confirm also our OLS results. The first-

generation immigrants in fact receive lower gross salary wages with an order of magnitude of -3 percent per month. As can be observed from Figure 4 below, the coefficient confidence interval in the quantile regression for both first- and second-generation immigrants does, for the most part, not cross the confidence interval of the OLS regression. Therefore, we can conclude that the quantile regression results are not significantly different from the OLS results.

**Table 6:** Robustness check

	Variant-I	Variant-II
Age	0.0569(0.00210)***	0.0592(0.00216)***
Age (sq)	-0.000521(3.19e-05)***	-0.000538(3.28e-05)***
Gender (male=1)	0.0688(0.00272)***	0.0546(0.00280)***
Non-Dutch	-0.00410(0.00742)	0.000575(0.00770)
1 <sup>st</sup> gen migrants	-0.0321(0.00947)***	-0.0388(0.00986)***
2 <sup>nd</sup> gen migrants	-0.00188(0.00645)	-0.00655(0.00670)
Non-OECD	-0.0164(0.00718)**	-0.0148(0.00741)**
Lives in (NH, ZH,U)	0.0440(0.00259)***	0.0423(0.00267)***
Left (NH, ZH,U)	0.0212(0.00909)**	0.0204(0.00922)**
Moved to (NH, ZH,U)	0.0310(0.00433)***	0.0282(0.00445)***
Moved between (NH, ZH,U)	0.0572(0.00787)***	0.0558(0.00782)***
Education	0.0775(0.0289)***	0.0775(0.0315)**
Technical studies	0.146(0.0288)***	0.151(0.0313)***
Economics	0.126(0.0288)***	0.142(0.0313)***
Health	0.115(0.0291)***	0.184(0.0316)***
Social behavior/culture	0.0969(0.0290)***	0.154(0.0315)***
Agriculture	0.0840(0.0294)***	0.0897(0.0320)***
<b>Time fixed effect</b>	Yes	
<b>Constant</b>	6.412(0.0439)***	1.232(0.0462)***
<b>Observations</b>	26,256	26,256
<b>R-squared</b>	0.382	0.380

Robust standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1



**Figure 2:** Quantile regression for first- and second-generation migrants

## **6. Conclusion**

In this study we have investigated wage differences between immigrants (first- and second-generation) and natives, and the extent to which the immigrant background has an impact on the labor market outcome of graduates with a higher professional education who have full-time jobs. Our empirical results indicate that, even when migrants are educated equally as natives, there is still a wage gap between migrants and natives in the Netherlands. Our empirical findings reject the human capital hypothesis that people with the same qualification and supply characteristics would have the same labor market outcome, especially for the first-generation migrants and immigrants with roots in non-OECD countries. Furthermore, graduation age plays a significant role in wage discrimination, in particular for the first-generation immigrants. The first-generation immigrants who start to invest in their human capital at later age experience more wage discrimination compared with those who invest at younger age.

We also find that there is a monthly gross income gap between males and females. This is even larger than the wage gap between the first- and the second-generation migrants and the natives. The female graduates who are full-time employed and have graduated with equal scores as their males counterparts receive between 7 to 8 per cent less monthly gross salary compared with male graduates with the same labor market supply characteristics.

The literature indicates that graduates who change their location fare better than those who do not change location. Our results confirm the findings of those previous studies, and also add new information on the emerging literature regarding the people who move from one big province to another. These people earn higher wages compared with the rest of the relevant categories.

We have also compared individuals according to their parents' roots: those who have roots in OECD countries and those who have roots in non-OECD countries. We found that for the second-generation immigrants, having roots in non-OECD countries (mainly referring to those individuals with both parents from non-OECD countries) is negatively related to wages. So,

when both parents are from outside the OECD, their wages are lower by approx. 2 per cent. This indicates that neither the parents' acquisition of Dutch-specific labor market knowledge due to long duration of residence, nor the graduates' acquisition of Dutch-specific human capital are able to overcome labor market wage differences. The same result is found for the first-generation immigrants with roots outside OECD countries.

Further research on the effect of social capital and specifically on the parents' roots is needed to divide both the first and the second-generation immigrants into more detailed socio-economic groups. However, in our research context it was difficult to pursue this categorization because of the limited number of observations.

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## Appendix A: descriptive analysis for collage graduates.

	Mean	Std. Dev	Min	Max	Obs
Gross monthly salary (native)	2384.5	638.7	1000	8450	23115
Migrant(first) gross monthly salary	2498.5	671.7	1300	8000	888
Migrant(second) gross monthly salary	2397.2	629.8	1300	8500	2254
Age (years)	26.93	5.88	20	50	26257
Gender (male)	0.53	0.499	0	1	26257
Non-Dutch (language)	0.062	0.241	0	1	26257
<b>Firm size &amp; position</b>					
Small firm	0.059	0.236	0	1	26257
Medium firm	0.298	0.457	0	1	26257
Large firm	0.643	0.479	0	1	26257
Supervisor position	0.189	0.391	0	1	26257
<b>Graduation score</b>					
Native graduation score6_7*	0.492	0.500	0	1	22471
Native graduation score7.5_8.5	0.479	0.499	0	1	22471
Native graduation score9_10	0.029	0.166	0	1	22471
Migrant(first) graduation score6_7*	0.512	0.500	0	1	872
Migrant(first) graduation score7.5_8.5	0.459	0.499	0	1	872
Migrant(first) graduation score9_10	0.029	0.167	0	1	872
Migrant(second) graduation score6_7*	0.551	0.497	0	1	2215
Migrant(second) graduation score7.5_8.5	0.427	0.495	0	1	2215
Migrant(second) graduation score9_10	0.022	0.147	0	1	2215
<b>Social structure</b>					
Native (Dutch)*	0.880	0.325	0	1	26257
Migrants	0.118	0.323	0	1	26257
First generation of migrants	0.034	0.181	0	1	26257
Second generation of	0.086	0.280	0	1	26257
OECD	0.044	0.206	0	1	26257
Non-OECD	0.076	0.264	0	1	26257
<b>Residential location</b>					
Entered (NH, ZH,U)	0.091	0.287	0	1	26257
Left (NH, ZH,U)	0.023	0.151	0	1	26257
Lived (NH, ZH,U)	0.325	0.469	0	1	26257
Moved between (NH, ZH,U)	0.026	0.160	0	1	26257
Other provinces*	0.534	0.499	0	1	26257
<b>Field of education</b>					
Education	0.147	0.354	0	1	26257
Technical studies	0.220	0.416	0	1	26257
Economy	0.416	0.493	0	1	26257
Health	0.083	0.274	0	1	26257
Social behavior/culture	0.096	0.294	0	1	26257
Language and skill*	0.002	0.040	0	1	26257
Agriculture	0.036	0.185	0	1	26257