Mismatch in the Graduate Labour Market Among Immigrants and Second-Generation Ethnic Minority Groups

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Abstract: This paper uses graduate survey data and econometric methods to estimate the incidence and wage effects of over-education and overskilling among immigrant and ethnic minority graduates from UK universities. The paper empirically demonstrates that immigrant and second-generation ethnic minority graduates were no more likely to experience education or skill mismatch relative to their native counterparts. Furthermore, graduates from immigrant and ethnic minority backgrounds incurred overeducation and overskilling wage penalties that lie well below the level incurred by native graduates. The research stresses the importance of controlling for the effects of location-specific human capital and sample selection when undertaking studies of this nature.

JEL Classification: J21, J31, J61

Keywords: Overeducation, overskilling, ethnic minorities, immigrants.

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Introduction

To date, the position of migrants and ethnic minority groups in the UK labour market has attracted considerable attention (Lindley, 2009; Kucel and Byrne, 2008; Dex and Lindley, 2007; Battu and Sloane, 2004; Alpin et al., 1998; Blackaby et al., 1998, 1999, 2002, 2005; Bell, 1997; Duncan and Hoffman, 1981; Chiswick, 1980). These studies have produced conflicting findings regarding the labour market outcomes of migrants and ethnic minority groups. On the one hand, a body of work has empirically demonstrated that both migrants and specific ethnic minority groups occupy an unequal and disadvantaged position in the labour market in terms of higher unemployment rates, lower earnings and higher rates of over-education (Blackaby et al., 1998, 1999, 2002, 2005; Duncan and Hoffman, 1981; Alpin et al., 1998; Battu and Sloane, 2004; Kucel and Byrne, 2008; Lindley, 2009). Alternatively, a number of studies have found that on average, migrants perform better than natives in the UK labour market, both in terms of higher employment and earnings (Bell, 1997; Clark and Lindley, 2005). However, while these studies find that migrants perform better, clear ethnic differences exist, with non-white migrants tending to perform worse, compared to both white natives and white migrants (Clark and Lindley, 2005).

More recently, studies have begun to draw a distinction between migrants and post-first generation/second-generation/native ethnic minorities[1] (see for example Borjas, 1994, 2006 in US; Connor et al., 1996; Blackaby et al., 2002, 2005; Dustmann and Theodoropoulos, 2006 in the UK; Messinis, 2008a, 2008b in Australia). These studies generally find that native ethnic minorities appear to be facing continued disadvantage and may be more vulnerable to the intergenerational transmission of disadvantage. Connor et al., (1996) report that native ethnic minority graduates are most likely to be discriminated against by employers. Blackaby et al., (2002, 2005) find that native

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[1] Henceforth this grouping will be referred to as native ethnic minorities.

ethnic minorities appear to be faring little better than their parents, and in reporting their findings, are generally pessimistic of the potential of British-born non-White ethnic minorities in particular to escape disadvantage. Dustmann and Theodoropoulos (2006) compare different ethnic minority groups born in Britain to their parents' generation and to equivalent groups of white native born individuals. While British-born ethnic minorities are on average more educated than their parents and more educated than their white native born peers, they (as well as ethnic minority immigrants) exhibit lower employment probabilities than their white native born peers. However, British born ethnic minorities appear to have slightly higher wages than their white native born peers.

A number of explanations have been offered in the literature to explain differences between native ethnic minority groups, white native groups and migrant groups in the labour market. On the one hand, it has been argued that native ethnic minorities occupy a more advantaged position than migrants, which rests largely on the notion that native ethnic minorities have experienced pre-labour market assimilation in the UK education system. Given this earlier exposure to the language and culture of the UK, one might expect that these graduates would have outcomes that are closer to their native counterparts than to migrants who enter the labour market directly (Kossoudji, 1989; Blackaby et al., 2002). Blackaby et al., (2002) argue that native ethnic minority groups may occupy a more advantaged position in the labour market relative to migrants because of anti-discrimination laws. Furthermore, Messinis (2008a, 2008b) in Australia argues that when native ethnic minority groups have proficiency in the national language as well as a second language, they may be able to outperform co-workers, based on the enabling properties of a foreign language (exploit trade advantages, access new ideas, access tacit knowledge, build complementary skills and human capital). In contrast, it has also been argued that native ethnic minority groups may not have derived the full benefits of a domestic education in that they may be more likely than white natives to have experienced an inferior quality of education which would explain lower returns to education (Blackaby et al., 2002, 2005; Dustmann and Theodoropoulos, 2006). Lower employment probabilities have also been explained in terms of less and inferior job offers because of possible discrimination. Furthermore, the role of unobserved characteristics such as motivation may also play a role. Blackaby et al., (2002, 2005)

make the point that integration may have come at a cost in terms of lower motivation to succeed which was found in their parents, as studies consistently show that migrants are motivated and are of relative higher ability (Chiswick 1978; Carliner 1980; Borjas 1994). Clark and Lindley (2005) placed emphasis on migrants who arrive in the UK to complete their education and found that assimilation is particularly strong for white migrants relative to non-white migrants, but did not compare them to native ethnic minority groups.

The mismatch literature generally reports that migrant groups tend to be over-represented amongst the overeducated. Evidence from Australia suggests that native ethnic minority groups also tend to be over-represented amongst the overeducated and overskilled (see Messinis, 2008a, 2008b)[2]. This literature suggests that the consequences of over-education on earnings are mostly negative. A number of studies have empirically demonstrated that the return to over-education is associated with a pay penalty (Sicherman, 1991; Sloane, Battu and Seaman, 1999; Dolton and Vignoles, 2000). Battu and Sloane (2004) find that for non-whites, the effect of over-education on earnings is larger for migrants compared to those born in the UK.

More recently, however, the mismatch literature has placed more emphasis on overskilling than on overeducation (Mavromaras, McGuinness and Fok, 2009; McGuinness and Sloane 2009; McGuinness and Wooden, 2009; Mavromaras et al., 2007). Overskilling is defined as the situation where an employed worker reports that their skills are not fully utilised in their job. Studies to date report a number of adverse outcomes resulting from overskilling in terms of lower earnings, especially for university graduates. However, to date, little attention has been placed on labour market mismatch and migrant and native ethnic minority groups.

Explanations for ethnic differences in education mismatch tend to centre around labour market discrimination. On the one hand, some commentators argue that ethnic differences in over-education are a result of discrimination. If migrant and ethnic minority groups find it more difficult to acquire any job, they may well be more likely

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[2] Messinis examines the incidence of overeducation and overskilling amongst second generation Greek-Australian and Italian-Australian full-time workers and suggests that second generation Greek-Australian workers are over-represented amongst the overeducated and overskilled.

to take a job that is not commensurate with their qualifications, so that a higher proportion of non-whites end up over-educated. With the level of educational attainment rising amongst ethnic groups as a whole and with ethnic students being comparatively well represented in higher education (Owen et al. 2000), discrimination, if reflected in greater over-education and thus lower earnings, may place doubts on the importance of human capital attainment as an avenue for escaping disadvantage (Leslie and Drinkwater, 1999). In contrast, others argue that ethnic differentials in over-education may be observed without necessarily attributing this to labour market discrimination (Lindley, 2009). There may be differences in the 'quality' of education received in terms of subjects, grades and institutions attended (Bhattacharyya, Ison and Blair 2003; Jones and Elias, 2005). In addition, some workers may have lower levels of job experience to compensate, so that skills and experience are also important (Sicherman, 1991). Furthermore, migrants are likely to possess much lower levels of UK labour market experience on average. Differences in over-education may also be a consequence of career mobility, since some higher educated workers may be in the early stages of their career and awaiting accelerated progression (Dex and Lindley, 2007).

This paper contributes to the current migration literature on a number of levels. First, it considers and compares the labour market position of migrants, native ethnic minority groups born in the UK and white natives. Second, it specifically considers the returns to location specific human capital for native ethnic minority groups and migrants. That is, it considers the outcomes of graduates from UK universities who have stayed to work in the UK post-graduation. Migration studies have pointed to the importance of the location in which the human capital was acquired; in the country of origin or in the host country. To date, a number of studies have emphasised the differential returns to location-specific human capital, with human capital that is acquired in the host country demonstrating positive returns (Bell, 1997; Shields and Wheatley Price, 1998). While previous studies may have restricted exploration of the labour market position of migrants and ethnic minority groups to those who have attained UK qualifications (see for example Lindley, 2009), this study provides a more ready comparison of a homogenous population, comparing like with like, by focusing on the graduate labour market. Fourth, this paper extends the literature on

the labour market position of this group to consider both education and skill mismatch, as well as the consequences of mismatch for migrants, natives and native ethnic minority groups. Finally, this paper provides more rigorous econometric testing of labour market outcomes in relation to wages, mismatch and ethnicity. Few studies have accounted for selectivity bias in labour market studies of migrants and ethnic minorities (for exceptions see Blackaby et al., 2002). In terms of wages, our primary interest is to determine whether migrants or members of native ethnic minority groups experience a wage differential relative to natives. Previous research on the relative wages of migrants in the United Kingdom implies that white migrants earn as much as their native counterparts, with evidence of an earnings penalty for non-white migrants (Chiswick 1970; Blackaby et al., 1994; Shields and Wheatley Price, 1998; Clark and Lindley, 2005). Furthermore, we are also interested in whether education or skill mismatch result in a wage penalty and if this differs for migrants or members of native ethnic minority groups. While McGuinness and Sloane (2009) have used the reflex data to find substantial pay penalties associated with both overeducation and overskilling, they make no reference to either migrants or graduates from ethnic minorities in their study.

Data and Methods

The Flexible Professional in the Knowledge Society (REFLEX) project was financed as a Specific Targeted Research Project (STREP) of the European Union's Sixth Framework Programme covering 15 countries. It is limited to graduates in the 1999/2000 academic year, who were interviewed five years later in 2005. We focus on UK graduates only for a number of reasons. Firstly, at 10 per cent of the total, the UK is the only country within the dataset with a workable population of migrants. Second, the UK is somewhat atypical in having the highest proportion of graduates in any of the countries in the survey failing to utilise their skills, thus leaving open the possibility of disproportionate effects among migrants and graduates from ethnic minorities. Third, the UK sample consists mainly of those with a bachelors degree, while in many other countries the sample consists mainly or wholly of those with a masters degree. This means that the UK graduates tend to have spent less time in higher education and will therefore have greater levels of labour market exposure (see Brennan, 2008).

To date all studies of mismatch and immigration \ ethnicity have focused exclusively on overeducation, however, there is an emerging strand of literature which argues that overskilling is a much more dependable measure of mismatch (Mavromaras et al., 2007, Mavromaras et al., 2009, McGuinness and Wooden, 2009). Overeducation has been criticised on the grounds that it represents a relatively imprecise measure of skill mismatch whereby education proxies individual human capital, and job entry requirements proxy the skill requirements of the job. Clearly individual human capital can be accumulated through both formal and informal means, thus overeducation ignores skills acquired while on-the-job. Similarly, in a world of rising educational attainment and credentialism, job entry requirements represent an increasingly imprecise measure of job complexity. It has also been argued that overeducated workers may be of lower ability and that the observed pay penalty merely reflects this, suggesting that studies of overeducation are heavily affected by unobserved individual heterogeneity bias. Arguably overskilling, which directly compares actual human capital, whether that be acquired formally or informally or related to innate ability, with actual job requirements overcomes all of the measurement problems associated with overeducation and, is therefore, potentially a much more robust measure of mismatch.

In terms of the individuals selected for this study, we restrict our sample to employees domiciled within the UK who were in full-time study prior to graduation. So as not to confound the impacts of immigration and ethnicity we restrict our ethnic minority grouping to non-migrants, consisting of individuals who were born in the UK. Subsequent to these restrictions our sample falls to 1,044 with migrants and native ethnic minorities each accounting for 6.7 per cent of the total. Within the data individuals were defined as overeducated if they indicated that a below tertiary level of education was most appropriate for the job. Overskilling was based on the response to a question asking individuals to rate on a 1 to 5 scale[3] the extent to which their skills and knowledge were utilised in their work with a response of 1 or 2 deemed consistent with overskilling.

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[3] Where 1 was 'not at all' and 5 to 'a very high extent'.

The obvious advantage of our dataset is that it enables us to study the relative impacts of both overeducation and overskilling among immigrant and native ethnic minority graduates controlling for the effects of location specific human capital. The obvious drawback of the data is that the relatively small sample size does not allow us to disaggregate our data in terms of country of origin or ethnic background. Nevertheless, we believe that the study makes an important contribution on the grounds of the robustness of the estimates presented.

Results

Table 1 reports the incidence of overeducation among migrants and native ethnic minorities relative to native white British graduates[4]. Mismatch is reported for both first and current job. There is no evidence that migrant graduates or those from native ethnic minority groups are more prone to mismatch, in fact, the incidence of both overeducation and overskilling on initial entry to the labour market are somewhat lower than for those from white British backgrounds, and this is particularly the case for overskilling among native ethnic minorities. The pattern changes somewhat with respect to current job, with migrants now somewhat more likely to be overskilled and ethnic minority graduates converging to the native mean. However, it is still unclear that any statistically significant differences exist.

[Insert Table 1 here]

To explore the matter further we estimate probit models for both overeducation and overskilling in current job. We adopt a forward stepwise approach to ensure the stability of our models. The overeducation equation is reported in Table 2.

[Insert Table 2 here]

The coefficients are relatively stable across specifications indicating that our results are not affected by multi-collinearity bias. The model reveals that an individual's single most important determinant of overeducation in current employment is

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[4] Henceforth this grouping will be referred to as natives.

overeducation in their first job, thus confirming earlier research that supports the notion of overeducation as a non-transitory phenomenon (see McGuinness, 2007). Interestingly, current overeducation was not associated with initial overskilling[5]. With respect to the other variables in the model, overeducation was found to be positively correlated with previous unemployment and inversely related to field mismatch, participation in a degree programme perceived as prestigious, and employment in an R&D intensive firm. Regarding the mismatch variables, crucially, there was no evidence to suggest that graduates from either migrant or native ethnic minority backgrounds were more likely to be overeducated; in fact, the coefficient on native ethnic minority is actually negative and significant.

The results of the overskilling model are reported in Table 3. The model results are similar to those in Table 2 with past mismatch again proving to be the most important determinant of current overskilling. The incidence of overskilling was found to be higher among males and older workers, while it was inversely related to labour market experience, field mismatch, course prestige, R&D intensity and having a supervisory role. The coefficients on immigrant and native ethnic minority were both insignificant. The results from both the overeducation and overskilling equation tend to contradict the findings of previous research, which reported higher overeducation incidences among both migrants and ethnic minorities. The results potentially demonstrate that when we control for location specific human capital no differences are evident, suggesting that previous studies may have been affected, at least to some extent, by individual unobserved heterogeneity bias.

[Insert Table 3 here]

However, that is not to say that we can state with certainty that the results reported in Tables 2 and 3 are fully robust. The issue of selection bias must be considered, a point also generally ignored within the existing literature. We need to account for the possibility that immigrants or native ethnic minority are not randomly distributed in terms of their characteristics. If it transpires, for example, that either group possess

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[5] It should be noted that the results remain stable when the controls for mismatch in initial employment are omitted from the models.

characteristics that raise their ex-ante probabilities of mismatch, then failure to account for such differences will result in an over-estimate of their exposure to overeducation and/or overskilling. Barrett et al., (2008) demonstrate that observed immigrant pay penalties within the general Irish labour market adjust significantly when account is taken of sample selection bias. In this paper we address the issue of sample section through propensity score matching, whereby the principal characteristics of immigrants and native ethnic minorities are initially identified through a probit model. Immigrants and native ethnic minorities are then matched on the basis of their predicted probabilities, or propensity scores, with native graduates holding similar characteristics. The overeducation and overskilling incidences of the two groups are then compared. In terms of the matching technique adopted, we apply Nearest Neighbour with replacement. The results from the stage 1 probit models reveal some differences relative to the native base case. That is, migrants tend to be older with lower levels of labour market experience, are more likely to have experienced a previous spell of unemployment, and to have obtained a degree in the social sciences. Relative to the base case, graduates from native ethnic minorities were more (less) likely to study on a programme that was known to employers (science)[6]. Tests revealed that we were able to successfully match our treatment and control groups on all key covariates.

[Insert Table 4 here]

The results of the matching are reported in Table 4 and are broadly consistent with those of the probit models (Tables 2 and 3) with the exception of the native ethnic minority\overeducation relationship which is no longer significant. The finding of no strong selection effect is perhaps not entirely surprising in the current context, as the uniformity of UK university admittance procedures will have left it less likely that any particular sub-population will vary substantially from the mean. However, this is not to say that the issue is irrelevant for all studies as obviously selection will be a more serious concern in instances where acquired education is not specific to a particular country, or where the sample is not specific to a single level of education. Nevertheless, after controlling for selection our earlier finding that native ethnic

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[6] Results available from the authors.

minorities or migrants are no more likely to be mismatched relative to their native counterparts holds.

Having established that migrant\native ethnic minority graduates do not have higher probabilities of educational or skill mismatch, we next test the hypothesis that graduates from migrant\native ethnic backgrounds incur larger pay penalties when overeducated and overskilled. The issue of selection bias is again considered, however, propensity score matching is no longer appropriate. While the PSM approach allows to assess, for example, the extent to which migrants earn lower wages per se, the framework is less useful for assessing the extent to which migrants who are overeducated earn less. As an alternative we estimate a treatment model. The model which can be written as follows

$$\ln Y_i = \beta' X + \varepsilon_{1i} \qquad\qquad (1)$$

$$e_i^* = \delta' Z + \varepsilon_{2i} \qquad\qquad (2)$$

Equation one represents a current wage equation with log earnings determined by a matrix of personal and/or job characteristics (X) while equation 2 measures the probability that the individual is from an migrant\native ethnic minority background given another vector of observed explanatory variables (Z). ε_{1I} and ε_{2I} are the mean-zero stochastic errors representing the influence of unobserved variables affecting each equation.

In this instance selection bias becomes an issue in the event of the unobserved error terms ε_{1I} and ε_{2I} from both equations being correlated i.e. individuals with higher/ lower expected earnings are most likely to come from migrant\native ethnic minority backgrounds.

Assuming that both error terms are drawn from a bivariate normal distribution, the following regression equation can be derived to include a selection control term which generates unbiased estimates of the latent migration\native ethnic minority dummy within the wage equation:

$$E(Y_i \setminus e_i) = \beta' X + \rho \sigma_1 \lambda_i \qquad (3)$$

Where ρ is the correlation coefficient between ε_1 and ε_2, σ_1 is the standard deviation of ε_1 in equation 1 whilst λ_i the Inverse Mills Ratio (IMR) is given by

$$\lambda = \phi(\delta'Z) / \Phi(\delta'Z) \text{ for } e_i = 1 \quad (4)$$

$$\lambda = -\phi(\delta'Z) / [1 - \Phi(\delta'Z)] \text{ for } e_i = 0 \quad (5)$$

Where ϕ and Φ are density and distribution functions of the standard normal distribution.

From a practical perspective, to ensure that models of this nature are correctly identified, equation 2 must contain at least one variable that is absent from equation 1 and the selected instruments should have some theoretical foundation (Himler, 2001). In this model we include controls for time spent abroad and cohabitation status while studying as clearly these will tend to vary more for migrants\native ethnic minorities. Generally our selected identification instruments perform well.

[Insert Table 5 here]

Table 5 presents the results from our wage equations. The hypothesis that the costs of mismatch are lower for native graduates is tested using an interaction term between the immigrant\native ethnic minority dummies with the mismatch variables, which can then be compared to the mismatch level terms in the model. We again adopt a forward stepwise approach, moving from our basic wage model in specification 1 to a model including both interaction terms and selection controls in specification 4. The wage models are well specified and generally conform to expectations. Males have higher earnings than females and earnings increase with labour market experience, however, the absence of faculty effects (field of study) is somewhat of a surprise suggesting that such influences decline rapidly over time. However, it is also possible that such effects are also being captured by the variables measuring course prestige,

employer recognition and vocational content. Earnings were found to increase with hours worked and degree class, and were higher for those graduating from prestigious courses and employed in larger firms. Earnings declined with a previous history of unemployment and public sector employment. With respect to the mismatch variables, the results are in line with those reported by McGuinness and Sloane (2009) with the overeducation pay penalty averaging 36 per cent relative while overskilling is associated with a 10 per cent wage cost. However, the overskilling effect is only significant at a 90 per cent confidence level.

The interaction terms were not significant in any of the specifications, indicating that immigrant and native ethnic minority graduates, when mismatched, do not incur any pay penalty relative to the base case which consists primarily of matched natives. Thus the results from this study suggest that mismatched graduates from immigrant and ethnic minority backgrounds do much better that native graduates who are overeducated and\or overskilled. The selection terms are again insignificant and do not change the results of the model, a finding consistent with the weak selection effects detected using the propensity score framework. However, we cannot discount the possibility that the insignificance of the interaction terms relate to larger standard errors that are a consequence of the relatively small numbers of immigrants and ethnic minority graduates in our sample. Thus, in a more extensive population, it may be the case that the negative impacts observed for overeducation may, in fact, be significant. However, even if this were the case, the penalty for both groups lies well below the level incurred by native graduates. With respect to overskilling the coefficients are actually positive suggesting that even in a larger sample, the finding of a zero pay penalty to will hold. Exactly why graduates from immigrant\ethnic minority backgrounds fail to incur wage penalties when overskilled is unclear. It may be the case that such graduates make more extensive use of social networks when seeking employment and that this enables them to successfully counter the negative wage effects of skill mismatch, however, this will remain a matter for further research.

Summary and Conclusions

This paper assesses the impact of overeducation and overskilling on graduates from immigrant and post-first generation ethnic minority backgrounds. The research is unique in that it represents the first study of overskilling among immigrant and native ethnic minority populations. Furthermore, the analysis can be considered particularly reliable in that it controls for potential biases relating to non-location specific human capital and sample selection. Contrary to the findings of existing research, the study found that immigrant and native ethnic minority graduates were no more likely to experience education and/or skill mismatch relative to their native counterparts. While previous studies have explained ethnic differences in education mismatch in terms of labour market discrimination, we find no evidence of disparities in the incidence of mismatch between these graduates. Furthermore, the results suggest that overeducated graduates from immigrant\native ethnic minority backgrounds incur overeducation wage penalties that are, at worst, well below those of their native counterparts and, at best, zero. With respect to overskilling, there was no evidence to suggest that immigrant\native ethnic minority graduates incurred any wage penalty when mismatched. It is hypothesised that this result is potentially a consequence of the greater use of social networks by immigrant\ethnic minority graduates; however, this cannot be validated using the current dataset.

With respect to methodology, while there was little evidence of sample selection bias here, it is important that this factor be accounted for in studies using more heterogeneous populations. The issue of location specific human capital appears crucial in this context, and we contend that failure to control for this may be the underlying factor driving the results of previous studies. Given that the quality of education will vary internationally and, not withstanding this, many immigrants educated outside the UK to degree level may still experience language difficulties, it does not seem reasonable to assume that levels of human capital are constant across all graduates. The absence of substantial negative impacts here suggests that previous studies may have been potentially affected by biases related to individual unobserved heterogeneity.

Table 1: Incidence of Mismatch by Ethnic \ Migrant Background

	UK - White	Migrants	Ethnic
Overeducated 1st Job	0.379	0.333	0.304
Overeducated Current Job	0.342	0.304	0.319
Overskilled 1st Job	0.153	0.159	0.087
Overskilled Current Job	0.139	0.188	0.130

Table 2: Probit Model of Overeducation in Current Job

	Equation 1	Equation 2	Equation 3
Overeducated 1st job	0.21***	0.17***	0.16***
	(0.03)	(0.03)	(0.03)
Overskilled 1st job	0.03	-0.01	-0.01
	(0.03)	(0.02)	(0.02)
Male	0.05*	0.03	0.03
	(0.02)	(0.02)	(0.02)
Experience	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)
Age	0.00***	0.00**	0.00**
	(0.00)	(0.00)	(0.00)
Education/Humanities	0.01	-0.01	-0.01
	(0.05)	(0.04)	(0.04)
Social Sciences	0.00	-0.01	-0.01
	(0.05)	(0.04)	(0.04)
Science	0.00	-0.00	0.00
	(0.05)	(0.04)	(0.04)
Engineering	-0.07*	-0.05	-0.05
	(0.04)	(0.04)	(0.03)
Masters Degree	0.00	0.04	0.03
	(0.05)	(0.05)	(0.05)
First Class Honours	-0.02	0.02	0.01
	(0.04)	(0.04)	(0.04)
Two One	-0.03	-0.01	-0.01
	(0.02)	(0.02)	(0.02)
Unemployment Duration	0.08***	0.05**	0.04*
	(0.02)	(0.02)	(0.02)
Migrant	-0.00	0.02	0.02
	(0.04)	(0.04)	(0.04)
Native Ethnic Minority	-0.07**	-0.04*	-0.04*
	(0.03)	(0.03)	(0.02)
Employers Familiar with Course Content		0.04	0.04
		(0.03)	(0.03)
Course Academically Prestigious		-0.06***	-0.06***
		(0.02)	(0.02)
Course Vocationally Orientated		-0.02	-0.02
		(0.02)	(0.02)
High Field-Study Match		-0.12***	-0.11***
		(0.02)	(0.02)
Moderate Field-Study Match		-0.16***	-0.14***
		(0.02)	(0.02)
Average Working Hours per Week			-0.00
			(0.00)
Intensive Research & Development			-0.03*
			(0.02)
50-99 Employees			-0.04
			(0.03)
100-249 Employees			-0.05*
			(0.02)
250-999 Employees			0.01
			(0.03)
1000+ Employees			0.02
			(0.02)
Public Sector			-0.02
			(0.02)
Number of Employers			0.00
			(0.01)
Supervisor Position			-0.01
			(0.02)
Observations	938	938	935

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3: Probit Model of Overskilling in Current Job

	Equation 1	Equation 2	Equation 3
Overeducated 1st Job	0.02	0.00	0.01
	(0.03)	(0.02)	(0.02)
Overskilled 1st job	0.16***	0.11***	0.10***
	(0.03)	(0.03)	(0.03)
Male	0.06***	0.05***	0.05**
	(0.02)	(0.02)	(0.02)
Experience	-0.00**	-0.00**	-0.00*
	(0.00)	(0.00)	(0.00)
Age	0.00**	0.00*	0.00*
	(0.00)	(0.00)	(0.00)
Education/Humanities	0.02	0.01	0.01
	(0.05)	(0.04)	(0.04)
Social Science	0.01	-0.01	0.00
	(0.05)	(0.04)	(0.04)
Science	-0.01	-0.01	-0.00
	(0.05)	(0.04)	(0.04)
Engineering	-0.04	-0.01	-0.02
	(0.05)	(0.05)	(0.05)
Health	-0.10***	-0.06	-0.05
	(0.03)	(0.04)	(0.04)
Masters Degree	-0.03	0.01	0.01
	(0.04)	(0.04)	(0.04)
First Class Honours	-0.01	0.02	0.01
	(0.04)	(0.04)	(0.04)
Two One	-0.04*	-0.02	-0.02
	(0.02)	(0.02)	(0.02)
Unemployment Duration	0.06**	0.04*	0.04*
	(0.02)	(0.02)	(0.02)
Migrant	0.04	0.05	0.04
	(0.04)	(0.04)	(0.04)
Native Ethnic Minority	-0.00	0.01	0.01
	(0.04)	(0.04)	(0.04)
Employers Familiar with Course Content		0.02	0.02
		(0.02)	(0.02)
Course Academically Prestigious		-0.05***	-0.05***
		(0.02)	(0.02)
Course Vocationally Orientated		-0.01	-0.01
		(0.02)	(0.02)
High Field-Study Match		-0.11***	-0.10***
		(0.02)	(0.02)
Moderate Field-Study Match		-0.13***	-0.13***
		(0.02)	(0.02)
Average Working Hours per Week			0.00
			(0.00)
Intensive Research & Development			-0.04**
			(0.02)
50-99 Employees			-0.02
			(0.03)
100- 249 Employees			-0.03
			(0.03)
250- 999 Employees			0.00
			(0.03)
1000+ Employees			0.02
			(0.02)
Public Sector			-0.03*
			(0.02)
Number of Employers			-0.00
			(0.01)
Supervisor Position			-0.04**
			(0.02)
Observations	1005	1005	1002

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 4: Results of Propensity Score Models

	Overeducated Current Job	Overskilled Current Job
Native Ethnic Minority	-.063	.015
	(-1.18)	(.027)
Migrant	0.00	.061
	(0.00)	(0.84)

T-Statistics in parentheses

Table 5: Wage Equations (log wages)

	Equation 1	Equation 2	Equation 3	Equation 4	Equation 5
Overeducation 1st Job	-0.05	-0.05	-0.05	-0.05	-0.04
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Overskilled 1st Job	0.02	0.02	0.02	0.02	0.03
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Male	0.07**	0.08**	0.08**	0.08**	0.07**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)
Experience	0.01***	0.01***	0.01***	0.01***	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Age	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Education/Humanities	-0.09	-0.09	-0.09	-0.09	-0.09
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Social	0.06	0.06	0.06	0.06	0.01
	(0.07)	(0.07)	(0.07)	(0.07)	(0.08)
Science	0.09	0.09	0.09	0.09	0.09
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Engineering	0.03	0.03	0.03	0.03	-0.01
	(0.09)	(0.09)	(0.09)	(0.10)	(0.10)
Health	0.10	0.10	0.10	0.10	0.06
	(0.09)	(0.09)	(0.09)	(0.09)	(0.10)
Masters Degree	0.12*	0.12*	0.12*	0.12*	0.08
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
First Class Honours	0.08	0.08	0.08	0.08	0.10
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Two One	0.06*	0.06*	0.06*	0.06*	0.06
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Unemployment Duration	-0.07*	-0.07*	-0.07**	-0.07*	-0.08**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)
Migrant	0.03	0.04	0.03	0.04	0.43
	(0.06)	(0.07)	(0.06)	(0.07)	(0.53)
Native Ethnic Minority	0.07	0.07	0.08	0.08	0.66*
	(0.06)	(0.06)	(0.07)	(0.07)	(0.40)
Employers Familiar with Course Content	0.04	0.03	0.04	0.04	0.04
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Course Academically Prestigious	0.09***	0.09***	0.09***	0.09***	0.09***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Course Vocationally Orientated	0.03	0.03	0.03	0.03	0.03
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
High Field-Study Match	-0.04	-0.04	-0.04	-0.04	-0.04
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Moderate Field-Study Match	-0.05	-0.05	-0.05	-0.05	-0.05
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Average Working Hours per Week	0.02***	0.02***	0.02***	0.02***	0.02***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Intensive Research & Development	0.01	0.01	0.01	0.01	0.01
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
50-99 Employees	0.08	0.08	0.08	0.08	0.08
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
100- 249 Employees	0.07	0.07	0.07	0.07	0.07
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
250- 999 Employees	0.07	0.07	0.07	0.07	0.06
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
1000+ Employees	0.12***	0.12***	0.12***	0.12***	0.12***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Public Sector	-0.11***	-0.11***	-0.11***	-0.11***	-0.11***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Number of Employers	-0.01	-0.01	-0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Supervisor Position	0.07**	0.07**	0.07**	0.07**	0.07**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Overeducated Current Job	-0.35***	-0.34***	-0.34***	-0.33***	-0.33***
	(0.05)	(0.06)	(0.05)	(0.06)	(0.06)
Over Skilled Current Job	-0.09*	-0.10*	-0.09*	-0.10*	-0.10*
	(0.05)	(0.05)	(0.05)	(0.06)	(0.06)

Overeducated Current Job*Migrant		-0.12		-0.13	-0.16
		(0.18)		(0.18)	(0.18)
Overskilled Current Job*Migrant		0.07		0.07	0.08
		(0.17)		(0.17)	(0.17)
Overeducated Current Job*Native Ethnic			-0.13	-0.14	-0.13
			(0.28)	(0.28)	(0.28)
Overskilled Current Job*Native Ethnic			0.01	0.02	0.02
			(0.21)	(0.21)	(0.21)
λ immigrant					-0.19
					(0.25)
λ ethnic					-0.29
					(0.20)
Constant	6.53***	6.53***	6.53***	6.53***	6.47***
	(0.15)	(0.15)	(0.15)	(0.15)	(0.16)
N	961	961	961	961	961
R-squared	0.33	0.33	0.33	0.33	0.33

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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