How do NMS immigrants fare within the enlarged EU labour market?
The case of Ireland

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Abstract.

This paper explores the relationship between occupational downgrading and the wages of NMS immigrants to Ireland by taking advantage of two data sources, the Irish Census and the Survey on Income and Living Conditions. The study identifies biases in SILC that dampen the estimated earnings disadvantage of NMS immigrants. Correcting population weights that match SILC against the Census are suggested. These have a significant impact on results for NMS immigrants, increasing both the size of their wage penalty and the extent to which their wage gap can be explained by occupational downgrading. The corrected wage penalties identified for Ireland are comparable to recently published results for the UK.

1. Introduction

The accession of the New Member States (NMS) to the European Union in 2004 was followed by unprecedented migratory flows of workers from the newly joined countries to the rest of the Union. [1] These large labour movements represent a stark departure from the generally small migratory trends observed over the preceding 30 years within the EU (Dobson and Sennikova, 2007). Moreover, the more liberal immigration policies implemented by Ireland, Sweden and the UK in the immediate post-accession period and the general popularity of English as a foreign language contributed to the direction of these migratory flows (see also Barrell, FitzGerald and Riley 2010, Kaczmarczyk and Okolski, 2008). Ireland and the UK witnessed by far the sharpest rise in immigration from Poland and the Baltic countries, as a result.

[1] The new countries that joined the European Union in May 2004 were the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia, as well as Malta and Cyprus.

These migratory flows have motivated a vibrant body of research. This paper focuses on the associated issue of the labour market experience of immigrants from the NMS to Ireland. Two approaches have been considered in the literature to asses the labour market outcomes of immigrants to Ireland. One approach examines the wages that immigrants receive in the Irish labour market. Several studies report that workers from the NMS experience a large wage penalty, compared to other immigrant groups and native workers (Barrett and McCarthy 2007a, 2007b, Barrett, McGuiness and O'Brien 2008). Using quantile regressions, the analysis of Barrett, McGuiness and O'Brien (2008) further reports an earnings disadvantage that is higher at the upper end of the distribution, or for educated NMS workers. The authors attribute this divergence to a lack of location specific human capital including language skills or poor recognition of qualifications obtained in the NMS, which could be more important for the labour market outcomes of skilled workers. Other studies have instead looked at the influence of a migrant's country of origin on the probability of employment in high or low skill occupations. The occupational analyses of Barrett and Duffy (2008) and Turner (2010) report a significant degree of occupational downgrading for NMS immigrants, compared to other immigrant groups and to the native population, even after controlling for differences in variables such as age, gender and education.

Taken together, these findings suggest that the wage gap of NMS immigrants to Ireland, as reported in investigations based on Mincer-type wage regressions, could be attributable in part to the higher level of occupational downgrading experienced by this group of workers. I am aware of two studies that consider this proposition empirically. Results reported in Barrett, McGuiness and O'Brien (2008), based on the National Employment Survey (NES) 2006, support the hypothesis that occupational downgrading explains part of the wage penalty suffered by NMS workers in Ireland. Using data from SILC 2005, the study of Barrett and McCarthy (2007b), however, finds no significant effect of occupations on the wage gap of immigrants from non-English speaking countries.

To gain a better understanding of the potential role played by occupations in the labour market performance of NMS workers, the current study takes advantage of two complementary data sources: the Irish Census and the Survey on Income and Living Conditions (SILC). Indeed, a principal difficulty in conducting this analysis is that no single data source provides all of the information that is required. Although the Census may be taken as a reliable source for data that are representative of the population, it does not provide information regarding labour market histories or wages. In contrast, the Survey on Income and Living Conditions (SILC) contains detailed information on wages and labour market history, but understates the number of immigrants from non-English speaking countries who

work in low occupations, and *vice versa* for high occupations. Worryingly, this bias is particularly pronounced for immigrants from the NMS. Population weights are therefore proposed to match the occupation specific distribution of employees described by SILC to the Census. After adjusting SILC sample weights, the current analysis finds that occupational downgrading is an important factor accounting for the wage penalty of NMS immigrants to Ireland. These effects are particularly important for tertiary educated migrants from the NMS, who also experience the largest relative wage penalty. These results highlight the potential biases that can arise where survey data provides limited coverage and weighting methodology fails to capture key margins of interest, of particular concern in relation to the wages of immigrants that are reported by SILC.

The paper is organised as follows. Section 2 provides statistical background regarding the recent immigration and the economic context in Ireland. Section 3 provides an occupational analysis based on the 5% Sample of Anonymised Records (SAR) from the 2002 and 2006 Irish Censuses, which helps to inform interpretation of the associated wage regressions. Section 4 begins by setting out the relationship between SILC and census data before presenting wage regressions results. A brief comparison of the estimated wage penalties experienced by NMS workers in Ireland with recently published results for the UK is given in section 5, and section 6 concludes.

2. Immigrants to Ireland and the recent economic context

Ireland experienced strong economic growth during the 14 years to 2007, with growth rates averaging 9 percent per annum between 1994 and 2000, and 5 percent between 2001 and 2007. Coincident with this growth, was a 75 percent increase in the number of people employed in Ireland, to 2.1 million in 2007 (Maitre, Nolan and Voitchovsky 2010). The rise in employment was facilitated by a sudden increase in immigration to the country, following decades of emigration. According to recent Irish census data, the share of immigrants – defined as people born outside of Ireland – among the employee population increased dramatically, from 9 percent in 1996 to 21 percent in 2006 (see Table 1).

This decade and a half of growth, however, can be divided into two important phases, which are distinguished by the nature of growth, sectoral distribution of employment, demand for skills, and type of workers entering the labour market (Maitre, Nolan and Voitchovsky 2010, Barrett and Duffy, 2008). In the first part of the boom until the early 2000s, growth was fostered by high levels of foreign direct investment into technologically advanced industries. The attendant rise in demand for skilled workers was met in part by immigrants, who were generally higher educated relative to native workers. Initially, these immigrants mostly came

from English speaking countries like the UK or the US, and included a large number of former Irish emigrants returning to Ireland (Barrett, Bergin and Duffy, 2005, Barrett and Duffy, 2008). Added to a growing level of education among native workers entering the labour market, this influx of highly educated and skilled immigrants is credited to have helped slow the rise in top wages, keeping the country competitive and contributing to the decline in inequality in the first part of the boom (Barrett, FitzGerald and Nolan, 2002).

Table 1   Characteristics of working age population in Ireland, by year and country of birth

Country of birth	Share working for payment or profit			Share unemployed			Distribution of employees, by country of birth (col. %)		
	1996	2002	2006	1996	2002	2006	1996	2002	2006
Ireland	61.18	66.93	70.58	9.18	5.44	5.24	90.58	86.11	78.79
UK	60.56	67.95	70.90	12.24	6.27	5.91	7.15	8.11	7.67
US	60.36	58.91	62.37	7.34	4.24	3.84	0.59	0.63	0.58
NMS			85.10			4.45			6.56
Old EU	53.99	67.27	74.48	7.87	5.71	3.89	0.78	1.65	1.95
Other	56.62	58.68	60.55	8.30	10.09	9.83	0.90	3.51	4.44
Total (avg)	61.02	66.66	70.8	9.36	5.67	5.44	100	100	100
Data from the 5% Sample of Anonymised Records (SAR) of the 1996, 2002 and 2006 Censuses. Working age population (20 to 64).									

The later growth period witnessed a drop in foreign direct investments, accompanied by a rise in domestic demand and a boom in the construction sector. It also saw a gradual shift in the origin of immigrants to Ireland, from English to non-English speaking countries; see Table 1. [2] This was in part attributable to the accession of the New Member States in 2004, and Ireland's open border policy in common with Sweden and the UK. The increase in NMS immigrants after 2004 in Ireland was such that, in the 2006 Census, NMS workers are reported as the largest population of immigrants in the labour force after people born in the UK. [3] By country of origin, the second largest immigrant group in Ireland in 2006 (after the UK) was from Poland, followed by Lithuanians, Nigerians and Latvians being fifth most common.

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[2] In Table 1, immigrants from English-speaking countries other than the UK and the US are included in the 'Other' category. According to published tables from the 2006 Census, there were, however, relatively few immigrants from other English-speaking countries in Ireland. All persons born in Australia, Canada, New-Zealand and South Africa represented 0.6 percent of the total population aged 15 and over in 2006. For comparison, the same figure was, 0.7 percent for people born in the US and 7.3 percent in the UK.

[3] Prior to 2006, people who were born in the NMS countries appear in the 'Other' category in Table 1. Nevertheless, published tables from the Census indicate that NMS immigrants only started arriving in large numbers in Ireland from 2004. For example, the number of Poles and Lithuanians resident in Ireland in the 2002 Census represented less than 5 percent of their total numbers in the 2006 Census.

Table 2 Allocation of Personal Public Service Numbers (PPSN), by country of origin

	Average yearly number of PPSN allocated		% change in yearly allocation of PPSN between the 2 periods	Of all PPSN allocated between 2004-2006	
	2002-03	2004-07		% with employment (at any time) in 2007	% with no employment activity up to the end of 2007
UK	16284	16905	+ 1.7	32.5	52.1
US	2427	2777	+ 14.4	21.6	53.8
NMS (*)	9027	102418	+ 1034.6	62.1	17.2
Old EU	18563	22832	+ 23.0	37.6	24.9
Other countries	30529	25217	-17.4	49.2	32.1
Total	78942	170522	+ 116.0	53.2	25.0

Source: PPSN allocated to foreign nationals aged 15 and over, CSO. (*) excl. Bulgaria and Romania who joined the EU in 2007. Totals include numbers for Romania and Bulgaria. People with no employment history may have left the country without having been employed or be out of the labour force (retired, student, on home duties, etc.)

This sudden inflow of NMS immigrants to Ireland is also observable in the administrative records on Personal Public Service Numbers (PPSN), see Table 2. The PPSN is a unique reference number that is required when an individual is either employed or to gain access to public and social welfare services in Ireland. Figures in Tables 1 and 2 indicate that NMS workers exhibited a strong attachment to the labour force relative to other population groups to 2007, both in terms of employment rates and the average duration of time spent in work. This population sub-group has by far the highest proportion of people at work, even when compared to immigrants from other EU countries with similar working permit requirements. [4]

NMS immigrants, however, were generally less educated on average than previous immigrant cohorts or immigrants from other countries, see Table 3. As mentioned earlier, the share of the Irish population with higher education grew rapidly between the mid 1990s and mid 2000s. Compared to the Irish population in 2006, a larger proportion of immigrants from NMS had reached higher secondary education. Third level education is typically very high throughout the period among other immigrant groups. When looking at the working age population in 2006, 27 percent of people born in the UK, 56 percent of people born in the US, 52 percent of people born in the rest of the EU (excl. UK and NMS) and 44 percent of people

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[4] The lower proportion of people at work among the population born in other countries also reflects a higher proportion of asylum seekers, who are not allowed to work while their demand is considered. PPSN figures may hide some seasonality in employment pattern and include workers who return to Ireland every year to work for a period of time. These figures also do not take into account illegal immigrants.

born in the rest of the world had obtained a third degree. For NMS immigrants the average figure is 23 percent and obscures variations by country of origin. In 2006 more than a quarter of Polish immigrants (whose education was finished) had completed a third level degree. The average was slightly lower for Lithuanians with 23 percent indicating a third degree or higher, and reached 12 percent for Latvians.

Table 3   Highest level of education completed, by country of birth, (%)

Years	Education levels	Ireland	Country of birth				
			UK	US	NMS	Old EU	Other
1996	Third level - degree or higher	10.9	17.7	41.7	—	42.3	44.6
2002	Third level - degree or higher	16.2	24.4	52.8	—	50.9	41.8
2006	Third level - degree or higher	20.3	26.8	56.2	22.8	52.2	44.1
	Third level - non-degree	13.0	13.7	14.3	4.6	11.1	13.2
	High secondary	31.4	30.0	22.3	57.1	28.1	27.2
	Lower secondary	21.4	23.2	4.3	10.3	5.0	9.0
	Primary (or less)	14.0	6.3	2.9	5.2	3.6	6.4
Data from SAR 1996, 2002 and 2006. The samples are restricted to working age population (20 to 64)							

Therefore, in the second phase of the economic boom, and after 2004 in particular, Ireland experienced a change in the characteristics and composition of flows of immigrants (see also Barrett and Duffy 2008). Additionally, in contrast to the experience of earlier immigrant cohorts, NMS nationals found work mostly in low-skill occupations. Several factors suggest that their arrival coincided with a period strong demand for low-skill workers in Ireland. Maitre, Nolan and Voitchovsky (2010) show that hourly earnings in the lower part of the earnings distribution kept up with the median, and unemployment remained low up to 2007; this is in spite of an increase in workers employed in low skill jobs and the introduction (and subsequent increases) in 2000 of a national minimum wage, which was set at a relatively high level compared to other countries.

3. Occupational analysis

The analysis begins by investigating the occupational attainments of immigrants in the Irish labour market using data from the 5% random Sample of Anonymised Records (SAR) of the 2002 and 2006 Irish Censuses. Although the Census does not collect data on earnings or labour market experience, it provides a range of socio-economic variables as well as information on individuals' occupation. A major strength of the SAR micro dataset is its broad and representative coverage of the population living in Ireland and therefore of the

immigrant population as well. Moreover, the last two Censuses conducted in 2002 and 2006 allow for a comparison of economic and labour market conditions just before and after the arrival of NMS immigrants to Ireland (and prior to the financial crisis).

Related occupational studies, by Barrett and Duffy (2008) and Turner (2010), investigate immigrants' occupational attainment in Ireland using a gradation of 3 to 4 occupational categories based on the Irish social class classification. The present study considers instead a hierarchy of 7 occupation categories, based on the socio-economic group (SEG) variable. [5] The SEG based categorisation that is employed in this study serves two main purposes. First, the finer classification considered here is designed to capture more nuanced differences in occupations between native and immigrant employees, differences which are likely to carry over to the average hourly wage received. Wage statistics from the Survey on Income and Living Conditions (SILC) confirm that these 7 occupation categories do translate into higher average hourly wages. Second, this occupational classification provides a useful link between the Census and SILC datasets to help to correct for the biases identified in SILC data.

Two population groups identified by the SEG variable – the self-employed, and employees otherwise unidentified – are omitted from the analysis. [6] Farmers working as employees were aggregated with skilled manual workers, and agricultural workers were aggregated with unskilled workers. These adjustments reduced the original 11 groups in the SEG classification to 7 categories: 4 non-manual occupation groups – employers and managers, higher professionals, lower professional and non-manual – and 3 manual occupation groups – manual skilled, semi-skilled and unskilled.

Immigrant status is determined by the place of birth. To keep the analysis simple, countries of origin are grouped into four categories. A distinction is made between immigrants from English and non-English speaking countries in response to literature which suggests that workers from English speaking countries did not experience a wage penalty in the Irish labour market during the economic boom; see Barrett, McGuiness and O'Brien (2008), Barrett and

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[5] The Irish Socio-Economic Group measure, introduced in the 1996 Census, is an adaptation of the UK Standard Occupational Classification. "The code to which a person's occupation is classified is determined by the kind of work he or she performs in earning a living, irrespective of the place in which, or the purpose for which, it is performed. (…). For example, the occupation "clerk" covers clerks employed in manufacturing industries, commerce, banking, insurance, public administration, professions and other services, etc.", Appendix 2, Census 2006.

[6] The self-employed are omitted due to measurement problems in relation to their wages. Employees whose occupation was otherwise unidentified (all others gainfully occupied and unknown) account for roughly 6 percent of all employees. This population subgroup does not present systematic biases in terms of education, gender of country of birth but most of these individual records also have missing information on industry.

McCarthy (2007a, 2007b), Barrett, Bergin and Duffy (2005). The restricted information on countries of birth that is provided in the SAR dataset, however, does not allow the identification of all English-speaking countries separately. It is only possible to recognise people who were born in the UK and the US, but who form the largest share of immigrants from English-speaking countries in Ireland (see footnote 2). Immigrants from other identifiable non-English speaking countries are split between those who were born in the NMS and people born in the rest of the world. The latter group includes a small proportion of workers from the old EU (see Table 1), who enjoy different working rights from non-EU immigrants. Some results presented therefore differentiate between the outcomes of immigrants from the old EU and immigrants from the residual category labelled 'Other'.

The distribution of employees across occupations in 2002 and 2006, by country of birth, is represented in Chart 1. Relative to native employees, English speaking immigrants (born in the UK and US) tend to be over-represented in the employers/managers and higher professional SEGs, and under-represented in the lower occupations. The same configuration holds, to a lesser extent, for immigrants from the rest of the world (old EU and Other). By contrast, NMS employees are strongly under-represented in the top three occupational groups, working almost exclusively in the non-manual SEG and in all manual occupations in 2006. A closer look at occupational patterns further reveals that NMS employees tend to fill different types of positions within each occupational category (SEG), relative to native workers. Within the non-manual occupation group, for example, about 50 percent of native workers were employed in clerical, managing and government positions in 2006. The situation was very different for NMS immigrants, where 83 percent of those employed in non-manual occupations worked as sales representatives or in services. [7]

The average statistics reported in Chart 1, however, hide discrepancies in educational and other individual characteristics between population sub-groups. To take these differences into account, the model estimated in this section is the probability that an individual is employed in one of the 7 occupation categories (unskilled, semi-skilled, skilled manual, non-manual, lower professional, higher professional and managers), conditional on their personal characteristics. The results of multinomial logit regressions are reported in Table 4. [8]

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[7] Non-manual services include police officers, chefs, cooks, waiters, childminders, housekeepers, catering assistants, hairdressers, etc.

[8] A multinomial logit was estimated after the assumption of parallel regressions that underlies ordered categorical models was rejected (results not shown). Tests also rejected the hypothesis that different pairs of occupational categories could be combined (results not shown), see Long and Freeze (2006).

Chart 1 Distribution of immigrants and native employees, by occupation, %
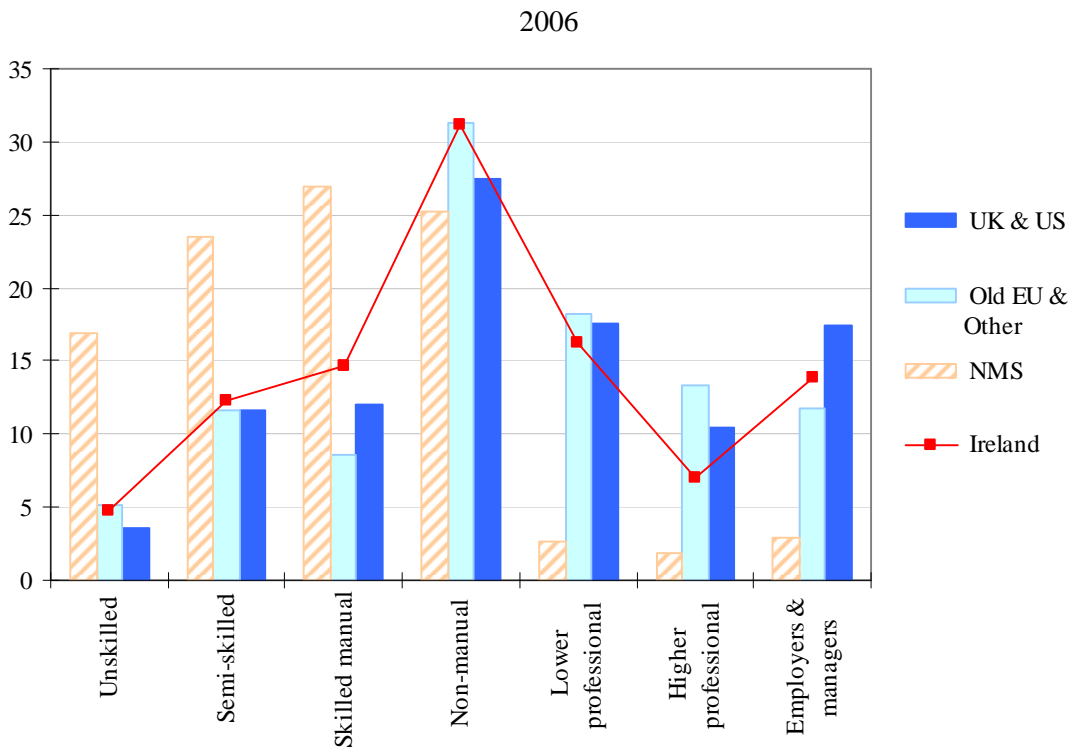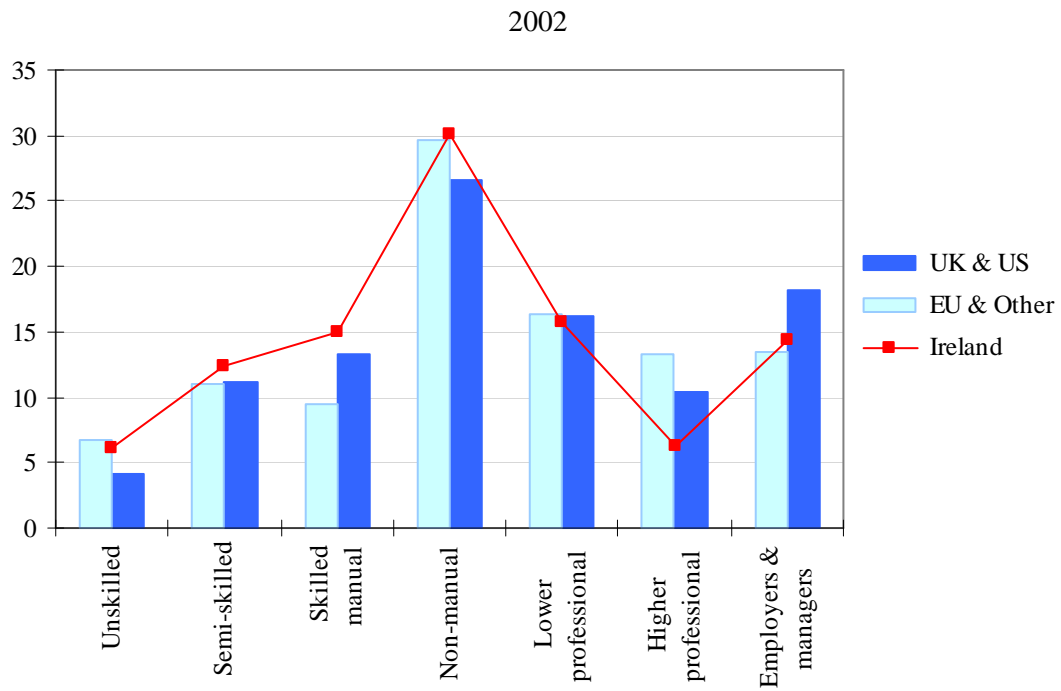
2002

2006

Source: SAR 2002 and 2006

Table 4   Influence of country of birth on the probability of occupational attainment, controlling for individual specific characteristics.

Country of birth	Unskilled	Semi-skilled	Manual skilled	Non-manual	Lower prof.	Higher prof.	Employers & managers
SAR 2006 - 71229 observations, McFadden's Adj R2: 0.292							
UK and US	**-0.005**	0.008	-0.003	-0.011	**-0.011***	**0.006****	**0.016****
	(0.003)	(0.007)	(0.003)	(0.009)	(0.005)	(0.002)	(0.006)
NMS	**0.179****	**0.212****	**0.051****	**-0.130****	**-0.118****	**-0.031****	**-0.163****
	(0.009)	(0.010)	(0.004)	(0.010)	(0.003)	(0.002)	(0.004)
Old EU	-0.003	**-0.073****	**-0.025****	**0.167****	**-0.026****	**-0.006***	**-0.035****
	(0.008)	(0.011)	(0.005)	(0.018)	(0.009)	(0.003)	(0.010)
Other countries	**0.068****	**0.118****	0.007	**-0.033****	**-0.049****	**-0.008****	**-0.103****
	(0.009)	(0.012)	(0.005)	(0.012)	(0.005)	(0.002)	(0.005)
SAR 2002 – 59537 observations, McFadden's Adj R2: 0.300							
UK and US	**-0.009****	0.006	-0.001	-0.001	**-0.019****	**0.004***	**0.020****
	(0.003)	(0.006)	(0.003)	(0.009)	(0.005)	(0.002)	(0.007)
Old EU	0.004	0.022	**-0.021****	**0.122****	**-0.047****	**-0.014****	**-0.066****
	(0.010)	(0.018)	(0.007)	(0.022)	(0.009)	(0.002)	(0.013)
Other countries	**0.077****	**0.088****	**0.017***	-0.014	**-0.055****	**-0.008****	**-0.105****
	(0.011)	(0.014)	(0.007)	(0.016)	(0.007)	(0.002)	(0.008)

Dependent variable: occupation categories. Estimated marginal effects for immigrant dummies reported; standard errors in parentheses; bold** p<0.01, bold* p<0.05, bold p<0.1. Other controls include age, age2, gender, a rural, married and student dummy, 7 industry and 4 education dummies (third level degree or higher, third level non-degree, high secondary, low secondary - primary or no education as base category). Samples are restricted to employees of working age (20-64).

Focusing on 2006 for the moment, results in Table 4 indicate that, after controlling for individual specific characteristics, employees born in English speaking countries are on average slightly more likely than native workers to be working as managers or as higher professionals. In contrast, everything else being equal, immigrants from non-English speaking countries experience some occupational penalty in the Irish labour market. The disadvantage is modest for employees born in old EU countries, it is higher for those from "Other" countries and highest for immigrants from the NMS. For immigrants from the NMS, results suggest a 0.18 and 0.21 higher probability of being employed in respectively, unskilled or semi-skilled occupations and a 0.16 lower probability of being hired as manager. A significant occupational gap for NMS immigrants to Ireland is also reported in the studies of Barrett and Duffy (2008) and Turner (2010). It is also notable that migrants from the NMS do

not seem have substantially influenced the occupational distribution of other immigrant groups between 2002 and 2006. The slight occupational advantage of UK and US born immigrants remained stable over the entire boom period, and the estimated effects for immigrants from old EU and Other countries are also very similar between 2002 and 2006.[9]

The later arrival of immigrants from the NMS, relative to immigrants from other countries, has been suggested as an explanatory factor in regard to their lower occupational outcomes. Unfortunately, the SAR dataset does not provide sufficient information to explore this proposition.[10] Using data from the Quarterly National Household Survey (QNHS) 2005, the occupational analysis by Barrett and Duffy (2008) did no find significant evidence of an integration effect. The data considered in their study, however, offers limited scope to test this hypothesis, which consequently remains an issue for further research.

Differences in labour market experience could explain some of the occupational disadvantage of NMS employees, relative to the wider population. Although the Census does not collect information on labour market histories, it is likely that migrant workers from NMS had little labour market experience upon entry to Ireland, due to their relative youth and preference for continuing education. About 65 percent of NMS nationals were aged below 30, and almost 80 percent were aged below 35 in the 2006 Census. Moreover a large proportion of these immigrants indicated that they had not finished their intended education: among those in the labour force, 15 percent of Polish immigrants, 38 percent of Lithuanians and 29 percent of Latvians stated that they had not finished their intended full time education. The age controls that are included in the regressions reported here may not fully account for this bias in the NMS immigrant population, an issue that is taken up further in the wage analysis in Section 4.

The marginal effects reported in Table 4 also obscure important discrepancies in the occupational penalties suffered by educational sub-groups. Compared to the native population and other immigrants in 2006, a large proportion (57 percent) of NMS workers stated having completed high secondary education; see Table 3. Still, more than a quarter of NMS employees had reached third level education (degree and non-degree). The occupational distribution of educated NMS immigrants, however, shows little correlation with the wider

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[9] Similar patterns across occupations for 1996 not shown. There were very few old EU and other immigrants in 1996, see Table 1.

[10] SAR data provides information on the year of arrival grouped by year bands. Years of arrival between 1991 and 2006, for example, are clustered in two periods from 1991 to 2000 and from 2001 to 2006. Moreover, about 43 percent of immigrant employees in the sample have missing information on the year of arrival. The response rate for NMS employees is 50 percent, most of whom (97 percent) state having arrived in the last period.

Irish workforce. For example, about 60 percent or more of all tertiary educated non-NMS workers in Ireland were employed in the top SEGs in 2006. Among educated NMS employees, only 18 percent worked the top 3 occupation groups, while 44 percent were employed in manual occupations.

Table 5   Influence of country of birth and education on the probability of occupational attainment, controlling for individual specific characteristics

Migrant and education dummies	Unskilled	Semi-skilled	Manual skilled	Non-manual	Lower prof.	Higher prof.	Employers & managers
High secondary	**-0.059****	**-0.121****	**-0.035****	0.006	**0.071****	**0.053****	**0.085****
	(0.002)	(0.004)	(0.002)	(0.008)	(0.007)	(0.010)	(0.007)
Third level	**-0.109****	**-0.253****	**-0.093****	**-0.147****	**0.216****	**0.252****	**0.134****
	(0.003)	(0.004)	(0.003)	(0.007)	(0.008)	(0.020)	(0.007)
UK & US							
* up to lower sec	**-0.013****	**-0.036****	**-0.013****	-0.022	-0.0183	0.053	**0.050***
	(0.003)	(0.001)	(0.004)	(0.022)	(0.0174)	(0.033)	(0.020)
* high secondary	-0.002	0.018	**-0.008**	**-0.031***	-0.003	0.011	0.015
	(0.006)	(0.011)	(0.004)	(0.015)	(0.011)	(0.010)	(0.011)
* third level	-0.0010	**0.026**	0.005	**-0.034***	**-0.012***	**0.009****	0.008
	(0.009)	(0.014)	(0.007)	(0.014)	(0.006)	(0.003)	(0.008)
NMS							
* up to lower sec	**0.061****	**0.102****	**0.051****	-0.069	**-0.115****	0.071	**-0.101****
	(0.014)	(0.030)	(0.014)	(0.040)	(0.020)	(0.069)	(0.024)
* high secondary	**0.222****	**0.176****	**0.038****	**-0.179****	**-0.083****	**-0.021****	**-0.153****
	(0.014)	(0.013)	(0.005)	(0.011)	(0.009)	(0.006)	(0.005)
* third level	**0.218****	**0.232****	**0.018***	**-0.170****	**-0.114****	**-0.030****	**-0.154****
	(0.023)	(0.021)	(0.007)	(0.014)	(0.003)	(0.002)	(0.004)
Old EU & Other							
* up to lower sec	-0.004	**-0.047****	**-0.018***	**0.102***	-0.046	0.095	**-0.083****
	(0.007)	(0.017)	(0.007)	(0.051)	(0.034)	(0.069)	(0.022)
* high secondary	**0.057****	0.026	**-0.018****	-0.023	0.021	0.013	**-0.077****
	(0.012)	(0.014)	(0.004)	(0.019)	(0.018)	(0.013)	(0.010)
* third level	**0.093****	**0.094****	-0.005	**-0.054****	**-0.042****	-0.003	**-0.082****
	(0.015)	(0.015)	(0.006)	(0.014)	(0.005)	(0.002)	(0.006)

Dependent variable: occupation categories. Estimated marginal effects reported; **bold**** $p<0.01$, **bold*** $p<0.05$, **bold** $p<0.1$. The default category is native employees with up to lower secondary education. Third level education includes third level degree and third level non-degree. Other controls include age, age2, gender, a rural, married and student dummy and 7 industry dummies. Data from SAR 2006, 71229 observations, Pseudo R2 = 0.280. The sample is restricted to employees of working age (20-64).

To allow for different effects by education levels, the model is extended to include interaction terms between immigration and education dummies. Education levels are grouped into 3 categories (up to lower secondary, higher secondary and tertiary), and immigrants from non-English speaking countries, other than the NMS, are aggregated into one group labelled 'Old

EU and Other'. Estimated marginal effects for immigrants, education and interaction terms are reported in Table 5. As previously, there is very little difference between the occupational outcomes of native and similarly educated employees from the UK and US. Highly educated immigrants from old EU and Other countries are slightly worse off in terms of occupational attainments, but the relative occupational penalty is highest for NMS employees. Although, all NMS employees are generally more likely to be found in lower groups compared to similarly educated native workers, the occupational disadvantage is particularly marked for NMS immigrants with high secondary and third level education (see also Turner 2010).

There are also important differences between the jobs taken by migrants from NMS and the wider Irish labour force, after controlling for both education and occupational categories. Looking at employees with third level education, 56 percent of native workers in non-manual occupations, for example, are hired as clerical, managing and government workers, compared to 36 percent as sales representatives and service workers. The reverse pattern holds for highly educated NMS employees in non-manual occupations; 73 percent are employed as sales representatives and service workers, compared to 22 percent in clerical positions. Although, these variations are likely to carry over to average wages, it is hoped that the industry dummies will capture some of these differences.

Part of the higher occupational gap experienced by educated immigrants could be attributable to language difficulties, real or perceived differences in educational systems and qualifications obtained abroad. In that respect, Barrett, McGuiness and O'Brien (2008) suggest that problems of skill transferability might be more important at higher levels of education. Overall, this occupational analysis suggests that NMS employees experience by far the highest level of occupational downgrading in the Irish labour market. Controlling for differences in demographics, education and industry, NMS immigrants are systematically less likely to be employed in all non-manual occupations and more likely to work in manual occupations. In particular, NMS employees have on average a 0.18 and 0.21 higher probability of being employed in unskilled or semi-skilled occupations respectively, and a 16 percent lower probability of being employed as a manager. The penalty is relatively higher for NMS employees with high secondary or tertiary education. Using the same occupational classification, the next section investigates how far the wage gap identified for immigrants from NMS can be explained by their low occupational attainment.

4. Wage analysis

The wage analysis is conducted on data from the Survey on Income and Living Conditions (SILC). This nationally representative dataset contains information on wages and labour market history as well as permits calculation of the same occupational identifiers as in the Census micro-datasets. One limitation of SILC, however, is that it provides a restricted coverage of the immigrant population in Ireland, relative to the Census. To increase the raw number of immigrants in each cell, the analysis is based on the combined SILC datasets for the 3 years starting with and following the immediate arrival of NMS immigrants in Ireland, that is from 2004 to 2006.

Statistics that describe the SILC 2004-06 sample are reported in Table 6. These statistics indicate that the share of the employee population identified as immigrants from non-English speaking countries described by SILC is roughly half that identified by the Census. Nevertheless, the main issue associated with the under-coverage of immigrants concerns how representative the sample is. In this respect, SILC appears to provide a reasonable approximation to census data regarding the weights of different immigrant populations relative to one another, and of the educational attainment within immigrant subgroups.[11]

Table 6 Working age population (20-64) in Ireland, by country of birth, %

Country of origin	Distribution of population by country of birth		Share of population with a third degree	
	Census 2006	SILC 2004-06	Census 2006	SILC 2004-06
Ireland	78.8	87.6	25.9	22.0
UK and US	8.2	5.9	34.4	28.5
NMS	6.6	3.1	23.1	26.6
Old EU and Other	6.4	3.4	52.4	57.3

The common occupational coding available in SILC and in the Census presents a useful margin against which to explore potential biases in further detail. Table 7 reports the distribution of the labour force by occupational groups described by the two datasets. This table indicates that the distribution of native employees across occupations is almost identical in the two data sources – except for the unskilled group, which is somewhat larger in SILC. This is also true for immigrants from the UK and US, although there are fewer semi-skilled and more unskilled workers in SILC.

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[11] Related trends are reported in Barrett and McCarthy (2007a), who compare several immigrant characteristics, like education levels and work status, between SILC 2004 and the larger QNHS dataset.

Table 7   Distribution of employees by occupational group and country of birth

Data source	Country of birth	Un-skilled	Semi-skilled	Skilled manual	Non-manual	Lower prof.	Higher prof.	Empl. & managers
SAR 2006								
	Ireland	4.90	12.31	14.81	31.13	16.08	6.93	13.85
	UK & US	3.60	11.62	12.14	27.44	17.48	10.43	17.30
	NMS	16.93	23.35	27.40	24.89	2.62	1.88	2.93
	Old EU & Other	5.32	11.56	8.72	31.34	18.2	13.17	11.68
SILC 2004-06								
	Ireland	8.51	11.76	14.43	29.24	15.80	6.91	13.35
	UK & US	6.83	8.41	12.03	28.65	19.23	8.60	16.25
	NMS	21.34	11.02	15.70	26.50	10.88	5.30	9.26
	Old EU & Other	5.20	11.69	6.14	25.87	23.97	12.55	14.58
Ratios (correcting weights)								
	Ireland	0.576	1.046	1.026	1.065	1.018	1.002	1.037
	UK & US	0.528	1.382	1.009	0.958	0.909	1.212	1.064
	NMS	0.793	2.119	1.745	0.939	0.241	0.355	0.316
	Old EU & Other	1.023	0.99	1.419	1.212	0.759	1.049	0.801

Comparison based on samples of employees of working age, excluding observations with missing information on education.

Important differences between the two data sources, however, emerge in relation to immigrants from non-English speaking countries with SILC over-sampling migrant workers in top occupations and tending to under represent workers in lower occupations. These differences are particularly marked for workers from NMS, for whom the share of workers reported in top occupations (employers, higher and lower professional) is more than three times higher in SILC than in the Census. In some of the lower occupations (semi-skilled and skilled manual), the share of NMS workers reported by SILC is about half the share reported by the Census. Additionally, NMS workers experience a larger average (relative) pay gap in the lower occupations (semi-skilled and skilled manual) where they are heavily under-represented by SILC, and vice versa for high occupations where they are over represented (see Table 8). This suggests that wage investigations based on SILC data are likely to understate the (average) pay gap of NMS workers.

Table 8   Wage ratios of immigrants to domestic workers, by occupation, SILC 2004-06

Country of birth	Average	Un-skilled	Semi-skilled	Skilled manual	Non-manual	Lower prof.	Higher prof.	Empl. & managers
UK & US	1.05	0.79	0.91	1.05	1.05	0.97	1.14	1.00
NMS	0.74	0.79	0.77	0.73	0.73	0.87	0.79	0.85
Old EU & Other	0.95	0.80	0.89	0.95	0.84	0.87	1.07	0.72

Employees of working age, excluding obs with missing information on education

Correcting weights, reported in the bottom panel of Table 7, are used to address the biases identified above in SILC relative to the Census. The impact of these adjustments on the occupational attainment of NMS workers described by SILC is displayed in Chart 2. The specification of the logit equation considered here is the same as in the occupational analysis of the previous section, except for industry dummies which could not be reconstructed identically with SILC data. Compared to the occupational outcomes estimated using census data, results from unadjusted SILC data clearly display the biases that are suggested by the population averages reported in Table 7. The unadjusted SILC data indicate much smaller penalties for immigrants from NMS in the higher occupational categories, and smaller excess probabilities for the lower occupational category (with the exception of the unskilled category). Estimates based on re-weighted SILC data are closer to the Census estimated outcomes. Related results on unadjusted SILC data for other immigrant groups do not reveal a similar discrepancy in occupational outcomes; see Table A1 in the Appendix for statistical details. [12]

Chart 2   Occupational attainment of NMS employees, SILC 2004-2006 and SAR 2006
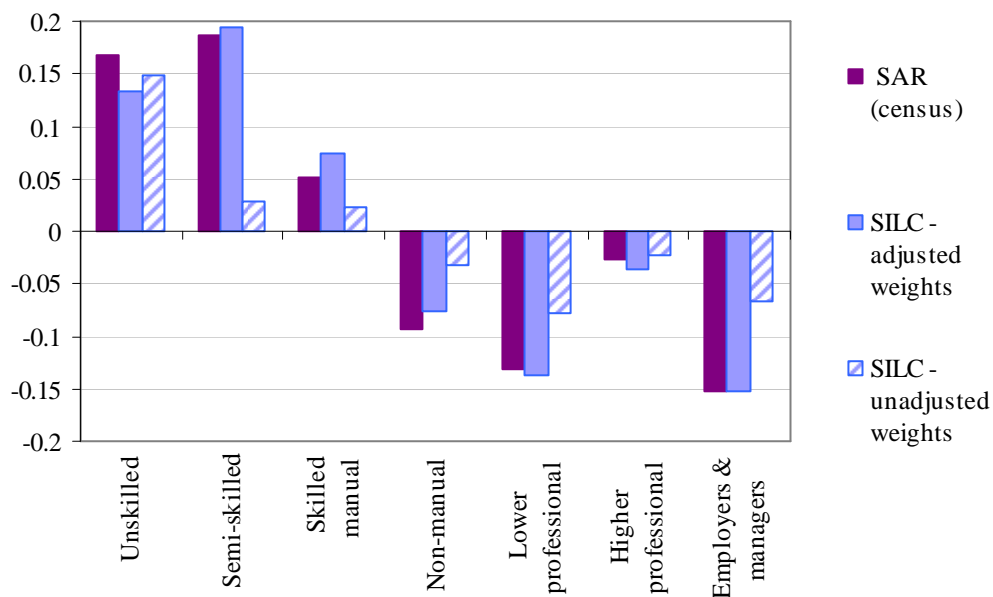
Estimated marginal effects, significant at 5 % or less; see Table A1 in the Appendix.

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[12] Similar results were obtained with weights that adjust for the distribution of employees across occupations as well as for the share of employees with third level education (degree and/or non-degree). Restricting the weight adjustment to the non-Irish population obtained comparable results.

To investigate the role of occupational downgrading in immigrants' earnings, the following wage equation is estimated:

$$\log(w_i) = \alpha + \beta x_i + \varepsilon_i \qquad (1)$$

where w_i is the individual hourly wage expressed in 2006 prices and x_i is a set of individual characteristics. The basic set of explanatory variables comprises age and age squared, a gender dummy, student dummy, married dummy, industry dummy, education and immigrant dummies, as well as interaction terms between immigrant and third level education dummies in some of the regressions. Additional labour market controls include years of experience and experience squared, the number of hours worked, the number of years the individual has spent in unemployment, and 4 company size dummies.

Table 9 reports the estimated immigrant dummies from equation (1) using SILC 2004-06 with (top panel) and without (bottom panel) adjusted sample weights. To allow for comparability with findings from the occupational analysis, the first columns of Table 9 report results based on the basic set of explanatory variables, with and without occupation dummies. The last columns extend the findings to take advantage of the additional labour market information available in SILC.

Looking first at regression results with adjusted sample weights (see top panel of Table 9), these suggest that, everything else being equal, immigrants from the UK and US do not receive an hourly wage that is significantly different from that earned by native. Immigrants from non-English speaking countries do, however, experience a significant pay gap on average; see also Barrett and McCarthy (2007b), and Barrett, McGuiness and O'Brien (2008) for related findings. Moreover, the inclusion of labour market controls (cols 5-8) appears to have little effect on the estimated wage disadvantage of immigrants, except possibly for NMS employees with less than tertiary education.

Table 9   Wage regressions with data from-SILC data 2004-06

Selected controls	Basic model				With added labour market controls			
	1	2	3	4	5	6	7	8
With adjusted sample weights								
UK & US	0.005	-0.005	-0.003	-0.011	0.014	-0.004	-0.019	-0.006
	(0.021)	(0.020)	(0.026)	(0.025)	(0.021)	(0.020)	(0.026)	(0.025)
UK & US *3rd degree			0.004	0.019			-0.020	-0.007
			(0.042)	(0.041)			(0.041)	(0.040)
NMS	**-0.248****	**-0.177****	**-0.181****	**-0.127****	**-0.229****	**-0.153****	**-0.163****	**-0.104****
	(0.038)	(0.034)	(0.038)	(0.037)	(0.028)	(0.034)	(0.038)	(0.037)
NMS *3rd degree			**-0.334****	**-0.253****			**-0.330****	**-0.249****
			(0.088)	(0.074)			(0.092)	(0.077)
Old EU & Other	**-0.176****	**-0.137****	**-0.096****	**-0.084***	**-0.167****	**-0.125****	**-0.087***	**-0.069**
	(0.029)	(0.027)	(0.0371)	(0.036)	(0.028)	(0.026)	(0.038)	(0.037)
Old EU & Other *3rd degree			**-0.149****	**-0.100**			**-0.148****	**-0.103***
			(0.055)	(0.052)			(0.054)	(0.050)
With unadjusted sample weights								
UK and US	0.001	-0.009	-0.001	-0.016	0.008	-0.001	-0.012	-0.002
	(0.021)	(0.020)	(0.026)	(0.024)	(0.021)	(0.020)	(0.019)	(0.024)
UK and US *3rd degree			0.006	0.025			-0.017	-0.002
			(0.042)	(0.040)			(0.036)	(0.040)
NMS	**-0.191****	**-0.157****	**-0.139****	**-0.113****	**-0.171****	**-0.131****	**-0.121****	**-0.089****
	(0.030)	(0.028)	(0.034)	(0.032)	(0.029)	(0.027)	(0.027)	(0.032)
NMS *3rd degree			**-0.175****	**-0.151***			**-0.164****	**-0.145****
			(0.067)	(0.059)			(0.051)	(0.057)
Old EU & Other	**-0.163****	**-0.139****	**-0.080***	**-0.086***	**-0.155****	**-0.127****	**-0.074***	**-0.072***
	(0.029)	(0.027)	(0.038)	(0.036)	(0.026)	(0.025)	(0.033)	(0.036)
Old EU & Other *3rd degree			**-0.148****	**-0.095**			**-0.151****	**-0.098***
			(0.055)	(0.052)			(0.044)	(0.050)
Occupations		X		X		X		X
Adj R2 (top)	0.374	0.410	0.376	0.411	0.420	0.457	0.421	0.458
Adj R2 (bottom)	0.375	0.411	0.375	0.412	0.420	0.459	0.421	0.459

Robust std errors in parenthesis. Bold**, bold* and bold only: significant at the 1, 5 and 10 % level respectively. Dependent variable is the log hourly wage. Other controls: age, age2, gender dummy, student dummy, married dummy, 4 education and 11 industry dummies. Labour market controls: experience, experience2, number of hours worked, number of years in unemployment, 4 company size dummies. The number of unweighted observations is 12381 in the basic model, and 12151 in regressions with added labour market controls.

After accounting for differences in labour market characteristics, results in the top panel of Table 9 indicate that immigrants from the rest of the world earn on average 17 percent less than natives (col. 5). The disadvantage experienced by NMS employees reaches 23 percent; a

significant part of which is explained by occupational downgrading (col 6).[13] Distinguishing by educational levels (cols 7-8), reveals that the earnings disadvantage of immigrants from non-English speaking countries is driven by the higher penalty experienced by educated workers (see also Barrett, McGuiness and O'Brien 2008, Barrett and McCarthy 2007a, 2007b). The gradient is steeper for NMS employees. Here again, occupational differences account for a significant part of the wage penalty of all NMS employees, and of educated workers from the rest of the world. [14] Nevertheless, even after controlling for occupational and labour market characteristics, the pay disadvantage of tertiary educated NMS workers remains impressively high at 25 percent, while tests (not shown) suggest that other immigrant groups from non-English speaking countries experienced similar pay gaps, of around 10 percent (col. 8).

The impact of the proposed weight adjustments to SILC is revealed by comparing the statistics reported in the top and bottom panels of Table 9. These indicate that the weight correction does not substantively affect the estimated earnings penalty of non-NMS immigrants, but increases the estimated pay gap of NMS employees (cols 1 and 5). For NMS employees with less than tertiary education, the main effect of the weights adjustment has been to increase the estimated penalty pre occupation controls (cols 3, 7). As a result, the inclusion of occupation dummies entails a larger drop in the estimated wage gap when using adjusted weights, from 16 to 10 percent, compared to 12 to 9 percent with unadjusted data (cols 7-8, with labour market controls). The weight correction also has an important effect on the estimated pay gap of educated NMS workers. The estimated disadvantage is much larger when using adjusted data: it jumps from 16 to 33 percent in regressions with labour controls but without occupational controls (cols 7). Additionally, differences in occupation explain a significant part of the educated NMS workers' disadvantage on adjusted data (top panel), while their influence is not significant when considering unadjusted data (bottom panel). Finally, even after controlling for occupational differences, the earnings disadvantage of educated NMS workers remains much higher when using adjusted compared to unadjusted data (cols 4, 8). For all other immigrant groups, the estimated pay gaps from adjusted and unadjusted data converge once occupation controls are included in the regression. [15]

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[13] Tests (not shown) did not reject the hypothesis that the estimated coefficients for NMS and 'Old EU and Other' immigrants are significantly different when accounting for occupational differences, columns 1-2 and columns 5-6 top panel of Table 9 – similar results were found in the lower panel.

[14] Tests (not shown) did not reject the hypothesis that the estimated coefficients for NMS workers with tertiary or less than tertiary education, and for 'Old EU and Other' immigrants with tertiary education are significantly different when accounting for occupational differences. The hypothesis was rejected for 'Old EU and Other' immigrants with less than tertiary education; see cols 3-4 and cols 7-8, Table 9.

[15] Tests (not shown) suggest that their pay disadvantage is not significantly different from one another (col. 8, bottom panel).

Results on unadjusted data echo the findings of Barrett and McCarthy (2007b) based on SILC 2005, who report no significant effect of occupation on the pay disadvantage of immigrants from non-English speaking countries. Barrett and McCarthy, however, suggest that the lack of a significant occupational effect could be driven by the small size of their sample. Findings on adjusted SILC data are closer to results reported in Barrett McGuiness and O'Brien (2008) on data from the National Employment Survey 2006. This second study, however, investigates the impact of including industry and occupational controls simultaneously, and finds that industry and occupation controls taken together reduce the average pay gap of NMS workers from 18 to 10 percent. By comparison, Table 9, indicates the effect of adding occupational controls only, industry controls being included in all specifications by default. Removing industry and occupational controls simultaneously from the regression in column 6 (with labour market controls) results in an estimated average wage gap of 26 percent for NMS immigrants (results not shown). Industry and occupational controls, therefore, explain a similar share of the wage gap to that reported in Barrett McGuiness and O'Brien (2008).

The sample weights correction suggested here for SILC has an important impact on the estimated wage penalty of NMS employees. This is because, in spite of their large numbers in Ireland, their coverage in SILC compared to the Census is biased towards higher occupations where they also experience a lower (relative) wage gap. Results with adjusted sample weights imply a higher earnings disadvantage for this population subgroup, and also suggest that a significant part of their wage penalty can be attributed to occupational downgrading. Moreover, a significant wage disadvantage remains for migrants from non-English speaking countries, relative to the wider Irish labour force, after differences in occupations, labour market, and other broad demographic variables are controlled for.

Of all non-English speaking migrants to Ireland, those from NMS with third level education appear to have suffered a disproportionately large wage penalty, equal to around 25 percent relative to similarly educated Irish workers. One plausible explanation for these findings is that very few educated native workers were employed in semi-skilled and unskilled occupations in the sample considered here, in contrast to educated NMS immigrants. The wage gap identified in this study may consequently be attributable to the observation that education provides little added value in lower occupational categories. Several other factors have been suggested to explain the disparate labour market outcomes of NMS immigrants to Ireland, including language difficulties, recognition of qualifications obtained abroad, suitability for supervisory positions of employment, and the recent timing of their arrival to Ireland. To this list we might add the self selection of immigrants into specific job types. A comparison with outcomes in the UK may help to clarify these issues further.

5. Comparison with the UK

This section undertakes a brief comparison of the labour market outcomes of NMS immigrants in Ireland and the UK, in the immediate post-accession period. Looking at these two recipient countries offers several advantages. To start with, both the UK and Ireland witnessed large immigration flows from the NMS in recent years. Moreover, their regional proximity, similarity of entry requirements for NMS workers, and common language should help to control for the impact that other variables like language barriers (see Clark and Drinkwater 2008) may have on the labour market prospects of these immigrants. Nevertheless, the UK and Ireland provided different economic contexts for these new immigrants. With a labour force of about 30 million people in 2004 – compared to less than 2 million in Ireland – the UK had a large economy in which to absorb new immigrant flows, a long history of immigration and a well-established Polish Diaspora, which is in stark contrast to the Irish Republic. [16] It seems interesting therefore to contrast the labour market performance of NMS immigrants moving to these two countries. The comparison starts with descriptive statistics before reporting wage regressions that replicate, for Ireland, some of the results reported in the recent UK study by Drinkwater, Eade and Garapich (2009).

Summary statistics for NMS immigrants in the UK and Ireland are reported in Table 10. Figures for the UK come from the administrative records of the Worker Registration Scheme (WRS) [17] – see Table 1 in Drinkwater, Eade and Garapich (2009). The Irish statistics come from the Personal Public Service Numbers (PPSN) administrative records. Both data sources may, however, under-estimate the number of immigrants working in the country as they only report people who registered.

The breakdown by sending countries reveals that NMS immigrant flows to the UK and Ireland presented a similar mix of national origins, between 2004 and 2006. Polish people formed by far the largest groups of NMS immigrants in both recipient countries. Although Ireland welcomed relatively more Lithuanians and Latvians, a slightly higher share of Poles and Slovaks moved to the UK. Together, immigrants from Lithuania, Latvia, Poland and Slovakia represented about 90 percent of all NMS immigrants who arrived in the UK and in Ireland over that period.

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[16] See e.g. Drinkwater, Eade and Garapich (2009) for more discussion on the UK context.
[17] The Worker Registration Scheme was introduced in 2004 following the accession of the NMS to the EU. This scheme requires citizens from most of the NMS, wishing to work for an employer in the UK for more than one month, to register with the government when starting work in the country; see Drinkwater, Eade and Garapich (2009) for more details.

Table 10 Comparison of NMS workers in the UK and Ireland, arrivals between 2004-06

United Kingdom						Ireland					
Countries	%	Ages	%	Sectors	%	Countries	%	Ages	%	Sectors	%
Czech Rep.	4.9	18-	0.3	Admin, Bus & Mgmt	36.6	Czech Rep.	4.0	15-	5.2	Admin, Bus & Mgmt	21.7
Estonia	1.1	18-24	43.7	Hotels & cat.	20.0	Estonia	NA	15-24	42.9	Hotels & cat.	17.7
Hungary	3.1	25-44	49.0	Agric.	10.7	Hungary	3.0	25-44	45.2	Agric.	3.2
Latvia	5.6	45-64	6.1	Manuf. & food proc.	12.2	Latvia	7.6	45-64	6.6	Manuf. & food proc.	17.0
Lithuania	10.6	65+	0.8	Health	4.7	Lithuania	15.4	65 +	0.1	Health	1.9
Poland	64.5	Un-known	0.2	Retail	4.3	Poland	60.0			Retail	15.6
Slovakia	10.2			Construct & Land	3.8	Slovakia	8.2			Construct & Land	15.9
Slovenia	0.1			Transport	2.7	Slovenia	NA			Transport	3.7
				Ent. & Leisure	1.6	*Cyprus*	NA			Social & pers. Serv.	3.4
				Education	1.0	*Malta*	NA			Education	0.4
				Other & unknown	2.3					Other & unknown	0.3
For the UK: data from the Workers Registration Scheme, as reported in Drinkwater, Eade and Garapich (2009). For Ireland: data from PPSN records, CSO report (2009). In Ireland, figures by country of origin refer to immigrants of all ages; figures for age and sector distributions are for immigrants aged 15 and over.											

The age distribution of NMS immigrants is also very similar in Ireland and the UK.[18] As well, a large number of NMS immigrants were employed via recruiting agencies (under the label 'Admin, Bus & Mgmt') in both countries, although it is not clear in which sector these workers were employed. Nevertheless, the much larger share of immigrants employed via agencies in the UK may reflect an important difference between the two labour markets. Other important discrepancies in sectoral employment relate to agriculture, retail and construction. Agriculture appeared to be a larger source of employment in the UK, while in the context of a boom in the construction sector in Ireland the reverse was true for employment in construction. Retail was also a major sector of employment for NMS immigrants to Ireland compared to the UK.

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[18] The slightly higher proportion of NMS people aged 15 or less in Ireland reflects differences in the data sources. While the WRS in the UK keeps records of new employees, applications for a PPS number in Ireland is required for anyone wishing to access social services.

Education levels of NMS immigrants (not reported) also present strong similarities between the two countries. The study of Drinkwater, Eade and Garapich (2009) states that the largest share of NMS immigrants in the UK had reached high secondary education and about 20 to 25 percent had completed third level education. Table 3 reports analogous figures for NMS workers in Ireland from the 2006 Census. Moreover, in Ireland as in the UK, the share of third level education appears to be higher among Polish immigrants than among other NMS immigrants.

In terms of broad demographics – age, education and mix of countries of origin – NMS immigrant flows to the UK and Ireland in the post enlargement period displayed remarkable similarities. Differences in their sectoral distributions, however, are likely to reflect the varied economic environment of the two recipient countries. To evaluate the relative labour market performance of NMS immigrants in both countries, this study replicates part of the wage analysis reported in the paper by Drinkwater, Eade and Garapich (2009). Data for the UK comes from the labour force survey. The Irish investigation is based on SILC 2004-06 data with adjusted sample weights (see section 4).

The analysis by Drinkwater, Eade and Garapich (2009) compares the earnings of immigrants who arrived between 2004 and 2006, to the wages of natives who entered the labour market after 2003 and with less than 3 years experience. Given the lack of information on immigrants' timing of arrival in SILC data, the Irish sample is restricted to employees aged 20-35 and observed between 2004 and 2006. As NMS workers only started arriving in large numbers in Ireland after 2004, this selection indirectly controls for their timing of arrival. The age constraint is aimed at controlling for labour market experience. Estimated coefficients for the different immigrant groups from the UK study, and the replicated exercise on Irish data, are reported in Table 11. The set of explanatory variables is specified at the bottom of the table.

For Ireland, specification (a) is set to replicate the UK analysis, while specification (b) is closer to the wage analysis reported in section 4. In the UK study, immigrants from Ireland are included with people from the rest of the EU. For comparability, a similar grouping of countries is used in specification (a). In specification (b), people born in the UK are included with other English-speaking immigrants. As a result, and together with the inclusion of additional explanatory variables, immigrants from 'the rest of the EU' experience a significant wage penalty in specification (b). Nevertheless, results for NMS immigrants suggest similar labour market outcomes in Ireland (both specifications) and in the UK. In both countries, these immigrants experience a higher pay disadvantage relative to other

migrant groups, a large part of which can be accounted for by differences in occupational attainments.

Table 11 Wage equations for the UK and Ireland, 2004-2006

United Kingdom Drinkwater et al. (2009)			Ireland Specification (a)			Ireland Specification (b)		
Migrants	(1)	(2)	Migrants	(3)	(4)	Migrants	(5)	(6)
Polish	**-0.204**[**] (0.028)	**-0.080**[**] (0.028)	Polish	**-0.206**[**] (0.049)	**-0.129**[**] (0.048)	Polish	**-0.250**[**] (0.048)	**-0.163**[**] (0.047)
Other NMS	**-0.246**[**] (0.051)	**-0.141**[**] (0.050)	Other NMS	**-0.202**[**] (0.039)	**-0.134**[**] (0.038)	Other NMS	**-0.211**[**] (0.038)	**-0.135**[**] (0.037)
Rest EU (incl. IRL)	0.069 (0.044)	**0.099**[*] (0.039)	Rest EU (incl. UK)	0.017 (0.029)	0.006 (0.028)	Rest EU (excl. UK)	**-0.137**[**] (0.051)	**-0.099**[*] (0.050)
Eng Spk countries	**0.287**[**] (0.043)	**0.258**[**] (0.038)	Eng Spk countries (excl. UK)	0.045 (0.074)	0.058 (0.072)	Eng Spk countries (incl. UK)	**0.052** (0.030)	0.037 (0.030)
Other	-0.064 (0.043)	-0.010 (0.038)	Other	**-0.129**[**] (0.044)	**-0.133**[**] (0.042)	Other	**-0.145**[**] (0.043)	**-0.137**[**] (0.041)
Occup.		X	Occup.		X	Occup.		X
R^2	0.467	0.519	R^2	0.320	0.361	R^2	0.352	0.391
N	3482	3481	N	4030	4030	N	4030	4030

Std errors in parenthesis. Bold**, bold* and bold only: significant at the 1, 5 and 10 % level respectively. Other common controls include: yrs of education, experience, experience2, and dummies for gender, marital status, region, industry, part-time status and firm size. Regressions for the UK also include job tenure and public/private sectors Regressions for Ireland: specification (a) also includes years of unemployment; specification (b) also includes age, age2, number of hours worked instead of the part time dummy, and years of unemployment. Results for the UK come from cols 3 and 4 Table A2 in Drinkwater, Eade and Garapich (2009). New Member States excl. Romania and Bulgaria.

6. Conclusion

Ireland witnessed large immigrant flows from Poland and the Baltic countries following the accession of the New Member States in 2004. The current paper explores the role of occupational attainment in determining the wages earned by these immigrants to Ireland. The occupational analysis, based on census data, indicates that NMS employees experience the largest occupational penalty in Ireland. Using SILC data, the next step of the analysis is to investigate whether this occupational gap translates into lower average earnings. Comparisons between SILC and the Irish Census suggest that the sample of immigrants from the NMS reported by SILC for the period 2004 to 2006 is systematically biased in favour of higher skill occupations, where NMS immigrants also experience a lower (relative) wage gap. Weights are suggested to correct for this bias, and the implications for wage regression are explored.

Regression results based on adjusted population weights indicate that controlling for occupations reduces the wage penalty suffered by NMS immigrants to Ireland from 23 to 15 percent on average, relative to the native population and English speakers, and from 17 to 12 percent for immigrants from other (non-English speaking) countries, including the 'old' EU. The weighting adjustment has a significant impact on the regression results obtained for immigrants from the NMS, for whom the adjustment exaggerates both the size of the wage penalty and the extent to which the wage gap is explained by occupational downgrading. This is particularly the case for NMS immigrants with tertiary education, who experienced the largest wage penalty relative to English speakers equal to 33 percent on average, falling to 25 percent after controlling for occupation. The adjusted SILC sample is then used to compare the labour market outcomes of NMS immigrants to Ireland with regression results reported by Drinkwater, Eade and Garapich (2009) for the UK (another important recipient country of NMS immigrants within the EU). This comparison suggests that immigrants from the NMS suffer a large pay gap in both countries, which is in part attributable to occupational downgrading.

These findings highlight two important and disparate issues. First, the analysis reveals that immigrants from non-English speaking countries to Ireland suffered a significant wage penalty during that period, relative to native and immigrant workers from English speaking countries. The extent of occupational downgrading that can be experienced by immigrants who encounter a language transition, and the associated impact that this has on the wages that they earn, highlights the role of language in determining labour market opportunities. This form of downgrading, however, is likely to be costly in the longer term, both from the perspective of the affected immigrants, and for society more generally (due to the resource waste associated with the under-utilisation of education). Understanding the fundamental drivers of occupational downgrading in context of language transitions, and how policy or institutions can be reformed to mitigate their effects, consequently has powerful welfare implications. Nevertheless, the fact that NMS immigrants faced the largest earnings disadvantage in both Ireland and the UK, points to the role of home conditions and institutional factors beyond language in explaining the situation of NMS employees in Ireland.

Second, the study highlights the statistical challenges involved when exploring the labour market outcomes of immigrants using SILC, at least in the Irish context. This reflects the more general problem of ensuring that a data source provides representative information, where the subgroup of interest forms a small part of the overall survey sample. In the current study, simple weights are suggested to provide an improved match to the Irish Census. It is

important to note, however, that re-weighting cannot compensate fully for such biases, which emphasises the importance high quality data sources that are necessary for evidence based policy design and reform.

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APPENDIX

Table A1   Occupational attainment of NMS employees, SILC 2004-2006 and SAR 2006

Immigrant dummies	Unskilled	Semi-skilled	Manual skilled	Non-manual	Lower prof.	higher prof.	Employers & managers
SAR 2006 - 71229 observations, McFadden's Adj R2: 0.198							
UK and US	-0.0038	0.0076	-0.0025	**-0.0146**	**-0.0087**	**0.0054****	**0.0166****
	(0.0029)	(0.0061)	(0.0032)	(0.0080)	(0.0046)	(0.0017)	(0.0059)
NMS	**0.167****	**0.186****	**0.0518****	**-0.0938****	**-0.131****	**-0.0272****	**-0.152****
	(0.0078)	(0.0089)	(0.0045)	(0.0089)	(0.0026)	(0.0013)	(0.0036)
Old EU and Other	**0.0335****	**0.0437****	**-0.0229****	**0.0638****	**-0.0439****	**-0.0057****	**-0.0686****
	(0.0053)	(0.0084)	(0.0032)	(0.0100)	(0.0042)	(0.0013)	(0.0054)
SILC 2004-06, adjusted weights - 12556 observations, McFadden's R2: 0.202							
UK and US	**-0.0136****	**-0.0118****	**-0.0063****	**-0.0255****	**0.0014****	**0.0165****	**0.0393****
	(0.0001)	(0.0003)	(0.0001)	(0.0004)	(0.0003)	(0.0001)	(0.0003)
NMS	**0.134****	**0.194****	**0.0750****	**-0.0765****	**-0.138****	**-0.0368****	**-0.153****
	(0.0004)	(0.0005)	(0.0003)	(0.0005)	(0.0001)	(6.33e-05)	(0.0002)
Old EU and Other	**0.0410****	**0.0895****	**-0.0005****	**0.0394****	**-0.0708****	**-0.0169****	**-0.0817****
	(0.0003)	(0.0005)	(0.0002)	(0.0006)	(0.0002)	(7.60e-05)	(0.0003)
SILC 2004-06, unadjusted weights - 12556 observations, McFadden's R2: 0.206							
UK and US	**-0.0182****	**-0.0408****	**-0.0039****	**0.0101****	**0.0155****	**0.0056****	**0.0317****
	(0.0002)	(0.0002)	(0.0001)	(0.0004)	(0.0003)	(0.0001)	(0.0003)
NMS	**0.149****	**0.0281****	**0.0237****	**-0.0327****	**-0.0772****	**-0.023****	**-0.0671****
	(0.0005)	(0.0004)	(0.0002)	(0.0005)	(0.0002)	(8.70e-05)	(0.0003)
Old EU and Other	**0.0118****	**0.103****	**-0.0150****	**-0.0039****	**-0.0364****	**-0.0158****	**-0.0439****
	(0.0003)	(0.0005)	(0.0002)	(0.0006)	(0.0003)	(7.87e-05)	(0.0003)

Estimated marginal effects; standard errors in parentheses; bold** $p<0.01$, bold* $p<0.05$, bold $p<0.1$
Dependent variable: occupational groups. Other controls: age, age2, a gender, student and married dummy, and 4 education dummies (third level degree or higher, third level non-degree, high secondary, low secondary - primary or no education as base category)