Skill Premia and Immigrant-Native Wage Gaps
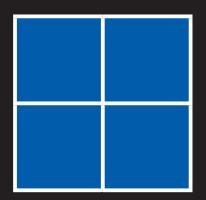
Anna Rosso

Centre for Learning and Life Chances in Knowledge Economies and Societies

Skill Premia And Immigrant-native Wage Gaps[*]

Anna Rosso[†]

University College London and NIESR

Abstract

This study examines the developments in the skill distribution of EU8 immigrants and UK natives between 1998 and 2008 in the UK, exploring to what extent wage differentials between these two groups are explained by the changing attributes of migrants and natives or by differences in returns to skill. After 2004, the number of immigrants from the new accession countries increased significantly. Using the UK Labour Force Survey, I compare the evolution of the immigrant-native wage gaps over two periods (before and after 2004) and compare them with those of other immigrant groups. Using the *new* unconditional quantile regression, I show that a large part of the decrease in the wage levels for EU8 is due to an increase in the wage gap at the top of the distribution. Yet, also a the bottom a wider wage penalty is observed. At all points of the distribution occupational downgrading plays an important role. In order to rule out the possibility that the increase in the gap is simply due to the lack of labour market assimilation, as the majority of EU8 immigrants only arrived after 2004, I compare recent immigrants after 2004. Results suggest that the decrease in the wage levels at the top of the distribution is mainly due to the lack of transferability of skills acquired in the source country. Also at the bottom EU8 immigrant wages have declined and worsened with respect to the period before the enlargement. It is likely that the nature of migration (temporary vs permanent) has a substantial role.

Contents

1 Introduction

In a very short period of time Eastern European immigrants have become one of the largest immigrant groups in the UK labour market. Recent estimates from the Office of National Statistics (2011) show that immigrants from the EU8 countries[1] represented 0.2% of all the employed population in quarter 1 2002 increasing up to 2.2% in quarter 1 2011 (the share of workers from other EU countries has been relatively stable over the period, around 2%). The rise in the number of Eastern European born (Figure 1) is linked to the accession of these countries to the European Union and in particular, to the UK labour market, in May 2004. Most other European countries (EU15) imposed transitional restrictions to the free movement of workers from Eastern Europe, only the UK, Ireland and Sweden allowed them to work in their labour markets without any particular requirement[2].

Changes in migration policies can affect the composition and quality of immigrants. As shown in Antecol, Cobb-Clark and Trejo (2004) selective immigration policy could have an effect on the labour market outcomes of immigrants by altering the skill composition. As noted in Pollard, Latorre and Sriskandarajah (2008), EU8 migration, and in particular Polish immigration has changed the scale, composition of immigration in the UK. The European enlargement can therefore be considered an interesting case for studying the effect of the elimination of administrative barriers to the selection of immigrants. In particular, I will study, using different econometric techniques, how this change has impacted on the skills of immigrants and how this change in skills is then transferred to the wage distribution. My main research question will focus on the analysis and decomposition of the wage gaps between natives and immigrants. Recent literature on immigration to the UK has extensively focused on the studying of EU8 immigrants in the UK labour market. The consensus view is that EU8 immigrants are better educated than natives but suffer from a very high wage penalty. Clark and Drinkwater (2008) show that, after the enlargement, the great influx of EU8 workers has shifted the wage distribution of recent immigrants, such that at the third quartile immigrants have suffered a *real* reduction in wages of over £3 per hour, despite higher employment rates. Drinkwater, Eade and Garapich (2009) show that immigrants from Eastern European countries that arrived after 2004 found employment in low paying jobs, despite their high level of education, translating into lower returns to education than other immigrant groups. Moreover, they also show that immigrants from these countries

---

[1]Poland, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Slovakia and Slovenia

[2]As explained in Boeri and Brücker (2005), only Sweden allowed labour to move freely in the country, the UK required workers to register with the Working Registration Scheme (WRS) up to May 2011. A similar registration scheme also applied to Ireland.

arriving after the enlargement have similar characteristics to those who arrived before. Yet, their analysis ends in 2006, including only few years after the accession. Blanchflower and Shadforth (2009) show the effects of EU8 immigrants on the UK economy. They use data from 2004-2007 and confirm the results from other studies. They show that *new* immigrant workers from EU8 countries are young, male in higher proportions, have high employment rates, low unemployment rates, lower wages, they are more likely to be self-employed but also more likely to be in temporary jobs. This research is also related to the literature on the effect of immigration on unemployment and wages, as the change in the composition of new immigrants can have different effects on different parts of the labour market. Gilpin et al (2006) showed that EU8 immigration did not have any statistically significant effect on the number of workers claiming unemployment, between 2004 and 2006. Dustmann, Frattini and Halls (2010) show that EU8 immigrants in the UK are less likely than natives to receive state benefits and live in social housing even after controlling for characteristics. The also find that EU8 immigrants have positively contributed to the public finances since 2004.
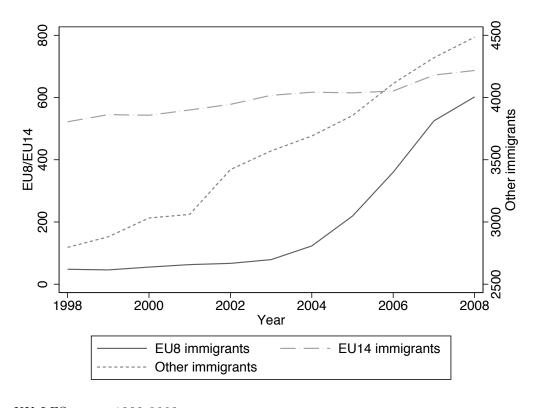
Figure 1: Total number of immigrants in the UK (in thousands)

If we consider EU8 immigrants as a *white* ethnic group, the findings mentioned above are

in contrast with what previous immigration literature has shown. Chiswick (1980) was the first to show that wages of recent white immigrants in the UK were in line with those of native born. Later studies also confirmed these results. Particularly, Bell (1997), looking at the period 1973-1992, finds that recent white immigrants experience a wage premium with respect to UK born, which is not seen for non-whites. Dustmann and Fabbri (2005) examine the economic performance of immigrants using the British Labour Force Survey from 1979 to 2004 (just before the enlargement) showing that white immigrants earn similar wages to comparable British-born and some groups even higher conditional wages. They also considered males immigrants from future "new accession" countries and concluded that they did not perform too differently from natives.

I use the British Labour Force Survey (hereafter UKLFS) for years 1998-2008 to compare EU8 immigrants' performance in the the UK labour market before and after the enlargement. In terms of contribution, firstly, my analysis adds to the literature and debate on the effect of EU enlargement on the UK labour market providing evidence not only by describing the difference (if any) in the human capital and socio-economic characteristics of those immigrants that arrived after 2004 compared to the ones arriving before, but also by contributing with a more precise explanation of why immigrants' earnings have deteriorated after 2004. This paper has the aim to review the results found in the previous literature by decomposing the mean wage gaps into composition and wage structure effects, but also adding to the literature on this topic by analysing wage gaps in different at different percentile. The decomposition of percentile will allow me to understand whether changes at the bottom or at the top can be explained by similar factors. By simply looking at average wages, the previous literature could not assess which characteristics (observable or unobservable) had a stronger impact on the deterioration of the gap and. My goal is to empirically show which could be the causes of the decrease of the gap for different types of immigrant workers. In addition to previous literature and with the scope of precisely identifying skills acquired in the home country and those developed in the destination country, I divide experience into foreign and British experience.

In relation to the first contribution, the second contribution of this paper is in terms of the techniques used. I look at different features of the wage distribution, not only at mean wage gaps but also at the gap at different quantiles. The EU8 immigrants-native gap has worsened differently at each point of the distribution (Table 2). As shown in Hunt (2012), immigrants' performance varies widely at the bottom and at the top of the distribution, and mean wage differences mask important differences: while immigrants at the bottom

earn less than natives, those at the top end sometimes have higher wages than their native equivalents. What she finds, though, is that in 2009 immigrant wages have become lower than natives' at all deciles with the exception of the 90th, and this is strongly linked to post-accession migration. When looking at the mean wage gap I use a standard Oaxaca-Blinder decomposition, while, when looking at the gap at different quantiles, I use the unconditional quantile regression method introduced by Firpo, Fortin and Lemieux (2009) which allows me to recover the unconditional parameter that would not be recovered if using the standard conditional quantile regression[3]. This method has been applied to the immigration literature by Bourdarbat and Lemieux (2010) to show the factors that triggered the decline in the immigrant-Canadian born wage gap between 1980 and 2000. They find that the decline is much larger at the low end of the wage distribution, while it is much lower at the top quantiles. Heywood and Parent (2012) use the same approach to decompose the white-black earning differentials for workers in performance pay jobs at different points of the distribution in the USA, showing how the gap grows over the earnings distribution for those in performance pay jobs and the opposite is true for workers not in performance pay jobs.

The combination of different migration theories may help understand these results. Firstly, the lack of some country-specific characteristics (in most case unobservable in the surveys) can play an important role, most of immigrants from the EU8 countries have come here recently, they may not have the destination country's skills that allow them to integrate. If that was the case, then EU8 recent immigrants when compared to other recent immigrants from other European countries, they would perform in a similar way. However, the transferability of the skills immigrants are endowed with when they enter the country are also a function of the country of origin and how the quality of the education system is perceived by the UK employers (see for example Friedberg, 2000). This would explain why two observationally equivalent immigrants (that only differ in the country of origin) may not have the same earnings, once they enter the country. As it is shown later, not only education, but also foreign experience (variable used to proxy the labour market experience in the home country), have different values in the UK labour market depending on the immigrant group. Moreover, these differences in the return to skills, often caused by occupational downgrading, were already found evidence of in the immigration literature in the US: Mattoo et al (2008) argue that the reason why Eastern European immigrants accept low-paid jobs should be

---

[3]The reason for this is that with the standard Oaxaca decomposition one can average out the wages gaps conditioned on the covariates, thanks to the law of iterated expectations which does not hold for the case of quantiles.

interpreted as an under-placement due to the lower quality of education in the home country (poor transferability) rather than skill under-utilization. Adsera and Chiswick (2007) show that Eastern European men and women have the lowest earnings among all in immigrant groups in all European countries they consider even after controlling for length of stay in the country, between 1999 and 2004. A question would still remain unsolved, as much little evidence of poor skill transferability was found before the enlargement. Clark and Drinkwater (2008) argue that the reason for this lies in the fact that migration from these countries was much lower before 2004, so UK employer were unfamiliar with the quality of the educational system in these countries. However, the magnitude of immigration from EU8 countries was still quite large but in most cases it was illegal, especially for Polish immigrants (Duvell, 2004 and Trevena, 2009). Moreover, before the enlargement immigrants from Eastern countries could enter the UK as self-employed, so there may have been some positive selection at work as those who could not find a job or were not performing well in the labour market would have decided to become self-employed. However it is hard to identify from the UK LFS, as the survey only does not ask the question on wages if the individual is self-employed. Another possible hypothesis considers migrant selection from sending countries. There is a large literature that shows that by lowering the cost of migration also individuals coming from the poorest regions decided to migrate. As shown in Dustmann et al (2012) and Rosso (2013) for the case of Poland, the accession has changed the regional distribution of emigrants. Before the enlargement a large fraction of (legal) emigrants lived in richer regions (like the region of Warsaw), after the enlargement a larger portion come from more agricultural regions. Differences in the quality of institutions within source countries could justify differences in the labour market performance of immigrants before and after the enlargement. Finally, and also partly related to the previous explanation, several studies have shown that the enlargement has made migration of EU8 individuals more temporary as immigrants can move back and forth without restrictions (Blanchflower and Shadforth, 2009; Blanchflower and Lawton, 2009). As shown by Dustmann (2000), temporary immigrants have lower reservation wages, therefore are more likely to accept lower wages and they invest less in host-country specific human capital. This theory seems to be particularly compelling when trying to explain why the immigrant-native wage gap has become larger also at the bottom.

My results show that, compared to British natives, EU8 immigrants are better educated but after 2004 the relative level of education has decreased, also because the level of natives' education has increased. Together with this, results also show that their education is valued less. Most of the decrease is ascribed to occupational downgrading, indeed when controlling for occupation in the wage regression the gap between the two periods in return to education

disappears. The return to foreign experience decrease substantially (on average and at different percentile) over the two periods and are much lower compared to other immigrant groups. As it was for other immigrants, before the enlargement EU8 immigrants the top earned higher wages than natives while at the bottom they earned less than natives. After 2004, the raw wage penalty between natives and EU8 immigrants are higher at the top. Moreover, at the top a higher proportion of this gap cannot be explained by the differences in the composition between immigrants and natives, even after controlling for occupation and industry dummies, but it is ascribed to differences in wage structure (how characteristics are rewarded). The analysis on recent immigrants is performed in order to rule out the possibility that the results are just determined by the fact that EU8 immigrants are *new* arrivals. Results suggest that EU8 immigrants are more likely to compete with other immigrants and not with EU14 immigrants[4]. Yet, the occupational downgrading is much larger for EU8 immigrants than for other immigrants. These results and the fact that return on foreign experience are much lower than return to foreign experience would be more compellingly explained by the theories on the lack of skill transferability and on the temporary nature of migration. While skill transferability tend to explain in particular the decrease at the top, the fact that also the bottom of the distribution has worsened may be justified by the fact that EU8 immigrants can choose to temporary live in the UK. Indeed, there would not be any reason to observe a decline also at the bottom of the distribution, in particular if compared to the period before, as the jobs performed at the bottom of the native distribution involve more routine and manual tasks. These jobs usually require less cognitive and communication skills, that may be missing in some immigrants (i.e. they can't speak the language). It has been found in the literature that immigrants have a relative advantage in jobs with high manual-intensive tasks (Peri and Sparber, 2009; Peri et al, 2013; D'Amuri and Peri, 2013). The temporary nature of migration then can partly explain why EU8 immigrants accept lower wages[5]. As pointed out in Clark and Drinkwater (2008) EU8 immigrants tend to work longer hours in order to compensate for lower wages, which could be another signal of their temporary nature and the unwillingness to invest in host country human capital. Using information only asked in the summer quarter in 2003 and 2006, they show that around 30% of those who did not speak English at home as a main language, 95%, had language

---

[4]Brenke et al find that EU8 immigrants are more likely to compete with non-EU immigrants for low-skilled jobs and not with German natives

[5]Parutis (2011) also shows that some groups of Eastern European immigrants are largely highly qualified but often work in low-skilled jobs. She finds that Polish and Lithuanian immigrants find it acceptable to work below their skills as it allows them either to maximise their income and then return back home (temporary migrants) or to improve other skills required by the British labour market in order to have access to a wider labour market (e.g. learn English).

difficulties in finding or keeping a job[6].

The remainder of this paper is the following. In Section 2, I describe the situation of EU8 immigrants in the UK, also referring to the data. In Section 3, I describe the decomposition techniques used and the following sections present the the results and conclusions.

2 Background and Data

2.1 Immigrants from EU8 countries in the UK

In May 2004, nationals from the eight accession countries were allowed free access to the UK labour market and they were only required to register with the Worker Registration scheme (WRS) if they wished to work for at least one month in the UK.

Between 1989 until the accession, immigration of EU8 workers to the UK was regulated by the Immigration Act of 1971: they were subject to work permits issued for non European Community nationals to work for a particular employer in a particular job for a limited period[7]. Yet, before the big change in 2004, since the 90's, through the Europe Agreement[8], EU8 citizens were allowed to come and stay in the UK for the purpose of establishing a business (self-employed or owners of companies or in partnership). Nevertheless, before 2004, labour mobility within the EU was limited[9] and in particular immigration from Eastern European countries was mainly to Western countries situated closer to their borders (Longhi and Rokicka, 2012). The Home Office (2009) using application from the WRS, showed that in 2004, the number of applications approved were more than 120,000 and this number increased until 2008, when the number of applications started to decline.

In Table A2 in Appendix A, I show the change in the country composition (and the log of the mean real hourly wages) in the periods before and after 2004. Immigrants from Poland are the largest group in both periods. Before the enlargement, Hungarian immigrants were the

---

[6]It is important to notice that knowledge of English can be both a proxy for knowledge of country specific skills, but also it could be a good indicator of the quality of education in the source country.

[7]Only after four years in the country these restrictions could be lifted and individuals obtain a resident status to freely choose their occupation. There was no need of work permit for season agricultural workers on scheme, teachers on exchange programmes, migrants with British grandparents, business men and Commonwealth working holiday-makers.

[8]Ratified in different years for each country.

[9]Only 4% of EU citizens have ever lived in another EU country and in 2002 only 1.5% of EU workers lived in a different member state (see Dobson (2009) for a discussion on this and references)

second largest group representing 20% of all immigrants from EU8 countries but, after 2004 their share decrease drastically to 3%. Also immigrants from Czech Republic experienced a decrease in their share from 12% to 6%. After the enlargement, Poles represented almost 70% of immigrants from EU8 and the other major groups were immigrants from Lithuania and from Slovakia. There is a decline in wages for all groups, with the exception of immigrants from Czech and Slovak Republic, whose wages have increased by more than 10% over the two periods, but are still below the average wages of British born, as reported in Table 1.

2.2 Data and samples

2.2.1 UK LFS: variables and sample selection

The main dataset used is the UK Labour Force Survey (LFS) for years 1998 to 2008[10]. The LFS is a sample of private households in the United Kingdom which contains information on demographic and labour market characteristics of the sampled individuals, since the mid-70s. From the spring quarter in 1992 it became a rotating panel, where individuals are sampled for 5 consecutive waves (in Northern Ireland this design was only introduced in 1994). The LFS is a large sample with on average 80,000 observations in each quarter. Data on wages are available after 1993 in the last wave the person in interviewed. Since 1997 questions on wages are also asked in the first interview. In particular, among other variables this dataset contains information on country of birth, arrival year in the UK, educational attainment, monthly gross wages, hours worked per week, occupation[11] and industry sector. The LFS is a nationally representative sample which does not focus on immigrants and, as pointed out by Saleheen and Shadforth (2006) immigrants are less likely to respond to the survey and so more likely to be underrepresented in the LFS data. Moreover, I am looking at a very specific group of the immigrant population. As pointed out by Gilpin et al (2006) the LFS is likely to underestimate the number of EU8 immigrants in the country in particular those who have been in the UK for less than 6 months and those living in communal establishments,

---

[10] I could use data up to 2011, but according to the official statistics from the ONS on long-term immigrants (available at: http://www.ons.gov.uk/ons/rel/migration1/long-term-international-migration/2011/2-03-ltim-country-of-birth–1991-2011.xls, accessed 28 August 2013), there is large decrease in the inflow and increase in the outflow of immigrants from EU8 countries. This is likely to be due to the financial crisis that hit the UK at the end of 2008. As pointed out by the OECD (2012) the economic crisis has severely affected the outcomes of diverse cohorts differently. In order to avoid any sample selection due to fact that also long-term migrants are more likely to return to their home country during an economic crisis, I use data up to 2008.

[11] ONS uses the Standard Occupational Classification (SOC) to classify occupations. There is a change in the occupational classification after 2001, from SOC1990 to SOC2000. I have recoded the occupation variable into the International Standard Classification of Occupations (ISCO-88) codes in both periods using tables provided by the Classification and Harmonisation Unit in the ONS, in order to be able to compare the distribution of occupation over years.

as it is more difficult to include them in the sample. The small and selected sample size can be a problem in particular before 2004, but as the number of EU8 nationals in the country increases[12], the probability of being included in the survey increases and population weights which are provided in the survey can correct for the non-response rates between immigrants and natives (Longhi and Rokicka, 2012). Further, this dataset has already been used to study the immigration of A8 citizens in the UK (Blanchflower and Shadforth, 2009; Drinkwater, Eade and Garapich, 2009; Longhi and Rokicka, 2012) and to analyse labour market outcomes of immigrants in the UK in many other studies (for example, Dustmann and Fabbri, 2005; Dustmann, Frattini and Preston, 2013; Manacorda, Manning and Wadsworth, 2012). Given the nature of the survey, the LFS is more likely to give a better picture of longer-term EU8 immigrants who are still living in the UK. Finally, the LFS allows the comparison with natives and other immigrant groups, for both the periods I am looking at (before and after 2004).

A further concern is the possibility that attrition is not random and affects natives and immigrants in a different way. To avoid sample selection issues resulting from non-random attrition, as a robustness check on the results, I run the same analysis including only individuals who respond to their first interview (Drinkwater, Eade and Garapich, 2009 and Longhi and Rokicka, 2012). Results are confirmed.

Following the existing literature on immigration, I define immigrants based on the country of birth. I define EU8 immigrants as those who were born in one of the countries that gained access to the EU in 2004 with the exclusion of Malta and Cyprus. As comparison groups, I also report statistics for immigrants from the other countries that were already part of the European Union (EU14 as I exclude the UK) and for all other immigrants. I use EU14 and other immigrants to compare the results in order to rule out the possibility that results were driven by changes in UK labour market conditions for all immigrants and not by a change in the composition of EU8 immigrants coming to the UK.

---

[12]The statistics from the Worker Registration Scheme show that more than 800 thousands applications were registered and approved between May 2004 and September 2008 (Home Office. UK Border Agency, 2009). From May 2004 until April 2011, all immigrants from EU8 countries who wanted to work in the UK had to register with the scheme. The collection of these data only started after 2004, so they would be useless in the context of this paper. Moreover, as pointed out by Blanchflower and Lawton (2008), the major caveat of these data comes from the fact that individuals do not need to de-register if they leave the country, for this reason the WRS may overestimate the number of immigrants from those countries in the UK. This can be even more severe in the case of EU8 migrants who should more appropriately be considered temporary workers. Looking at the Census statistics from 2001 and 2012, the share of EU8 immigrants has increased: in 2001 they only represented 0.13% of the working age population (and 0.21% of the total population), but in the latest 2012 Census they represent almost 2% of the population in England and Wales.

I restrict the analysis to individuals of working age (16-65) at the time of the interview who report to be employed or in government schemes. The earnings measure I use is real hourly wages, deflated using the CPI. Hourly wages are defined as gross weekly wages divided by the total usual hours worked in a week, including the usual hours of paid overtime. Using hourly wages will allow me to have a measure of wages which is less contaminated by the decision on how much to participate in the labour market[13]. Finally, for each year I trim all the wage observations below the 1st and above 99th percentile to eliminate outliers. I focus on employees, excluding self-employed as no wage information is reported for them.

The variable education is defined using "age left full-time education". In the context of immigration the variable on the highest qualification achieved cannot be used as the ONS's policy is to recode any foreign qualification which is not on their list as "other". While for natives those who are classified in this category are likely to have low level of education, for immigrants this is not the case (see Manacorda, Manning and Wadsworth (2012); Saleheen and Shadforth (2006) for a more detailed discussion). Using "age left full time education" represents a good proxy for the level of education, in absence of precise information on qualifications, so it also allows me to better compare different groups that are likely to have acquired education abroad. I define workers with tertiary education as those who have left full-time education at age 21 or later, workers with secondary education as those who left full-time education between the ages of 17 and 20 and workers with less than secondary those who left full-time education before 16 years old (included) or never had full-time education. Using the same variable from the LFS, I also define the years of education for each worker, and this variable is used in the estimation as it easier to interpret in the context of wage decompositions, as explained below.

2.2.2 Descriptive Statistics

Table 1 shows a set of labour market variables for natives, for EU8 immigrants, for all the other immigrants (excluding EU8) and for immigrants from the EU14 for years before 2004 (1998-2003) and after 2004 (2004-2008)[14].

Table 1: Descriptive statistics

	Before 2004				After 2004			
	UK natives	EU8	Other immigrants	EU14	UK natives	EU8	Other immigrants	EU14
log hourly gross real wage	2.25	2.17	2.32	2.32	2.34	1.99	2.38	2.42
British labour market experience	22	14	15	13	23	3	14	13
Foreign labour market experience		4	4	3		6	5	4
males (%)	50%	37%	51%	46%	50%	55%	52%	49%
Education								
Primary	57%	12%	26%	30%	51%	8%	21%	25%
Secondary	27%	47%	36%	33%	29%	51%	36%	33%
Tertiary	16%	41%	37%	37%	20%	41%	43%	42%
Years of education	11	14	13	13	12	14	14	14
Cohort of arrival								
before 1998		73%	84%	81%		7%	59%	64%
arrival 1998-2003		27%	16%	16%		15%	28%	23%
arrival 2004-2008						78%	13%	12%
Age	39	38	38	36	40	30	39	37
Marital status								
Single	30%	29%	28%	42%	32%	55%	28%	43%
Married	58%	58%	61%	47%	55%	36%	61%	46%
Other	12%	13%	11%	10%	13%	9%	11%	10%
Region								
tyne & wear	2%	1%	1%	1%	2%	1%	1%	1%
rest of northern region	3%	2%	1%	2%	3%	1%	1%	2%
south yorkshire	2%	0%	1%	1%	2%	2%	1%	1%
west yorkshire	4%	2%	3%	2%	4%	6%	3%	2%
rest of yorks & humberside	3%	1%	1%	2%	3%	3%	1%	2%
east midlands	8%	4%	5%	5%	8%	10%	5%	5%
east anglia	4%	5%	3%	4%	4%	5%	3%	5%
inner london	3%	14%	19%	18%	3%	8%	16%	17%
outer london	6%	30%	23%	14%	5%	13%	21%	13%
rest of south east	20%	22%	20%	24%	20%	18%	21%	23%
south west	9%	6%	6%	8%	9%	5%	6%	8%
west midlands (met county)	4%	1%	5%	2%	4%	4%	4%	2%
rest of west midlands	5%	1%	2%	3%	5%	3%	2%	3%
greater manchester	5%	3%	2%	2%	4%	4%	3%	2%
merseyside	2%	0%	0%	0%	2%	1%	1%	1%
rest of north west	4%	1%	2%	2%	4%	3%	2%	2%
wales	5%	2%	2%	2%	5%	3%	2%	3%
strathclyde	4%	1%	1%	1%	4%	2%	1%	2%
rest of scotland	6%	3%	3%	4%	6%	4%	3%	5%
northern ireland	2%	1%	1%	3%	2%	3%	1%	3%
Occupation								
Legislators and managers	14%	0%	14%	15%	15%	3%	13%	17%
Professionals	15%	6%	21%	21%	14%	5%	20%	21%
Technicians	11%	3%	11%	10%	13%	4%	15%	15%
Clerks	18%	9%	16%	16%	16%	8%	12%	12%
Service and sales workers	15%	38%	16%	18%	16%	17%	17%	16%
Agricultural and fishery workers	1%	0%	0%	0%	1%	1%	0%	0%
Crafts and related trades workers	9%	0%	5%	5%	7%	9%	4%	4%
Plant and machine operators	8%	13%	7%	5%	7%	20%	6%	4%
Elementary occupations	9%	31%	9%	9%	10%	34%	12%	11%
Industry								
a-b: agriculture & fishing	1%	1%	0%	0%	1%	2%	0%	1%
c,e: energy & water	1%	0%	1%	1%	1%	0%	1%	1%
d: manufacturing	19%	14%	15%	15%	14%	27%	12%	12%
f: construction	5%	6%	2%	3%	6%	6%	3%	3%
g-h: distribution, hotels & restaurants	18%	23%	20%	21%	17%	25%	19%	20%
i: transport & communication	7%	3%	7%	7%	7%	11%	7%	7%
j-k: banking, finance & insurance etc	15%	15%	19%	20%	15%	11%	20%	21%
l-n: public admin, educ & health	30%	24%	30%	27%	34%	11%	34%	30%
o-q: other services	5%	13%	5%	6%	5%	5%	4%	5%
workplace outside uk	0%	0%	0%	0%	0%	0%	0%	0%
Observations	346,509	348	22,092	4,723	240,038	2,245	20,315	3,903

Note: Employees aged 16-65. Self employed are excluded as there is no wage information. Real wages at constant 2008 prices. EU8 immigrants include Poland, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Slovakia and Slovenia. EU14 immigrants includeAustria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden. Other immigrants include all foreign born in the UK with the exclusion of EU8 born. Tertiary education: left full-time education at age 21 or later; secondary education: left full-time education between the ages of 17 and 20; less than secondary: left full-time education before 16 years old (included) or never had full-time education. Other in the marital status include separated, divorced or widowed.

In the first row of the table, I report the natural logarithm of hourly gross wages in real terms. Overall, EU8 immigrants are the lowest paid group in both periods. EU8 immigrants mean log wages are 8 log points below that of natives, 15 points below the other immigrant groups in the period before the accession[15]. The gap between EU8 immigrants and all other groups has widened after 2004. EU8 immigrants earned 35 log points (30%) less than British born-workers and even less if compared to other immigrants[16].

Following Green and Worswick (2004) and Boudarbat and Lemieux (2012), I divide experience into British experience and foreign experience, as the latter is probably not valued as much as British experience in the UK labour market[17]. There is enough evidence in the literature to support the idea that immigrants find it hard to transfer both formal education and labour market experience from their country of origin to the destination country. In particular as shown in Chiswick and Miller (2009), there is a strong inverse relationship between source country labour market experience and the likelihood of being correctly matched to the skill requirements of the job.

For natives and for immigrants who studied in the UK- those who left full-time education after their arrival, British experience is defined as age minus age at which the individual left full time education, assuming that it is also the age of entry in the labour market. For all

---

[13]I report results for men and women together as in terms of the final results there is not much difference. Moreover, using hourly wages may not completely solve the problem of selection, as part-time jobs for example are systematically paid less than full-time jobs and part-time jobs are more popular among female workers (Manning and Petrongolo, 2008). For this reason, as a robustness check I present descriptive statistics and estimation results for men only.

[14]In Table A1 in Appendix A I report the employment rates for all the groups over the same two periods. The UK LFS allows for a distinction between inactive and employed and among employed self-employed are included. Self-employed only remain in the sample used to compute employment rates, but are then excluded from the sample mainly because of sample selection issues (see for example Dawson, Henley and Latreille, 2009) but also because there is not information on earnings for this group.

[15]We could transform this gap into percentage using the following transformation: let Δ_t represent the difference in mean log wages between EU8 immigrant and native in period t (before or after 2004). The percentage wage difference is then given by $e^{\Delta_t} - 1$. For small values of Δ_t the difference in log wages is a good approximation of the percentage change in wages. For large values of Δ_t it is better to use the formula.

[16]This results is confirmed by previous studies on EU8 immigrants. Longhi and Rokicka (2012) find that those who arrived after the enlargement suffered a wage penalty of almost 19% after controlling for individual characteristics, job characteristics, time and location dummies. Moreover, Drinkwater, Eade and Garapich (2009) documented a decline in average wages for Poles and other EU8 immigrants entering the country after the enlargement compared to other EU immigrants entering the country over the same period. See also Blanchflower and Shadforth (2009) for a discussion on immigrant wages from A10 countries. Clark and Drinkwater (2008) show that EU8 immigrants have the lowest earnings of any other immigrant group, especially after 2004.

[17]As pointed out by Green and Worswick (2004) we should be cautious in interpreting the value of foreign experience as returns to foreign experience as individuals arriving with different numbers of years of experience in the source country labour market may also face different selection processes in different dimensions.

other immigrants who arrived at the end of their studies, British experience is simply defined as the years since migration, which is also assumed to be years since entering the British labour market. Foreign experience is calculated as age at arrival minus school leaving age and it is assumed to be zero for natives. Table 1 shows that before the enlargement natives had on average 22 years of experience in the British labour market, which increase to 23 after the enlargement. British experience for EU8 immigrants decreased by 11 years between the two periods of analysis, from 14 to 3 years, this is expected given the large cohort of EU8 immigrants who arrived after 2004. This short UK experience seems to be strongly related to the widening of the gap between EU8 immigrants and natives. This has not happened in the other immigrant groups. British experience has decreased by 1 year for all other immigrants and remained stable for other EU immigrants. Overall, the labour market experience of EU8 immigrants has decreased by 50%. This is also confirmed by the fact that immigrants are younger (in general) and EU8 immigrants are younger than other immigrant groups after the enlargement. Before 2004, the labour market experience of EU8 immigrants was much more comparable to that of other immigrants, still they suffered a wage penalty. Interestingly, after 2004, there is a larger increase in foreign experience for EU8 immigrants (from 4 years to 6) while for other immigrants it has only increased by 1 year.

As explained above, I group workers into three education categories on the basis of the age they left full time education. In all groups I observe an increase in the level of education. Most noticeably, while the increase in the level of education has happened through an increase in the share of tertiary education for natives, other and EU14 immigrants, for immigrants from EU8 countries there is no change in the share of tertiary educated over the two periods, but there is an increase in the share of secondary educated that it is barely seen in the other groups. Moreover, the share of primary educated has decreased more in other groups than amongst EU8 immigrants. Comparing the groups within each period, it is easy to notice that, firstly immigrants are in general better educated than natives: before 2004, there are only 16% of natives at the top end of the distribution of education, for other groups the fraction is around 40%, even higher after 2004. Secondly, in both periods the group of immigrants from EU8 countries has the lowest fraction of primary educated (12 and 8% respectively in the two periods, while for natives it is above 50% in both periods) and before 2004 the highest fraction of tertiary educated (41%). Lastly, the fraction of secondary educated individuals among the EU8 immigrants is above 50% after 2004, again the highest among all groups. Because of the strong relation between wages and education, I should observe higher wages for immigrants, in particular for EU8 immigrants. So, while I observe this for all other immigrants in both periods immigrants from Eastern European countries

have always had on average lower wages than natives, the wage penalty for this group has become even higher.

The next figures show the marital status for each group. I report the percentage of single, married (including those in civil partnership) and other which include those who are separated, divorced or widowed. Before 2004, EU14 immigrants were more likely to be single (42%), while other groups were more likely to be married. After 2004, the distribution only changed for EU8 immigrants, who became more likely to be single (partly because they are younger). Before 2004, all immigrants were disproportionately concentrated in London (inner and outer). The distribution across UK regions has only changed for EU8 immigrants. They have moved out of London (the share based in London fell from 44% to 21% after 2004) and the percentage of EU8 immigrants living in lower-wage regions has increased (after 2004, 10% live in the East Midlands, 10% in the Yorkshire)[18]. I expect this relocation to have some effect on relative wages.

I also report the distribution of occupation and industry for each group. Occupational and industry differences may just represent an outcome of the poor job matches, mainly due to the little international transferability of skills (education and foreign experience)[19]. Before 2004, the distribution of natives' occupations was fairly similar to that of immigrants, but not for EU8 immigrants. Overall, immigrants are over-represented among professionals and slightly under-represented among crafts and related trade workers. Before 2004, more than 80% of immigrants from East-European countries were working in low-wage jobs (in particular service and sales and elementary occupations) and after 2004 even if we observe an increase in the percentage of immigrants in high-wage jobs, the percentage of those in low-paid jobs is still very high. In terms of industry distribution there is not much change over the two periods. EU8 immigrants are more likely to work in distribution, hotel and restaurants in both periods (even more than other immigrants). This is a low-paid sector. After 2004, they are also over-represented in the manufacturing sector in comparison to all other groups.

---

[18]See for example, Rincón-Aznar and Stokes (2011) for a discussion on migrants' choice of location within the UK.

[19]See for example Altonji and Blank (1999) for a discussion on this issue in the case of labour market discrimination. Applied to this case occupational and industry differences can represent either a preferential choice or an outcome of, for example, the lack of skill transferability (or some other unobservable factors). Therefore, not controlling for these variables may underestimate the importance that these characteristics have on labour market outcomes but on the other side, controlling for these variables may just underestimate the existence of some sort of occupational segregation for this group of immigrants and thus the constraints that this group is facing.
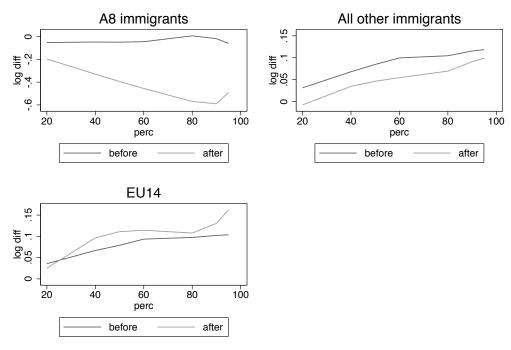
2.2.3 Changes in the distribution of wages

In order to understand what is happening to the distribution of wages of EU8 immigrants and natives, I compute the wage gap between the two groups at each percentile in the two periods. Also in this case, I report the results for both males and females together as the trends are very similar. Figure 2 shows the wage gap between natives and EU8, EU14 and all other immigrants by each percentile in the period before and after 2004. Consistent with what I have said above, before 2004 EU8 immigrants earned less than British born, and this is almost true at each percentile of the distribution (with the exception of the 80th percentile where the gap is positive). When I look at the period after the enlargement, again the gap is always negative but it is larger at the top of the wage distribution. In particular, at the 90th percentile EU8 immigrants earn (almost) 60% less than British born at the same percentile. When I consider the other groups, there is not much difference in the wage gap at each percentile over the two periods. After 2004 the gap of EU14 born has increased at the top in favour of EU14 but became more negative at the bottom (the wage distribution has become wider), while it has shrunk for all other immigrants, still being positive.

Table 2 shows the log real wages for each percentile, for UK natives, EU8, EU14 and other immigrants before and after the enlargement. Wages for natives have increased similarly at each percentile. Wages have decreased at each percentile after the enlargement for EU8 immigrants, and the decrease has been higher (around 40%) at the percentiles at the top of the distribution. Wages for EU14 immigrants have increased by 9% at the 20th percentile but more than 10% for the other percentiles. Two things come out of this table. EU8 immigrants' wage distribution moved to the left , disproportionally at each point of the distribution(more at the top). EU8 immigrants are the only group that experienced a decrease in wages over the two periods considered.

In this paper I will try to account for the changes in the distribution of wages not only by decomposing the mean wages, but also decomposing the changes in relative wages of EU8 immigrants at different percentiles of the distribution, using the Firpo, Fortin and Lemieux (2009) unconditional quantile regression method. As we have seen in the previous paragraphs, EU8 immigrants have always had lower wages than natives even before the enlargement, but this gap has worsened becoming larger at the top percentiles of the distribution. Moreover, I will try to see whether this increase of the gap is explained solely by the lack of British labour market experience or if compared to another group of recent immigrant from other European countries, I still observe the same pattern. Skills of immigrants from

Figure 2: Immigrant-Native wage gap by percentile

by percentile in the two periods

Source: UK LFS, years 1998-2008
Note: Real wages in 2008 prices.

EU14 countries seem to have a better transferability in the UK labour market compared to those of EU8 immigrants.

3 Decomposition Methods

The standard Oaxaca-Blinder method (Oaxaca,1973; Blinder, 1973) decomposes the difference in mean wages into two parts: the *explained* and *unexplained* components. The first part is the part that can simply be attributed to the differences in the characteristics between the two groups (valued at the reference group coefficients). The way it could be interpreted is: if the wage structure of the reference group was held constant how much of the gap could be explained by the differences in characteristics? The unexplained component is simply part of the gap that cannot be explained by characteristics and it is usually attributed to differences in the return to skill function of the two groups.

Decomposing the mean is a rather easy exercise because of the statistical properties of the

Table 2: Log hourly gross real wage by quantile, before and after 2004

	UK Natives		EU8		Other immigrants		EU14	
	Before 2004	After 2004	Before 2004	After 2004	Before 2004	After 2004	Before 2004	After 2004
20th	1.79	1.89	1.75	1.69	1.82	1.88	1.83	1.92
40th	2.08	2.16	2.03	1.83	2.15	2.20	2.14	2.26
50th	2.21	2.30	2.16	1.91	2.30	2.35	2.29	2.41
60th	2.36	2.44	2.32	1.99	2.46	2.50	2.45	2.56
80th	2.71	2.79	2.72	2.22	2.81	2.86	2.81	2.90
90th	2.95	3.04	2.94	2.45	3.07	3.13	3.06	3.16

Source: UK LFS, years 1998 to 2008
Note: Real wages at constant 2008 prices.

expected values. Thanks to the law of iterated expectations, the estimated coefficient of a simple OLS regression can be interpreted as the effect of a change on the mean value of the covariate on the *unconditional* mean value of the dependent variable[20]. Decomposing quantiles is harder because this property does not hold. The coefficient in the conditional quantile regression can only be interpreted as the effect of a change in the mean value of the covariates on the τth *conditional* quantile of the dependent variable, as the law of iterated expectation does not hold. For this reason, an alternative regression method was introduced by Firpo, Fortin and Lemieux (2009), where instead of estimating the usual conditional quantile regression, a recentered influence function (RIF) is estimated and the standard Oaxaca-Blinder decomposition is then performed on the results[21].

Just a note should be made about the interpretation of the coefficients in both mean and quantile decompositions: it is assumed that there are no general equilibrium effects of immigration on skill prices. This implies that the wage structure of the natives is taken as given and their wage structure acts as the wage structure of reference. Nothing can be said about what would happen to the natives' wage structure in the absence of immigrants, which would probably act as a better counterfactual for decomposition.

3.1 Mean decomposition

Starting from the mean decomposition, I consider a simple log wage equation for immigrants (I) and for natives (N).

$$W_{Iit} = X_{Iit}\beta_{It} + \epsilon_{Iit} \tag{1}$$

and

---

[20]$E[Y] = E_X[E(Y|X)] = E(X)\beta$

[21]An extensive description of the methods, with advantages and disadvantages can be found in Fortin, Lemieux and Firpo (2011).

$$W_{Nit} = X_{Nit}\beta_{Nt} + \epsilon_{Nit} \tag{2}$$

where t is either before or after 2004. I estimate a log wage regression separately for immigrants and natives[22]. The main assumptions in this setting is the linearity and separability of wage as a function of observable and unobservable characteristics. In addition to this I also need to assume the conditional mean independence of the error term ($E[\epsilon_{it}|X_{it}] = 0$) which allows me to estimate unbiased and consistent estimators with OLS. These assumptions are used to re-write the difference in the mean wages ($\Delta_t = \overline{W}_{It} - \overline{W}_{Nt}$) into the two components.

$$\Delta_t = \overline{W}_{It} - \overline{W}_{Nt} = \underbrace{(\overline{X}_{It} - \overline{X}_{Nt})\beta_{Nt}}_{explained} + \underbrace{(\beta_{It} - \beta_{Nt})\overline{X}_{It}}_{unexplained} \tag{3}$$

where $\overline{W}_{gt}$ and $\overline{X}_{gt}$ represent the mean wages and characteristics for all individuals in group g in period t. Following Boudarbat and Lemieux (2010), given that some variables are immigrant specific (i.e. foreign experience), I set the values for these variables and the corresponding parameters for natives to zero. As explained above, the first part of the decomposition is the explained component which is given by differences in the average composition between the two groups, while the second part is the unexplained component which is the difference in the estimated returns to similar characteristics between immigrants and natives.

3.2   Unconditional quantile decomposition

The quantile wage gap is the difference between immigrant and native quantiles
$$\Delta_t(\tau) = q_{It}(\tau) - q_{Nt}(\tau) \tag{4}$$

As pointed out in the introduction to this paragraph, because the unconditional quantile is not equal to the mean of the conditional quantile, a new procedure has been introduced. The unconditional quantile regression provides estimates of the coefficient of each single characteristics at different points of the distribution, where the dependent variable is substituted by the recentered influence function (RIF). The first step to be taken is to construct the RIF of the wage W_{it} for the quantile $q(\tau)$. It is defined as:

---

[22]The alternative would be to estimate a pooled (immigrants and natives) wage regression, just by adding an immigrant dummy control. In this case I would need to assume that the prices for skills are the same in both groups. This is not credible in this context as the coefficients on separate regressions are very different. The risk in this case is that when looking at the change of the gap over 2 periods, some of the change could be attributed to a change in the wage structure of the reference group, making the results harder to interpret. As I show in the OLS results, the wage function for natives has barely changed over the two periods, therefore most of the decomposition results are imputable to changes in the immigrant group (composition and prices).

$$RIF_{it}(W_{it}, q) = q(\tau) + \frac{\mathbf{1}\{W_{it} \geq q(\tau)\} - (1 - \tau)}{f_W(q(\tau))} \tag{5}$$

where $f_w(.)$ is the wage density function and $\mathbf{1}(.)$ is the indicator function which is 1 when the wage observation is above the quantile $q(\tau)$. The second part of the function is the influence function. The main advantage of using this transformation is that the expected value of the influence function is zero, therefore the expected value of the RIF is just $q(\tau)$. The first method suggested for the estimation is a simple OLS which provides consistent estimates of the parameters, as long as the $Pr(W_{it} \geq q(\tau)|X)$ is linear in the covariates (Firpo, Fortin, Lemieux, 2009):

$$E[RIF_{it}(W_{it}, q)|X] = \beta_t X_{it} \tag{6}$$

The intuition behind it is that running a RIF regression is similar to running a linear model on the probability of the wage observation being above the quantile, the only difference with a simple linear probability model is that in the RIF case, the coefficients are normalized by the density function evaluated at the quantile. Instead of decomposing the quantile gap ($\Delta_t(\tau)$), Firpo, Fortin and Lemieux (2009) show that it is easier to decompose the corresponding gap in the probability, which is given by the difference between the fraction of natives *and* the fraction of immigrants earning below the value of the quantile for natives $q_{Nt}(\tau)$, which is $\mathbf{1}\{W_{it} \geq q_{Nt}(\tau)\}$. The probability decomposition and the quantile decomposition are then reconciled by dividing the probability gap by the probability density function[23] The Oaxaca-Blinder decomposition is then performed on this probability gap.

Firstly, I will run a RIF regression for each group

$$RIF_{Iit} = X_{Iit}\delta_{It} + \epsilon_{Iit} \tag{7}$$

and

$$RIF_{Nit} = X_{Nit}\delta_{Nt} + \epsilon_{Nit} \tag{8}$$

The coefficients are interpreted as partial effect on the probability estimation (similar to any linear probability model)[24]

I can re-write the quantile wage gap as a difference of the conditional expected value of the RIF[25] between the two groups

---

[23]In a cumulative density function, being P_I the cumulative probability for immigrants at a quantile $q_{Nt}(\tau)$ and P_N the cumulative probability for native at the same quantile $q_{Nt}(\tau)$, the slope of the cumulative distribution function is given just by the probability function: $\frac{P_N - P_I}{q_{It}(\tau) - q_{Nt}(\tau)} = f_W$ where f_W is the wage pdf. So $q_{It}(\tau) - q_{Nt}(\tau) = \frac{P_N - P_I}{f_W}$.

[24]In the case of the conditional quantile regression the parameter is an estimate of the shift in the location of the quantile in the conditional wage distribution.

[25]Available at: http://faculty.arts.ubc.ca/nfortin/datahead.html (accessed 28 August 2013) for the RIF-Regression STATA ado file from Firpo, Fortin and Lemieux (2009)

$$\Delta_t(\tau) = \underbrace{(\overline{X}_{It} - \overline{X}_{Nt})\delta_{Nt}}_{explained} + \underbrace{(\delta_{It} - \delta_{Nt})\overline{X}_{It}}_{unexplained}$$

4   Estimation Results

4.1   Results from the mean wage gap

In order to compare the wage structure of EU8 immigrants and natives I run two ordinary least squares regressions for each group, one for the period between 1998 and 2003 and one for the period after the enlargement, 2004 and 2008. The dependent variable is the natural logarithm of hourly wages, measured in real terms. Table 3 and Table 4 show the estimates of these log wage regressions with robust standard errors in parentheses. Columns 1, 3, 5, and 7 of both tables (model 1) report the results using the following controls: British labour market experience and its square, completed years of schooling[26], civil status, gender, dummies for region of residence to control for time-constant differences in labour market conditions across regions[27]. For the immigrant regression, I also control for foreign experience and its square and the interaction between foreign experience and British experience following Boudarbat and Lemieux (2011). For immigrants, I allow the intercept to vary across cohorts which are defined by the year of arrival (before 1998, between 1998 and 2003 and between 2004 and 2008). In the other columns (model 2) I further control for occupation and industry. The wage equation is run separately for each group in both periods as the differences in the estimated coefficients are large and given the higher proportion of natives compared to immigrants, the estimated coefficient would be more likely to reflect the native returns to skills (see footnote 17 for more details). Moreover, I am interested in showing not only the contribution of the explained part (the part explained by the characteristics) but also the contribution of the unexplained part, which is given by the fact that the skills of the two groups have different prices. In Tables 3 and 4 I present the estimates for the coefficients of the intercept, foreign and British experience, civil status and gender. Following Trejo (1997), for each group of immigrants the intercept reported in the table is given by a weighted

---

[26]I use years of education instead of the categorical variable constructed on the base of the age left education in order to avoid any difficulties that may arise with the interpretation of the effect in the decomposition when an omitted category has to be chosen. As pointed out by Oaxaca and Ransom (1999), the choice of the omitted category is arbitrary and the conventional practice is to omit one category as a reference point. Moreover, while the overall effect of the categorical variable in the explained part of the decomposition may not be affected, in the unexplained part of the decomposition it would be hard to distinguish the effect which is due to different wage structures (different returns) and the part which is just due to the differences in the coefficient due to the arbitrary choice of the omitted variable (see also Fortin, Lemieux and Firpo (2011) for a discussion on this issue and the possible solutions).

[27]I do not control for year dummies as I use real wages as the dependent variable

average of each separate intercept estimated for each cohort of arrival, where the weights just represent the share of each cohort in that group of immigrant in each period as reported in Table 1[28]. I do not report the coefficients on regional, occupation and industry dummies[29].

Starting from Table 3, in the period before 2004, there is not a big difference in the returns to British experience for natives and EU8 immigrants even after controlling for occupation and industry. After 2004, while these returns remain constant for natives, they increase for immigrants: each additional year of experience in the British labour market increases wages by 5% (controlling for occupation decrease the returns to the levels we observe before 2004)[30]. The coefficient on foreign experience declines substantially from 0.045 to 0.015: after 2004 each year of work in the source country is valued 3 times less in the British labour market. This result is quite surprising. Before 2004, experience in the host country labour market was valued similarly to British experience. After the enlargement, this is not true any more and the returns to foreign experience for these immigrants are lower than those of any other immigrant group. The estimates of the coefficient on the interaction between British experience and foreign experience are small, negative but significant and they are also in line with the coefficients of all other immigrant groups considered. The negative sign means that workers with high foreign experience should have lower returns to British experience[31].

The education measure used is years of education. The education premium declined substantially between the two periods for EU8 immigrants, even after controlling for occupation and industry dummies, though the two coefficients are *not* statistically different from each other in the second model. For every extra year of education, immigrants from East European countries earned 7.1% higher wages and after the enlargement only 4%. Similar results have been found by Clark and Drinkwater (2008) who show that recent immigrants from

---

[28]For example, the intercept for EU8 immigrants in the period before 2004:$\overline{intercept}_{A8,before2004} = share_{before1998,before2004} * intercept_{before1998,before2004} + share_{1998-2003,before2004} * intercept_{1998-2003,before2004}$. The standard errors are then computed using the variance-covariance matrix of the estimated coefficients and the fact that the $se(\overline{intercept}_{A8,before2004}) = \sqrt{Var(\overline{intercept}_{A8,before2004})}$ and the following formula for the variance: $var(\sum_i \alpha_i x_i) = \sum_i \alpha_i^2 var(x_i) + \sum_i \sum_{j \neq i} \alpha_i \alpha_j cov(x_i, x_j)$

[29]I run the models on immigrants without constant. That explains why the R-squared of the OLS regressions are inflated. If run with constant R-squared would be in line with those of natives.

[30]The increase in the returns to labour market experience is likely to be related to the fact that Eastern European immigrants are younger in the period after the enlargement and therefore these returns are calculated on a steeper part of the wage-experience profile.

[31]In Green and Worswick (2004), they find that the decrease in return of foreign experience plays a significant role in the declines in entry earnings across immigrants cohorts. Given that A8 immigrants, after 2004, are mainly recent immigrants, also in this case the decline in return to foreign education can partly explain the increase in the wage penalty we observe for this group.

EU8 countries have the lowest returns to education. Returns have decreased for all groups, but on average by only 1 percentage point. Moreover, before 2004, skills of immigrants from EU8 countries were valued similarly to skills of immigrants from other EU14 countries (Table 4)[32].

Interestingly, before 2004 those who are married earned about 21% more than single individuals (the omitted category). The difference is only about 7% for natives and other EU14 immigrants, but it is negative for other immigrants. The estimates decrease substantially after 2004 but also become statistically insignificant. The coefficient also decrease for EU14 immigrants and did not change much for other immigrants. The high effect I observe for married EU8 immigrants may also be related to the type of immigration: being married in the host country may also increase the investment in human capital in the host country which is related to the intentions to stay in the country.

There is evidence to say that female workers are paid lower wages, *ceteris paribus.* In all regressions the estimated coefficient on the female variable is negative and high, even after controlling for occupation and industry. Before 2004, Eastern European female workers earned 42% (33% in model 2) less than males and this estimates went down to 15% in the post-enlargement period. The gender penalty is above 20% for natives, which is much higher than the penalty I observe for the other groups I consider.

In order to provide some additional evidence of differences in the wage structure of the natives and EU8 immigrants, I jointly test whether the coefficients for natives and EU8 immigrants on education, experience, gender and marital status are different. Very high F-statistics confirm the the fact that the wage structure of the two groups are remarkably different, in particular in the second period (the F-statistic for the pre-enlargement regression is 4 while it is 37 in the post-enlargement period).

In Table 5, I use the decomposition techniques illustrated in section 3 in order to understand which portion of the wage differences can be attributed to characteristics and which portion

---

[32]There is also an issue of country composition and the fact that skills from some countries are less transferable than others. The relative distribution of countries within this groups has slightly changes. There is a decrease in the percentage of individuals from Hungary (from 20% to 3% of all immigrants from East European countries). Immigrants from Poland were 42% before and are about 70% after. Those from Czech Republic represented 12% before and they are 6% after. The shares of immigrants from other countries had minor adjustments. I also investigate further by running regressions controlling for country dummies and results do not change. In Table A2 I report the country distribution and mean wages for each group in the two periods.

Table 3: OLS estimates for natives and EU8 immigrants before and after 2004

| | Before 2004 | | | | After 2004 | | | |
| | Natives | | EU8 immigrants | | Natives | | EU8 immigrants | |
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
British Experience	0.046***	0.035***	0.043***	0.030***	0.044***	0.032***	0.054***	0.034***
	(0.000)	(0.000)	(0.011)	(0.009)	(0.000)	(0.000)	(0.011)	(0.010)
British Experience squared	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Foreign experience			0.045***	0.021			0.015***	0.009**
			(0.017)	(0.016)			(0.004)	(0.004)
Foreign experience squared			-0.001**	0			-0.000**	-0.000*
			(0.001)	(0.001)			(0.000)	(0.000)
Brit-foreign exp interaction			-0.002***	-0.001**			-0.001**	0
			(0.001)	(0.001)			(0.000)	(0.000)
Education	0.101***	0.051***	0.071***	0.030**	0.091***	0.046***	0.038***	0.022***
	(0.000)	(0.000)	(0.011)	(0.012)	(0.001)	(0.001)	(0.004)	(0.003)
Married	0.076***	0.061***	0.216**	0.096	0.089***	0.057***	0.031	0.014
	(0.002)	(0.002)	(0.086)	(0.088)	(0.003)	(0.002)	(0.021)	(0.019)
Other marital status	0.030***	0.028***	0.118	0.049	0.035***	0.022***	-0.03	0.005
	(0.003)	(0.003)	(0.135)	(0.123)	(0.004)	(0.003)	(0.035)	(0.031)
Female	-0.257***	-0.198***	-0.429***	-0.336***	-0.220***	-0.165***	-0.157***	-0.133***
	(0.002)	(0.002)	(0.066)	(0.066)	(0.002)	(0.002)	(0.018)	(0.017)
Intercept	0.269***	1.105***	0.280	1.548***	0.715***	1.480***	1.246***	1.960***
	(0.008)	(0.013)	(0.286)	(0.336)	(0.010)	(0.016)	(0.080)	(0.104)
Other controls								
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Occupation and Industry dummies	No	Yes	No	Yes	No	Yes	No	Yes
R-squared	0.328	0.474	0.941	0.959	0.303	0.463	0.956	0.964
obs	346509	346380	348	348	240038	239834	2245	2245

Robust Standard errors reported in brackets. indicates significance at 10%, ** indicates significance at 5%, *** indicates significance at 1% level.
When controlling for occupation and industry some observations for natives are lost.

Table 4: OLS estimates for natives and EU14 and other immigrants, before and after 2004

	Before 2004				After 2004			
	Other immigrants		EU14 immigrants		Other immigrants		EU14 immigrants	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
British Experience	0.039***	0.026***	0.042***	0.031***	0.041***	0.026***	0.047***	0.032***
	(0.001)	(0.001)	(0.003)	(0.003)	(0.002)	(0.002)	(0.004)	(0.003)
British Experience squared	-0.001***	-0.000***	-0.001***	-0.000***	-0.001***	-0.000***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Foreign experience	0.026***	0.022***	0.040***	0.033***	0.021***	0.018***	0.045***	0.037***
	(0.002)	(0.002)	(0.005)	(0.004)	(0.002)	(0.002)	(0.005)	(0.004)
Foreign experience squared	-0.000***	-0.000***	-0.001***	-0.000***	-0.000***	-0.000***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Brit-foreign exp interaction	-0.001***	-0.001***	-0.002***	-0.001***	-0.001***	-0.001***	-0.002***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Education	0.071***	0.027***	0.083***	0.045***	0.059***	0.021***	0.074***	0.034***
	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.003)	(0.003)
Married	-0.048***	-0.013	0.072***	0.049***	-0.034***	-0.002	0.043*	0.044**
	(0.010)	(0.008)	(0.021)	(0.019)	(0.010)	(0.009)	(0.023)	(0.020)
Other civil status	-0.060***	-0.012	0.027	0.006	-0.081***	-0.029**	-0.019	0.015
	(0.015)	(0.012)	(0.030)	(0.026)	(0.015)	(0.012)	(0.031)	(0.025)
Female	-0.163***	-0.126***	-0.213***	-0.150***	-0.110***	-0.102***	-0.186***	-0.135***
	(0.008)	(0.007)	(0.016)	(0.015)	(0.008)	(0.007)	(0.017)	(0.017)
Intercept	0.622***	1.682***	0.029***	0.136***	1.106***	2.052***	1.605***	1.601***
	(0.046)	(0.072)	(0.042)	(0.049)	(0.040)	(0.056)	(0.071)	(0.119)
Other controls								
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Occupation and Industry dummies	No	Yes	No	Yes	No	Yes	No	Yes
R-squared	0.936	0.956	0.946	0.958	0.946	0.964	0.956	0.968
obs	22,092	22,083	4,723	4,723	20,315	20,288	3,903	3,900

Note: Robust Standard errors reported in brackets. indicates significance at 10%, ** indicates significance at 5%, *** indicates significance at 1% level. When controlling for occupation and industry some observations for both groups are lost.*

to the change in skill prices. The table shows the decomposition for three groups: EU8 vs natives, EU14 vs natives and all other immigrants vs natives. For each group I report the two models. As before, "Model 1" controls on British and foreign experience, education, marital status, gender, regional, year and cohort dummies; "Model 2" additionally controls for occupation and industry. The top rows of the table show the raw difference of log hourly wages in real terms between each immigrant group and natives before and after 2004. The following rows show shares due to characteristics and the bottom of the table the share of the gap due to differences in the coefficients. As briefly explained before (in footnote 26), when looking at the decomposition for subgroups of variables, it is important to bear in mind that the unexplained part of the decomposition attributed at these subgroups is affected by the choice of the omitted category, though the total unexplained part remains the same.

Between the two periods, the explained part decreased substantially. Looking at model 1, the factor that drives this change is British experience: the gap has decreased by 29 log points and two thirds of the change is due to British experience. Also education plays an important role: immigrants are more educated than natives but relative to the period before there is a slight decrease in the contribution of education. The contribution of marital status was zero before 2004, because the distribution of this variable was identical in the two groups, while it slightly contributes to the decline by 0.016 because of the increase in the share of not married individuals among EU8 immigrants, who have relatively lower wages than married workers. The increase in the share of males is the only positive contribution to the change. After 2004, the contribution of location to the wage gap is still positive but lower if compared to the period before: immigrants are still located in places with higher wages (i.e. London) but there is a higher fraction of EU8 immigrants that locate in regions with lower wages (e.g. East Midlands, Yorkshire). To sum up, differences in average characteristics $((\overline{X}_{It} - \overline{X}_{Nt}))$ between immigrants and natives tend to suggest that immigrant wages are higher than native wages before 2004, while they suggest the opposite after 2004. Moving the attention to the total unexplained component of the decomposition, there is not much change over the two periods, but they are in both periods very high. Before 2004, the background characteristics of EU8 immigrants were already valued less relatively to those of natives but the differences were offset by the average characteristics that were better than those of natives. This does not happen after 2004. Looking in more details at the contribution of each variable, a large share of the coefficient effect comes from the lower returns to education, which decreased even more after 2004. The other factors which are easily interpretable are British and foreign experience and female. As we have already reported before, there is an increase in the returns to British experience, but decrease in the returns to foreign experience.

27

Table 5: Decomposition of natives and immigrants mean wage gaps

	EU8 immigrants vs natives				Other immigrants vs natives				EU14 immigrants vs natives			
	Model 1		Model 2		Model 1		Model 2		Model 1		Model 2	
	Before 2004	After 2004	Before 2004	After 2004	Before 2004	After 2004	Before 2004	After 2004	Before 2004	After 2004	Before 2004	After 2004
Raw (unadjusted) gap	-0.079	-0.369	-0.079	-0.369	0.073	0.042	0.073	0.042	0.072	0.087	0.072	0.087
British Experience	-0.146	-0.339	-0.107	-0.248	-0.094	-0.12	-0.068	-0.088	-0.126	-0.123	-0.092	-0.090
Education	0.267	0.223	0.131	0.107	0.189	0.187	0.093	0.09	0.190	0.185	0.093	0.089
Marital Status	0	-0.016	0	-0.01	0.002	0.004	0.001	0.003	-0.007	-0.008	-0.006	-0.005
Female	-0.033	0.012	-0.026	0.009	0.002	0.006	0.001	0.005	-0.010	-0.001	-0.007	-0.001
Location	0.089	0.028	0.076	0.024	0.085	0.078	0.072	0.064	0.062	0.061	0.053	0.051
Occupation	-	-	-0.017	-0.168	-	-	0.026	0.016	-	-	0.033	0.040
Industry	-	-	-0.018	-0.019	-	-	0.001	-0.002	-	-	-0.004	-0.003
Total Explained	**0.18**	**-0.093**	**0.039**	**-0.306**	**0.187**	**0.155**	**0.126**	**0.088**	**0.111**	**0.114**	**0.070**	**0.080**
British Experience	0.007	0.023	-0.041	-0.001	-0.04	-0.034	-0.057	-0.05	-0.019	-0.003	-0.028	-0.017
Foreign Experience	0.089	0.071	0.042	0.042	0.069	0.07	0.052	0.056	0.082	0.094	0.065	0.077
Brit-foreign exp interaction	-0.064	-0.019	-0.05	-0.005	-0.046	-0.051	-0.028	-0.031	-0.048	-0.053	-0.032	-0.038
Education	-0.498	-0.713	-0.401	-0.332	-0.39	-0.432	-0.3	-0.318	-0.268	-0.245	-0.163	-0.161
Marital Status	0.006	-0.029	-0.046	-0.019	-0.086	-0.085	-0.051	-0.041	-0.011	-0.026	-0.014	-0.007
Female	-0.052	0.035	-0.023	0.018	0.055	0.056	0.04	0.033	0.031	0.024	0.031	0.020
Location	-0.143	0.028	-0.093	0.031	-0.015	0.009	0.018	0.009	0.083	-0.004	0.054	0.078
Occupation	-	-	-0.058	0.177	-	-	-0.061	-0.029	-	-	-0.032	-0.004
Industry	-	-	-0.221	-0.047	-	-	-0.135	-0.12	-	-	-0.071	0.047
Intercept and other variables	0.395	0.327	0.773	0.073	0.34	0.353	0.47	0.445	0.108	0.185	0.192	0.012
Total unexplained	**-0.259**	**-0.276**	**-0.118**	**-0.063**	**-0.114**	**-0.113**	**-0.053**	**-0.046**	**-0.040**	**-0.027**	**0.001**	**0.007**

Source: Author's OLS regressions using the UK LFS, 1998-2008

Note: Other variables dummies for cohorts of arrival.

28

Adding occupation and industry controls helps explain more of the gap in both period, but their contribution is higher after 2004. In fact in the latter period, the addition of occupation and industry dummies can explain 80% of the gap and the rest is simply attributed to the unexplained component. After the EU enlargement, the difference in the distribution across occupation in the two groups plays an important role in explaining the decline of the gap and confirms the fact that EU8 immigrants have a higher probability to end up in low-paid jobs. Additionally, controlling for occupation and industry also improves the difference in the returns to education between the two groups. These findings are a clear evidence of occupational downgrading

To sum up firstly, before the enlargement EU8 immigrants had slightly better characteristics compared to the group of immigrants after 2004. Secondly, occupational downgrading becomes more evident and severe after the accession. I also look at the other immigrant groups (EU14 and other immigrants). The contribution of each decomposed part to the gap has remained stable over the period, in particular for EU14 immigrants. The gap for this group has slightly improved, but no significant changes happened to the composition of immigrants or their wage structure. For the other group of immigrants the decline in the gap from 0.073 to 0.042 can entirely be explained by a change in their characteristics. Moreover, on average, both groups work in better paid occupations than natives.

4.2   Results from the quantile gaps

Table 6 show the results from the Firpo, Fortin and Lemieux (2009) decomposition for the native-immigrant wage gap explained above. In order to save space I report only the results from the Oaxaca-Blinder decomposition and no regression results (which can be provided upon request). The results shown in the table are based on the coefficients of the RIF regression which I run separately. As reported above, I firstly run a RIF regression for quantiles for each group and then I perform an Oaxaca-Blinder decomposition of the quantile wage gaps and look at the changes in the two periods.

Table 6 shows the results from the decomposition for the 20th, 50th (median) and 90th quantile for model 1 and model 2 (as reported above). The first line of the table indicates the unadjusted gaps for real wages, as reported in Table 2. The following rows show the explained and unexplained gaps. As pointed out before, the gap has increased more in the upper part of the distribution. If I consider the composition effect (Total explained) given by the top part of the table, it is clear that British experience plays an important role in the gaps at each quantile analysed, but this role is less substantial at the bottom end. This

Table 6: Decomposition of natives and immigrants quantile wage gaps

	EU8 immigrants vs Natives Model 1						EU8 immigrants vs Natives Model 2					
	20th		50th		90th		20th		50th		90th	
	Before 2004	After 2004	Before 2004	After 2004	Before 2004	After 2004	Before 2004	After 2004	Before 2004	After 2004	Before 2004	After 2004
Raw (unadjusted) gap	-0.047	-0.192	-0.050	-0.393	-0.017	-0.590	-0.047	-0.192	-0.050	-0.393	-0.017	-0.589
British Experience	-0.120	-0.282	-0.150	-0.357	-0.160	-0.358	-0.083	-0.193	-0.101	-0.240	-0.132	-0.295
Education	0.165	0.142	0.284	0.250	0.371	0.285	0.060	0.052	0.111	0.099	0.248	0.187
Marital Status	0.000	-0.010	0.001	-0.021	0.000	-0.023	0.000	-0.006	0.001	-0.013	0.000	-0.016
Female	-0.032	0.011	-0.039	0.013	-0.034	0.013	-0.026	0.009	-0.028	0.009	-0.026	0.009
Location	0.071	0.019	0.100	0.032	0.101	0.038	0.060	0.015	0.087	0.028	0.083	0.032
Occupation							-0.043	-0.150	-0.021	-0.223	-0.010	-0.141
Industry							-0.027	-0.034	-0.026	-0.028	0.002	0.003
Total Explained	**0.087**	**-0.122**	**0.198**	**-0.081**	**0.279**	**-0.045**	**-0.055**	**-0.307**	**0.025**	**-0.368**	**0.173**	**-0.222**
British Experience	-0.154	-0.029	0.024	-0.007	0.192	0.098	-0.174	-0.015	-0.070	-0.007	0.166	-0.001
Foreign Experience	0.005	0.022	0.076	0.022	0.069	0.180	-0.033	0.012	0.021	0.003	0.051	0.115
Brit-foreign exp interaction	-0.030	-0.002	-0.035	-0.003	-0.067	-0.057	-0.006	0.000	-0.022	0.005	-0.070	-0.023
Education	-0.572	-0.570	-0.549	-1.079	-0.493	-0.448	-0.286	-0.117	-0.585	-0.393	-0.559	-0.587
Marital Status	0.155	-0.014	-0.062	-0.026	-0.196	-0.062	0.062	-0.005	-0.062	-0.009	-0.141	-0.059
Female	-0.043	0.056	-0.039	0.057	-0.029	0.017	-0.024	0.048	-0.058	0.027	-0.067	-0.001
Location	-0.187	-0.038	-0.130	0.105	0.065	-0.053	-0.074	-0.035	-0.113	0.102	0.152	-0.059
Occupation							-0.058	-0.032	0.040	0.010	0.373	0.056
Industry							-0.035	0.171	-1.573	0.523	0.233	0.477
Intercept and other variables	0.692	0.505	0.467	0.618	0.163	-0.218	0.636	0.088	2.348	-0.286	-0.329	-0.286
Total unexplained	**-0.134**	**-0.070**	**-0.247**	**-0.312**	**-0.297**	**-0.545**	**0.008**	**0.115**	**-0.074**	**-0.025**	**-0.191**	**-0.367**

Source: Author's RIF regressions using the UK LFS, 1998-2008

Note: Other variables dummies for cohorts of arrival.

30

happens in both periods. Before 2004, the part of the gap due to lower levels of experience was compensated by higher level of education. This does not happen after 2004, firstly because, especially at the top, there is a relative (to natives) decrease in the level of education and secondly because the effect of British experience has become even more negative. The other factors change similarly over the period in all the quantiles. As noted before, the contribution of location is positive as immigrants are more present in high-pay regions, but this contribution decreases after 2004 and more at the top. Before 2004, the total explained gap was positive at every quantile and higher towards the top of the distribution, implying that if the same price function as natives was applied to them, the immigrant-native wage difference would have been positive. After 2004, the explained component is larger at the bottom compared to the top. Once I control for occupations and industries (Model 2), the unexplained gap at the 20th and at the median are a bit closer in the two periods, but very distant at the 90th quantile: the effect of the wage structure is more evident at the top end of the distribution and most of the gap cannot be explained by background characteristics. The contribution to the wage gap of a change in the coefficient of the variables is different at each quantile. In both periods, the return to British experience is lower for EU8 immigrants at the bottom of the distribution but higher when moving to the top. Interestingly, this return plays an important and opposite role in explaining the gap at the 20th and at the 90th quantile, especially before 2004. However, this role largely decreases in the second period as the contribution of the return to British experience becomes smaller due to an increase in the return for immigrants, especially at the bottom. British experience, especially for immigrants, is much more valued, everything else equal, at the top of the distribution where individuals work in occupations where the knowledge of the local culture and norms, gained with time spent in the country are more important. The return to foreign experience play a much larger and positive role at the top of the distribution, where differently from the results for mean wage and the median, an increase is reported. Before the enlargement, the price of education were higher at the top of the distribution, but, as the negative sign implies, much higher for natives. In the period after the enlargement, there is not much of a change in the coefficients for education at the bottom and at the top of the distribution, yet EU8 workers in the middle of the distribution are the ones who experienced the most remarkable decrease in the return to education. This decline is likely to be associated with a mismatch between workers education and the jobs they perform which is translated into lower wages and lower returns to education, *ceteris paribus*. As reported in the panel on the right hand side of the table (Model 2), the industry dummies play an important role. This mis-match is more severe in the middle of the distribution. According to the data, after 2004 there are more workers with tertiary education that have wages below the median compared to the

31

period before.

To sum up, while before 2004 in all parts of the distribution, because of the greater set of endowments immigrants would earn more than natives, if their characteristics were rewarded in the same way, after 2004, estimation results suggest the opposite. As shown by the high and negative contribution of occupation along the whole distribution, EU8 are suffering from a very large occupational downgrading (see Table A3 in the Appendix). In addition, while the gap was more negative for the bottom percentile in the period before the enlargement, the opposite is true for the period after, where data show much higher gaps for workers at the top and a large part of it still remain unexplained even after controlling for industry and occupation.

Table 7 shows the same decomposition just explained for EU8 immigrants, for immigrants from EU14 countries and all other immigrants using Model 2. EU14 immigrants are performing better than natives in all quantiles of the distribution, especially at the top. While I do not observe any change in the gap at the bottom over time, the gap above the median slightly improves in favour of EU14 immigrant. Most of this is attributed to a change in total unexplained part, therefore to a change in wage structure in particular at the 90th quantile. Specifically, there is a decrease in the difference in the return to education between immigrants and natives, mainly due to both an increase in the level of education of EU14 at the top and a slight decrease in the return to education for natives. The median behaves similarly to the mean, and after 2004 I observe an increase in the wage gap in favour of immigrants, mainly ascribed to an increase in the relative level of education, which is likely to have determined the improvement in the distribution of immigrants across occupations towards better paid jobs, despite the relative decrease in the return to education. It is interesting to notice the sign on the contribution to British experience: it goes in the opposite direction at each percentile if compared to EU8 immigrants (positive at the bottom and negative at the top).

Moving the attention to other immigrants, the picture is reversed. Immigrants at the bottom started to suffer from a wage penalty which did not exist before 2004. Note that wages for all immigrant at each quantile have decreased and therefore the gap has worsened. This is mostly explained by the characteristics which are still better relative to natives in most dimensions, in spite of the fact that they have worsened (mainly because of British experience and occupations). By contrast, the unexplained component has improved at the 20th and 90th deciles. For example, the difference in return to education has improved for workers at the 90th percentile, yet most of this effect is offset by other factors, while below the median

Table 7: Decomposition of natives and immigrants quantile wage gaps

| | EU14 immigrants vs natives | | | | | | Other immigrants vs natives | | | | | |
| | 20th | | 50th | | 90th | | 20th | | 50th | | 90th | |
	Before 2004	After 2004	Before 2004	After 2004	Before 2004	After 2004	Before 2004	After 2004	Before 2004	After 2004	Before 2004	After 2004
Raw (unadjusted) gap	0.038	0.031	0.082	0.116	0.103	0.130	0.032	-0.003	0.086	0.048	0.117	0.091
British Experience	-0.068	-0.068	-0.083	-0.085	-0.118	-0.113	-0.050	-0.066	-0.061	-0.083	-0.091	-0.110
Education	0.042	0.043	0.078	0.082	0.175	0.155	0.042	0.043	0.078	0.083	0.174	0.156
Marital Status	-0.004	-0.003	-0.007	-0.006	-0.008	-0.007	0.001	0.001	0.001	0.003	0.002	0.004
Female	-0.007	-0.001	-0.008	-0.001	-0.007	-0.001	0.001	0.005	0.001	0.005	0.001	0.005
Location	0.040	0.030	0.059	0.056	0.061	0.071	0.056	0.038	0.081	0.074	0.079	0.087
Occupation	0.006	0.014	0.042	0.053	0.049	0.049	0.008	-0.003	0.034	0.023	0.034	0.022
Industry	-0.009	-0.009	-0.008	-0.008	0.007	0.009	-0.001	-0.004	-0.002	-0.005	0.006	0.004
Total Explained	**0.001**	**0.007**	**0.073**	**0.091**	**0.158**	**0.162**	**0.057**	**0.015**	**0.133**	**0.100**	**0.207**	**0.169**
British Experience	-0.031	0.051	-0.010	0.034	-0.077	-0.121	-0.050	-0.066	-0.047	-0.027	-0.058	-0.016
Foreign Experience	0.031	0.043	0.039	0.037	0.139	0.171	0.022	0.028	0.040	0.040	0.115	0.127
Brit-foreign exp interaction	-0.011	-0.017	-0.029	-0.016	-0.056	-0.082	-0.016	-0.013	-0.031	-0.028	-0.046	-0.057
Education	-0.001	0.016	-0.043	-0.122	-0.538	-0.390	-0.064	-0.136	-0.210	-0.284	-0.659	-0.521
Marital Status	-0.033	-0.028	-0.024	-0.033	-0.007	0.017	-0.072	-0.048	-0.059	-0.058	-0.032	-0.021
Female	0.040	0.024	0.040	0.039	0.014	0.003	0.051	0.041	0.047	0.043	0.021	0.026
Location	0.037	0.124	0.088	0.162	-0.055	-0.040	0.112	0.057	0.019	0.013	-0.246	-0.032
Occupation	-0.133	-0.244	-0.055	-0.044	0.084	0.553	-0.208	-0.100	-0.127	0.095	-0.118	0.169
Industry	-0.253	0.012	0.145	0.060	0.643	0.150	-0.195	0.250	0.088	0.253	0.471	0.155
Intercept and other variables	0.391	0.043	-0.143	-0.091	-0.202	-0.293	0.394	-0.033	0.234	-0.098	0.461	0.093
Total unexplained	**0.037**	**0.023**	**0.009**	**0.025**	**-0.055**	**-0.032**	**-0.026**	**-0.018**	**-0.046**	**-0.052**	**-0.090**	**-0.078**

Source: Author's RIF regressions using the UK LFS, 1998-2008
Note: Other variables dummies for cohorts of arrival.

33

results suggest a decrease in the return to education for immigrants[33].

5   Recent immigrants from European countries

In this section I look at recent immigrants. The aim of this section is to understand whether the large downgrading and wage deterioration reported for EU8 immigrants are simply due to the lack of economic assimilation or by some other factors. In the former hypothesis, the wage structure across different immigrant groups should be very similar. I define recent immigrants as those who arrived between 2004 and 2008, so anyone who has been in the country for a maximum of 4 years. I commence by describing their characteristics (Table 8). Recent immigrants from EU14 have higher wages, almost 40% higher, they have less experience in the British labour market and they have more experience in the home country labour market than recent immigrants from the EU8. On average they are better educated as they have stayed in school two years longer. There is a higher percentage of individuals with tertiary education, but EU8 immigrants are over-represented among those with secondary education. EU14 are slightly older and more likely to be single. More than 60% of recent EU14 immigrants live in London or in the rest of the South East, which are among the wealthiest are in the UK. Only 13% of recent Eastern European immigrants live in London, a high portion lives in the South East as well, and the East Midlands. Other immigrants are more similar in some of their characteristics to EU14: they ave a similar education attainment and age. Yet they have more foreign experience, in higher percentage male and more likely to be married. Alike EU14 they are more likely to live in London (mainly outer) and the South East.

Table 9 shows the decomposition of mean and quantiles for the two groups, where the reference group is British natives. Recent EU8 immigrants have in all cases lower wages than natives. The gaps are bigger than the ones observed in tables 5 and 6 and in particular are bigger at the top, while the mean and median gaps are similar. The decomposition results lead to similar conclusions as before, with an increasing unexplained gap in the upper end. Other immigrants a slightly more similar to EU8 immigrants, as they suffer from wage penalties at the bottom quantiles, but they do have a wage advantage at the top.

---

[33]A negative contribution of the intercept is usually interpreted as discrimination in the race and gender literature (see for example Altonji and Blank, 1999), as if there were not differences in composition and in the wage structure a wage gap could only be interpreted as discrimination. I am not reporting results with the intercept only as in the table, together with the intercept I also include dummies for cohort of arrival. In all cases, the contribution of the intercept is negative, with the exception of the decomposition of the wage gap between EU8 immigrants and natives at the 90th quantile after 2004 and of the wage gap between EU14 immigrants and natives in the 20th quantile.

Table 8: Recent immigrants, after 2004

	EU8	EU14	Other Immigrants
log hourly gross real wage	1.87	2.34	2.28
British Experience (year since migration)	1.65	1.47	1.68
Foreign experience	6.62	7.41	8.96
males (%)	0.60	0.52	0.57
Education			
Primary	9%	10%	10%
Secondary	53%	29%	33%
Tertiary	38%	60%	57%
Years of education	14	16	15
Age	28	31	32
Marital status			
Single	61%	68%	43%
Married	32%	28%	53%
Other	7%	4%	5%
Region			
tyne & wear	1%	1%	1%
rest of northern region	1%	1%	2%
south yorkshire	3%	2%	1%
west yorkshire	8%	2%	3%
rest of yorks & humberside	4%	1%	1%
east midlands	12%	3%	4%
east anglia	5%	10%	6%
inner london	4%	28%	20%
outer london	9%	13%	17%
rest of south east	17%	20%	19%
south west	5%	3%	5%
west midlands (met county)	4%	2%	3%
rest of west midlands	4%	3%	2%
greater manchester	4%	3%	3%
merseyside	1%	0%	1%
rest of north west	3%	1%	2%
wales	4%	1%	2%
strathclyde	2%	2%	2%
rest of scotland	5%	4%	4%
northern ireland	4%	3%	2%
Observations	1,732	420	2,346

Source: UK LFS, years 2004 to 2008

Note: Employees aged 16-65. Self employed are excluded as there is no wage information. Real wages at constant 2008 prices. Recent immigrants are defined as those whose year of arrival is between 2004 and 2008. EU8 immigrants include Poland, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Slovakia and Slovenia. EU14 immigrants includeAustria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden. Other immigrants include all foreign born in the UK with the exclusion of EU8 born. Tertiary education: left full-time education at age 21 or later; secondary education: left full-time education between the ages of 17 and 20; less than secondary: left full-time education before 16 years old (included) or never had full-time education. Other in the marital status include separated, divorced or widowed.

Results from EU14 are different and EU14 immigrants have lower wages than natives only at the 20th percentile. Specifically, immigrants at the bottom earn around 5% less than natives, while those at the top earn almost 20% more than natives, even upon their arrival. Starting from the explained component, the main difference of EU8 from the other groups is the very negative contribution of occupations and industry at all percentile which is not observed in other groups (only at the bottom for other immigrants, but with a much smaller effect). As shown in Table A3 in the Appendix, almost 50% of EU8 recent immigrants work in elementary occupations and 20% as plant and machine operators. These percentages are much higher if compared to natives but also with other immigrants, whose occupational distribution overall is more similar to that of native born. Also interesting it is the fact that at the 90th percentile there is still 25% of EU8 immigrants that work in elementary occupations. Location is another difference with respect to other groups, as all other immigrants reside in regions with higher wages, especially at the top. Moving the attention to the wage structure, the total unexplained component is always positive, with the exception of the one of EU8 immigrants at the 90th,which is very negative, and a very large proportion of it is just explained by the very low return to education, which are observed for other immigrants at the same percentile but which are to a larger extent compensated by the very positive contribution of foreign experience. Note that the return to foreign experience has a very important a positive role in all groups and percentile, in particular at the top of the distribution (as probably expected), but despite similar levels of foreign experience (in the range of 6-8 years on average), the value for this experience is values much less among EU8, *ceteris paribus*. This is an interesting result as it suggests that the hypothesis of that human capital is not easily portable from Eastern European countries.

6   Robustness checks

Sample selection

To reduce any selection problem due to individuals dropping out of the survey after wave 1, I run some robustness checks including only those workers who report their wage in the first interview as the information on wages is asked in wave 1 and and 5 (Longhi and Rokicka (2012); Drinkwater, Eade and Garapich (2009)). All the results are confirmed for EU8 immigrants. The right panel of Table 10, reports these results. The only major difference is the wage gap for the 50th and 90th percentile before 2004, but this only affects the unexplained component confirming the fact that there may be some selection bias in the coefficients that can be ascribed to non-random attrition.

Table 9: Quantile decomposition for recent immigrants (reference group: natives)

	EU8			EU14			Other immigrants		
	20th	50th	90th	20th	50th	90th	20th	50th	90th
Raw (unadjusted) gap	-0.216	-0.437	-0.750	-0.059	0.089	0.183	-0.100	-0.068	0.087
British Experience	-0.218	-0.270	-0.329	-0.221	-0.275	-0.334	-0.217	-0.269	-0.328
Education	0.049	0.093	0.176	0.082	0.157	0.295	0.065	0.123	0.233
Marital Status	-0.007	-0.016	-0.019	-0.008	-0.019	-0.022	-0.002	-0.004	-0.003
Female	0.017	0.018	0.018	0.006	0.006	0.006	0.015	0.015	0.015
Location	0.005	0.008	0.009	0.045	0.084	0.106	0.038	0.073	0.088
Occupation	-0.172	-0.255	-0.164	0.001	0.002	0.003	-0.024	0.008	0.016
Industry	-0.033	-0.027	0.002	-0.008	0.063	0.088	-0.021	-0.016	0.018
Total Explained	**-0.358**	**-0.448**	**-0.307**	**-0.104**	**0.017**	**0.141**	**-0.146**	**-0.069**	**0.039**
British Experience	0.023	0.037	0.001	0.012	-0.058	-0.005	0.008	0.023	-0.002
Foreign Experience	0.015	-0.012	0.059	0.126	0.160	0.567	0.047	0.129	0.408
Brit-foreign exp interaction	-0.001	0.014	-0.003	-0.065	-0.082	-0.194	-0.005	-0.044	-0.144
Education	-0.118	-0.409	-0.837	-0.199	-0.009	-0.163	-0.245	-0.393	-0.577
Marital Status	-0.006	-0.010	-0.039	-0.017	-0.021	0.064	-0.015	-0.066	-0.003
Female	0.046	0.039	0.027	0.064	0.053	0.016	0.052	0.073	0.050
Location	-0.036	0.059	-0.009	0.078	0.371	0.156	0.082	0.134	0.080
Occupation	0.201	0.439	0.738	-0.150	0.220	-0.015	-0.186	-0.142	-0.161
Industry	-0.024	-0.034	-0.529	-0.119	-0.120	1.165	-0.130	-0.339	-1.227
Intercept and other variables	0.041	-0.111	0.149	0.316	-0.443	-1.550	0.440	0.625	1.625
Total unexplained	**0.141**	**0.011**	**-0.443**	**0.045**	**0.071**	**0.042**	**0.046**	**0.001**	**0.048**

Source: Author's RIF regressions using the UK LFS, 2004-2008

Estimating the gap for men and women separately

The second check is to look at only men, because of participation issues that may drive the results, as women decide to participate differently in the labour market. I observe a positive gap in all parts of the distribution for white male before the enlargement. This result was also confirmed in previous studies (Dustmann and Fabbri, 2005). Interestingly, deterioration of the wage gap is even worse than in the pooled case, with EU8 immigrants earning more than 30% less than British males on average and almost 50% less than British males at the top. In terms of the decomposition, results are confirmed with immigrants at the top having a larger unexplained component.

7 Summary and conclusions

In this paper I show that the wage gap between immigrants from Eastern European countries and British natives has increased between the period before the enlargement and the period after because of a decrease in immigrant average wages, despite higher education levels. I describe how this gap has changed not only at the mean but also along the wage distribution. I show that distance between immigrant and native wages has increased more at the top percentile. Looking at the simple mean would not allow me to identify how different factors influenced the increase in the wage gap and relate it to the literature on migration. Moreover, in order to better understand how skills acquired in the EU8 countries before migrating are transferable in the UK labour market, I divide labour market experience into foreign (to proxy experience in the home country) and British labour market. Foreign labour market experience has a much higher value for other immigrants. This result would point to the theoretical explanation that skills acquired in the home country are not perfectly transferable in the destination country. In addition to this, in order to rule out the possibility that results are just a product of the fact that EU8 immigrants are recent arrival, I compare wage gaps along the distribution with other recent immigrant groups. For EU8 immigrants a much larger proportion of the gap is explained by occupational downgrading in all parts of the distribution, while for other immigrants this is not true. This results are in line with previous results found in the literature on Eastern European immigrants. In particular, Mattoo et al ,2008) argue that the low wage levels observed for immigrants from East Europe should not be considered a brain-waste, but, simply the consequence of the poor quality of education in the countries of origin. As confirmed by Friedberg (2000), human capital is not portable across countries and the degree of transferability also depends on how the quality of institutions in the source country is perceived by employers in the destination country. This would explain

Table 10: Robustness checks on mean and quantile decomposition for EU8 immigrants

	EU8, only wave 1								EU8, only males							
	Mean		20th		50th		90th		Mean		20th		50th		90th	
	Before 2004	After 2004	Before 2004	After 2004	Before 2004	After 2004	Before 2004	After 2004	Before 2004	After 2004	Before 2004	After 2004	Before 2004	After 2004	Before 2004	After 2004
Raw (unadjusted) gap	-0.091	-0.371	-0.039	-0.186	-0.103	-0.395	-0.048	-0.604	0.043	-0.435	0.022	-0.288	0.028	-0.467	0.096	-0.643
British Experience	-0.148	-0.334	-0.118	-0.275	-0.153	-0.350	-0.164	-0.357	-0.135	-0.388	-0.144	-0.401	-0.135	-0.400	-0.113	-0.320
Education	0.279	0.220	0.172	0.140	0.298	0.246	0.384	0.282	0.258	0.184	0.172	0.122	0.279	0.207	0.345	0.229
Marital Status	0.001	-0.017	0.001	-0.011	0.002	-0.022	0.001	-0.023	0.002	-0.034	0.002	-0.031	0.003	-0.045	0.002	-0.037
Female	-0.030	0.011	-0.029	0.010	-0.036	0.013	-0.031	0.012								
Industry	0.084	0.032	0.068	0.021	0.094	0.036	0.097	0.044	0.066	0.016	0.058	0.013	0.068	0.015	0.079	0.019
Total Explained	**0.186**	**-0.087**	**0.094**	**-0.116**	**0.205**	**-0.076**	**0.288**	**-0.040**	**0.194**	**-0.223**	**0.090**	**-0.296**	**0.217**	**-0.224**	**0.315**	**-0.109**
British Experience	-0.029	0.030	-0.164	-0.013	-0.152	0.004	0.540	0.040	0.066	0.003	0.063	-0.038	-0.034	0.005	0.497	0.138
Foreign Experience	0.059	0.068	-0.002	0.013	0.008	0.018	-0.003	0.191	0.085	0.096	0.067	0.035	0.106	0.029	0.121	0.248
Brit-foreign exp interaction	-0.026	-0.024	-0.010	-0.005	0.043	-0.002	-0.052	-0.067	-0.078	-0.009	-0.049	0.001	-0.102	0.007	-0.173	-0.063
Education	-0.469	-0.718	-0.497	-0.566	-0.512	-1.069	-0.174	-0.378	-0.293	-0.533	-0.406	-0.515	-0.367	-0.902	-0.369	-0.020
Marital Status	0.003	-0.033	0.063	-0.015	-0.132	-0.027	-0.489	-0.085	-0.182	-0.069	-0.248	-0.067	-0.138	-0.073	-0.216	-0.085
Female	-0.030	0.039	0.012	0.062	0.097	0.063	-0.048	-0.011								
Location	-0.241	-0.064	-0.192	-0.064	-0.324	0.070	-0.344	-0.177	0.019	-0.039	-0.146	-0.143	-0.236	0.044	1.058	0.198
Intercept and other variables	0.455	0.417	0.658	0.517	0.663	0.625	0.234	-0.078	0.232	0.339	0.651	0.734	0.582	0.648	-1.137	-0.952
Total unexplained	**-0.278**	**-0.284**	**-0.132**	**-0.070**	**-0.308**	**-0.319**	**-0.336**	**-0.565**	**-0.151**	**-0.212**	**-0.068**	**0.008**	**-0.189**	**-0.243**	**-0.219**	**-0.535**

Source: Author's OLS and RIF regressions using the UK LFS, 1998–2008

Note: Other variables dummies for cohorts of arrival.

39

the skill downgrading is larger for EU8 immigrants.

The results that look at different points of the distribution also shed some light on why we also observe a decrease in the wage level at the bottom of the distribution, in particular if compared to the period before. On one side, poor skill transferability can explain why secondary and tertiary educated are observed in low paid jobs, thus why the wage levels at the top of the distribution have decrease, but it would not explain the increase in the wage penalty at the bottom. At the bottom of the distribution, immigrants should be more likely to compete with natives for more similar jobs (mainly performing manual and routine tasks). This is because communication and cognitive skills, skills that may lack in immigrants who cannot speak the language or do not know the local culture, are not as much valued as at the top of the distribution.

The nature of migration (EU8 immigrants are more likely to be temporary) can be an important determinant of why also at the bottom wages have decreased. If compared to a permanent equivalent immigrant, temporary migrant are more likely to accept lower wages (i.e. they have lower reservation wages) and invest much less in human capital of the destination country (Dustmann, 2000). Cam (2007) shows that EU8 workers are more likely to work under temporary contracts with respect to the rest of the UK. However whether this condition is decided by the immigrants with a strong desire to go back home or is simply due to discrimination (or entry barriers in some occupations) is hard to identify.The change in the regional distribution of emigrants in the source country, which has been documented for Poland (Dustmann et al, 2012 and Rosso, 2013) could also explain why labour market performance of EU8 immigrants has become poorer over time, as explained in the introduction. However, it is very hard to show just by using data from the destination country as no information on the region (and country) of previous residence is reported.

These findings have implications for policies for both the source and the destination country. Given that most of the occupational downgrading is a consequence of poor skill transferability, the two countries could collaborate in order to improve the quality of education, in particular by, for example, making qualifications more transferable across countries, so that education can be more easily exported in other destinations. On the other side, brain drain can be seen as an issue from the point of view of the source country, as increasing the standard of education in the source country may simply induce an increase in emigration without really benefiting the domestic labour market, at least in the short run (Mattoo et al (2008)). However, it is important to notice that there are indirect positive effects driven by the increase in the probability of immigrants to enter high skilled occupations could also

benefit the source countries, through for example higher remittances or skill and technology acquisition. Further, a more direct intervention of the destination country government that could enhance labour market integration and opportunities of immigrants from Eastern European countries would be to provide language classes to improve their communication abilities (see Clark and Drinkwater, 2008).

References

Adsera, Alicia and BarryR. Chiswick. 2007. "Are there Gender and Country of Origin Differences in Immigrant Labor Market Outcomes across European Destinations?" *Journal of Population Economics* 20 (3):495–526.

Altonji, Joseph G. and Rebecca M. Blank. 1999. "Race and Gender in the Labor Market." In *Handbook of Labor Economics*, vol. 3, Part C, edited by Orley C. Ashenfelter and David Card. Elsevier, 3143–3259.

Antecol, Heather, Deborah A. Cobb-Clark, and Stephen J. Trejo. 2004. "Selective Immigration Policy in Australia, Canada, and the United States." *Brussels Economic Review* 47 (1):57–76.

Bell, Brian D. 1997. "The Performance of Immigrants in the United Kingdom: Evidence from the GHS." *The Economic Journal* 107 (441):333–344.

Blanchflower, David G. and Helen Lawton. 2008. "The Impact of the Recent Expansion of the EU on the UK Labour Market." *IZA Discussion Paper No. 3695* .

Blanchflower, David G. and Chris Shadforth. 2009. "Fear, Unemployment and Migration." *The Economic Journal* 119 (535):F136–F182.

Blinder, Alan S. 1973. "Wage Discrimination: Reduced Form and Structural Estimates." *The Journal of Human Resources* 8 (4):436–455.

Boeri, Tito and Herbert Brücker. 2005. "Why are Europeans so Tough on Migrants?" *Economic Policy* 20 (44):629–703.

Boudarbat, Brahim and Thomas Lemieux. 2010. "Why are the Relative Wages of Immigrants Declining? A Distributional Approach." *CLSRN, Working Paper No. 65* .

Brenke, Karl, Mutlu Yuksel, and Klaus F. Zimmermann. 2009. "EU Enlargement under Continued Mobility Restrictions: Consequences for the German Labor Market." *IZA Discussion Paper No. 4055* .

Cam, Surhan. 2007. "Temporary employment among the EU migrants ('Eastern Europeans') in Britain." Tech. Rep. Working Paper 86, School of Social Sciences, Cardiff University, Cardiff. 00000.

Chiswick, Barry R. 1980. "The Earnings of White and Coloured Male Immigrants in Britain." *Economica* 47 (185):81–87.

———. 1991. "Speaking, Reading, and Earnings among Low-Skilled Immigrants." *Journal of Labor Economics* 9 (2):149–170.

Chiswick, Barry R., Yinon Cohen, and Tzippi Zach. 1997. "The Labor Market Status of Immigrants: Effects of the Unemployment Rate at Arrival and Duration of Residence." *Industrial and Labor Relations Review* 50 (2):289–303.

Chiswick, Barry R. and Paul W. Miller. 1995. "The Endogeneity between Language and Earnings: International Analyses." *Journal of Labor Economics* 13 (2):246–288.

———. 2009. "The International Transferability of Immigrants' Human Capital Skills." *Economics of Education Review* 28 (2):162–169.

Clark, Ken and Stephen Drinkwater. 2008. "The Labour Market Performance of Recent Migrants." *Oxford Review of Economic Policy* 24 (3):495–516.

D'Amuri, Francesco and Giovanni Peri. 2013. "Immigration, Jobs and Labor Market Institutions: Evidence from Europe." *Journal of European Economic Association, forthcoming* 00005.

Dawson, Christopher, Andrew Henley, and Paul L. Latreille. 2009. "Why Do Individuals Choose Self-Employment?" *IZA Discussion Papers No. 3974* .

Dobson, John R. 2009. "Labour Mobility and Migration within the EU following the 2004 Central and East European Enlargement." *Employee Relations* 31 (2):121 – 138.

Drinkwater, Stephen, John Eade, and Michal Garapich. 2009. "Poles Apart? EU Enlargement and the Labour Market Outcomes of Immigrants in the United Kingdom." *International Migration* 47 (1):161–190.

Dustmann, Christian. 1993. "Earnings Adjustment of Temporary Migrants." *Journal of Population Economics* 6 (2):153–168.

———. 1994. "Speaking Fluency, Writing Fluency and Earnings of Migrants." *Journal of Population Economics* 7:133–156.

———. 1999. "Temporary Migration, Human Capital, and Language Fluency of Migrants." *Scandinavian Journal of Economics* 101 (2):297–314.

———. 2000. "Temporary Migration and Economic Assimilation." *IZA Discussion Paper No. 186* Cited by 0000.

Dustmann, Christian and Francesca Fabbri. 2003. "Language Proficiency and Labour Market Performance of Immigrants in the UK." *The Economic Journal* 113 (489):695–717.

———. 2005. "Immigrants in the British Labour Market." *Fiscal Studies* 26 (4):423–470.

Dustmann, Christian, Tommaso Frattini, and Caroline Halls. 2010. "Assessing the Fiscal Costs and Benefits of A8 Migration to the UK." *Fiscal Studies* 31 (1):1–41.

Dustmann, Christian, Tommaso Frattini, and Ian Preston. 2013. "The Effect of Immigration along the Distribution of Wages." *The Review of Economic Studies* 80 (1):145–173.

Dustmann, Christian, Tommaso Frattini, and Anna Rosso. 2012. "The Effect of Emigration from Poland on Polish Wages." *CReAM DP 29/12* .

Duvell, Franck. 2004. "Polish Undocumented Immigrants, Regular High-Skilled Workers and Entrepreneurs in the UK. A Comparative Analysis of Migration Patterns, Strategies and Identity Process." *Prace Migracyjne, nr 54, Institute for Social Studies, Warsaw Universtiy* .

Firpo, Sergio, Nicole M. Fortin, and Thomas Lemieux. 2009. "Unconditional Quantile Regressions." *Econometrica* 77 (3):953–973.

Fortin, Nicole, Thomas Lemieux, and Sergio Firpo. 2011. "Decomposition Methods in Economics." In *Handbook of Labor Economics*, vol. Volume 4, Part A, edited by Orley Ashenfelter and David Card. Elsevier, 1–102.

Friedberg, Rachel M. 2000. "You Can't Take It with You? Immigrant Assimilation and the Portability of Human Capital." *Journal of Labor Economics* 18 (2):221–251.

Gilpin, Nicola, Matthew Henty, Sara Lemos, Jonathan Portes, and Chris Bullen. 2006. "The Impact of Free Movement of Workers from Central and Eastern Europe on the UK Labour Market." Working Paper 29, Department of Work and Pensions, London.

Green, David A. and Christopher Worswick. 2004. "Entry Earnings of Immigrants Men in Canada: The Roles of Labour Market Entry Effects and Returns to Foreign Experience." Manuscript, University of British Columbia.

Heywood, John S. and Daniel Parent. 2012. "Performance Pay and the White-Black Wage Gap." *Journal of Labor Economics* 30 (2):249–290.

Home-Office. 2009. "Accession Monitoring Report, May 2004-December 2008, A8 Countries." Tech. rep., UK Border Agency, available at http://www.ukba.homeoffice.gov.uk/sitecontent/documents/aboutus/reports/ accession_monitoring_report/report18/may04-dec08?view=Binary.

Hunt, Priscilla. 2012. "From the Bottom to the Top: a more Complete Picture of the Immigrant-Native Wage Gap in Britain." *IZA Journal of Migration* 1 (9).

Longhi, Simonetta and Magdalena Rokicka. 2012. "European Immigrants in the UK before and after the 2004 Enlargement: Is there a Change in Immigrant Self-Selection?" *ISER Working Paper Series No.2012-22* .

Manacorda, Marco, Alan Manning, and Jonathan Wadsworth. 2012. "The Impact of Immigration on the Structure of Wages: Theory and Evidence from Britain." *Journal of the European Economic Association* 10 (1):120–151.

Manning, Alan and Barbara Petrongolo. 2008. "The Part-Time Pay Penalty for Women in Britain." *The Economic Journal* 118 (526):F28–F51.

Mattoo, Aaditya, Ileana Cristina Neagu, and Caglar Ozden. 2008. "Brain Waste? Educated Immigrants in the US Labor Market." *Journal of Development Economics* 87 (2):255–269.

Oaxaca, Ronald. 1973. "Male-Female Wage Differentials in Urban Labor Markets." *International Economic Review* 14 (3):693–709.

Oaxaca, Ronald L. and Michael R. Ransom. 1999. "Identification in Detailed Wage Decompositions." *The Review of Economics and Statistics* 81 (1):154–157.

OECD. 2012. "Settling In: OECD Indicators of Immigrant Integration 2012." Tech. rep.

ONS. 2011. "Non-UK born workers -2011." available at http://www.ons.gov.uk/ons/dcp171776_234559.pdf.

Parutis, Violetta. 2011. "Economic Migrants or Middling Transnationals? East European Migrants Experiences of Work in the UK." *International Migration* .

Peri, Giovanni, Gianmarco IP Ottaviano, and Greg C. Wright. 2013. "Immigration, Offshoring and American Jobs." *American Economic Review, forthcoming* .

Peri, Giovanni and Chad Sparber. 2009. "Task Specialization, Immigration, and Wages." *American Economic Journal: Applied Economics* 1 (3):135–169.

Pollard, Naomi, Maria Latorre, and Dhananjayan Sriskandarajah. 2008. "Floodgates or Turnstiles: Post-EU Enlargement Migration Flows to (and from) the UK." Tech. rep., Institute for Public Policy Research, London.

Rincón-Aznar, Ana and Lucy Stokes. 2011. "Local Geography of International Migration to the UK." Tech. rep., Department for Communities and Local Government, London.

Rivera-Batiz, Francisco L. 1990. "English Language Proficiency and the Economic Progress of Immigrants." *Economics Letters* 34 (3):295–300.

Rosso, Anna. 2013. "Understanding migrant selection: the case of Poland." Mimeo, University College of London.

Saleheen, Jumana and Chris Shadforth. 2006. "The Economic Characteristics of Immigrants and their Impact on Supply." *Bank of England Quarterly Bulletin* Q4:375–385.

Trejo, Stephen J. 1997. "Why Do Mexican Americans Earn Low Wages?" *Journal of Political Economy* 105 (6):1235–1268.

Trevena, Paulina. 2009. "'New' Polish migration to the UK: A synthesis of existing evidence." *ESRC Centre for Population Change Working Paper 3/2009* :35.

A   Appendix Tables

Table A.1: Participation, employment and unemployment rates, before and after 2004

	Before 2004				After 2004			
	UK natives	EU8	Other immigrants	EU14	UK natives	EU8	Other immigrants	EU14
Participation rate	78%	67%	71%	79%	79%	87%	73%	81%
Employment rate	74%	62%	65%	75%	75%	81%	68%	77%
Unemployment rate	5%	7%	8%	6%	5%	6%	7%	5%

Source: UK LFS 1998 to 2008

Note: Participation rate is defined as the ratio between the labour force and the working age population; employment rate is defined as the ratio between the number of employed (including self-employed) and the working age population; the unemployment rate is defined as the ratio between the number of unemployed and the labour force. The labour force is given by the number of employed plus the number of unemployed. The working age population includes those who are inactive.

Table A.2: Share of EU8 immigrants by country of birth and average wages, before and after 2004

	Before 2004		After 2004	
	%	mean wages	%	mean wages
Hungary	20%	2.07	3%	2.05
Poland	43%	2.31	67%	1.98
Czech Republic	12%	1.96	6%	2.10
Estonia	2%	2.30	1%	2.08
Lithuania	9%	2.19	9%	1.88
Latvia	3%	2.22	3%	1.90
Slovak Republic	10%	1.73	10%	1.89
Slovenia	1%	2.60	0%	2.30

Source: UK LFS, years 1998 to 2008

Note: mean of log hourly wages in real terms. Only employed are included to compute the shares

Table A.3: Occupational distribution at the 20th and 90th percentile after 2004

| | 20th | | | | | | | 90th | | | | | | |
| | Natives | EU8 | | EU14 | | Other Immigrants | | Natives | EU8 | | EU14 | | Other Immigrants | |
		Recent	All	Recent	All	Recent	All		Recent	All	Recent	All	Recent	All
Legislators and managers	5.57	0.51	0.85	5.19	6.29	3.01	4.59	33.33	3.56	9.82	**32.52**	**34.7**	**27.71**	**28.75**
Professionals	2.89	0.26	0.66	3.46	5.06	3.02	3.4	37.52	11.88	21.19	**47.97**	**44.8**	**46.68**	**47.24**
Technicians	6.19	1.4	1.69	8.23	7.33	3.92	5.47	14.8	6.41	9.17	13.82	12.3	17.84	14.08
Clerks	22.13	3.06	4.41	12.12	18.85	9.05	15.03	4.63	5.94	11.76	4.07	4.16	3.61	4.95
Service and sales workers	27.34	17.73	21.69	**30.74**	**30.81**	**37.19**	**31.12**	3.18	9.5	8.27	0.81	1.59	1.33	1.76
Agricultural and fishery workers	0.88	0.13	0.28		0.36	0.1	0.31	0.03		0.26				
Crafts and related trades workers	7.66	8.04	7.51	5.19	5.27	2.61	5.29	3.99	12.35	10.47	0.81	1.65	1.71	1.82
Plant and machine operators	10.27	**20.92**	**19.53**	9.09	7.43	9.75	11.63	1.63	25.18	13.57		0.43	0.19	0.75
Elementary occupations	17.06	**47.96**	**43.38**	25.97	18.6	**31.36**	**23.16**	0.9	**25.18**	**15.5**		0.37	0.95	0.65

Source: UK LFS, years 1998 to 2008

Note: Employees aged 16-65. Self employed are excluded as there is no wage information. Real wages at constant 2008 prices. EU8 immigrants include Poland, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Slovakia and Slovenia. EU14 immigrants includeAustria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden. Other immigrants include all foreign born in the UK with the exclusion of EU8 born. Recent immigrants are defined as those whose year of arrival is between 2004 and 2008.