

# Immigrants in the labour market and beyond

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## **Abstract**

I investigate the labour market performance of immigrants in the UK. In particular, I aim to advance understanding of the international transferability of qualifications, skills, and experience. I also discuss the roles of differential self-selection and labour market discrimination, and consider immigrant uptake of the native national identity.

First, I examine the incidence and wage associations of over-education among migrants to the UK from the ‘A8’ EU accession countries of Central and Eastern Europe. I find that A8 immigrants face a substantially higher risk of over-education in the UK than other recent EU immigrants, and that this additional risk remains after taking account of observed characteristics. I argue that this result is driven by unobserved differences between the groups, arising from distinct self-selection processes associated with the institutional context of the EU accession.

Second, I examine how qualifications and the origin of schooling and experience can help us to understand immigrant earnings, and, in particular, the difference between the wages paid to immigrants and natives with apparently similar human capital profiles. I show that accounting for the level of qualification held by immigrants, as well as the source and duration of schooling, causes conditional wage estimates to converge substantially with those of natives.

Finally, I examine how variation in the original motives for migration can help us understand the labour market performance of immigrants, and their propensity to adopt the native national identity. On employment and wages, I find that those who originally came as work or student immigrants are the most successful, while family immigrants do less well, and refugees fare the worst. On national identity, I find that those who originally came as refugees and family immigrants are the most likely to identify as British, while work and student immigrants are the least.

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All opinions and mistakes are my own.

## **Thanks and dedication**

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My progress through education has not always been smooth. This has worried my parents more than it has me, but they are patient people. They came to the UK expecting a socialist paradise, and remain here more than four decades later, still managing their disappointment. They have also supported me through every misstep. For their tolerance and wisdom, I dedicate these essays to them.

S. J. C.

London

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## **Declaration**

I hereby declare that, except where explicit attribution is made, the work presented in this thesis is entirely my own.

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# 1. Investigating the labour market performance of immigrants

## 1.1 Introduction

The labour market experiences of immigrants tend to differ from those of natives for at least three reasons. First, the skills which are acquired in the immigrant origin country may be more or less useful elsewhere. Second, immigrants may face barriers in the host labour market that are not present in their origin labour market, such as discrimination among employers or in law. Finally, migration is a self-selecting process, and immigrants are distinct from those who do not migrate in more elusive ways. In this thesis, I examine the how the labour market performance of immigrants varies in response to these and other factors. I also touch on some areas of life beyond the labour market.

In this first chapter, I introduce the subject and discuss the factors which might create the need for a thesis on this topic, at this time, and in this context. Specifically, I examine the scale of recent changes in the size and composition of the immigrant stock in the UK, the reasons why immigrant labour market performance may have implications for natives as well as for immigrants themselves, and why the UK provides an illuminating case study. I also discuss the existing literature and the dataset I use, as well as providing an outline of my analysis in the forthcoming chapters.

In Chapter 2, I examine the incidence of ‘over-education’ among recent migrants to the UK from Central and East Europe (specifically, the ‘A8’ countries)<sup>1</sup>, drawing comparisons with the UK born, and with recent immigrants from the more affluent side of the European Union (the ‘EU15’).<sup>2</sup> I also examine the differences in pay between those who are over-qualified for their jobs, and those who are well matched. In Chapter 3, I examine how qualifications and the origin of schooling and experience can help us to understand immigrant earnings, and, in particular, the difference between wages paid to immigrants and natives with apparently similar human capital profiles. In Chapter 4, I examine how variation in the original motives for migration is associated with the labour market performance of immigrants, and their propensity to adopt the native national identity. (It is this examination of national identity which accounts for the ‘...and beyond’ in the title of my thesis.) In Chapter 5 I summarise my contributions and conclude.

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<sup>1</sup> The ‘A8’: Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia.

<sup>2</sup> The ‘EU15’: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden.

## 1.2 Does it matter how immigrants perform on the labour market?

### 1.2.1 Immigrant labour market performance shapes the material wellbeing of a substantial proportion of the UK population

‘Net migration’ is the difference between the number of people entering and leaving a country. These people are not always foreign born, but the size of the immigrant stock is particularly affected by changes in net migration, since immigrants tend to move more readily than natives. Indeed, the phrase ‘net migration’ has entered the UK political lexicon over the last few years, largely in response to public concern about the size of immigrant flows and subsequent changes in the size of the immigrant stock. However, even with zero net migration, the composition of immigrant flows can change, and so the characteristics of an immigrant population with any degree of mobility are always subject to variation over time.

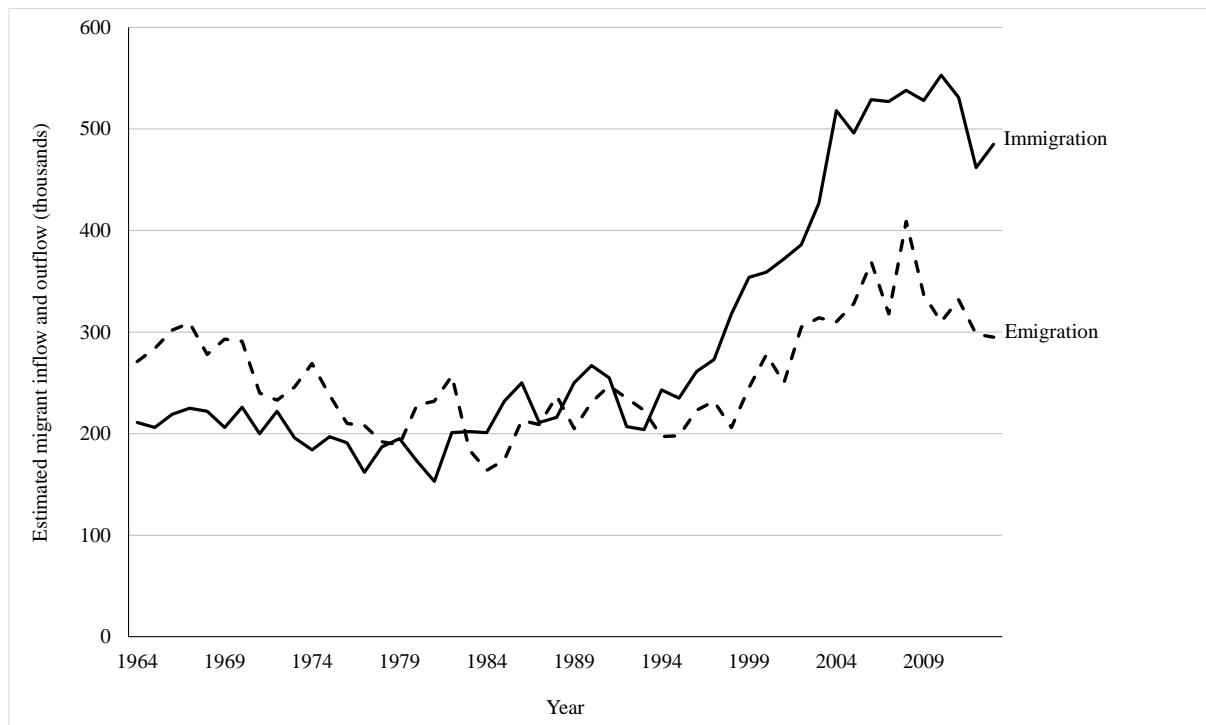
Figure 1.1 shows the best comparable estimates we have of the number of long-term migrants moving to the UK each year between 1964 and 2013, and the number of people emigrating.<sup>3</sup> Up until around 1980, emigration consistently exceeds immigration. For the 15 subsequent years, immigration and emigration are more balanced, at around 200 thousand a year each. Since the middle of the 1990s, there has been a large divergence, and immigration has consistently exceeded emigration, producing positive net migration in every year. Policy changes played an important role in precipitating this rise, although a series of macroeconomic factors were also favourable to an increase at the time (see Hatton, 2005). The increase in immigration sped up substantially in 2004, when the UK opened its labour markets to the populations of the A8 countries. Since this time, immigration has usually been over 500 thousand a year, while emigration has usually been between 300 and 400 thousand.

This increase in immigration has had a lasting impact on the size of the immigrant stock in the UK. Between 1993 and 2013, the number of immigrants in the UK of working age more than doubled, to just over six million, or around 16% of the working age population (Rienzo, 2014; Wadsworth, 2014). Given that immigrants in the labour market often have dependents in the UK, many of whom are born in the country, immigrant labour market performance has a direct bearing on the material wellbeing of a substantial proportion of the UK population.

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<sup>3</sup> ‘Long-term’ migrants are those who intend to stay or leave for more than a year. I discuss this concept further in Chapter 2. More accurate data are available after 1991, which are adjusted for asylum seekers, migration to and from Northern Ireland, and changes in the planned length of stay (ONS, 2015: 3). See Hawkins (2015) for a recent summary of the evidence on migrant flows to and from the UK.

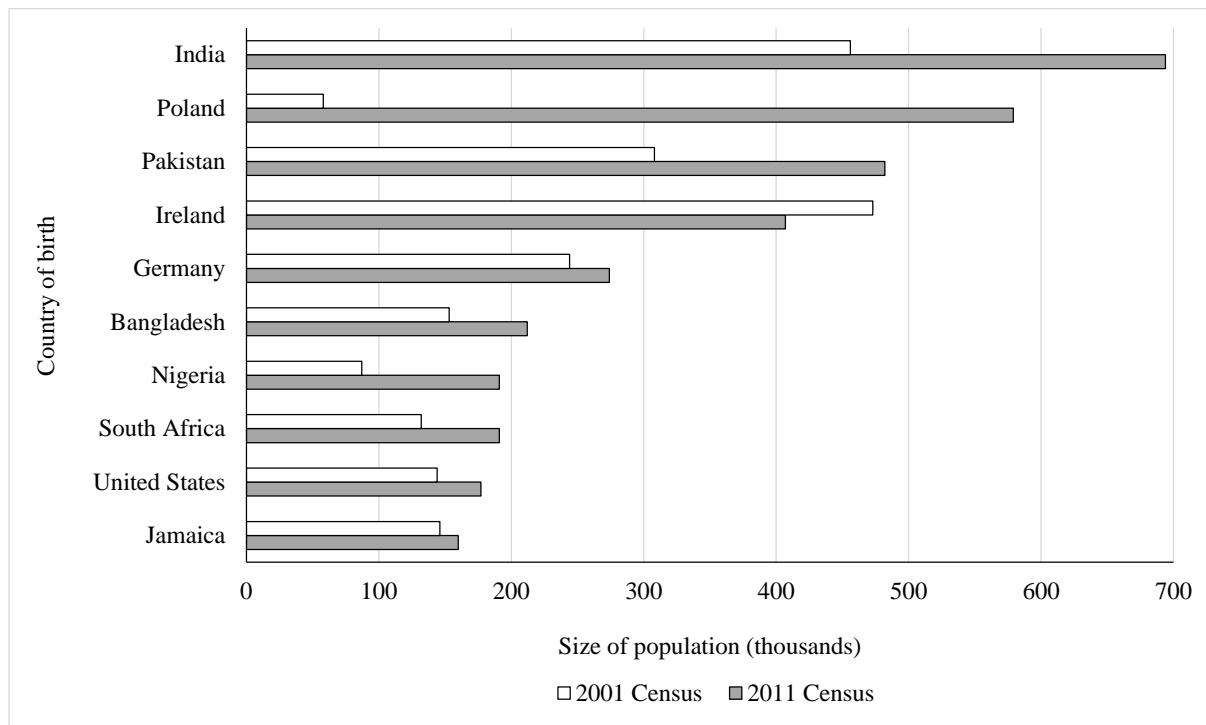
**Figure 1.1: International Passenger Survey estimates of long-term international migration to and from the UK, 1964-2013**



Source: ONS Long-term International Migration Estimates (IPS Calendar Year) (via Hawkins, 2015: 29).

To give some indication of the change in the composition of the immigrant population over the last decade, Figure 1.2 shows the number of people from each of the ten largest countries of origin within the foreign born population of England and Wales in the 2011 Census, as well as the equivalent numbers for 2001. With the exception of those born in Ireland, there are increases in the absolute number of foreign born from each country in the top ten over this period. Most noticeable is a large increase in the number of people born in Poland (from 58 thousand to 579 thousand - a 900% increase), as well as large increases in the absolute numbers of those born in India and Pakistan.

**Figure 1.2: Foreign born population in England and Wales from each origin country, 2001 and 2011**



Source: ONS (2012b). Those born in Germany include the children of UK military personnel who were previously stationed in that country.

### 1.2.2 Immigrant labour market performance may affect the wellbeing of natives

The labour market performance of immigrants is also likely to have implications for the material wellbeing of natives, and a rising proportion of research in the economics of migration addresses this possibility. The effects of immigration on native wages and employment prospects have become a well-established topic of research over the last two decades (Card, 1990; Borjas, 2003; Dustmann et al., 2005, 2013; Manacorda et al., 2012; Ottaviano and Peri, 2012), and, more recently, several studies have reported on the fiscal impact of immigration (Dustmann and Frattini, 2014; Dustmann, Frattini and Halls, 2010; Rowthorn, 2008). The vast majority of this research suggests that immigration on the whole has only a modest impact on the economic lives of natives, although the size and direction of this effect varies by the composition of the immigrant population and the characteristics of the natives in question.

The way natives perceive the costs and benefits of immigration is also shaped by immigrant labour market performance, often as filtered through media or anecdotal portrayals (see Brader et al. 2008;



Citrin et al. 1997; Mayda, 2006). The *perceived* costs and benefits of immigration are beyond the traditional remit of labour economists, but this does not mean that they are not important for labour markets. In democracies, it is these perceptions that dictate the policy preferences transmitted to elected policy makers, and can ultimately shape the immigration and labour market policy agenda. Indirectly, perceptions of immigrant labour market performance can therefore affect the policy environment faced by immigrants in the labour market and beyond. For example, Boeri (2010) and Dustmann and Frattini (2014) both make the point that welfare exclusions for EU migrants seem to have been introduced based on popular perceptions of immigrant welfare use, rather than the best available empirical estimates of such.

### **1.2.3 The UK provides an illuminating case study**

Understanding variation in the labour market performance of immigrants in the UK is not a straightforward exercise. The foreign born population exhibit a great deal of heterogeneity in their observed demographic and human capital characteristics, and this is before considering how their unobserved characteristics may vary. For example, the average hourly wage of a male immigrant from Central or Eastern Europe is over 30% lower than that of a UK born male, while the average wage of a male immigrant from Australia is over 30% higher.<sup>4</sup> Women from America have similar employment rates to UK born women, while women from Pakistan or Bangladesh have employment rates around a third lower. As I note more than once in this thesis, there is also great variation between immigrants who were born in the same country or international region, and much can only be attributed to unobserved differences between individuals. When the differences in performance are apparently so large, the task of untangling the different correlates is vital for informed research and policy making.

Three features of recent immigration history have contributed to producing this unusual heterogeneity in the UK immigrant population. First, it is a former colonial power, which for some time gave citizens of former colonies preferential immigration status (see the discussion in Bell, 1997: 334-335). Although this preferential status was withdrawn decades ago, the legacy of immigration from the former colonies remains strong in the UK immigrant inflow, largely due to family reunification. Second, the UK was one of several countries to experience a wave of asylum claims in the late 1990s and early 2000s, largely associated with wars and country-breakdown (see Bell et al. 2013; Hatton, 2009). As I discuss in Chapter 4, refugees still constitute a relatively small proportion of the settled

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<sup>4</sup> The figures I quote in this paragraph come from the Migration Observatory (Rienzo, 2014, and Rienzo and Vargas-Silva, 2014).

immigrant population in the UK, but their characteristics are very distinctive. Finally, the UK was one of only three EU countries (along with Ireland and Sweden) to offer immediate and more or less free access to its labour markets to the populations of the A8 2004 EU accession countries. A large amount of temporary and permanent migration has occurred between the UK and these countries in the last decade, and this is particularly the case for Poland. This last feature of recent immigration history has been transformative: I have already noted the 900% increase in the Polish born population of England and Wales. The 2011 census also revealed that Polish has gone from being the language of a small minority population to the second language of these countries (ONS, 2013b).

#### **1.2.4 The existing literature and the available data**

Given the potentially wide-ranging implications for human welfare and public policy, and the challenges of explaining outcomes for such a heterogeneous immigrant population, there is a pressing need for timely, large scale quantitative evidence on the labour market performance of immigrants in the UK. While the North American literature is large and well-established, and there is a good deal of evidence from the rest of Europe, the economic literature on the labour market experiences of immigrants in the UK is modest in size and limited in scope by comparison. Of course, we can learn much from studying immigrants in other countries, since these experiences will share some common features, but there is no replacement for the insights that can be gained from testing ideas in different labour markets, with different institutions and histories of immigration.

The existing economic research into the labour market performance of immigrants in the UK refers largely to the time period before the most rapid inflow of immigrants began in 2004, and is restricted in various ways by the features of the available data. Early studies used the General Household Survey (Chiswick, 1980; Bell, 1997), and later studies have tended to rely on the Labour Force Survey (LFS) (Shields and Wheatley-Price, 1998; Frijters et. al. 2005; Dustmann and Fabbri, 2005; Clark and Drinkwater, 2008; Drinkwater et al., 2009; Clark and Lindley, 2009; Lindley, 2009). More recently, Dickens and McKnight (2008) and Lemos (2013) have presented analysis from newly available longitudinal data derived from government registers. These data are an exciting prospect for research on immigrant wages, but they do not contain any information on educational characteristics, and cannot therefore be used to account comprehensively for immigrants' human capital characteristics. In terms of substance, the UK literature has examined the labour market implications of immigrant ethnicity, job search, origin country, and educational mismatch. Dickens and McKnight (2008), Clark and Lindley (2009), and Lemos (2013) particularly focus on wage assimilation.

Throughout this thesis, I use the LFS (see Chapter 3 for a summary of the scope and administration of the survey). I have noted that the LFS is widely used in the study of immigrants, but there are several disadvantages associated with using the survey for these purposes. Clark and Drinkwater (2008: 504-505) summarise some of these disadvantages: sample sizes tend to be small, recent immigrants are thought to be under-sampled, intended duration of stay is not recorded, and the survey does not regularly collect information on English language ability. Other commonly noted disadvantages are that communal living establishments are excluded from the survey, which disproportionately affects recent immigrants, and that immigrants who have been in the country for less than six months are ineligible.<sup>5</sup> Until recently, the survey contained only very basic information on education attained abroad (see the discussion in Manacorda *et al.* 2006: 22-24), and lacked any information on the reasons for migration.

The weaknesses of the LFS in this area are forgivable given that it is a general survey rather than a specialist dataset for the study of immigrants. Indeed, the survey has many positive features which should not be overlooked: Country of birth and nationality are recorded for all respondents, as is the year of arrival for those born abroad. This information is provided alongside detailed information on demographic and labour market characteristics on all respondents, which allows for the comparison of immigrants and natives with similar observed characteristics. In this thesis, I am also able to address several weaknesses of the LFS in regard to the study of immigrants. In Chapter 2, I describe a novel method to increase the cross-sectional sample size possible with the LFS, by exploiting the fact that many respondents who are absent from the first wave of the survey appear in later waves. In Chapter 3, I use new LFS measures of qualifications attained abroad, and in Chapter 4 I use new LFS measures of the original motive for migration (for example, whether a respondent came for work, study, or family reasons, or as a refugee).

The new variables I use in Chapters 3 and 4 have not generally been available to researchers in the past. I first used them as an ESRC intern at the Home Office during my doctoral studies, and as a contributor to Cooper *et al.* (2014). I was given permission to continue using them for the purposes of my thesis, although the variables are now also available via the ‘Secure lab’ of the UK data service. As I discuss in Chapters 3, 4, and 5, these variables are imperfect, but in many ways they are internationally unique. I have not come across survey measures of foreign qualifications before in any national labour force survey – the closest equivalent of which I am aware is the Canadian Census, which does capture qualifications attained in foreign countries, but does not make it easy to

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<sup>5</sup> This later exclusion has not been applied since 2007 (ONS, 2011:10), but it is still frequently noted in the literature.

differentiate these from qualifications attained domestically (see the discussion in Ferrer and Riddle, 2008: 196). Similarly, I am not aware of any national labour force survey which asks foreign born respondents their original reasons for coming to the country. The nearest equivalents are administrative data which provide information on original visa category, which are rare, and in any case could represent something quite different to the actual motive for migration (see my discussion in Chapter 4).

Information on foreign qualifications and the original motives for migration made the LFS the most appropriate dataset for this thesis. Possible alternatives for this type of analysis in the UK include the ‘Understanding Society’ survey (which has superseded the previous ‘British Household Panel Survey’), and the Census. These are both rich datasets, but neither provides the variables necessary for the analysis presented here. The Census does attempt to capture qualifications attained abroad, but does not combine this information with the rich set of demographic and labour market information available in the LFS. Neither Understanding Society nor the Census contains information on the original motives for migration.

As I will describe in more detail in Chapter 2, the LFS follows a rotating panel design. I exploit this feature of the survey to increase my cross-sectional sample size, but I do not employ panel methods in this thesis. The survey follows addresses rather than households or individuals, and this means that individuals can leave or join the panel at any wave. It is not possible to establish whether a person leaves or joins the panel because they have moved house, or because they have migrated, or for some other reason. This makes the use of panel methods to study changes in the circumstances of immigrants difficult. Further, Clarke and Tate (1999) and Tate (1999) have shown that attrition and response error in the different waves of the LFS create the potential for substantial error in estimates of flows between labour market states. The ONS do now produce a longitudinal version of the LFS, but this excludes respondents who do not appear in all 5 waves, which disproportionately excludes immigrants.

### **1.2.5 Moving the literature forward**

In this thesis, I make both substantive and methodological contributions to the UK literature. I also contribute to the broader international literature on the labour market performance of immigrants. The thesis as a whole advances our understanding of the labour market experiences of immigrants, the transferability of qualifications, skills, and experience, and the potential roles of differential self-selection and labour market discrimination.

Chapter 2 examines immigrant educational mismatch in a unique institutional context, expanding the scope of the international literature in this area. It is the first evidence on educational mismatch focussed particularly on the A8 immigrants in the UK. The chapter introduces an improved method to categorise the educational attainment of immigrants, which takes account of variation in international education systems. As I have noted above, this chapter also introduces a novel method to increase the cross-sectional sample size possible with the LFS, by exploiting the fact that many respondents who are absent from the first wave of the survey appear in later waves.

Chapter 3 focusses more closely on the relationship between how we measure the educational characteristics of immigrants and our estimates of the gap in earnings between immigrants and comparable natives. It is the first analysis to examine the role of qualifications in explaining wage differences between immigrants and natives with similar durations of schooling. It presents a more effective way of representing education in immigrant wage equations, and also expands the international scope of the small related literature.

Chapter 4 presents a novel analysis of the relationship between the original motives for migration and immigrant self-selection. It is the first analysis to examine all four major immigrant motive groups (work, student, family, and refugee). This chapter also provides new support for the human capital model of migration in both the economic and cultural spheres, as well as advancing the small literature in economics on national identity.

### **1.3 Thesis outline**

Three chapters of analysis in related areas follow.

In Chapter 2, I present new evidence on the incidence and wage associations of over-education among migrants to the UK from the A8 EU accession countries. Recent immigrants to the UK from the A8 countries have developed a strong reputation for being over-educated, but no study in economics has yet investigated the incidence and implications of over-education in this group. This represents an important omission from the literature, given both the grand scale of this wave of migration, which some believe to have been the largest to the UK in history (Salt and Rees, 2006), and its unique character, which appears to have been more temporary and recurrent than that observed in other immigrant groups in the UK (see Eade et al., 2007, 33-34). The purpose of Chapter 2 is to estimate the prevalence of over-education among A8 immigrants in the UK, and to investigate any potential wage implications. As I will discuss, the LFS data prevent a very detailed analysis of the absolute level of

over-education, but with the available information I am at least able to produce estimates of the relative level in different origin groups. I find that A8 immigrants face a substantially higher risk of over-education in the UK than other recent EU immigrants, and that this additional risk remains after taking account of observed characteristics. Moreover, A8 immigrants are concentrated in a particular subgroup of occupations, where higher wages are not available for the over-educated.

In Chapter 3, I examine how qualifications and the origin of schooling and experience can help us to understand immigrant earnings, and, in particular, the differential between the wages paid to immigrants and natives with apparently similar human capital profiles. Estimating the conditional difference between native and immigrant earnings is complicated by differences in the human capital endowments of the two groups. For example, one might compare the earnings of immigrants with those of natives with similar years of schooling. However, each additional year of schooling is unlikely to confer the same increase in earnings potential for people who have studied in different education systems. Friedberg (2000) addresses this problem by allowing the returns to schooling to vary depending on where it was acquired. However, this approach does not allow for heterogeneity in the earnings potential of immigrants with the same duration of schooling. In this chapter, I use new, unique measures in the LFS to show that accounting for the level of qualification held by immigrants, as well as the source and duration of schooling, causes conditional wage estimates to converge substantially with those of natives. This convergence in estimated wages appears to be greater for those educated in countries with less similar economies.

In Chapter 4, I examine how variation in the original motives for migration can help us understand the labour market performance of immigrants, and their propensity to adopt the native national identity. The importance of the original motives for migration has often been asserted in the economics of migration literature, but direct measures of such motives have seldom been included in empirical models of immigrant outcomes. For the first time, I am able to directly identify work, student, family, and refugee immigrants in the LFS. Using a sample of immigrants who have been in the country for at least five years, I show that original motives are strong predictors of employment, wages, and uptake of the native national identity. On employment and wages, I find that those who originally came as work or student immigrants are the most successful, while family immigrants do less well, and refugees fare the worst. On national identity, I find that those who originally came as refugees and family immigrants are the most likely to identify as British, while work and student immigrants are the least. My results provide new support for the predictions of the human capital model of migration in both the economic and cultural spheres, as well as for the recent ‘cultural distance’ model of national identity proposed by Manning and Roy (2010).

In Chapter 5 I summarise my contributions and conclude.

I wrote each of the three substantive chapters in this thesis as a standalone paper, and although each is closely related to the others, there are some differences in approach across the three chapters that would seem unusual in a single, seamlessly integrated analysis. The biggest differences are between Chapter 2 and the later chapters. I wrote most of Chapter 2 at the start of my doctoral training and circulated it as Campbell (2013). Although I revised the content when constructing the complete thesis, differences in approach remain. I discuss the LFS and issues related to the construction of my dataset more extensively in this chapter. I also define immigrants by nationality rather than country of birth, although robustness checks reveal that this alternative definition makes little difference to results.<sup>6</sup> Chapters 3 and 4 are more similar to each other in their approach, and use the more conventional ‘country of birth’ definition of immigrant.

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<sup>6</sup> A more minor difference: in Chapter 2, I deflate wages using the Retail Prices Index, while in chapters 3 and 4 I use the Consumer Prices Index.

## 2. Over-education among A8 immigrants in the UK

### 2.1 Introduction

The highly educated immigrant earning a modest living as a cleaner, shop assistant, or factory worker is a popular caricature in public discussions of immigration in the rich world, and there is some evidence to suggest that the phenomenon of immigrant ‘over-education’ has more than a merely anecdotal existence. Where it does exist, such mismatch between occupation and educational background potentially represents a waste of individual potential for the immigrant affected, as well as a failure for the host country to capture the full economic gains from immigration. In the United Kingdom, where the leaders of all three major political parties have expressed concern that low-skilled native workers have suffered from unfair competition arising from increased immigration in recent years,<sup>7</sup> the perception that over-qualified immigrants are displacing low-skilled natives may also be damaging for social cohesion, and for public support of moderation in immigration policy-making.

A large empirical literature suggests that over-education is associated with decreased job satisfaction, higher labour market turnover, and reduced earnings potential.<sup>8</sup> For immigrants, it may also contribute to a decision to move on to another country, or indeed to move home. Recent immigrants to the UK from the EU accession countries of Central and Eastern Europe (the ‘Accession 8’, or ‘A8’ countries), namely the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia, have developed a strong reputation for being over-educated, but no quantitative study has yet investigated the incidence and implications of over-education in this group. This represents an important omission from the literature, given both the grand scale of this wave of migration, which some believe to have been the largest to the UK in history (Salt and Rees, 2006), and its unique character, which appears to have been more temporary and recurrent than that observed in other immigrant groups in the UK (see Eade *et al.*, 2007, 33-34). The purpose of this chapter is to estimate the prevalence of over-education among A8 immigrants in the UK, and to investigate any potential wage implications.

The main comparison group I use in this study is EU15 immigrants, who come to the UK from countries which were already EU members in 2004 (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain and Sweden).<sup>9</sup>

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<sup>7</sup> See Cameron (2011); Clegg (2013); Miliband (2013). Empirical support for such claims is mixed. Dustmann *et al.* (2013) find that immigration depresses wages slightly at the lower end of the UK wage distribution, but the evidence on employment effects is weaker (Dustmann *et al.*, 2005, find no well determined impact of immigration on native employment).

<sup>8</sup> Various empirical studies on the implications of over-education are cited in Allen and van der Velden (2001: 434).

<sup>9</sup> The ‘EU15’ designation usually includes the UK, but UK nationals are treated as a separate group here. Malta and Cyprus joined the EU at the same time as the A8 countries, but under quite different institutional circumstances, and nationals of these countries are



immigrants from these countries have been coming to work in the UK over a longer time period, but to allow comparison with the recent A8 immigrants, I only consider those arriving in 2004-2011. UK nationals act as an alternative comparison group.

The definition of ‘over-education’ I use in this study is based on the distribution of educational attainment within a given occupation. Having established a standard level of education within each occupation, using an internationally comparable measure of educational attainment, I class individuals as ‘matched’, or ‘over-educated’, depending on how their own level of educational attainment compares to this standard level. I then compare the prevalence of over-education in different immigrant groups. I take account of differences in the observable characteristics of the immigrant groups using a probit model, and I assess the wage associations of over-education using a variant on the standard human capital earnings function.

The data I use here come from the Labour Force Survey (LFS) between 2004 and 2011. Previous empirical work on A8 immigrants in the UK has been hindered by the small survey sample sizes possible, even with large datasets such as the LFS, and by the difficulty of estimating returns to education attained in different European education systems. I use a novel strategy to extract information on the maximum number of individuals possible from the LFS, which results in a cross-sectional sample substantially larger than any used in previous survey-based studies of A8 immigrants. I also use an improved method of classifying the past educational attainment of A8 immigrants, which takes account of the differences between European education systems.

A recent review of the scholarly literature examining over-education among immigrants in general is provided by Piracha and Vadean (2012). Almost all studies in this area have suggested that immigrants suffer a higher propensity to be over-educated than the native population, and that immigrants receive lower returns to surplus education than natives. However, I argue that the institutional context of the EU accession attracted and retained immigrants from the A8 countries with a unique vulnerability to over-education, and my findings are consistent with this hypothesis. I also find that over-education is associated with wage differences. Further, I note that A8 immigrants are concentrated in a particular sub-group of occupations, where higher wages are not available for the over-educated.

In Section 2.2, I present background information on the concept of over-education, as well as on A8 immigrants in the UK. I also review some of the existing evidence relating to this group. In Section 2.3, I discuss the dataset and the definitions I use in this study; in Section 2.4, I examine the prevalence

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therefore excluded from the analysis. The same applies to immigrants from Romania and Bulgaria (the ‘A2’ countries), who have been part of the EU since 2007, but did not enjoy equal labour market access in the UK until January 2014.

of over-education and the characteristics with which it is associated; in Section 2.5, I examine the wage associations of this over-education, and in Section 2.6, I conclude, and make a brief comment on policy.

## **2.2 Background**

### **2.2.1 The concept of over-education and its measurement**

Following an expansion in the number of people gaining university degrees in the USA, Freeman (1976) argued that an oversupply of graduates was leading to a fall in the returns to college education. Several subsequent studies using aggregate data found little evidence of a fall in the returns to such qualifications, suggesting that the expansion in the supply of graduates was matched by an increase in demand. However, using microdata, Duncan and Hoffman (1982) found around 40% of Americans had more education than was required for their jobs. Duncan and Hoffman's paper spawned a huge literature on over-education and its implications, and this chapter contributes to that literature.

Early research tended to view job mismatch as a temporary phenomenon (for example, Sicherman, 1991), and this raises legitimate questions about whether it should be a matter for scholarly concern at all. However, later studies present evidence of persistence in job mismatch (for example, Sloane et al., 1999), which suggests the phenomenon does not simply reflect a temporary disequilibrium.

Broadly, three approaches have been used to define over-education, summarised by Chiswick and Miller (2009: 164) as the 'Job Analysis', 'Worker Self-Assessment', and 'Realised Matches' approaches. The Job Analysis approach uses some 'objective' evaluation of the education required for a particular job, and then compares this with the education level attained by individuals doing that job. If an individual is found to have surplus education, she is 'over-educated'. 'Worker Self-Assessment' is less commonly used, and simply involves asking workers to specify the level of education required to do their job, or whether they have more or less education than is required to do their job. Finally, the 'Realised Matches' approach uses the mean or modal level of education within each occupation to define the 'required' level of education, and then sets some statistical boundary around this level (such as one standard deviation) to allow some variation. Any individual with education above the defined level in their occupation is said to be over-educated.

As Chevalier (2003: 511) notes, each of these methods presents some difficulties. The 'Job Analysis' method is objective, but relies on timely and large-scale information on the skill requirements of each job. If it is available, such information may be out of date by the time it is fully compiled. It also

assumes that every job that has the same title comes with the same educational requirements. The ‘Worker Self-Assessment’ method has the advantage of capturing the education level required for each specific person’s job, but is likely to produce misclassification since it depends on the subjective judgement of individuals. As I noted in the introduction to this chapter, I use a variant of the ‘Realised Matches’ approach, which I discuss in more detail below. I also discuss additional issues of measurement which arise when dealing with education that was attained abroad.

Seeking to explain the enhanced risk of over-education faced by immigrants, Chiswick and Miller (2009:163) note several possible explanations. One set of explanations are related to search and match theory: over-education is produced by imperfect information in the labour market. Workers are over-educated when they first enter the labour market, but engage in on-the-job search and gradually move into more appropriate employment. This may be one factor which produces immigrant over-education, particularly among those from countries with very distinct economies and labour markets, for whom gathering information about the host labour market may be more costly and time-consuming.

A second category of explanations is implied by human capital theory. Over-educated workers may be taking on employment below their education level in order to gain experience, in order to secure more appropriate employment at some future date. This could be true for either natives or immigrants, but the latter face a further difficulty: if qualifications and experience attained in the home country are not transferable to the host country, they may find themselves over-educated on the host labour market for a longer time period.

Both the search and match and the human capital explanations of immigrant over-education are relevant here when comparing the risk of over-education faced by immigrants and natives, but I also compare the risk of over-education faced by different immigrant groups. I argue below that A8 immigrants face a higher risk than EU15 immigrants due to differences in their unobserved labour market characteristics. However, first I provide some background information on the A8 immigrants and on the scale of the A8 migration to the UK.

### **2.2.2 Who are the A8 immigrants?**

The ‘A8’ countries are the eight former communist countries of Central and Eastern Europe that joined the EU on May 1<sup>st</sup> 2004. EU citizens had previously been allowed almost free access to the labour markets of the other member states, but fears about mass immigration from the poorer A8 countries led to the establishment of ‘transitional arrangements’ in the richer EU15. For most governments of the EU15, these transitional arrangements involved placing substantial barriers to the employment of

A8 immigrants,<sup>10</sup> but the governments of the UK, Ireland and Sweden allowed more or less free access to their labour markets. The UK has by far the largest labour market of these countries, and, although the exact numbers are contentious, perhaps 1.5 million A8 immigrants came to the UK to work for some period of time in the first five years following accession in 2004 (Sumption and Somerville, 2010: 5).

The transitional arrangements in the UK from May 2004 until the end of April 2011 placed some restrictions on access to welfare benefits for A8 immigrants in their first year in the country, as well as requiring initial registration on a 'Worker Registration Scheme' (WRS) in order to take up employment. The demographic information collected in the WRS is thoroughly summarised in Drinkwater *et al.* (2009: 166-167) and in Blanchflower and Shadforth (2009: F145-F146). Broadly, it indicates that most A8 workers in the UK are aged between 18 and 34, and only a small number arrive with dependent children. A8 nationals also appear to be more evenly distributed around the country than other immigrant groups, which tend to be clustered in large metropolitan areas (Drinkwater *et al.*, 2009: 167).

The speed and scale of A8 migration drew scholarly attention, focussing, for example, on its impact on the domestic labour market (Portes and French, 2005; Gilpin *et al.*, 2006; Green *et al.*, 2007; Lemos and Portes, 2008), the housing market (Robinson, 2007; Pemberton, 2009), its fiscal effects (Dustmann *et al.* 2010), and its impact on the crime rate (Bell *et al.*, 2013). The geographical distribution of the early A8 immigrants has also been addressed (Coombes *et al.*, 2007). Other authors have considered the labour market performance of A8 immigrants, and the returns to education available for these workers in the UK. For example, Clark and Drinkwater (2008) found A8 immigrants worked relatively long hours for relatively low wages, and had particularly low returns to education. Drinkwater *et al.* (2009) also found low returns to education among A8 immigrants.

Over-education among this group of immigrants in the UK has been considered in several qualitative studies, often focussing on one or more of the constituent A8 nationalities.<sup>11</sup> Parutis (2011) explicitly addresses the question of why so many Polish and Lithuanian immigrants in the UK appear to be working below their level of qualification, using in-depth interviews. She argues that often the motivation for migration does not centre on wage benefits, and that learning English, and the experience of living abroad, can play an important role. Similarly, Anderson *et al.*, (2006) find over-

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<sup>10</sup> Restrictions on the rights of A8 immigrants to work in all of the other EU15 countries had ended by May 1<sup>st</sup> 2011, with the end of the period of 'Transitional Arrangements'.

<sup>11</sup> On the possible consequences of over-education, aside from labour market implications, over-education among Polish immigrants in Scotland has also been cited in the public health literature as a major contributor to stress (Weisharr, 2008: 1253).

qualified interviewees explaining their situation both in terms of such non-wage benefits, and in terms of a conscious economic trade-off, as a low wage in the UK may be relatively high when compared with wages in the country of origin. There is also qualitative evidence of discrimination against A8 immigrants causing over-education, or at least a lack of recognition of qualifications attained in A8 countries. For example, Cook *et al.* (2011a: 61) note that more highly qualified workers expressed frustration that imported qualifications and experience were not recognised by employers in the UK. Such interview evidence is very valuable, particularly in assessing individual perspectives on the causes and consequences of educational mismatch, but it is difficult to judge the reliability of these subjective accounts of over-education, or indeed their national significance.

This previous research has therefore indicated that the reputation for over-education among A8 immigrants has some empirical basis. However, no study has yet produced quantitative evidence that addresses over-education in this group explicitly, or that examines the association between over-education and wages. This study fills this gap in the literature.

### **2.2.3 How many A8 immigrants are in the UK?**

It is difficult to estimate the number of A8 immigrants who have come to work in the UK with precision: no comprehensive official records are kept of people entering or leaving the country, and researchers must therefore rely on surveys, which often struggle to capture recent immigrant populations adequately (see the discussion in Section 2.3.1 below), or on domestic administrative data, which often lacks detail, and is not always comprehensive. Around one million workers from the A8 countries registered on the ‘Worker Registration Scheme’ (WRS) in the UK in the first five years after accession, and, taking account of the many workers who did not register on the scheme, it has been inferred that around 1.5 million A8 workers came to the UK in total, though much of this migration has been temporary (Sumption and Somerville, 2010: 9).

Leaving aside these problems of accurate measurement, it is clear that at any point in time, A8 immigrants make up a small proportion of the UK working age population, which is now around 38.5 million people (ONS, 2012d). One consequence of this is that even a large government survey such as the LFS can capture only a relatively small number of A8 immigrants, and this creates problems for statistical inference. I employ a novel strategy to increase sample size, discussed below in Section 2.3.3.

Long-Term International Migration (LTIM) data, which are based on the International Passenger Survey (IPS), suggest total net migration from the A8 countries over 2004 to 2011 of only around 393

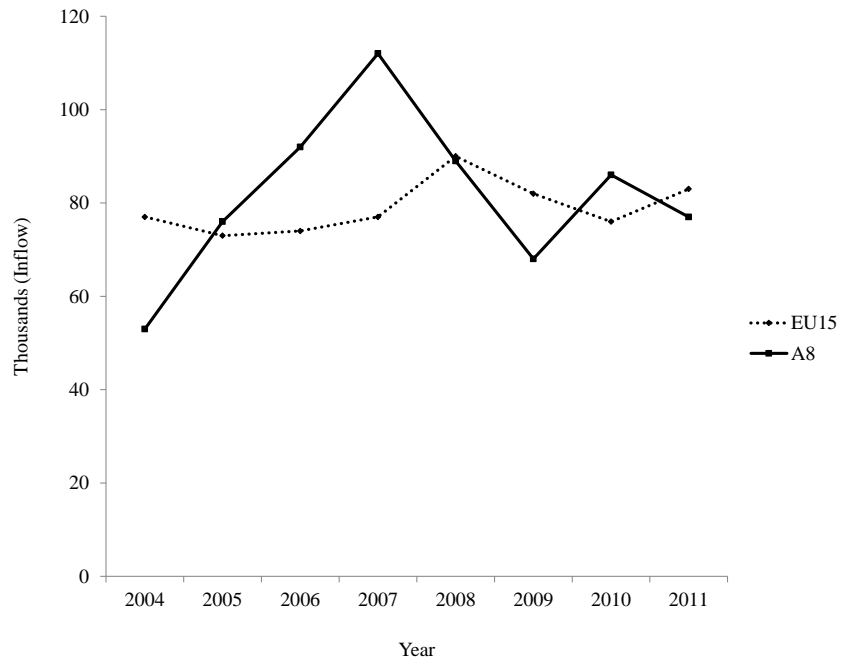
thousand (compared to 354 thousand for EU15 immigrants), but the IPS uses an interpretation of the United Nations definition of a long-term international immigrant, which specifies that a person must stay in the country for at least a year in order to be properly considered as such. As the IPS is conducted at the point of arrival in the UK, immigrants are asked about their ‘intended’ length of stay, and included in the survey if this is over one year.<sup>12</sup> This definition excludes many A8 and EU15 immigrants with short time horizons in the UK, including those who end up staying for longer than a year, for there is often a large discrepancy between intended and actual length of stay in the country (Clark and Drinkwater, 2008: 504n). In order to give a sense of trends in long-term migration from the A8 countries and the rest of the EU, at least in the limited sense of ‘intended’ long-term migration, Figure 2.1 compares the total inflow and outflow of A8 and EU15 immigrants recorded in the LTIM data, over 2004-2011.

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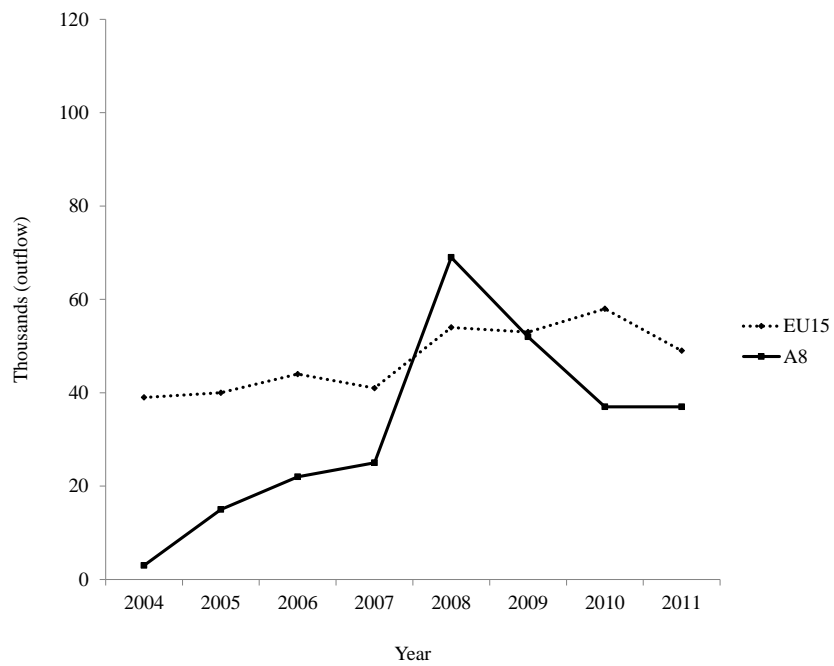
<sup>12</sup> ‘Outflow’ estimates are collected at the point of departure in the UK, and immigrants are identified based on their actual length of their stay.

**Figure 2.1: Total flows of Long-term A8 and EU15 immigrants to the UK, 2004-2011**

**(a) Inflows ('Intended' Long-term immigrants)**



**(b) Outflows ('Actual' long-term immigrants)**



Source: LTIM time-series data, ONS (2013c).

The inflow and outflow of EU15 immigrants appears to be relatively constant during the transitional arrangements, with an increase in the rate of outflow over the second-half of the period. In contrast, the inflow of A8 immigrants rises sharply up to nearly 120 thousand per year in 2007, and then falls sharply until 2009, before starting to rise again in 2010, and falling slightly in 2011. The outflow of A8 immigrants rises more slowly until 2007, before increasing sharply in 2008, and then falling back again over 2009-2010. These patterns suggest that the flow of A8 immigrants with long-term intentions is less constant than that of EU15 immigrants with long-term intentions. Indeed, with the fluctuations in the UK macro-economy since 2008, it may be that the A8 immigrant group is simply more responsive to macroeconomic conditions. This would be consistent with the evidence that patterns of A8 migration are more fluid than those of other immigrant groups, an idea that I will refer to again in the next section.

#### **2.2.4 Why are A8 immigrants different?**

I argue here that A8 immigrants face a higher risk of over-education than recent EU15 immigrants because of unobserved differences in their labour market characteristics, and possibly also because they experience a higher degree of labour market discrimination in the UK. These unobserved differences in characteristics include more heterogeneous motivations, more uncertain time-horizons, and lower reservation wages. Such qualities reflect a distinct self-selection process associated with the institutional context of the accession. Specifically, wide real wage gaps, wide differences in absolute price levels, and a one year exclusion from government welfare benefits attracted and retained immigrants with a unique vulnerability to educational mismatch.

Migrants tend to be favourably self-selected on labour market ability and motivation (Chiswick, 1978). However, in general, the larger real wage gaps between the UK and the A8 home countries<sup>13</sup> imply that the inflow of immigrants from these countries will be less favourably self-selected on such characteristics than will the inflow of immigrants from the richer EU15 countries, if transport and other fixed costs of migration are reasonably similar.<sup>14</sup> In other words, migration to the UK will be a profitable enterprise for many people from the A8 countries whether their labour market ability and motivation is high or low, while only the most able and most motivated workers in EU15 countries will gain from migrating. Indeed, the heterogeneity of the motivations for migration cited by people

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<sup>13</sup> I do not quantify the wage gaps between the A8 and EU15 countries here, but Eurostat (2013) provides detailed maps of GDP per capita within the EU over the period of the transitional arrangements.

<sup>14</sup> This is a straightforward implication of the human capital approach to migration in Chiswick (1978). See Chiswick (1999) for a discussion of migration costs and positive selection.



from A8 countries is one of the features of the qualitative literature in this area (Anderson *et al.*, 2006; Cook *et al.*, 2011a; Parutis, 2011), and this may reflect the more marginal role that labour market motivations play for some such immigrants.

The larger real wage gaps between the A8 countries and the UK may also foster a higher occurrence of ‘temporary’ or ‘circular’ migration,<sup>15</sup> as extended periods of country-specific human capital adaptation are not required in order to make migration profitable. Time-horizons in the UK therefore may be less certain for many A8 immigrants. Indeed, one of the stylised facts emerging from the empirical work on A8 immigrants so far is that they are an unusually fluid group of immigrants, with many people coming to the UK and working for only a short time before moving elsewhere, or moving back and forth between their home country and the UK over a longer period (see Eade *et al.*, 2007: 33-34). Engbersen *et al.* (2010) have described the movement of A8 workers around the EU as ‘liquid migration’, with workers ‘trying their luck’ in different European labour markets before settling or moving on.<sup>16</sup> If those A8 immigrants with greater labour market ability leave the UK permanently after achieving some pre-determined level of target savings, then the relative degree of favourable self-selection on labour market ability and motivation will be further reduced in the A8 immigrant stock in the UK.

At the same time, in terms of generic skills associated with securing employment quickly, the inflow of A8 immigrants will be strongly favourably self-selected, since A8 nationals are excluded from government benefits during their first year in the UK during this period, and the gap between the absolute price levels in the UK and the A8 countries makes any period out of work particularly costly. Thus, in order to secure positive returns to migration, many will have to be able to find work fast, and with minimum expenditure.<sup>17</sup> In a job-search framework, such workers have a lower ‘reservation wage’. EU15 immigrants are not excluded from government benefits, and do not face an equivalent price gap, and so job-search is not so constrained. If those A8 immigrants who are unable to secure or maintain employment leave the UK permanently, this will leave the remaining stock of such immigrants even more strongly selected on these characteristics. The lower reservation wages among many A8 immigrants are reflected in exceptionally high employment rates, which averaged 81.1% over the years of the transitional arrangements, compared to 72.4% for EU15 nationals and 72.8% for UK nationals.<sup>18</sup> They are also reflected in the unusually high geographic mobility of this immigrant

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<sup>15</sup> For a concise summary of different forms of migration, see Dustmann and Weiss (2007: 237-238).

<sup>16</sup> Eade *et al.* (2007: 34) have referred to the ‘intentional unpredictability’ of such immigrants.

<sup>17</sup> The high relative cost of job-search for A8 immigrants may be reflected in their more intensive use of social contacts when looking for work. Sumption (2009) presents evidence of this for Polish immigrants, and Battu *et al.* (2011) note similar patterns for the A8 group as a whole.

<sup>18</sup> These are my calculations, for men and women aged 16-64, from the tables in ONS (2013a).

group, as workers travel to areas of labour-shortage, rather than clustering in large metropolitan areas (Coombes *et al.*, 2007).

A8 immigrants may also face higher levels of employer discrimination. Little work has been done so far in the quantitative literature on discrimination specifically against A8 immigrants, but, for example, there is qualitative evidence of general hostility towards A8 immigrants from the host population in the UK (see Cook *et al.*, 2011a: 61-62; Cook *et al.*, 2011b: 736; Spencer *et al.* 2007: 66-69; Anderson *et al.*, 2007: 15; and a review of newspaper coverage of Polish immigrants in Fomina and Frelak, 2008), and it is plausible that such discrimination could be affecting occupational outcomes for A8 immigrants in a way that it does not affect outcomes for EU15 immigrants. And, as noted above, some more highly qualified A8 workers have expressed frustration that imported qualifications and experience are not recognised by employers in the UK (Cook *et al.*, 2011a: 61), which may reflect a more subtle form of discrimination, targeted against non-native qualifications and experience, rather than at the individuals that hold them.

I assume that this combination of different motivations, different time horizons, lower reservation wages, and potentially also different levels of labour market discrimination all contribute to a higher risk of over-education for A8 immigrants compared to those from EU15 countries. Of course, the distinct geographical, occupational and demographic characteristics of the two groups may also be part of the explanation, but I can account for these characteristics in an econometric analysis, which I will discuss in Section 2.4.2 below.

In the broader educational mismatch literature, over-educated workers are generally found to earn more than their matched peers within a given occupation. This must partly be because their surplus education proves to be of some productive value to employers (Duncan and Hoffman, 1982). However, immigrant groups tend to face wage penalties in the host country independent of educational mismatch, due both to wage discrimination and imperfect human capital portability. For the immigrant over-educated, then, wage returns depend on the relative size of the immigrant wage penalty and any wage effects associated with over-education. Establishing the relative size of these effects is an empirical exercise, but the existing evidence (e.g. Clark and Drinkwater, 2008; Drinkwater *et al.*, 2009) suggests that the wage penalties suffered by A8 immigrants in the UK are such that only very strong returns to surplus education would reverse them for the over-educated.

## 2.3 Data

### 2.3.1 The Labour Force Survey

The LFS is a large sample survey of households in the United Kingdom, which collects a range of demographic and labour market information. It is administered by the Office for National Statistics (ONS). The sample includes around 50,000 responding households each quarter in Great Britain, and around 3,000 responding households in Northern Ireland. As such, it is the largest regular household survey in the UK. The survey employs a rotating panel design, in which addresses are followed quarterly for five successive ‘waves’, so that around one fifth of the sample is new in each quarter. Addresses to be surveyed are sampled randomly by postcode from the small users' sub-file of the ‘Postcode Address File’ for Great Britain, and by geographical strata from the ‘Valuation List’ used for rating purposes in Northern Ireland. Each member of the sampled household is surveyed in person in the first wave, and is then surveyed on the telephone for the four subsequent waves. Interviews may be conducted by proxy if any household member is absent, or if they cannot be surveyed for some other reason, such as poor English language ability. The LFS excludes individuals living in some types of communal establishments, and, until the start of 2008, it also excluded immigrants who had arrived in the UK within the preceding 6 months (ONS, 2011: 10).

The LFS follows addresses rather than respondents, and the identity of respondents surveyed may therefore change over the five waves, as current residents leave the address, or as new residents arrive. Individuals may also be unavailable, or refuse to participate in the survey in any of the five waves. Individual respondents may therefore appear for the first time in waves two, three, four or five, as well as in wave one, and may disappear from the survey intermittently or permanently at any point. I use this feature of the LFS to maximise the sample of immigrants in this chapter, as I describe in Section 2.3.3 below.

The LFS has been used to examine the labour market performance of immigrants in the UK in several studies (for example, Shields and Wheatley-Price, 1998, Blackaby *et al.*, 2005; Dustmann and Fabbri, 2005), including in work focussed specifically on A8 immigrants (for example, Clark and Drinkwater, 2008; Jayaweera *et al.*, 2008; Drinkwater *et al.*, 2009; Sumption, 2009). There are several reasons to suspect that the LFS under-represents the A8 immigrant population. For example, before 2008, all new immigrants were excluded by the requirement that they be resident in the UK for six months before being eligible for the survey. Gilpin *et al.* (2006: 11) have also suggested that the exclusion from the LFS of those living in ‘communal households’ (such as hotels, boarding houses or hostels) may have reduced coverage of A8 immigrants in particular.

Aside from these sampling issues in the LFS, a major disadvantage of the survey in this application is its lack of regular information on English language ability, which is thought to be a particularly important determinant of labour market success among immigrant workers in the UK (see Dustmann and Fabbri, 2003). Poor English language ability may be reflected in higher rates of response by proxy, but these rates do not differ substantially between A8 immigrants, EU15 immigrants, and UK nationals. Any household's participation is itself an indicator that at least one available household member has a minimum level of English language ability, which may mean the survey misses the least assimilated immigrants.

The potential sampling issues and the lack of data on English language ability together constitute significant weaknesses for conducting research on A8 immigrants, but the LFS is of course intended to capture information on the UK labour force generally, and is not a specialist dataset for studying immigrants. The survey benefits from collecting the same detailed demographic and work-related information on a large number of respondents from different immigrant groups as well as on UK nationals, which represent important points of comparison for A8 immigrants in any analysis. Another source of data on A8 immigrants is the Worker Registration Scheme (WRS), which covers a much larger sample, but contains only very basic information on demographic and labour market characteristics, and, crucially, contains no information on educational background.

### **2.3.2 How are immigrants identified?**

#### ***Dates of arrival and the transitional arrangements***

The period of interest in this study is between May 1<sup>st</sup> 2004 and April 30<sup>th</sup> 2011. This covers all immigrants arriving after accession, for the entire period of the 'transitional arrangements'. As the arrangements restricted access to government welfare benefits for the first year spent in the UK, they will have affected both the composition of the inflow of A8 immigrants, and the labour market behaviour of A8 immigrants once in the country. Restricting the analysis to this period ensures that my results describe the characteristics and behaviour of A8 immigrants under this specific set of institutional constraints.

The LFS records only the year of arrival of immigrants, rather than a specific date or month of arrival. My study identifies all immigrants from A8 countries who arrived between 2004 and 2011 as post-accession immigrants. As the accession took place on May 1<sup>st</sup> 2004, this means respondents who arrived between January and April 2004 are misclassified as post-accession immigrants. The only feasible alternative to this strategy would be to exclude all A8 workers who arrived in 2004, which

would eliminate large numbers of the respondents of interest. For this reason, I proceed with this likely misclassification in mind. Other studies of A8 immigrants in the UK have chosen the same strategy (for example, Dustmann *et al.*, 2010). As, at the time of the accession, immigrants could not appear in the survey during their first six months in the country, the first post-accession immigrants appear in the LFS in November 2004, so I do not include respondents interviewed before this date. The transitional arrangements ended on 1<sup>st</sup> May 2011, so I also exclude all those interviewed after this date.

### ***Nationality versus country of birth***

It is possible to infer immigrant status from either the ‘nationality’ or ‘country of birth’ variables in the LFS. The literature contains some studies that use ‘nationality’ to identify immigrants, and some that use ‘country of birth’. Each of these methods is problematic in its own way. For example, identifying immigrants by nationality may cause misclassification because of different naturalisation laws for people from different countries or on different visas. Using immigrants’ country of birth may cause misclassification because of nationals being born abroad, particularly in countries with former colonies or military posts abroad, such as the UK (Brücker *et al.*, 2002: 72-73).

In this chapter, I define immigrants in terms of their nationality. I see this as a more useful measure of immigrant status than country of birth in this case, because nationality is a more fluid concept, which can change over a lifetime as a person moves, or indeed as the borders of a country change. Six of the A8 countries became independent in the early 1990s, which is during the lifetime of many A8 immigrants presently in the UK, and therefore a potential source of misclassification in the ‘country of birth’ variable. Estonia, Latvia, and Lithuania, all part of the former Soviet Union, became independent countries in 1991. Slovenia, part of the former Yugoslavia, became an independent country in 1992, and the Czech Republic and Slovakia, constituting the former Czechoslovakia, separated into independent countries in 1993. A8 immigrants born before these dates could potentially report having been born in countries which no longer exist, and, in the cases of the former Soviet Union and the former Yugoslavia at least, be misclassified as non-EU immigrants and excluded from the sample.

Table A1.1 in Appendix A1 compares the proportion of immigrants in each category by the ‘nationality’ and ‘country of birth’ definitions’. The only group in the sample for whom the definition makes a substantial difference is the ‘EU15’ group, 17% of whom would have been classified as ‘non-EU’ immigrants had the ‘Country of Birth’ definition been used. The continents of birth of these particular EU15 nationals are listed in Table A1.2 (46% were born in African countries, 33% in Asia,

and 17% were born in the Americas). This is an interesting finding in itself, but the numbers affected are still relatively small, so I do not pursue the matter here. I do, however, use the ‘country of birth’ definition of immigrant as a robustness check in Appendix A4.

### ***Grouping Nationalities***

The central comparison in my analysis is between immigrants who identify themselves as nationals of one of the A8 countries, who have arrived in the UK since the start of 2004, and immigrants who identify themselves as nationals of one of the EU15 countries, who have arrived in the UK over the same time period. Of course, the use of the ‘A8’ and ‘EU15’ groups hides much national heterogeneity, but each of these groups is crucially united by a specific set of legal constraints in the UK during the transitional arrangements, so in this case I think the two groupings are useful. Other authors have taken a different approach, such as separating the analysis of Polish immigrants (for example, Drinkwater *et al.*, 2008).

The countries that are in the European Economic Area (EEA) but not the EU (Iceland, Lichtenstein and Norway) are not included, despite effectively having open borders with the UK – this is because there are slight legal differences in the entitlements of these citizens in the UK. Switzerland is not a member of the EU or the EEA, and is not included for the same reason. Malta and the EU area of Cyprus, which joined the EU at the same time as the A8 countries, are not included, as they did not face equivalent ‘transitional arrangements’. Finally, Bulgaria and Romania (the ‘A2’ countries), which joined the EU in 2007, are not included, as nationals of these countries faced their own ‘transitional arrangements’ until 2014. I will comment on the situation of the A2 nationals briefly in the conclusion to this chapter.

The nationalities of immigrants in the A8 and EU15 groups are shown by country in Tables A3 and A4 in Appendix B. The principle feature of the A8 group is the prevalence of Polish nationals, and, to a lesser extent, Slovakian and Lithuanian nationals: 70% of the A8 sample report Polish nationality, and 88% report either Polish, Slovakian, or Lithuanian nationality. In contrast, the EU15 group features relatively large proportions of several nationalities: respondents from France, Germany, Ireland, Italy and Portugal together make up 71%.

### 2.3.3 Sample construction

#### *All occupations*

I draw the sample from 27 calendar quarters of the LFS, from the fourth quarter of 2004 to the second quarter of 2011.<sup>19</sup> I exclude respondents outside the ages of 16-64, those who are not employed, those in full-time education, and those reporting nationalities of countries other than UK, A8 or EU15 countries.

Most studies looking at A8 immigrants in the UK using the LFS have discarded all but the first wave of the survey. For example, Drinkwater *et al.* (2009: 167-168) favour this approach, as wave one contains earnings information (waves 2-4 do not), and using only the first wave avoids the risk of double counting respondents, and avoids mode effects associated with the switch to telephone interviewing after wave one. Response rates are also highest in wave one, at around 70 per cent (ONS, 2011). However, discarding waves 2-5 results in a smaller sample size than would otherwise be available. A common technique to increase sample size is to pool the data from the first wave of the LFS over several years, and this strategy has allowed for larger sample sizes of A8 immigrants as the years have passed since accession, but the sample sizes used for analysis in this area of research have so far still been relatively small.

I use a novel strategy to exploit the potential of the LFS more fully, allowing a substantial increase in the size of the cross-sectional sample. As noted above in Section 2.3.1, the LFS follows addresses rather than respondents, and individual respondents may therefore appear for the first time in any of the five waves. For the same reasons that immigrants in general, and A8 immigrants in particular, are thought to be under-sampled, they also tend to appear more intermittently across the five waves, and a disproportionate number of immigrants are therefore missed when only the first wave is used.

I use one observation per individual respondent, but in order to maximise the number of individuals in the sample, I do not restrict my search for this observation to the first wave. For the first part of this study, in fact, the observation may be drawn from any of the five waves, depending on which waves the individual appears in. The second part of this study requires wage information, and therefore I use only unique observations on individual respondents who provided wage information in waves one or five. The self-employed are automatically excluded in the second part, as wage information is not available on this group.

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<sup>19</sup> Until the start of 2008, it was not possible for immigrants to appear in the sample until they have been in the UK for six months. November 2004 is six months after the EU accession of the A8 countries, and is therefore the first month in which post-accession immigrants appear.

Table 2.1 compares the frequency of unique observations with education and occupational information in each nationality group using the first wave only, with that found by augmenting the first wave with individuals observed in the other waves. It also compares the frequency of unique observations that have wage information in the first wave, with that found by adding in observations with wage information only from the fifth wave. ‘UK’ represents respondents who report UK nationality, ‘A8’ represents respondents who report being a national of one of the A8 countries, who have come to the UK since 2004, and ‘EU15’ represents respondents who report being a national of one of the EU15 countries, who have come to the UK in the same time period.

In the construction of the ‘Waves 1 and 5’ and ‘All Waves’ samples, I prioritise Wave 1 observations, due to the high response rate and complete set of questions in this Wave. If a respondent is absent from Wave 1, I use the information from Wave 5, as although Wave 5 tends to have the lowest response rate, it still contains earnings information. This constitutes the complete sample for the ‘Waves 1 and 5’ sample. For the ‘All Waves’ sample, I also use individuals who do not appear in Waves 1 or 5, adding observations from Waves 2, 3 and 4, in that order, on the grounds that response rates get progressively lower over each wave.

**Table 2.1: Number of individuals from each nationality group in the sample**

Nationality	Education and occupational information		Wage information	
	Wave 1	All waves	Wave 1	Waves 1 & 5
UK	258,088	309,240	169,721	190,701
A8	2,987	5,174	2,193	2,940
EU15	967	1,600	654	874
Total	262,042	316,014	172,568	194,515

Source: LFS 2004-2011. Notes: Employed men and women, aged 16-64, not in full-time education.

Thus, I increase the number of A8 respondents in the sample with education and occupational information by 2,187 (73%) by adding in individuals found in all waves. Similarly, I increase the number of EU15 respondents by 633 (65%) by adding in individuals from all waves, and the number of UK respondents by 51,152 (20%). The number of each group on whom there is wage information also increases. This strategy increases the size of the immigrant sample proportionally much more than it increases the size of the native sample, because, as noted above, a higher proportion of immigrants miss the first wave and appear in the subsequent waves.



My strategy of constructing a cross-sectional sample using responses from all five waves of the survey could be criticised on the grounds that the method of data collection moves from face-to-face interview to telephone interview for waves two to five, which may alter the way respondents answer some questions. However, there is some evidence that mode effects are less prevalent with objective questions, such as those asked in the LFS (see, for example, Nicolaas *et al.* 2011). My strategy also precludes the use of the sample weights provided with the LFS. However, in my view these disadvantages are outweighed by the benefits of having a substantially larger analytical sample.

### *‘A8 intensive’ occupations*

New immigrant groups are seldom evenly dispersed across different occupations, and in fact are often concentrated in just a few. There are 12 occupations in my sample that have more than one hundred A8 immigrants.<sup>20</sup> These are largely unskilled manual or service sector occupations, which might be known in the sociological literature as ‘secondary labour market’ occupations – that is, they are part of a segmented labour market consisting of occupations that provide low wage, insecure employment with low returns to education, to workers who may face discrimination or other obstacles in the ‘primary’ labour market. In fact, a high concentration of A8 workers in secondary labour market occupations would be expected for many of the same reasons that I expect to see a higher risk of over-education in this group (see the discussion of motives, time-horizons, reservation wages, and possible discrimination in Section 2.2.4). I expect returns to surplus education to be lower in such occupations, since the scope for using surplus education to add productive value is particularly limited. Some of the analysis that follows is restricted to these ‘A8 intensive’ occupations. Table 2.2 compares the number of each nationality group in these 12 ‘A8 intensive’ occupations.

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<sup>20</sup> The 12 occupations are as follows: ‘Assemblers and routine operatives’, ‘Construction trades’, ‘Elementary cleaning occupations’, ‘Elementary goods storage occupations’, ‘Elementary personal service occupations’, ‘Elementary process plant occupations’, ‘Food preparation trades’, ‘Healthcare & related personal service occupations’, ‘Process operatives’, ‘Plant and machine operatives’, ‘Sales assistants and retail cashiers’, ‘Transport drivers and operatives’.

**Table 2.2: Number of people in the ‘A8 intensive’ occupations sample, by nationality group**

Nationality	Non-A8 intensive	A8 intensive	Total
UK	230,633	78,607	309,240
A8	1,545	3,629	5,174
EU15	1,146	454	1,600
Total	233,324	82,690	316,014

Source: LFS. Notes: Employed men and women, aged 16-64, not in full-time education. Restricted to 12 occupations with at least 100 A8 immigrants.

Table 2.2 shows that 70% of the A8 immigrants in the sample are working in these 12 ‘A8 intensive’ occupations, compared to 28% of EU15 immigrants, and 25% of UK nationals.

### 2.3.4 Measuring qualifications

#### *Using the ‘Age completed full-time education’ variable*

Over the period of interest, the LFS does not capture non-UK qualifications very effectively. In fact, until 2011 all non-UK qualifications were classified as ‘Other’ in the survey – which presents serious difficulties in assessing relative labour market performance and returns to education for those educated abroad.<sup>21</sup> This is a problem faced by all similar surveys – without the capacity to provide a list of all potential qualifications from every possible country of origin, there is inevitably some inaccuracy in the classification of non-native qualifications.

The tendency in studies of immigrants using the LFS has been to use the ‘Age completed full-time education’ variable as a proxy for the educational achievements of the respondent. Without any further information on why an individual completed education at that particular age, it is very difficult to assess quite what this age might mean for anyone, but it is especially difficult in the case of immigrants who have studied in different education systems. The assumption underlying the use of this variable is that a marginal year of education means something roughly equivalent within every country, and indeed at every level of education within every country. The measure is therefore supposed to allow the comparison of ‘returns’ to each year of education for natives and immigrants, and for people educated to different levels. However, the diversity of national education systems, even within the European Union, means that that marginal year of education can mean quite different things in different

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<sup>21</sup> A set of new variables was introduced to the LFS in the first quarter of 2011, in order to capture qualifications gained abroad more effectively. I use these in Chapter 3.

countries. Even the statutory minimum school leaving age varies within the EU. I will focus again on this issue in Chapter 3.

### *Using ISCED levels*

I use a novel strategy to classify educational attainment more accurately for each country, using ‘age completed full-time education’ to assign respondents to a level in the International Standard Classification of Education (ISCED), a categorisation system that takes account of differences between national education systems (UNESCO, 2006). The different statutory school leaving ages are not as problematic here, as I have classified respondents according to what different school leaving ages should in principle mean in their country of origin. Of course, there is still room for misclassification of respondents’ education level, particularly as the survey only records ‘age left full-time education’ in years, and the fact that some students may be held back to repeat years;<sup>22</sup> this method is by no means equivalent to having direct information on each individual’s qualifications. However, this approach does at least exploit the ‘age completed full-time education’ information fully, by placing it in the context of the relevant education system.<sup>23</sup> Table 2.3 shows the results of this process.

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<sup>22</sup> ‘Grade retention’ causes measurement problems for the EU15 countries, where in some places (France, Germany, Spain, Portugal for example), 15% or more pupils repeat years at secondary level (EACEA, 2011). I discuss alternative specifications in Appendix A.6, allowing for large amounts of measurement error in assigned ISCED level for the EU15 group.

<sup>23</sup> I use the tables in the PISA 2009 Technical Report (OECD, 2012: 364) and the Primary school starting ages from the World Bank’s World Development Indicators (World Bank, 2015) to calculate the usual age at which each ISCED level is attained in each country.

**Table 2.3: ISCED level attained, based on age left full-time education, by nationality group (column %)**

ISCED levels	Nationality			Total
	UK	A8	EU15	
Never had education	0.1	0.5	0.3	0.1
Primary	0.1	1.4	0.7	0.1
Lower secondary	0.7	0.7	4.8	0.7
(Upper) secondary	58.8	34.0	23.8	58.2
Post-secondary, non-tertiary	13.3	16.2	3.6	13.3
Vocational tertiary	5.8	25.9	16.4	6.2
Academic tertiary	21.4	21.4	50.5	21.5
Total	100.0	100.0	100.0	100.0

Source: LFS. Notes: Employed men and women, aged 16-64, not in full-time education. n=316,014.

### 2.3.5 Occupation and ‘required’ education

I classify the occupations of respondents using the 3-digit ‘Standard Occupational Classification’ (SOC) reported in the LFS. I classify the entire sample using the SOC 2000 definitions, and I use the modal ISCED level of UK nationals within each 3-digit occupation as the ‘required’ level of education. The modal definition has been used frequently in immigrant over-education papers (Battu and Sloane, 2004: 543; Lindley and Lenton, 2006: 5), with the aim of establishing the standard level of education among native workers in each occupation. Applying this approach, the required level of education within every 3-digit occupation is either ‘Upper-secondary’ or ‘Academic tertiary’. I define 3-digit occupations as ‘graduate’ if the modal ISCED level of UK nationals in that occupation is ‘Academic tertiary’.

This approach leads to a fairly simple characterisation of the education required for each occupation. Using only two ISCED levels means that an occupation need have only slightly over 50% of UK nationals being graduates to be defined as a graduate occupation. There is also likely to be some variation in the education required for different jobs within each 3-digit occupation, which is not captured using this measure. The ‘deviation from the mode’ method of estimating over-education also has several disadvantages as an objective measure. As Green and Henseke (2014: 6) point out, an ideal objective measure of over-education would be based on direct skill use in jobs, which this measure is not. Since it uses the observed distribution of educational attainment within each occupation, it is sensitive to changes in the required level of education for each occupation over time. The measure is also sensitive to the level of occupational aggregation, and it implicitly assumes that all jobs within a given occupation require the same level of education. Further, the cut-off point between having the ‘required’ level of education and having ‘too much’ education is always to some extent arbitrary. For

example, authors have often used one standard deviation from the mean level of education in an occupation as the threshold beyond which one is considered ‘over-educated’ (Chevalier, 2003: 511-512).

However, the ‘deviation from the mode’ method is the best available for this analysis. While it is not based on direct skill use in jobs, it does tell us whether the distribution of educational attainment within a particular job differs for natives and different immigrant groups. Because each respondent is assigned an ISCED level rather than simply a duration of education, the cut-off point between ‘required’ and ‘too much’ education is not arbitrary: ‘over-education’ is having the qualification level above that which is most frequently observed among natives in the occupation. Immigrant ‘over-education’ in this chapter might therefore be best understood as a relative concept, although indirectly related to actual skill requirements in any given occupation.

It is possible for respondents to be ‘under-educated’ using the ISCED definition, but the number of people in the sample who would be classed as such is relatively small, and, for the purposes of this study, the ‘under-educated’ are considered ‘matched’. The relative youth of the immigrant groups of interest in this study means few would be classified as under-educated, as such workers tend to be older. For the UK ‘under-educated’, I assume that additional labour market experience is acting as a substitute for formal education (see Groot and van den Brink, 1999). In these circumstances, it is reasonable to assert that these ‘under-educated’ workers are ‘matched’, and the small numbers of such workers in the sample mean that this classification will not affect the results of the study.

Using this method, it is not possible for someone in a ‘graduate’ occupation to be classed as over-educated. This will cause me to under-estimate the prevalence of over-education, particularly among the UK and EU15 groups. The A8 group will be largely unaffected by this, since so few in the sample work in these occupations. Table 2.4 shows the number and proportion of each nationality group in graduate and non-graduate occupations.

**Table 2.4: Number of people in graduate occupations, by nationality group**

Nationality	Non-graduate	Graduate	Total
UK	250,321	58,919	309,240
(row %)	(80.9)	(19.1)	(100.0)
A8	5,018	156	5,174
(row %)	(97.0)	(3.0)	(100.0)
EU14	1,154	446	1,600
(row %)	(72.1)	(27.9)	(100.0)
Total	256,493	59,521	316,014
(row %)	(81.2)	(18.8)	(100.0)

Source: LFS. Notes: Men and women, aged 16-64, not in full-time education.

Thus, only 156 (3%) of A8 immigrants in the sample work in graduate occupations, while 446 (27%) of the EU15 immigrants do so, and 58,919 (19%) of the UK nationals. When estimating the wage associations of over-education, I will use only non-graduate occupations, in order to prevent higher average wages among the ‘matched’ workers in graduate occupations from swamping the wage associations of over-education in the non-graduate occupations. Since wage information is only available for a subset of these workers in non-graduate occupations, the sample size will be further reduced in this part of the analysis.

### 2.3.6 Sample definitions

For ease of reference, Table 2.5 labels the different samples used in the remainder of this study as Samples ‘A’, ‘B’, ‘C’, ‘D’, and ‘E’. Sample B is a sub-set of Sample A, while Samples D and E are the constituent parts of Sample C. The numbers in the latter three samples are smaller than those with wage information seen in Table 2.1, as in this case only those in non-graduate occupations are considered.

**Table 2.5: Sample definitions**

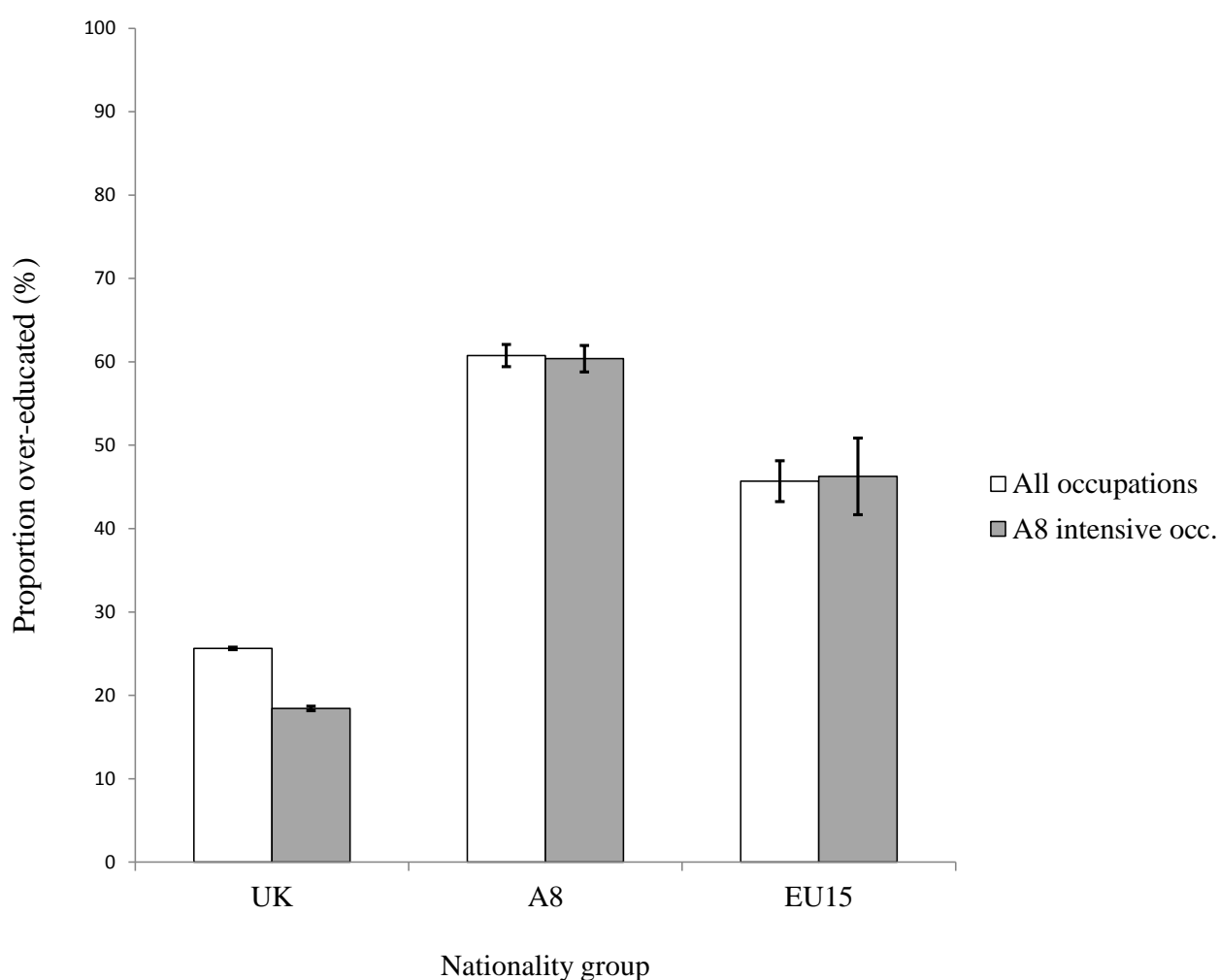
Sample	Description	n
A	All occupations	316,014
B	‘A8 intensive’ occupations only	82,690
C	Non-graduate occupations, with wage information	157,194
D	Non-‘A8 intensive’ occupations, with wage information	107,818
E	‘A8 intensive’ occupations, with wage information	49,376

## 2.4. Is there any evidence of over-education?

### 2.4.1 The prevalence of over-education

Using the definition of ‘required’ education outlined above, it is possible to compare the prevalence of over-education among the respondents of different nationalities. Figure 2.2 shows the proportion of each nationality group that is ‘Matched’ and ‘Over-educated’, across all occupations, and in the A8 intensive occupations.

*Figure 2.2: Prevalence of over-education, by nationality group*



Source: LFS. Notes: Each proportion is a mean value, and bars represent 95% confidence interval. Men and women, aged 16-64, not in full-time education. Samples A & B in Table 2.5. n= 316,014 (all occupations), n= 82,690 (A8 intensive occupations).

There is a higher prevalence of over-education among immigrants than among natives, with 61% of A8 immigrants and 46% of recent EU15 immigrants over-educated, compared to 26% of UK nationals.

The proportion of UK nationals who are over-educated is lower in the ‘A8 intensive’ occupations, at 18%. However, restricting the sample to these occupations does not substantially change the prevalence of over-education among either of the immigrant groups.

#### **2.4.2 Can over-education be explained by other observed characteristics?**

Differences in the prevalence of over-education between different groups of immigrants may be associated with differences in their demographic, human capital, or occupational characteristics. For example, if, in general, younger people face a higher risk of over-education, then an immigrant group with a younger age profile will also face a higher risk of over-education, independent of any immigrant effects. Alternatively, if part-time workers face a higher risk of over-education, then an immigrant group with a higher proportion of part-time workers will also face a higher risk of over-education. I can assess the importance of such factors in explaining the prevalence of over-education in each immigrant group by using a probability model, which quantifies the likelihood of respondents being classed as over-educated, conditional on their observed characteristics. However, if I am correct in thinking that the different levels of over-education in A8 and EU15 immigrants are driven by unobserved differences between the groups, as well as by possible labour market discrimination, then such a model will not explain all of the difference in the risk of over-education.

Given that I have classified all workers as ‘matched’ or ‘over-educated’, which are mutually exclusive categories, I use a probit model here. The model estimates the relative probability of being ‘over - educated’ compared to being ‘matched’. Using the set of parameter estimates, the relative probability of any individual being over-educated can be calculated, conditional on a vector of observed characteristics, including their nationality group. A positive estimate indicates a higher risk of over-education relative to the reference category, and a negative estimate indicates a lower relative risk of over-education. I include controls for demographic characteristics, with a gender dummy<sup>24</sup> and a set of four age dummies, for location of workplace, with dummy variables representing the South-east and the ‘Regions’ (those areas outside London and the South-east), and for job characteristics, with dummy variables for part-time employment, for having ‘supervisory responsibilities’, and for being in an ‘A8 intensive’ occupation.

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<sup>24</sup> Elsewhere in this thesis I estimate separate models for men and women. In this chapter I include both men and women in the same models, since although women face a higher risk of over-education in general, many of the other characteristics which are associated with over-education will be similar for newly arrived immigrants, whether male or female.



For the purposes of comparison with the results, and in order to get a sense of the average characteristics of each nationality group in the sample, Table 2.6 shows the proportion in each nationality group to which each of these control variables applies, given as percentages.

**Table 2.6: Average characteristics, by nationality group (%)**

	Nationality group			Total
	UK	A8	EU15	
Gender				
Female	47.6	43.4	45.7	47.5
Age				
16-25	13.1	32.7	22.6	13.5
26-30	10.4	32.7	27.8	10.8
31-35	11.3	15.6	19.9	11.4
36-45	24.7	10.9	19.1	24.4
46-64	40.5	8.2	10.6	39.9
Place of work				
London	10.8	14.5	38.4	11.0
South-east	13.3	10.7	15.6	13.2
Regions	76.0	74.8	46.0	75.8
Job				
Part-time	22.6	10.7	17.6	22.4
Supervisor	32.8	10.1	26.4	32.4
A8 intensive occ	25.4	70.1	28.4	26.2

Source: LFS. Notes: Employed men and women, aged 16-64, not in full-time education. Sample A in Table 2.5. n= 316,014.

Women tend to face a higher risk of over-education than men. It has been suggested that this is because, in a male/female relationship, the higher earnings potential of men gives them greater power in the decision of where to locate (Frank, 1978; Battu, Seaman and Sloane, 1998). This constrains the job-search of women in relationships, and increases the probability that a woman will have to accept a job for which she is over-educated. Discrimination against women may also be a factor (Chevalier, 2003: 517). Table 2.6 shows that around 43% and 46% of the A8 and recent EU15 immigrant groups in the sample is female, while closer to 48% of the UK nationals group is female. This is in line with the evidence from the WRS, cited in Drinkwater *et al.* (2009: 167), which also suggests that around 43% of A8 workers are female. Taking account of gender should therefore increase the relative risk of over-education among both immigrant groups.

Younger workers tend to face a higher risk of over-education than older workers because they have had less time to acquire information about the labour market, and may also require more labour market experience to fill any gaps in their skills (Chevalier, 2003: 517). Table 2.6 shows that 66% percent of A8 immigrants in the sample are 30 or younger, compared to 51% of recent EU15 immigrants, and 23% of UK nationals. This is in line with the evidence from the WRS, cited in Drinkwater *et al.* (2009:

167). Taking account of age should therefore reduce the relative risk of over-education in both immigrant groups, and particularly for A8 immigrants.

The theory and evidence on the link between living in an urban area and the risk of over-education is ambiguous (for contrasting empirical results, see Chiswick and Miller, 2009, and Poot and Stillman, 2010), and in this case I argue that the important geographical distinction is between those working in London and the surrounding area, and those working outside it, rather than a general rural/urban divide. Table 2.6 shows that the employment of recent EU15 immigrants is very concentrated around London, with 54% working in either the London or the South East. In contrast, only 25% of A8 immigrants work in the same area, a similar proportion to UK natives. Accounting for this geographic distribution is likely to reduce the relative risk of over-education for the recent EU15 immigrant group. As A8 immigrants are more dispersed, accounting for those working in and around London is not likely to affect their relative risk of over-education substantially.

Part-time employment is generally associated with a higher prevalence of over-education, since part-time work is not possible in all jobs, and those seeking it will therefore have limited opportunities compared to those seeking full-time work. Having supervisory responsibilities may also be associated with a higher prevalence of over-education, if those with more education within a given occupation are more likely to be given such responsibilities. However, including ‘part-time employment’ and ‘supervisory responsibilities’ variables in my model potentially introduces endogeneity, since the decision to take part-time work, or the acceptance of supervisory responsibilities may itself reflect the same underlying factors which produce a higher risk of over-education. However, given that different immigrant groups can have very different employment profiles, ignoring these factors would introduce a risk of attributing over-education independently associated with these employment characteristics to immigrant-specific effects. I will show results of the model without these variables, so that their impact on the estimates of interest is clear.

As noted above, 70% of A8 immigrants in the sample work in one of 12 occupations, and Figure 2.2 showed that the UK workers in these occupations are less likely to be over-educated. Accounting for those working in these occupations is therefore likely to reduce the relative risk of over-education among recent EU15 immigrants, but not among A8 immigrants, the majority of whom work in these occupations anyway. Since this variable is the most clearly endogenous, I will introduce it to the model last.

This is a relatively parsimonious specification. Some studies, such as Battu and Sloane (2004), include a much larger set of control variables when estimating the probability of over-education, and I have

experimented with including further relevant controls where they are available in the LFS (Appendix A6 discusses results for models which include additional controls for marriage, firm size, and working in the public sector). However, these do not change the results substantially.

Table 2.7 shows the results of the probit model. The control variables are gradually introduced over the columns from left to right, so that the impact of each control on the coefficients of interest is clear. The first column shows the estimates for only the nationality groups, without any control variables, the second column shows the estimates after introducing the gender dummy and the four age dummies, the third column shows the estimates after adding the location dummies to the equation, the fourth column shows the estimates after adding the controls relating to part-time work and supervisory responsibilities, and the final column shows the estimates after introducing the control for working in an ‘A8 intensive’ occupation.

The logic behind introducing the control variables in the order is to account for the demographic differences between the groups first, before accounting for the different geographical distribution of the groups, and finally factors associated with the different occupational distribution of the groups. The ‘reference person’ is a UK national, male, age 16-25, living in London, working full-time, in a non-supervisory role, and in a non-‘A8 intensive’ occupation.

**Table 2.7: Results from estimating probit model of over-education, with increasing control variables**

Characteristics	Control variables				
	No controls (1)	Age/gender (2)	Location (3)	Job type (4)	A8 intensive occ. (5)
Nationality (REF: UK)					
A8	92.8 (1.8)	70.3 (1.8)	69.9 (1.8)	73.0 (1.8)	86.6 (1.8)
EU15	54.7 (3.1)	36.9 (3.2)	28.9 (3.2)	29.9 (3.2)	32.0 (3.2)
Gender					
Female		11.9 (0.5)	12.4 (0.5)	12.1 (0.5)	10.0 (0.5)
Age (REF: 16-25)					
26-30		0.9 (0.9)	-0.2 (0.9)	-2.1 (0.9)	-5.5 (0.9)
31-35		-18.2 (0.9)	-19.5 (0.9)	-22.3 (0.9)	-25.9 (0.9)
36-45		-42.2 (0.8)	-43.2 (0.8)	-46.1 (0.8)	-49.4 (0.8)
46-64		-63.0 (0.7)	-63.7 (0.7)	-66.1 (0.8)	-69.1 (0.8)
Place of work (REF: London)					
South-east			-16.6 (1.0)	-16.3 (1.0)	-14.6 (1.0)
Regions			-29.6 (0.8)	-28.9 (0.8)	-25.7 (0.8)
Job					
Part-time				2.6 (0.6)	6.8 (0.7)
Supervisor				14.1 (0.5)	10.0 (0.5)
A8 intensive occ					-30.8 (0.6)
Constant term	-65.5 (0.2)	-35.4 (0.7)	-10.4 (1.0)	-14.1 (1.0)	-5.4 (1.0)
n	316,014	316,014	316,014	316,014	316,014

Source: LFS. Notes: Standard errors in parentheses. Parameter estimates and SEs are multiplied by one hundred. Employed men and women, aged 16-64, not in full-time education. Sample A in Table 2.5. The set of location variables include a missing dummy for 325 observations.

The estimate on the A8 variable starts out much higher than that on the EU15 variable on the left-hand side of the table, reflecting the higher prevalence of over-education in this group seen in Figure 2.2. The estimates for the A8 and EU15 variables fall substantially in the second column, after taking account of age and gender. As anticipated, the sign and magnitude of the estimates associated with the age dummies suggest that the risk of over-education reduces with age. Taking account of age therefore explains a part of the over-education seen in both of these immigrant groups, which are both youthful relative to the UK comparison group. The higher

proportion of A8 nationals in the youngest age categories is reflected in a greater fall in the A8 estimate. The sign of the estimate on the gender dummy is positive, suggesting a higher risk of over-education among women, which is also consistent with the existing evidence.

The A8 estimate is stable in column 3, after accounting for those that work in London and the South-east, but the EU15 estimate falls again. The sign and magnitude of the estimates associated with the location dummies suggest that, as anticipated, working outside London and the South-east reduces the relative risk of over-education, and that this risk is particularly high in London. As discussed above, a much larger proportion of the EU15 group live in this area, and hence the reduction in the relative risk of over-education in this group after introducing these controls.

Job characteristics are accounted for in column 4, but both nationality estimates are stable. The sign and magnitude of the estimates associated with the occupational dummies suggest that those with ‘supervisory’ positions are more likely to be over-educated, but part-time work has only a small positive effect. As the ‘A8 intensive’ occupation dummy is introduced in column 5, the EU15 estimate is stable, but the A8 estimate rises to a level similar to that which it was before introducing controls. This reflects the fact that UK nationals in these occupations face a lower risk of over-education, as is clear from the sign and magnitude of the estimate associated with the A8 intensive dummy. A8 immigrants are concentrated in these occupations and yet still face a much higher risk of over-education.

Overall, it appears that much of the risk of over-education among EU15 nationals is associated with their relatively young age profile and the concentration of their employment in London and the South East, but that they still face a relatively high risk of over-education compared to UK nationals. Some of the risk of over-education among A8 nationals is explained by their particularly young age profile, but this group still faces a much higher risk than recent EU15 immigrants or UK nationals.

In order to allow a more intuitive interpretation of the magnitude of the effects reported in Table 2.7, Table 2.8 shows the marginal effects for each variable at mean values.

**Table 2.8: Marginal effect for each characteristic, at mean values, all controls included**

Characteristics	
Nationality (REF: UK)	
A8	27.6 (0.6)
EU15	10.2 (1.0)
Gender	
Female	3.2 (0.2)
Age (REF: 16-25)	
26-30	-1.8 (0.3)
31-35	-8.3 (0.3)
36-45	-15.8 (0.3)
46-64	-22.0 (0.2)
Place of work (REF: London)	
South-east	-4.6 (0.3)
Regions	-8.2 (0.2)
Job	
Part-time	2.2 (0.2)
Supervisor	3.2 (0.2)
A8 intensive occ	-9.8 (0.2)
n	316,014

Source: LFS. Notes: Source: LFS. Notes: Standard errors in parentheses. Impacts and SEs are multiplied by one hundred. Employed men and women, aged 16-64, not in full-time education. Sample A in Table 2.5. The set of location variables include a missing dummy for 325 observations.

Being an A8 immigrant increases the probability of being over-educated by 28 percentage points relative to UK nationals, holding geographical, occupational and demographic characteristics constant at mean values. The magnitude of this effect is very similar to that implied above in Figure 2.2, and this reflects that fact that taking account of observed characteristics does not much reduce the relative risk of over-education for A8 immigrants. Being an EU15 immigrant increases the relative probability of being over-educated by 10 percentage points. The magnitude of this effect is much smaller than that implied in Figure 2.2, as a fairly large portion of the elevated risk of over-education in this group can be explained by their relative youth, and especially by their geographical concentration in London and the South East.

These results are consistent with my assertion that different levels of over-education are driven by unobserved differences between the groups, arising from distinct self-selection processes associated with the institutional context of the EU accession, as well as by possible differential labour market discrimination. However, the high level of over-education among immigrants is only a concern in itself if it is associated with negative outcomes. One potential negative outcome which is relatively straightforward to observe in survey data is reduced earnings potential. The next section investigates whether over-education among A8 immigrants is associated with any wage differences.

## **2.5. Is over-education associated with wage differences?**

### **2.5.1 Is there any evidence of wage differences?**

If over-educated workers within an occupation are more productive than matched workers, then they may be paid higher wages. Indeed, previous empirical work suggests that the over-educated are usually paid more than those who are matched to their jobs within the same occupation (Piracha and Vadean, 2012: 21). However, at the same time, recent immigrants tend to be paid less than native workers (Chiswick, 1978). The size of these opposing effects varies in different countries and with different immigrant groups. In this section I will investigate the size of these effects for A8 and recent EU15 immigrants in the UK.

The association of over-education and wages is assessed here based on the income information available for a sub-section of the sample drawn from the LFS. The widely used 'HOURPAY' variable (average gross hourly pay) is used. This is a derived variable, based on reported gross weekly pay, basic usual hours, and usual hours of paid over-time per week. As, by the definitions I use here, no worker in a graduate occupation can be over-educated, I also exclude those graduate occupations from the wage analysis. As noted above, this only excludes 3% of the A8 immigrants in the sample, while it excludes 27% of the EU15 immigrants and 19% of the UK nationals. The self-employed are not asked to provide wage information, so they are automatically excluded from this part of the analysis as well. These exclusions should be borne in mind when considering the results.

Figure 2.3 shows kernel density estimates of the log wage distribution for each nationality group, for all non-graduate occupations, and for A8 intensive occupations.<sup>25</sup> Across all non-graduate occupations, the distribution of wages among recent EU15 immigrants is distinct from that of UK workers, peaking at a lower point and tailing off more rapidly, until the very top of the distribution where the highest paid EU15 workers are paid more than UK workers. However, the A8 wage distribution in non-graduate occupations is clearly very different to that of both EU15 workers and UK nationals. The peak of the distribution is in approximately the same area of that of the EU15 immigrants, but there is a much higher density of A8 immigrants at this point, and the distribution tails off very rapidly after this peak.

In the ‘A8 intensive’ occupations, by contrast, the wage distributions of the two immigrant groups are almost indistinguishable. The peak of the wage distribution for UK nationals is in a similar place to that for the two immigrant groups, but at a lower density. The much narrower wage distribution in the second part of Figure 2.3 is characteristic of the kind of secondary labour market occupations in which A8 workers are concentrated. Whether these wage similarities remain after controlling for observed characteristics, and whether there is any association with over-education, is discussed in the next section.

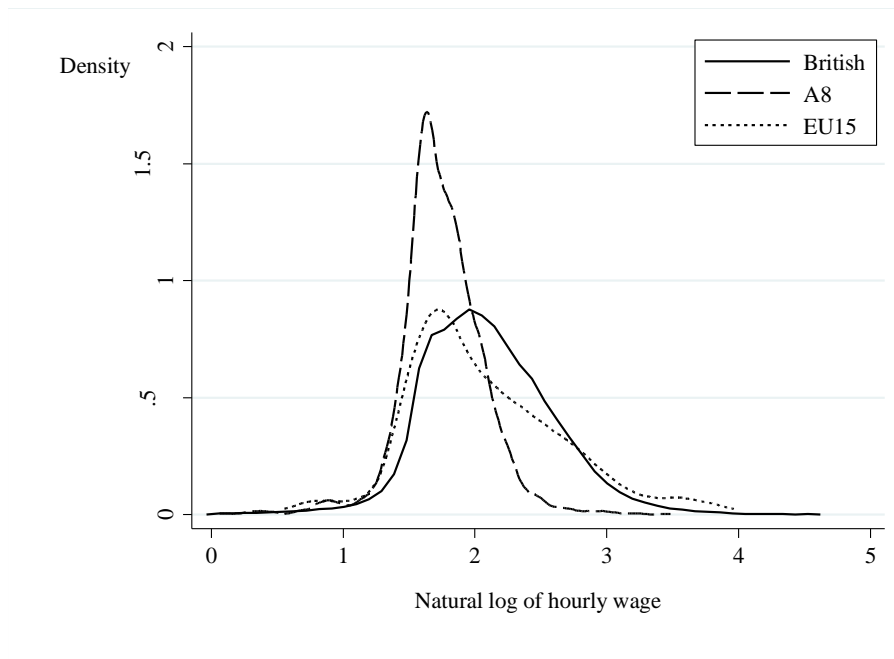
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<sup>25</sup> Wages are adjusted for price inflation monthly using the Retail Prices Index (ONS, 2012a), with November 2004 as the reference month.

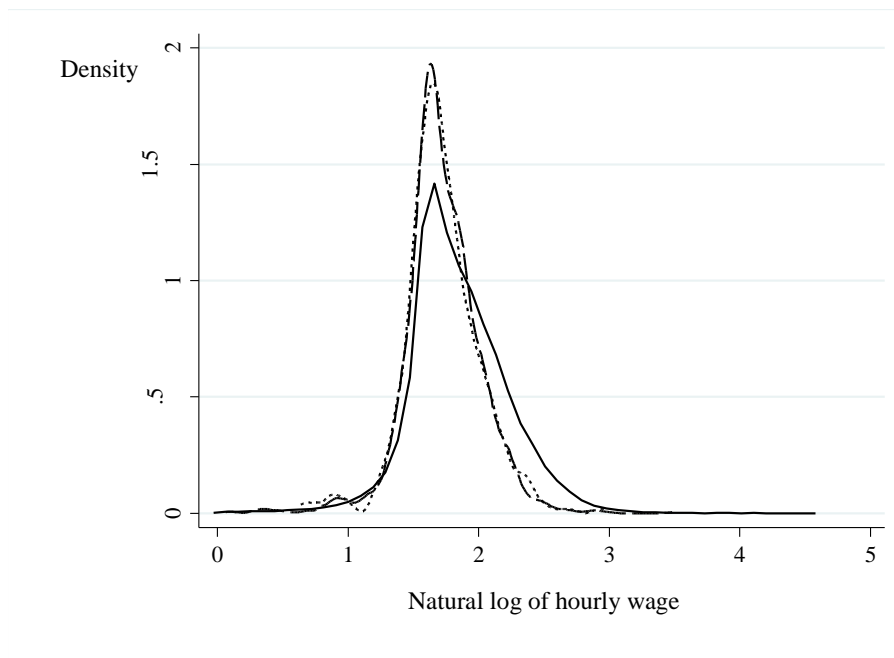


**Figure 2.3: Kernel density estimates of log wage distribution in non-graduate occupations, by nationality group**

**a) All occupations**



**b) A8-intensive occupations**



Source: LFS. Notes: Employed men and women, aged 16-64, not in full-time education, in non-graduate occupations. Sample C and E in Table 2.5. Sample sizes are slightly lower here as I have excluded those reporting hourly wages of less than £1. n=156,822 (all occupations), n= 49,243 (A8 intensive occupations).

### 2.5.2 Can wage differences be explained by other observed characteristics?

In order to establish whether some part of the large discrepancy in non-graduate wages between the nationality groups is predicted by the differences in the prevalence of over-education, I estimate a novel variant of the ‘ORU’ (‘Over-, Required-, and Under-education’) wage equations, first used by Duncan and Hoffman (1982). This version of the equation allows for variety in the educational systems of different countries, and also allows for over-education to interact with different nationality groups in distinct ways.

The equation used here takes the form:

$$\ln(w_i) = \alpha + \beta_1 A8_i + \beta_2 EU15_i + \beta_3 OVER_i + \beta_4 A8_i \cdot OVER_i + \beta_5 EU15_i \cdot OVER_i + \gamma X_i + u_i \quad (1)$$

where  $w_i$  represents the hourly wage of individual  $i$ ,  $A8$  and  $EU15$  are dummy variables representing each nationality group,  $OVER$  is a dummy variable representing over-education, and  $A8 \cdot OVER$  and  $EU15 \cdot OVER$  are interaction terms for the joint effect of nationality and over-education.  $X$  represents a vector of control variables, including year and quarter dummies, which are intended to take account of other factors associated with wage outcomes. As in Figure 2.3 above, wages are adjusted for price inflation monthly using the Retail Prices Index (ONS, 2012a), with November 2004 as the reference month.

Each of  $\beta_1$  and  $\beta_2$  therefore represent the wage effect for matched workers of being an A8 or recent EU15 immigrant in a non-graduate occupation, as opposed to a UK national, while  $\beta_3$  represents the hourly wage returns to over-education for UK nationals. The interaction terms represent any additional effects that arise from being in a particular nationality group and being over-educated – for example, if being both an A8 and over-educated ( $\beta_4$ ) has an additional effect beyond the sum of the effect of being A8 and the effect of being over-educated ( $\beta_1 + \beta_3$ ). These interaction terms are a useful addition to the standard ORU wage equations, as they separate out any additional differences in wages associated with over-education specific to each nationality group.

This specification also differs from that used in most of the immigrant over-education literature (see Piracha and Vadean, 2012: 13-14) in that it estimates a rate of return to the *state* of over-

education, rather than a rate of return to *years* of over-education.<sup>26</sup> The more widely used specification constrains the wage effect of a marginal year of education to be the same whichever country that education comes from, and at whichever level of education that marginal year occurs. As discussed above, this approach does not fit comfortably with the heterogeneity of European education systems. In my approach, the state of being over-educated already takes into account different European education systems, via the ISCED classification system discussed in Section 2.3.4.2 above, and therefore avoids the problematic notion of a continuous rate of return to over-education across individuals educated in different countries, and across different levels of education within each country.

Given the strong negative association between being in an ‘A8 intensive’ industry and the likelihood of being over-educated found in the probit model estimated above, these industries are separated in the analysis. Table 2.9 compares the coefficients resulting from estimating Equation 1 for: (i) All non-graduate occupations, (ii) non-A8 intensive occupations, and (iii) A8-intensive occupations. The reference respondent is a matched UK national, and only controls for year and quarter are included at this stage.

**Table 2.9: Log wage equations: Nationality and over-education, non-graduate occupations only**

	(i) All non-graduate	(ii) Non A8 intensive	(iii) A8 intensive
Over-educated	22.0 (0.3)	18.9 (0.3)	1.3 (0.5)
A8	-33.5 (1.6)	-44.0 (3.4)	-14.7 (1.4)
EU15	-20.3 (3.3)	-15.3 (5.2)	-11.9 (3.3)
Over-educated*A8	-13.0 (2.0)	0.4 (4.0)	3.3 (1.8)
Over-educated* EU15	16.4 (4.1)	21.9 (6.0)	0.7 (5.0)
n	157,194	107,818	49,376

Source: LFS. Notes: Men and women, aged 16-64, not in full-time education. Table shows key coefficients from estimating equation (1) for those in (i) All industries, (ii) Non-A8 intensive industries, and (iii) A8 intensive industries.

The coefficients for ‘Non-A8 intensive occupations’ are in general much closer in magnitude to those for ‘All occupations’ than are those for the ‘A8 intensive’ occupations. I therefore

<sup>26</sup> The use of dummies in the estimation of wage effects in the over-education literature comes from Verdugo and Verdugo (1989). Battu and Sloane (2004) take a similar approach.

separate the ‘A8 intensive’ occupations from the ‘Non-A8 intensive’ occupations’ in the wage analysis.

Tables 2.10 and 2.11 show the gradual introduction of control variables into Equation 1, for non-A8 intensive and A8 intensive occupations respectively (see Appendix A5 for the equivalent table for all occupations). The control variables include a full set of year and quarter dummies, and, as in the probit model in Section 2.4.2 above, controls for age and gender, location, and job characteristics. I also include two terms which interact the gender variable with the A8 and EU15 nationality indicators, in order to capture any additional association between gender and wages that is specific to each immigrant group. I do this because gender potentially has a smaller effect on wages in the A8 intensive occupations, where the wage distribution is narrower. As in the probit analysis above, I introduce the control variables incrementally, so that it is possible to get a sense of which characteristics are contributing most to each coefficient of interest. The first column only controls for year and quarter, the second column controls for demographic characteristics, the third column controls for location, and the fourth column introduces controls related to occupation.

**Table 2.10: Log wage equations: Non-A8 intensive occupations**

Characteristics	Control variables			
	No controls (1)	Age/gender (2)	Location (3)	Job type (4)
Mismatch				
Over-educated	18.9 (0.3)	24.3 (0.3)	22.3 (0.3)	19.9 (0.3)
Nationality (REF: UK)				
A8	-44.0 (3.4)	-39.6 (3.3)	-39.5 (3.3)	-32.7 (3.1)
EU15	-15.3 (5.2)	-6.3 (5.4)	-11.9 (5.3)	-7.8 (5.1)
Over-educated*A8	0.4 (4.0)	-4.4 (3.8)	-2.9 (3.7)	-2.6 (3.5)
Over-educated*EU15	21.9 (6.0)	18.5 (5.6)	17.0 (5.5)	16.5 (5.3)
Gender				
Female		-21.2 (0.3)	-20.9 (0.3)	-13.4 (0.3)
Female*A8		17.8 (3.5)	13.9 (3.4)	6.6 (3.3)
Female*EU15		-0.5 (4.8)	-1.4 (4.7)	-4.9 (4.5)
Age (REF: 16-25)				
26-30		28.9 (0.6)	28.6 (0.6)	25.4 (0.6)
31-35		41.0 (0.6)	40.5 (0.6)	37.0 (0.5)
36-45		47.0 (0.5)	46.5 (0.5)	42.4 (0.5)
46-64		45.1 (0.5)	44.5 (0.5)	41.1 (0.4)
Place of work (REF: London)				
South-east			-22.0 (0.6)	-20.3 (0.6)
Regions			-28.1 (0.5)	-26.6 (0.5)
Job				
Part-time				-14.9 (0.4)
Supervisor				23.2 (0.3)
Constant term	213.3 (1.1)	184.1 (1.1)	209.2 (1.2)	201.3 (1.1)
n	107,818	107,818	107,712	107,712

Source: LFS. Notes: Source: LFS. Notes: Standard errors in parentheses. Coefficients and SEs are multiplied by one hundred. Employed men and women, aged 16-64, not in full-time education, in non-graduate, non-A8 intensive occupations. Sample D in Table 2.5.

**Table 2.11: Log wage equations: A8-intensive occupations**

Characteristics	Control variables			
	No controls (1)	Age/gender (2)	Location (3)	Job type (4)
Mismatch				
Over-educated	1.3 (0.5)	6.8 (0.5)	6.1 (0.5)	5.5 (0.5)
Nationality (REF: UK)				
A8	-14.7 (1.4)	-16.7 (1.5)	-16.9 (1.5)	-16.1 (1.5)
EU15	-11.9 (3.3)	-19.8 (3.9)	-22.7 (3.9)	-19.3 (3.8)
Over-educated*A8	3.3 (1.8)	-1.5 (1.7)	-1.1 (1.7)	-1.1 (1.7)
Over-educated*EU15	0.7 (5.0)	-1.6 (4.7)	-1.8 (4.7)	-3.7 (4.6)
Gender				
Female		-22.4 (0.3)	-22.2 (0.3)	-16.7 (0.4)
Female*A8		15.0 (1.7)	14.7 (1.7)	11.0 (1.6)
Female*EU15		20.1 (4.6)	21.1 (4.6)	16.7 (4.5)
Age (REF: 16-25)				
26-30		17.4 (0.7)	17.3 (0.7)	16.3 (0.7)
31-35		21.2 (0.7)	21.0 (0.7)	20.1 (0.7)
36-45		24.8 (0.5)	24.6 (0.5)	23.5 (0.5)
46-64		23.1 (0.5)	22.8 (0.5)	22.1 (0.5)
Place of work (REF: London)				
South-east			-9.1 (0.9)	-9.1 (0.9)
Regions			-11.9 (0.8)	-11.7 (0.8)
Job				
Part-time				-10.8 (0.4)
Supervisor				11.4 (0.4)
Constant term	184.8 (1.3)	176.7 (1.3)	188.0 (1.5)	187.3 (1.4)
n	49,376	49,376	49,354	49,354

Source: LFS. Notes: Source: LFS. Notes: Standard errors in parentheses. Coefficients and SEs are multiplied by one hundred. Employed men and women, aged 16-64, not in full-time education, in non-graduate, A8 intensive occupations. Sample E in Table 2.5.

The coefficients on the over-education and nationality variables in Tables 2.10 and 2.11 can be interpreted relative to the reference category, but to calculate the effect of nationality and over-education together, the coefficients on the nationality variables and over-education variables must be summed with the coefficients on the interaction term. Also, as the dependent variable is the natural logarithm of the hourly wage, the antilog must be taken to get a precise percentage interpretation.<sup>27</sup>

Before accounting for any differences in characteristics, in the non-A8 intensive occupations analysed in Table 2.10, over-educated workers overall earn an average wage premium of 21%, while the average wage penalty faced by A8 immigrants in these occupations is 36%. There appears to be no additional effect captured by the A8\*over-educated variable, so, ignoring the small and poorly determined coefficient on the interaction term, an over-educated A8 immigrant in one of these occupations will earn 15% less than the reference individual, a matched UK national. As different characteristics are accounted for in the table, the positive return to over-education remains at around 20%, becoming 22% after introducing all the controls, while the wage penalty faced by A8 immigrants falls to 28% on average, with most of the fall being accounted for by demographic and occupational characteristics. Thus we see that the positive returns to over-education are able to compensate in part for the wage penalty suffered by A8 immigrants in these occupations, but that wage penalty is of such a large magnitude that, even after controlling for the characteristics here, such over-educated immigrants in these occupations on average still earn 6% less than matched UK nationals.

The positive returns to over-educated immigrants from EU15 countries in these occupations are able to fully compensate for the wage penalty that they face. Before introducing controls, recent EU15 immigrants in these occupations earn 14% less than UK workers on average, but those recent EU15 immigrants who are over-educated earn the over-education premium of 21%, plus an EU15-specific wage premium for over-educated workers of 25%. Overall, over-educated recent EU15 immigrants in these occupations earn an average wage premium of 32%. After accounting for the characteristics above, over-educated EU15 workers earn a wage premium of 33% relative to matched UK nationals, with the increase being largely accounted for by their age and gender profile.

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<sup>27</sup> The equation to apply to each coefficient to get a percentage interpretation is  $(100 * [\exp(\beta) - 1])$ , where  $\beta$  is the coefficient of interest. Where multiple coefficients apply they must be summed before the antilog is taken (for example, the percentage wage effect for an over-educated EU15 immigrant would be  $(100 * [\exp(\beta_2 + \beta_3 + \beta_5) - 1])$ ).

In the non-A8 intensive occupations analysed in Table 2.10, matched A8 immigrants face an especially large wage penalty compared to matched UK nationals. However, the strong positive returns to over-education can at least partly compensate for the wage penalties that immigrants face in the UK. For over-educated A8 immigrants though, these strong positive returns to over-education are still not big enough to bring their average wages up to the level of matched UK nationals.<sup>28</sup> Furthermore, it is the results of the wage equations represented in Table 2.11 that reflect the experience of most A8 immigrants in the sample, 70% of whom work in these ‘A8 intensive’ occupations.

In contrast to the occupations analysed in Table 2.10, there appear to be very low positive returns to over-education in the ‘A8 intensive’ occupations analysed in Table 2.11, and the positive return of 6% only appears after taking account of all the observed characteristics above. However, the wage penalty faced by A8 workers is much smaller here, at 15%, and in fact recent EU15 immigrants pay a similar penalty of 17% on average, after taking account of observed characteristics. The control variables still generally have a well-determined influence on wages, but the size of the effect for each variable is much smaller. Age is really the only factor in these industries that seems to have a large and well-determined effect.

The wage effects estimated in Table 2.11 fit well with the idea that these ‘A8 intensive’ occupations are part of a ‘secondary labour market’. Almost no returns to over-education are available to workers of any nationality in these occupations, but wage penalties faced by matched and over-educated immigrant workers are much smaller at the same time. These wage penalties may be smaller simply because most employers are bound by the National Minimum Wage in the UK, so there is a ‘lower bound’ beyond which wages cannot fall, or because even the highest wages paid in these occupations do not rise far above the average wages earned by immigrants.

Figure 2.4 presents the implied average wage differentials from estimating Equation 1 with the full set of controls for non-A8 intensive and A8 intensive occupations. The ‘reference person’ is a matched UK national who is male, age 16-25, living in London, working full-time, and in a non-supervisory role. The ‘matched’ bars for A8 and EU15 nationals can be thought of as representing the ‘standard’ wage penalties for each immigrant group, while the ‘over-educated’ bars can be considered the returns to surplus education for each group.

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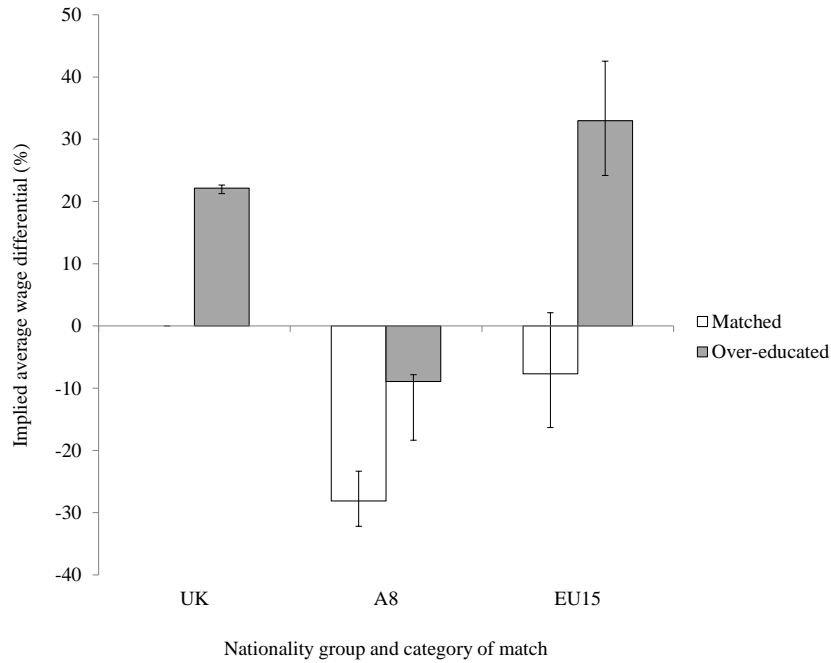
<sup>28</sup> The coefficients on the female\*A8 interaction terms are positive and well determined in both Tables 2.10 and 2.11, which suggests female immigrants earning similar wages to their male counterparts. This is an interesting finding and further investigation in this area may be fruitful.



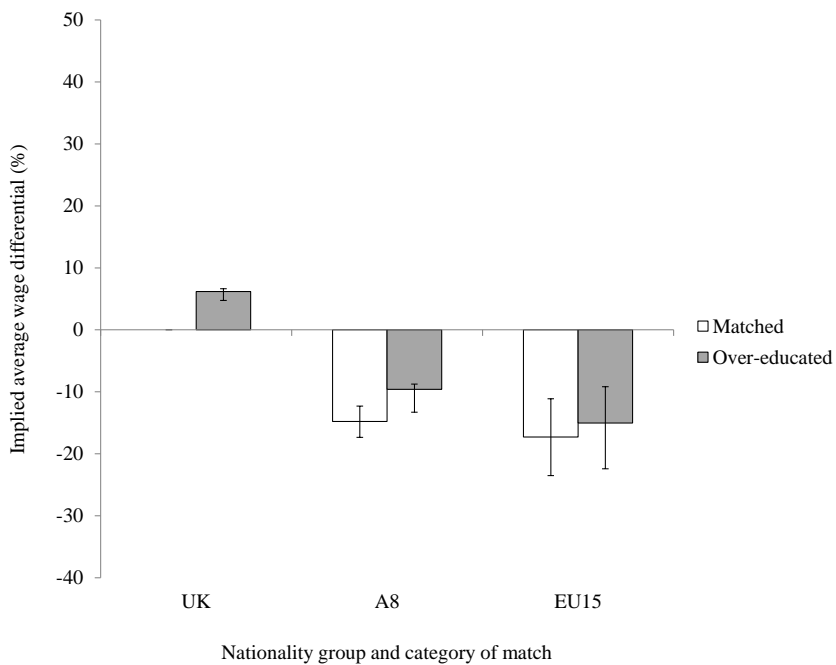
Figure 2.4(a) shows large wage penalties for both immigrant groups, partly or fully compensated for by strong positive returns to over-education, while Figure 2.4(b) shows occupations where wage penalties for A8 immigrants are less severe, but where there are almost no compensating returns to over-education available.

**Figure 2.4: Implied average wage differentials, compared to matched UK nationals**

**a) Non-A8 intensive occupations**



**b) A8 intensive occupations**



Source: LFS. Notes: Each proportion is a mean value, and bars represent 95% confidence intervals. Employed men and women, aged 16-64, not in full-time education, in non-graduate occupations. Samples D & E in Table 2.5. Sample sizes are slightly lower as the equations which produced these charts include the full-set of control variables. n=107,712 (Non-A8 intensive occupations), n= 49,354 (A8 intensive occupations).

## 2.6 Conclusions

In this chapter I have presented the first quantitative evidence on the prevalence and wage associations of over-education among A8 immigrants in the UK. I have estimated that 61% of A8 immigrants in the UK are over-educated for their jobs, and that very little of this over-education is explained by their observed characteristics. In comparison, I have estimated that 46% of recent EU15 immigrants in the UK are over-educated, and that most of this over-education is explained by their age profile and geographical distribution. I have argued that these results are driven by unobserved differences between the groups, arising from distinct self-selection processes associated with the institutional context of the EU accession, and that differential labour market discrimination may also play a part.

In non-graduate occupations, I also examined the association between over-education and wages, and found that overall the over-educated tend to earn more than their peers within each nationality group, and that in some occupations positive rewards to over-education can partly or wholly compensate the over-educated for average immigrant wage penalties. However, the majority of A8 immigrants work in occupations where penalties for immigrant workers are less severe, and where over-education is barely rewarded with higher wages at all.

The costs of immigrant over-education are not only borne by the over-educated individual herself. In order to capture the full gains from migration, it is in the interests of the host country to make use of the skills and qualifications of the immigrant population. Potential productivity gains and higher tax receipts are lost if immigrants are employed in inappropriate jobs. I have noted the grand scale of the A8 migration. The losses associated with over-education in this group of immigrants are therefore large. Any policy changes that would help domestic employers recognise qualifications from this region or help new migrants adjust to the UK labour market could therefore be beneficial.

### **3. How well does the duration of schooling capture the earnings potential of immigrants?**

#### **3.1. Introduction**

The gap in earnings between immigrants and natives with similar human capital characteristics is a key indicator of labour market integration. Such immigrant wage penalties could raise concerns about labour market discrimination and present problems for social cohesion, as well as affecting the relative fiscal contributions of immigrants and natives. This area has consequently received a large amount of scholarly attention across several different countries.<sup>29</sup>

Estimating the conditional difference between native and immigrant earnings is complicated by differences in the human capital endowments of the two groups. These differences can be qualitative as well as quantitative. For example, one might compare the earnings of immigrants with those of natives with similar years of schooling. However, each additional year of schooling is unlikely to confer the same increase in earnings potential for people who have studied in different education systems. This is partly because the quality of education varies internationally, but also because the skills acquired in different systems are not always optimal for the host labour market, and because domestic employers may discriminate against or not recognise the value of unfamiliar education systems. The matter is further complicated by the fact that many immigrants hold a mixture of domestic and foreign schooling. Parallel problems exist when comparing the value of labour market experience held by natives and immigrants.

Friedberg (2000) addresses these problems by allowing the returns to schooling and experience to vary depending on where they were acquired. Using data from Israel, she shows that both schooling and experience acquired abroad receive a much lower return in the host labour market, and that accounting for the origin of human capital can completely explain the average conditional wage gap between immigrants and natives. The broad character of these findings has since been replicated in several studies across different countries (Bratsberg and Ragan, 2002; Basilio et al., 2014: 11-12; Sanroma et al., 2009).

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<sup>29</sup> See Algan *et al.* (2010) for a cross-country comparison.

The Friedberg (2000) approach improves estimates of the conditional difference in earnings by acknowledging heterogeneity in schooling and experience, but it does not allow for systematic differences in the earnings potential of people with the same amount of schooling and experience. This is an important restriction, since, at any given length of schooling, there are several reasons why we might expect more variation in the earnings potential of immigrants than that of natives. For example, there are international differences in the duration and intensity of educational programmes, and in the extent of compulsory schooling. These factors will both produce variation in the years of schooling held by immigrants that is not necessarily reflected in their earnings ability.

Even within education systems, we know that people with the same endowment of schooling can differ in their earnings potential. In fact, this issue has been acknowledged by researchers in this area for several decades. Welch was blunt about this in the *American Economic Review* in 1975:

Frankly, I find it hard to conceive of a poorer measure of the marketable skills a person acquires in school than the number of years he has been able to endure a classroom environment. My only justification for using such a crude measure is that I can find nothing better. (1975: 67)

Welch's scepticism of the schooling measure may be justified. For example, a large international literature on 'sheepskin effects' demonstrates the additional earnings boost associated with attaining qualifications, conditional on years of schooling.<sup>30</sup> Further, the possibility of grade retention in some countries means that individuals can take a different number of years to complete identical educational programmes (see Ikeda and García, 2014). Finally, within some education systems, particularly those with separate vocational components, people can have identical years of schooling and receive completely different levels of training (see my discussion in Appendix A3).

If these origin-country and individual-level factors producing additional variation in years of schooling mean that immigrants are more heterogeneous in their earnings potential than natives

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<sup>30</sup> The 'sheepskin' refers to the material from which diplomas were once manufactured. Classic references include Hungerford and Solon (1987), Jaeger and Page (1996), and Park (1999). For a more recent application of the concept, see Bitzan (2009).

with similar years of schooling, then the conditional wage gap between immigrants and natives will be overstated if only schooling is accounted for. However, accounting for qualifications could help with this problem. Natives with similar years of schooling *and* the same qualification level as immigrants are more likely to provide a meaningful comparison group. Controlling for qualifications will mitigate the effects of differences in programme length, compulsory schooling, and grade retention, as well as accounting for any effects associated with the completion of qualifications, or differences in the level of training disguised by identical programme lengths.

When comparing the returns to education for immigrants from different countries, Friedberg (2000: 235) suggests that schooling received in richer countries will be generally of better quality, since more resources can be devoted to education in these places. She also notes that schooling received in countries with a similar level of economic development will be more appropriate for the host economy. If each year of education from these more similar economies is valued more highly, we can expect controlling for qualifications to have a smaller impact on the conditional wage penalty. The less similar the economy of the home country, the greater will be the impact of controlling for qualifications.

In this chapter, I seek to answer three questions in particular:

1. How does the immigrant wage gap change after accounting for the origin of human capital?
2. How does accounting for qualifications affect the immigrant wage gap?
3. Does accounting for qualifications affect the immigrant wage gap in different ways for those schooled in different countries?

I use unique measures in the Labour Force Survey (LFS) to show that accounting for the level of qualification held by immigrants, as well as the source and duration of schooling, causes conditional wage estimates to converge substantially with those of natives. This convergence in estimated wages appears to be greater for those educated in countries with less similar economies.

There is a sizable and long-established general literature in labour economics on the estimation of returns to education (see Card, 1999). A large part of this literature has focussed on coping

with unobserved ability differences which confound the relationship between education and earnings, as well as error in the measurement of education. Broadly, ‘ability bias’ is expected to inflate estimates of the returns to education, while measurement error is expected to depress the same estimates. Some authors have found evidence suggesting that these two biases approximately cancel each other out (for example, Bonjour et al., 2003), with the result that estimating a standard OLS human capital earnings function can produce estimates which are comparable to those from more complex models which actively seek to correct for these biases.

My objective in this chapter is not to add to the discussion of how best to account for ability bias and measurement error, but rather to highlight the potential difficulties associated with comparing immigrant and native education, and the implications for our estimates of the wage gap. My emphasis is therefore on the comparative rather than the absolute returns to education.

As far as I am aware, this is the first study on immigrant wage differentials which uses qualifications to address heterogeneity in the earnings potential of people with the same amount of domestic and foreign schooling. It combines insights from the literature on the origins of human capital which followed Friedberg (2000) (Bratsberg and Ragan, 2002; Basilio et al, 2014: 11-12; Sanroma et al., 2009), with a smaller literature on immigrant ‘sheepskin effects’ (Aydemir and Skuterud, 2004; Betts and Lofstrom, 2000; Ferrer and Riddell, 2008), which examines variation in the boost in earnings associated with holding qualifications. I expand the international scope of these literatures by presenting evidence from the UK, a relatively large immigrant receiving country within the European Economic Area, an international region with almost completely unrestricted movement of labour. The literature in this area has not covered the UK to date. The data enhance these contributions by providing a direct survey measure of qualifications and their origin, as well as allowing me to account for the duration and origin of schooling and experience.

In the next section, I discuss human capital and the earnings differential, and in Section 3.3 I describe the data and key variables. In Section 3.4 I model immigrant wages, and in Section 3.5 I conclude.

## 3.2 The immigrant earnings differential and the returns to human capital

### 3.2.1 The origins of human capital

We know that the origins of human capital are important for understanding immigrant earnings. Following Chiswick (1978), studies seeking to estimate the immigrant earnings differential often used a modified Mincer-style wage equation. Equation (1) is a relatively flexible variant:

$$\begin{aligned} \ln(w_i) = & \alpha + \beta_1 IMMIGRANT_i + \beta_2 ED_i + \beta_3 ED_i^2 + \beta_4 EXP_i + \beta_5 EXP_i^2 + \beta_6 YSM_i + \\ & \beta_7 YSM_i^2 + \beta_8 (IMMIGRANT_i * ED_i) + \beta_9 (IMMIGRANT_i * ED_i^2) + \\ & \beta_{10} (IMMIGRANT_i * EXP_i) + \beta_{11} (IMMIGRANT_i * EXP_i^2) + u_i \end{aligned} \quad (1)$$

where  $w$  is the wage of individual  $i$ ,  $IMMIGRANT$  is a dummy variable equal to 1 if the individual was born abroad,  $ED$  is years of schooling,  $EXP$  is years of potential labour market experience, and  $YSM$  is ‘Years since migration’ (this is set equal to zero for the native born). If the interaction terms are uncentered,  $\beta_1$  gives the average log wage difference between a newly arrived immigrant and a native, where both have zero years of schooling and zero years of potential labour market experience.  $\beta_2$ , and  $\beta_3$  give the returns to education, and  $\beta_4$ , and  $\beta_5$  give the returns to potential labour market experience. In the absence of unobserved differences between immigrant cohorts,  $\beta_6$  and  $\beta_7$  give the rate at which immigrant wages converge with those of the native born. The interaction terms in the version I have presented allow returns to years of schooling and experience to vary for immigrants and natives, and the quadratic terms allow the returns to education, experience, and years since migration to increase or diminish.

Even with the flexibility offered by the interactions, the interpretation of  $\beta_1$  as the earnings difference between a native and an immigrant with similar human capital characteristics depends on the assumption that the education and experience accumulated by immigrants is comparable to that of natives. Model (1) does not allow the returns to these investments to vary depending on their origin. However, such a restriction does not accord well with the standard theoretical understanding of the labour market assimilation process, whereby the wages of immigrants converge with those of natives through a process of host country human capital accumulation, and home country human capital adaptation (Chiswick, 1978: 899-903; Skuterud and Su, 2012: 1110). Neither does this restriction fit well with what is typically



observed in the data. Friedberg (2000) suggests a form of the immigrant wage equation which takes account of such difficulties, similar to equation (2):<sup>31</sup>

$$\begin{aligned} \ln(w_i) = & \alpha + \beta_1 IMMIGRANT_i + \beta_2 DOMESTIC\_ED_i + \beta_3 DOMESTIC\_ED_i^2 + \\ & \beta_4 FOREIGN\_ED_i + \beta_5 FOREIGN\_ED_i^2 + \beta_6 DOMESTIC\_EXP_i + \\ & \beta_7 DOMESTIC\_EXP_i^2 + \beta_8 FOREIGN\_EXP_i + \beta_9 FOREIGN\_EXP_i^2 + \\ & \beta_{10}(IMMIGRANT_i * DOMESTIC\_ED_i) + \beta_{11}(IMMIGRANT_i * \\ & DOMESTIC\_ED_i^2) + \beta_{12}(IMMIGRANT_i * DOMESTIC\_EXP_i) + \\ & \beta_{13}(IMMIGRANT_i * DOMESTIC\_EXP_i^2) + u_i \end{aligned} \quad (2)$$

where domestic and foreign years of schooling and potential labour market experience are separated, and the domestic terms are interacted with the immigrant dummy to allow returns to vary for immigrants and natives.<sup>32</sup> The ‘Years since migration’ term does not feature in this specification, since, by construction, for natives it is zero, and for immigrants it is either exactly equal to domestic experience, or to the sum of domestic experience and domestic education.

The practice of forcing the model (1) restriction on returns to domestic and foreign human capital has not vanished, but it is now more common to see the two components separated in models of immigrant earnings (recent examples include Basilio et al, 2014; Sanroma et al, 2009; Clark and Lindley, 2009; and Aydemir and Skuterud, 2005). The majority of the studies using models similar to (2) have shown that years of schooling acquired abroad attract lower returns in the host labour market than those acquired domestically, and that years of potential experience in foreign labour markets seem hardly to be valued at all. This lower valuation of human capital acquired abroad is generally attributed to international variation in the quality of education, the suitability of skills acquired abroad for the host labour market, and discrimination.

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<sup>31</sup> In her version, Friedberg (2000) also allows for complementarities between foreign and domestic schooling and experience.

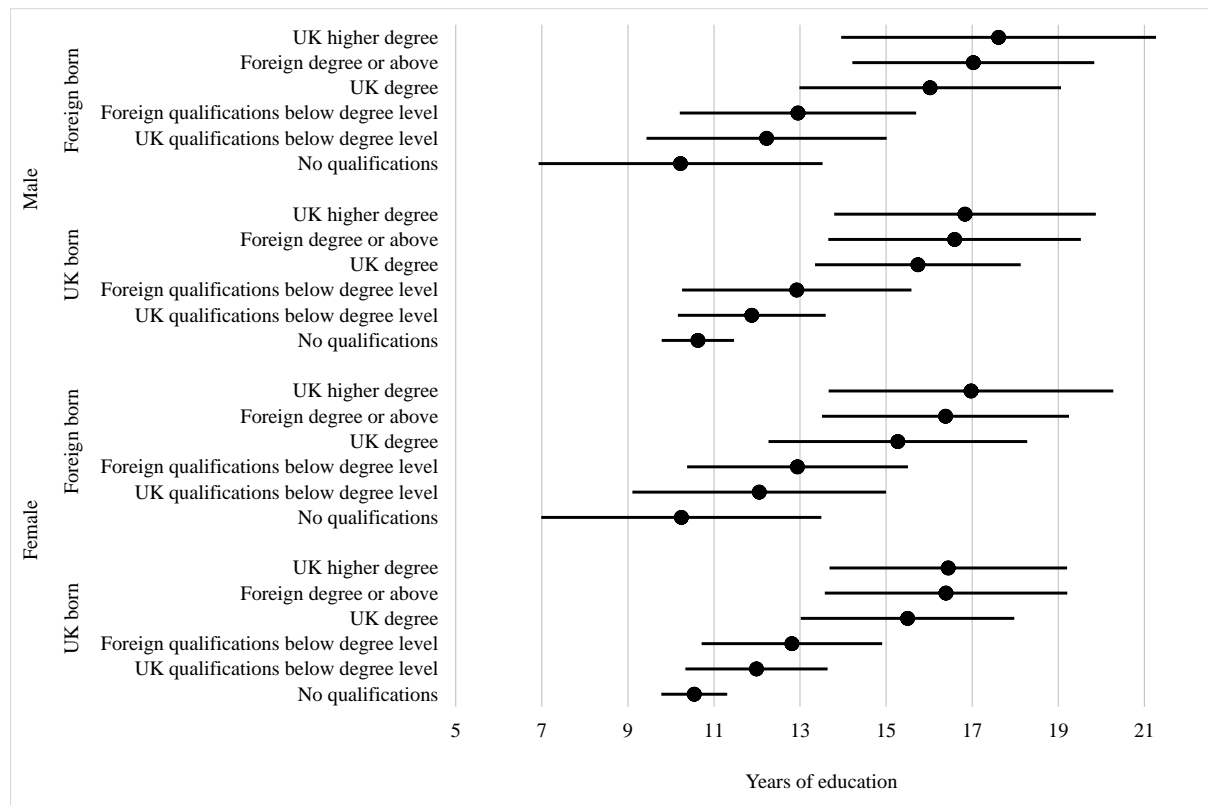
<sup>32</sup> The foreign education and foreign experience terms are not interacted with the immigrant dummy, since they are zero by construction for the native born.

### 3.2.2 Qualifications and years of schooling

Although the Friedberg approach reflected in model (2) addresses heterogeneity in the origins of human capital, it uses only the years of domestic and foreign schooling to capture the relationship between education and wages. However, as I note above, this representation does not accord well with what we know about differences in international education systems. One indicator that years of schooling may be failing to account for differences in the true human capital endowments of natives and immigrants is the relative dispersion of average years within a given qualification level. Figure 3.1 shows the dispersion of years of schooling by highest qualification for the native and foreign born in my sample (I give further details on my sample in the next section). The dots represent the mean years of schooling at each qualification level, and the lines represent one standard deviation either side of the mean.

Figure 3.1 shows that the dispersion of years of schooling is greater at every qualification level for immigrants. For example, allowing for one standard deviation either side of the mean, completing a UK higher degree takes between 14 and 22 years of education for foreign born men, compared to between 14 and 20 years for UK born men. Foreign born women with no qualifications have between 7 and 14 years of education, compared to between 10 and 11 years for UK born women. Ferrer and Riddell (2008: 194) make a similar observation using Canadian data. The UK born in my sample also have a lower average years of schooling than the foreign born at almost every qualification level. This second point may be a UK-specific phenomenon, since the major qualifications tend to be awarded after slightly fewer years of schooling in the UK than elsewhere, but it also reflects the more general difficulties associated with comparisons of years of schooling acquired in different systems.

**Figure 3.1: Dispersion of years of schooling by highest qualification, by gender and origin**



Source: LFS 2011-2014. Notes: Error bars represent one standard deviation either side of the mean. Sample consists of employed men and women, age 16-64, who are not in full-time education. n= 110,118 (52,669 men and 57,449 women).

### 3.2.3 Accounting for the origins of human capital and qualifications

Given the importance of the origins of human capital and qualifications, my favoured specification in this chapter is model (3):

$$\begin{aligned}
 \ln(w_i) = & \alpha + \beta_1 IMMIGRANT_i + \beta_2 DOMESTIC\_ED_i + \beta_3 DOMESTIC\_ED_i^2 + \\
 & \beta_4 FOREIGN\_ED_i + \beta_5 FOREIGN\_ED_i^2 + \beta_6 DOMESTIC\_EXP_i + \\
 & \beta_7 DOMESTIC\_EXP_i^2 + \beta_8 FOREIGN\_EXP_i + \beta_9 FOREIGN\_EXP_i^2 + \\
 & \beta_{10} (IMMIGRANT_i * DOMESTIC\_ED_i) + \beta_{11} (IMMIGRANT_i * \\
 & DOMESTIC\_ED_i^2) + \beta_{12} (IMMIGRANT_i * DOMESTIC\_EXP_i) + \beta_{13} (IMMIGRANT_i * \\
 & DOMESTIC\_EXP_i^2) + \sum_{j=1}^5 \beta_{j+13} HIGHESTQUAL_{ji} + \\
 & \sum_{j=1}^5 \beta_{j+14} (IMMIGRANT_i * HIGHESTQUAL_{ji}) + u_i
 \end{aligned} \tag{3}$$

where HIGHESTQUAL is a vector of five dummies representing qualification level: ‘UK higher degree’, ‘Foreign degree or above’, ‘UK degree’, ‘Foreign qualification below degree level’, and ‘UK qualification below degree level’ (I discuss the construction of these variables

in Section 3.3). These terms are all interacted with the immigrant dummy, to allow their returns to vary for natives and immigrants. People with no qualifications act as the reference group. Note that this model includes both continuous measures of domestic and foreign education, as well as dummies for highest qualification. This means that  $\beta_{14}$  to  $\beta_{18}$  are the returns to qualifications after accounting for schooling, and  $\beta_{19}$  to  $\beta_{23}$  give the difference in these returns for immigrants and natives.  $\beta_1$  now gives the average wage difference between a newly arrived immigrant and a native with zero years of schooling, no qualifications, and zero years of potential labour market experience.

### **3.2.4 A note on the models**

All three of the models I have described in Section 3.2 are relatively parsimonious. The object of estimating them is not to maximise the proportion of explained variance in wages, but rather to see how different representations of the human capital endowment are associated with different estimates of immigrant and native wages. Inevitably, excluding other variables which may influence both education and wages raises the possibility of omitted variable bias, and for this reason I caution against the interpretation of the estimates I present as causal. Other relevant variables might include region, job tenure, or marital status. However, estimating these models in their simplest possible form shows the direction in which wage estimates could be affected by the representation of human capital endowments, and gives some sense of the size of these effects.

The models are also set-up in a slightly unusual way, in that the interaction terms are uncentered, so the coefficients of the immigrant dummy variables give the estimated wage differential for an individual without any human capital endowment, rather than the difference between immigrants and natives with average education and experience. I have set-up the models like this in order to make the immigrant dummy comparable across all three models, but I should caution against hasty interpretation, since no immigrants or natives in the sample have this profile. I will show wage estimates across different human capital endowments in Section 3.4.

### 3.3 Data

#### 3.3.1 How do we know about the human capital characteristics of immigrants and the native born?

To estimate these models, I use data drawn from the LFS over 2011-2014. I create a cross-sectional sample using Wave 1 of the survey, and expand the number of individuals in the sample by including observations from Wave 5 where Wave 1 has been missed, or where wage information has not been available in the first wave. I restrict the sample to employed men and women on whom I have wage information, who are aged between 16 and 64, and who are not currently in full-time education or self-employed. I do not restrict the sample on years of stay, although the LFS is thought to under-represent recently arrived immigrants, since it is a household survey and does not cover communal establishments (ONS, 2011: 10).

The LFS has not captured foreign qualifications very effectively in the past. Indeed, until recently, non-UK qualifications at all levels were classified as ‘Other’ qualifications, making the task of comparing immigrants with similarly qualified natives very difficult (see the discussion in Manacorda *et al.*, 2006: 22-24). However, in the first quarter of 2011, a new set of questions was introduced in order to capture foreign qualifications more effectively (see Appendix B1).

The new qualification questions are multiple choice, but do not list most foreign secondary-level qualifications. Instead, respondents are asked if they hold a qualification ‘equivalent’ to one in the standard domestic structure of qualifications. Responses are then mapped onto a single variable which combines both domestic and foreign highest qualifications into these categories:

1. *Degree or equivalent*
2. *Higher education below degree level*
3. *GCE, A-level or equivalent*
4. *GCSE grades A\*-C or equivalent*
5. *Other qualification*
6. *No qualification*
7. *Don't know*

I use this information in combination with a question on whether the highest qualification was attained in the UK or abroad, and a question on UK higher degrees, to separately identify the following groups by highest qualification:

1. *No qualifications*
2. *UK qualification below degree level*
3. *Foreign qualification below degree level*
4. *UK qualification at degree level*
5. *Foreign qualification at degree level or above*
6. *UK qualification at higher degree level*

These groups all contain both UK and foreign born respondents.

The 'below degree level' qualification groups include 'Higher education below degree level', 'GCE, A-level or equivalent', 'GCSE grades A\*-C or equivalent' and 'Other qualification'. I lose some variation by grouping these responses, but I do so because I suspect a sizable part of this variation in the immigrant group is spurious. Giving responses that fall into any of the first three categories would require a relatively advanced familiarity with the UK education system, which some proportion of the foreign born population will not possess. Further, even for those with a good understanding of what these qualifications mean in the UK, 'equivalence' is an ambiguous concept. For example, the UK is unusual in having its traditional 'end of compulsory schooling' exams at age 16, in the form of the GCSE. It is not straightforward to identify an 'equivalent' of this in many other countries, where school-leaving exams often take place at age 18. The UK also itself lacks obvious equivalents of many standard qualifications in other countries, particularly more advanced vocational qualifications. I therefore judge that the assignment of immigrants to one of the separate below degree level categories would seem somewhat arbitrary, and many equally qualified respondents could be assigned to the 'Other' category.

My 'below degree level' category also requires the assumption that all qualifications reported as 'other' are below degree level. This seems a reasonable assumption, as a degree level qualification acquired abroad would presumably be identified as such, regardless of the particular education system in which it was earned. This assumption is supported by the

evidence I present in Appendix B2, which shows the average ‘years of schooling’ of respondents who report each qualification, and also reports the results of robustness checks which exclude ‘other’ qualifications altogether.

The data allow me to identify both UK and foreign born respondents who hold a UK higher degree, but do not allow me to differentiate those with a foreign higher degree from those with other foreign degrees. This means that the returns to the UK and foreign degree categories are not strictly comparable, since the foreign degree category will also contain some unknown proportion who hold higher degrees. I judge that the most important comparison in this chapter is between individuals with the same level of qualification, rather than between the returns to different qualifications, hence my decision to include UK degrees and higher degrees separately.<sup>33</sup>

I also generate a ‘years of schooling’ variable, based on the respondent’s reported ‘Age completed full-time education’. For immigrants who arrived in the UK at age 5 or older, I adjust the variable for different school starting ages based on their reported country of origin, using the tables in World Bank (2015). I calculate a ‘potential experience’ variable by subtracting the ‘Age completed full-time education’ from the respondent’s age. For immigrants, I split both these variables into UK and foreign components based on the respondent’s reported year of arrival to the UK, in combination with their age. For the UK born, foreign ‘years of schooling’ and experience are not possible by construction.

My information on wages comes from the ‘average gross hourly pay’ variable, which is calculated from the gross weekly pay reported by the respondent in their main job in the week ending the previous Sunday. Gross weekly pay is divided by the respondent’s usual hours of regular work plus their usual paid overtime. I exclude respondents who report earning more than £99 an hour, and those who report zero wages.

When considering the wages and human capital characteristics of immigrants relative to natives, it is worth recalling that the immigrant ‘stock’ in any country is a selected group. We

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<sup>33</sup> The LFS has a relatively broad definition of degree-level qualification, including ‘NVQ level 5’, ‘Level 8 Diploma’, ‘Level 8 Certificate’, ‘Level 7 Diploma’, ‘Level 7 Certificate’, ‘Level 8 Award’, ‘First degree/foundation degree’, and ‘Other degree’ (ONS, 2012c: 272).

generally expect that stock to be favourably self-selected on labour market characteristics at the point of entry, since the costly migration process is more appealing for those who are most able to recoup on the labour market (see Chiswick, 1999). However, the degree of this self-selection will vary by origin country, and motive for migration (see Chapter 4). The stock is also likely to be self-selected in some way on outflow, since a non-random subgroup of immigrants will move home after some time or move on to other countries. Whether selection on outflow is favourable or unfavourable is less certain (see Dustmann and Weiss, 2007). Given favourable selectivity on inflow, one might expect immigrants to outperform comparable natives. However, depending on the selectivity of outflow, this advantage could either be amplified or attenuated.

### **3.3.2 What are the human capital profiles of immigrants and the native born in the sample?**

Table 3.1 gives an overview of the wages and human capital characteristics of the UK and foreign born in the sample. The first two rows show mean and median hourly wages. Foreign born men appear to have a more positively skewed wage distribution than the UK born, earning around 3% less at the mean, and around 13% less at the median. The distributions of female wages for immigrants and the UK born are closer – foreign born women earn around 4% more at the mean and 2% less at the median. The administrative data presented by Lemos (2013: 341-342) suggest that average immigrant and native wages in the UK are closer than these LFS data suggest (with immigrants earning less than natives at the bottom of the wage distribution, a similar amount in the middle, and more at the top).<sup>34</sup> This may reflect a lower level of accuracy in the LFS wage data, though it could also be because the data used by Lemos refer to an earlier time period.<sup>35</sup>

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<sup>34</sup> Lemos (2013) uses the Lifetime Labour Market Database (LLMDB), which is a large random sample linked to National Insurance records. I assume it gives a more accurate representation of the immigrant and native wage distribution in the UK than the LFS, but it does not contain education information, and therefore could not be used to address the research questions in this chapter.

<sup>35</sup> The data used by Lemos (2013) only capture the first two years of the period of great change in the composition of the UK immigrant workforce which began with the EU accession of eight Central and East European countries in 2004 (see Blanchflower and Shadforth, 2009; Clark and Drinkwater, 2008). It is equally plausible that this change in the composition of the immigrant workforce altered the distribution of immigrant wages in the UK.



**Table 3.1: Wages, experience, years of schooling, and highest qualification, by gender and origin**

	Men			Women		
	UK born	Foreign born	Total	UK born	Foreign born	Total
<b>Wages (£/h)</b>						
Mean wage	14.1	13.7	14.0	11.2	11.6	11.3
Median wage	11.6	10.1	11.4	9.2	9.0	9.2
<b>Potential labour market experience (mean)</b>						
UK experience	23.9	13.2	22.5	23.7	13.8	22.5
Foreign experience	0.0*	5.8	0.8	0.0*	5.4	0.7
Total	23.9	19.0	23.3	23.7	19.2	23.2
<b>Years of schooling (mean)</b>						
Of which UK education	13.0	3.1	11.6	13.0	2.9	11.8
Of which foreign education	0.0*	11.2	1.5	0.0*	11.2	1.4
Total	13.0	14.3	13.1	13.0	14.1	13.2
Years since migration (mean)	0.0*	16.6	2.2	0.0*	17.2	2.1
<b>Qualification (column %)</b>						
UK higher degree	8.6	10.9	8.9	9.3	10.1	9.4
Foreign degree or above	0.3	22.6	3.2	0.2	24.7	3.2
UK degree	18.9	8.7	17.6	19.8	10.1	18.6
Foreign qualification below degree level	0.2	26.7	3.7	0.2	25.6	3.3
UK qualification below degree level	65.6	22.2	59.8	64.3	23.1	59.2
No qualifications	5.5	8.4	5.9	5.5	6.1	5.5
Missing/Don't know	0.9	0.4	0.8	0.8	0.3	0.7
Total	100.0	100.0	100.0	100.0	100.0	100.0
n	45,617	7,052	52,669	50,339	7,110	57,449

Source: LFS 2011-2014. Sample consists of employed men and women, age 16-64, who are not in full-time education. Wages are at January 2011 prices. n= 110,118 (52,669 men and 57,449 women). \*By construction, the UK born cannot hold foreign experience, foreign years of schooling, or years since migration.

These relatively modest differences in unconditional average wages reflect both differences in characteristics, and in returns to these characteristics.<sup>3637</sup> I will briefly describe the differences in characteristics here, before addressing returns to these characteristics in the next section. Broadly, immigrants are less experienced but much more highly educated than the UK born.<sup>38</sup> The division of this education and experience into UK and foreign components is shaped by

<sup>36</sup> The Oaxaca-Blinder method is often used to decompose such wage gaps, but I have not found it the most intuitive way to present my results here, since the 'gap' to be explained is relatively small. The average gap is small despite the fact that immigrants receive much lower returns to qualifications, because the immigrants in the sample tend to be much better qualified than the native born.

<sup>37</sup> This modest gap is at the mean of the wage distribution, and there may be greater wage differences at other points. See Dustmann, Frattini and Preston (2013).

<sup>38</sup> Immigrant men and women are around three years younger than natives on average, which partly explains this difference in potential labour market experience (the other factor is that they have more years of schooling on average, since by construction potential labour market experience is equal to age minus age completed full-time education). This does not explain the higher qualifications of immigrants.

the fact that around a third of the immigrants in my sample arrived either before their full-time education was complete, or in the same year. By construction, this group cannot have foreign labour market experience, but may have some UK education, and may hold qualifications from the UK or abroad.

Foreign born men have an average of around 20% less potential labour market experience than the UK born in total, and 45% of this is from abroad. In line with what we saw in Figure 3.1, they have an average of 10% more years of schooling, though most of this is from abroad. In total, over 40% of foreign born men hold some kind of tertiary qualification, and around half of these were attained abroad. This compares to under 30% of UK born men holding either a degree or higher degree, almost none of which were attained abroad. Foreign born women have around 20% less labour market experience than UK born women on average, and 40% of this is from abroad. They have an average of around 10% more years of schooling, and nearly 45% of foreign born women hold some kind of tertiary qualification, with half of these attained abroad. This compares to under 30% of UK born women with either a degree or higher degree. As with UK born men, almost no native born women have their highest qualification from abroad.

### **3.4 Results**

#### **3.4.1 All immigrants and natives**

Table 3.2 shows the results of estimating equations (1), (2), and (3) for men and women. All results in the table are multiplied by 100. Table 3.3 summarises the average returns to education and experience for natives and immigrants calculated from models (1), (2), and (3).

**Table 3.2: Results from models (1), (2), and (3) (all immigrants and natives) (all multiplied by 100)**

	Men			Women		
	(1)	(2)	(3)	(1)	(2)	(3)
<b>Origin</b>						
Foreign born	81.6 (7.5)	114.2 (6.5)	95.0 (6.7)	88.3 (6.6)	103.8 (5.9)	72.9 (6.1)
<b>Schooling</b>						
Years of ed	18.7 (0.5)			18.5 (0.4)		
Years of ed2	-0.3 (0.0)			-0.3 (0.0)		
Immigrant*years of ed	-8.4 (0.9)			-8.9 (0.7)		
Immigrant*years of ed2	0.2 (0.0)			0.2 (0.0)		
UK years of ed/10		187.2 (5.1)	111.7 (5.2)		184.7 (4.4)	106.5 (4.4)
UK years of ed2/10		-3.3 (0.2)	-2.2 (0.2)		-2.9 (0.1)	-1.9 (0.1)
Foreign years of ed/10		65.0 (5.2)	20.1 (5.4)		87.8 (4.9)	46.3 (5.1)
Foreign years of ed2/10		0.2 (0.2)	0.3 (0.2)		-1.1 (0.2)	-0.6 (0.2)
Immigrant*UK years of ed/10		-107.1 (7.3)	-84.3 (7.5)		-123.5 (6.8)	-79.7 (6.8)
Immigrant*UK years of ed2/10		3.1 (0.3)	2.3 (0.3)		4.0 (0.3)	2.7 (0.3)
<b>Experience</b>						
Exp/100	562.0 (7.1)			391.3 (6.5)		
Exp2/100	-8.8 (0.1)			-6.1 (0.1)		
Immigrant*Exp/100	-261.9 (21.8)			-197.9 (19.9)		
Immigrant*Exp2/100	3.4 (0.5)			2.6 (0.4)		
UK exp/100		562.0 (7.1)	545.1 (6.9)		391.3 (6.5)	366.5 (6.2)
UK exp2/100		-8.8 (0.1)	-8.6 (0.1)		-6.1 (0.1)	-5.6 (0.1)
Foreign exp/100		153.6 (25.4)	139.0 (24.6)		55.1 (22.6)	87.7 (21.7)
Foreign exp2/100		-3.3 (0.9)	-2.9 (0.8)		-1.3 (0.8)	-1.9 (0.8)
Immigrant*UK exp/100		-233.9 (20.7)	-250.9 (20.1)		-34.3 (19.2)	-55.7 (18.7)
Immigrant*UK exp2/100		3.8 (0.5)	4.3 (0.5)		0.1 (0.5)	0.7 (0.5)
<b>Years since migration</b>						
YSM/100	89.7 (16.0)			172.7 (15.2)		
YSM2/100	-0.4 (0.3)			-2.0 (0.3)		
<b>Qualifications</b>						
UK QBDL			25.3 (1.0)			19.9 (0.9)
UK degree			55.7 (1.3)			51.3 (1.1)
UK higher degree			63.4 (1.5)			66.3 (1.3)
Foreign QBDL			33.4 (5.7)			26.6 (4.9)
Foreign degree			54.4 (4.7)			58.0 (4.8)
Immigrant*UKQBDL			-0.6 (2.7)			-5.5 (2.8)
Immigrant*UK degree			4.1 (3.5)			-3.2 (3.3)
Immigrant*UK higher degree			9.8 (3.4)			-5.6 (3.3)
Immigrant*foreign QBDL			-19.5 (6.1)			-21.6 (5.5)
Immigrant*foreign degree			10.0 (5.5)			-15.4 (5.5)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
(Constant)	-8.5 (4.0)	-8.5 (4.0)	38.8 (4.1)	-11.5 (3.5)	-(11.5) (3.5)	43.7 (3.5)
R <sup>2</sup>	25.5	25.5	30.5	23.2	23.2	29.7

Source: LFS, 2011-2014. Notes: Source: LFS 2011-2014. Standard errors in parentheses. QBDL is 'Qualification below degree level'. Sample consists of employed men and women, age 16-64, who are not in full-time education. 'Other controls' are year dummies and missing qualification dummies. \*Model 4 includes individual dummies for each year of UK and foreign schooling between 10 and 20 years, as well as one dummy for 1-9 years and another for 20 years or more. The UK year of schooling dummies are also interacted with the immigrant dummy. These results are not reported. n= 110,118 (52,669 men and 57,449 women).

**Table 3.3 Summary of average returns to education and experience calculated from models (1), (2), and (3) (all immigrants and natives) (all multiplied by 100)**

	Men			Women		
	(1)	(2)	(3)	(1)	(2)	(3)
<hr/>						
Schooling						
Natives						
Returns to education	10.5	10.5	5.5	11.3	11.3	5.9
Returns to experience	1.5	1.5	1.5	1.1	1.1	1.1
<hr/>						
Immigrants						
Returns to education	7.6			6.8		
Returns to foreign education		7.2	2.9		6.0	3.1
Returns to UK education		7.6	3.1		9.3	4.9
Returns to experience	0.5			0.3		
Returns to foreign experience		0.0	0.0		-0.1	0.0
Returns to UK experience		1.0	1.0		0.8	0.8
<hr/>						

I should first address results associated with the ‘Years since migration’ variable in model (1), which are shown in Table 3.2. These coefficients appear to suggest that male immigrant wages rise 1% per year relative to those of natives, while female immigrant wages rise by 2%. However, since there are no controls for immigrant cohort in this model, this apparent rise in wages over time could also represent changes in cohort quality (as noted by Borjas, 1987).

The first column of Table 3.3 shows the results from model (1), which constrains education and experience to be worth the same regardless of whether they were accumulated domestically or abroad. The returns to each year of schooling in this model are 11% for both native born men and women at the sample mean, compared to 8% for foreign born men and 7% for foreign born women.<sup>39</sup> The returns to experience are 2% and 1% for native born men and women at the sample mean, compared to 1% for immigrant men. Immigrant women have a return of just 0.3% to potential labour market experience. All these differences are statistically significant at conventional levels.

The estimated conditional earnings gap between immigrants and natives is large and positive in this model, at around 125% for immigrant men and 140% for immigrant women. As I noted above, the immigrant dummy here gives the wage differential for an individual without any

<sup>39</sup> These returns can be calculated from Table 3.2 by taking the antilog of  $\beta_2 + (2 * \beta_3) * X$ , where  $\beta_2$  is the coefficient on years of schooling,  $\beta_3$  is the coefficient on its square, and X is the sample mean value. For immigrants, this equation is adjusted to take account of  $\beta_8$  and  $\beta_9$ .

human capital, rather than the difference between immigrants and natives with average human capital characteristics. No such individual exists in the sample, so it is more informative to evaluate predicted wage differences at higher values. Since the returns to education and experience are much lower for immigrants than natives, the initial large wage premiums for immigrants diminish and turn negative as education and experience increase. For example, with education and experience at their sample mean values, the predicted wages of male immigrants are 29% below those of natives, and those of female immigrants are 26% lower than those of natives (where male sample means are 13.1 years of schooling and 23.3 years of experience, and female sample means 13.2 and 23.2 years). These wage gaps are larger than those reported in Table 3.1, since immigrants tend to be above the sample mean on schooling.

***How does the immigrant wage gap change after accounting for the origin of human capital?***

The second column of Table 3.3 summarises the results from model (2). Both years of schooling and experience attained abroad are worth less than those acquired domestically, and those acquired domestically are worth less for immigrants. At the sample mean, the returns to each year of foreign education are 5% lower than each year attained in the UK for immigrant men, and 35% lower for immigrant women. Compared to natives, the returns to domestic education are about 28% lower for men and 18% lower for women. These differences are all statistically significant at conventional levels.

The returns to potential labour market experience follow a similar pattern to the returns to years of schooling. At the mean level of experience, the average returns to each year of foreign experience are close to zero for immigrant men, and slightly negative for immigrant women. Compared to natives, the returns to domestic experience are around a third lower for both immigrant men and women.

This evidence on the relative returns to domestic and foreign human capital endowments for immigrants and natives complements that from several other countries, including Israel (Friedberg, 2000: 233), Germany (Basilio et al, 2014: 11-12), and Spain (Sanroma et al., 2009: 13-14). As I noted above, the lower returns to education and experience for immigrants may reflect that immigrants are at a disadvantage in country-specific skills, that their education is of a lower quality, or that they are facing labour market discrimination. The fact that even

domestically educated immigrants receive lower returns suggests that discrimination or other unobserved disadvantages are likely to be a factor.

Since the predicted wage gap varies over the duration of schooling, I use the results from model (2) to plot the predicted hourly wages of three representative individuals with different endowments of domestic and foreign education in Figure 3.2. The three different lines represent: (a) a UK born individual with varying endowments of domestic education; (b) a foreign born individual with varying endowments of domestic education; and (c) a foreign born individual with varying endowments of foreign education. I hold UK and foreign experience at their sample mean values.

The representative male immigrant with no years of schooling has an earnings advantage of 124% over natives, but, as in model (1), this advantage diminishes and disappears as education increases. For the representative male immigrant with only domestic schooling, predicted wages are 7% below those of the representative native at sample mean endowments (22.5 years of UK experience, 0.8 years of foreign experience). For the male immigrant with only foreign schooling the expected wage gap is bigger, earning 18% less at the mean. Note that in both these cases, the mean wage penalty is substantially smaller than in model (1), where the returns to domestic and foreign human capital are constrained to be the same. This suggests that part of the penalty observed in model (1) was attributable to the lower returns to foreign schooling and experience.<sup>40</sup>

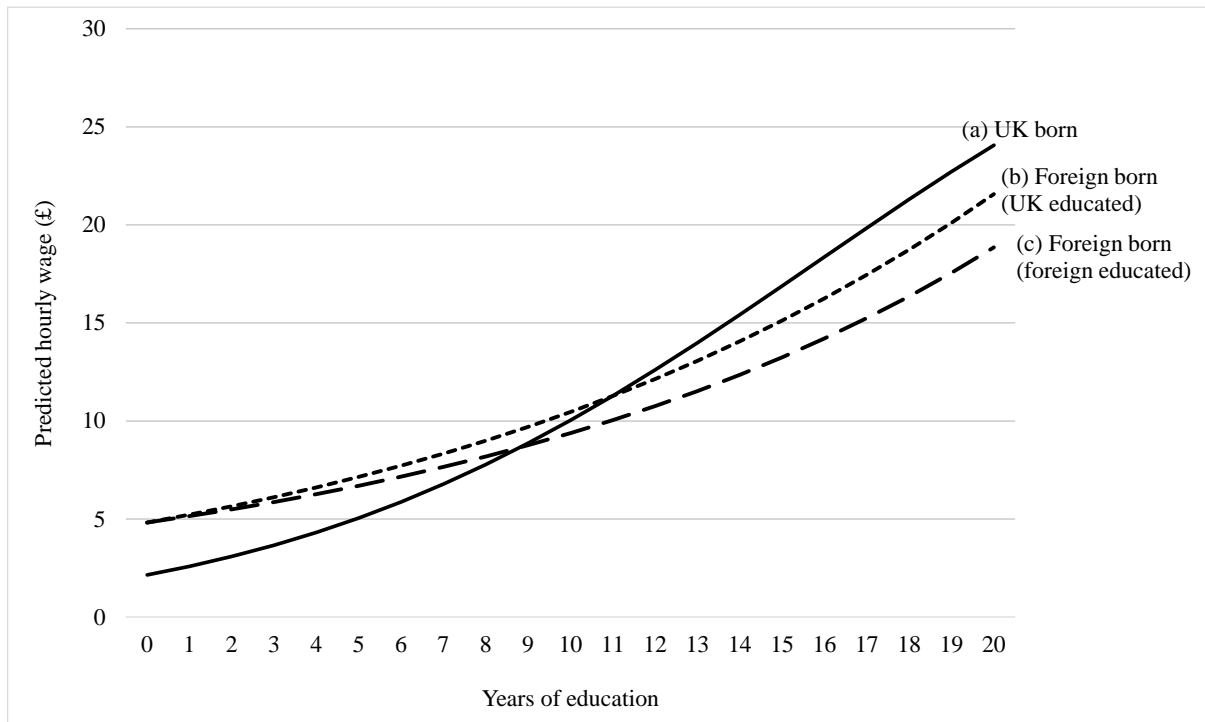
Female immigrants with no years of schooling and average experience (22.5 years of UK experience, 0.7 years of foreign experience) have an earnings advantage over natives of 162%. For the domestically educated representative immigrant, predicted wages are 3% above those of the native at sample mean endowments, and for the foreign educated, predicted wages are 1% above. For females, who faced a substantial mean wage penalty in model (1), simply accounting for the origin of human capital has caused the sign of the mean wage differential to change. As for men, this can be attributed to the lower returns to foreign human capital.

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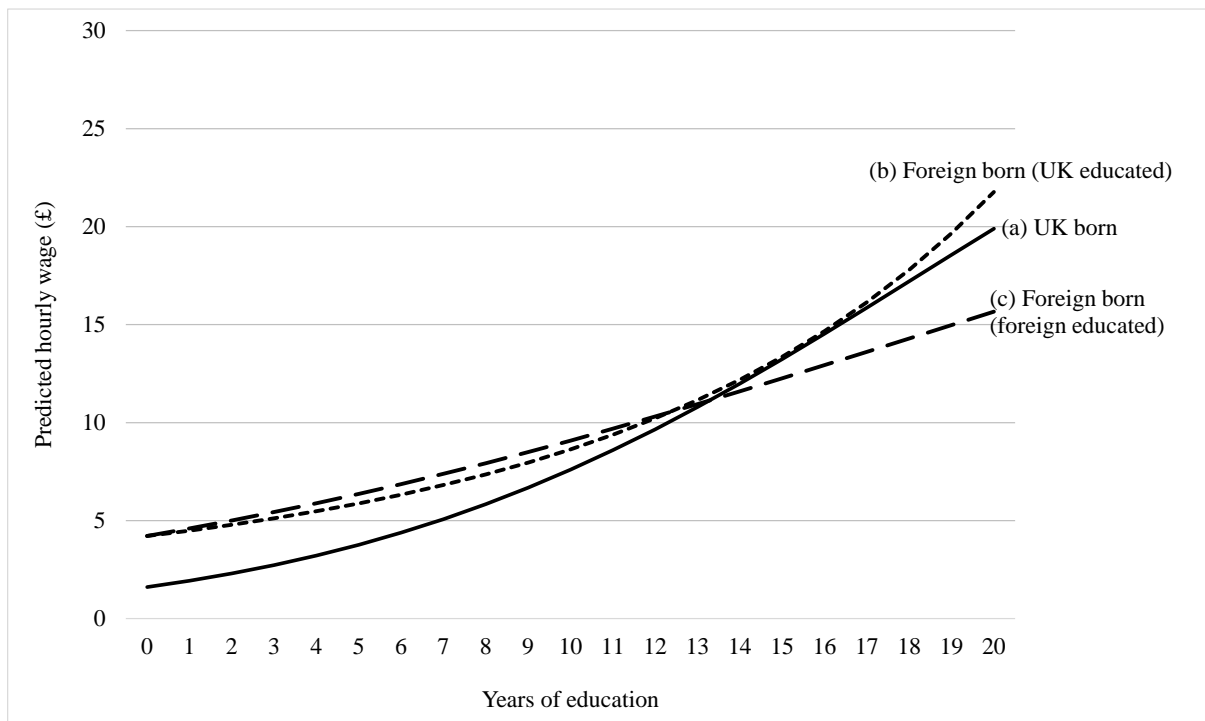
<sup>40</sup> Many immigrants have a mixture of some UK and some overseas schooling (see Clark and Lindley, 2009).

**Figure 3.2: Predicted hourly wages by origin and years of schooling**

**(a) Men**



**(b) Women**



Source: LFS, 2010-2014. Notes: Sample consists of employed men and women, age 16-64, who are not in full-time education. Reference person has the sample mean years of domestic (22.5 for both men and women) and foreign (0.8 for men, 0.7 for women) potential labour market experience. n= 110,118 (52,669 men and 57,449 women).

The third column of Table 3.3 summarises the results from estimating model (3), which includes controls for domestic and foreign qualifications as well as for years of schooling and experience. I continue to differentiate schooling and experience by origin, and the controls for qualifications I use are also differentiated by origin. Any returns to qualifications in this model can be attributed to heterogeneity in the productive characteristics of people who hold the same amount of schooling and experience.<sup>41</sup>

The returns to years of schooling fall in model (3), since they now represent the returns to education within the broad qualification categories I have introduced to the model. The returns to a year of domestic schooling falls by nearly half for native born men and women, by 60% for immigrant men and by nearly half for immigrant women. The returns to foreign schooling fall by the same proportion for immigrant men and women. However, the difference in returns to domestic and foreign education remains statistically significant. The proportion of variance explained by the included independent variables also rises after including qualification dummies, from around 25 to 30% for both men and women.

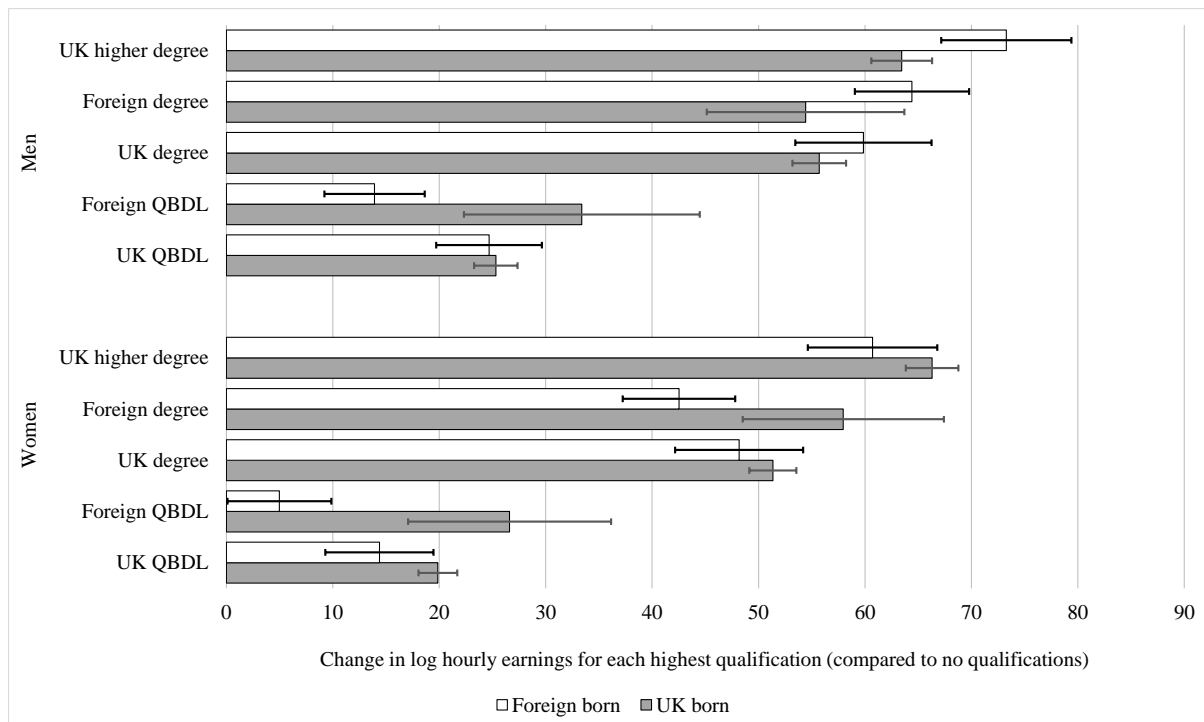
The coefficients on the qualification dummies are large and well-determined at all levels for both men and women. Using the results from model (3), Figure 3.3 shows the association of each qualification level with earnings for immigrants and the native born.

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<sup>41</sup> A signalling interpretation would be that these returns to qualifications partly reflect the productivity signal of holding a qualification, as well as variation in actual productive characteristics. However, there is no way to differentiate the signalling power of a qualification from its actual productive value. See Weiss (1995) for a summary of the debate.



**Figure 3.3: Relative change in log hourly earnings associated with each qualification level, after conditioning on years of schooling (from model 3) (all x100)**



Source: LFS 2011-2014. Notes: Error bars represent 95% confidence interval. Sample consists of employed men and women, age 16-64, who are not in full-time education. n= 92,691 (44,310 men and 48,381 women).

Within the male immigrant group, there is no statistically significant difference between the returns to any of the tertiary qualifications, domestic or foreign, but UK qualifications below degree level are worth more than their foreign equivalents. Among immigrant women, there is no statistically significant difference between the returns to UK and foreign degrees, or between the returns to domestic and foreign qualification below degree level, but higher degrees from the UK are worth significantly more than other qualifications.

Some authors have found evidence that qualifications are associated with a bigger earnings boost for immigrants than for natives, and attributed this to an immigrant-specific ‘sheepskin effect’ (Betts and Lofstom, 2000; Aydemir and Skuterud, 2004; Ferrer and Riddell, 2008). Ferrer and Riddell (2008: 191) suggest that this is because foreign years of schooling may be a less informative signal of productivity to domestic employers relative to holding a qualification, that minority groups may receive greater returns to higher productivity signals, or that productivity differences between those with and without qualifications may be greater among immigrants. There is only weak support for this hypothesis here. The earnings boost

associated with holding a higher degree from the UK is around 15% bigger for immigrant men than for natives. Immigrant men receive substantially lower returns to foreign qualifications below degree level, but recall that only 0.2% of the UK men in the sample hold such qualifications, so this difference is not especially meaningful. Female immigrants earn less than natives with foreign qualification below degree level, and foreign degrees are worth substantially less for immigrant women than for the UK born, but again the UK comparison group in both these instances is very small.

### *How does accounting for qualifications affect the immigrant wage gap?*

Table 3.1 showed that the distribution of highest qualifications is different for immigrants and natives, and Figure 3.3 illustrates that qualifications are strongly associated with earnings differences after accounting for schooling and experience. Given these results, accounting for qualifications should reduce the conditional expected earnings gap between immigrants and natives. In Figure 3.4, I use the results from models (2) and (3) to show the predicted % wage gap over years of schooling, both before and after accounting for qualifications. As before, I hold UK and foreign experience at their sample mean values. The ‘representative’ immigrant here has only foreign schooling, and in the case where qualifications are included, both immigrants and natives have the sample average level of qualification.

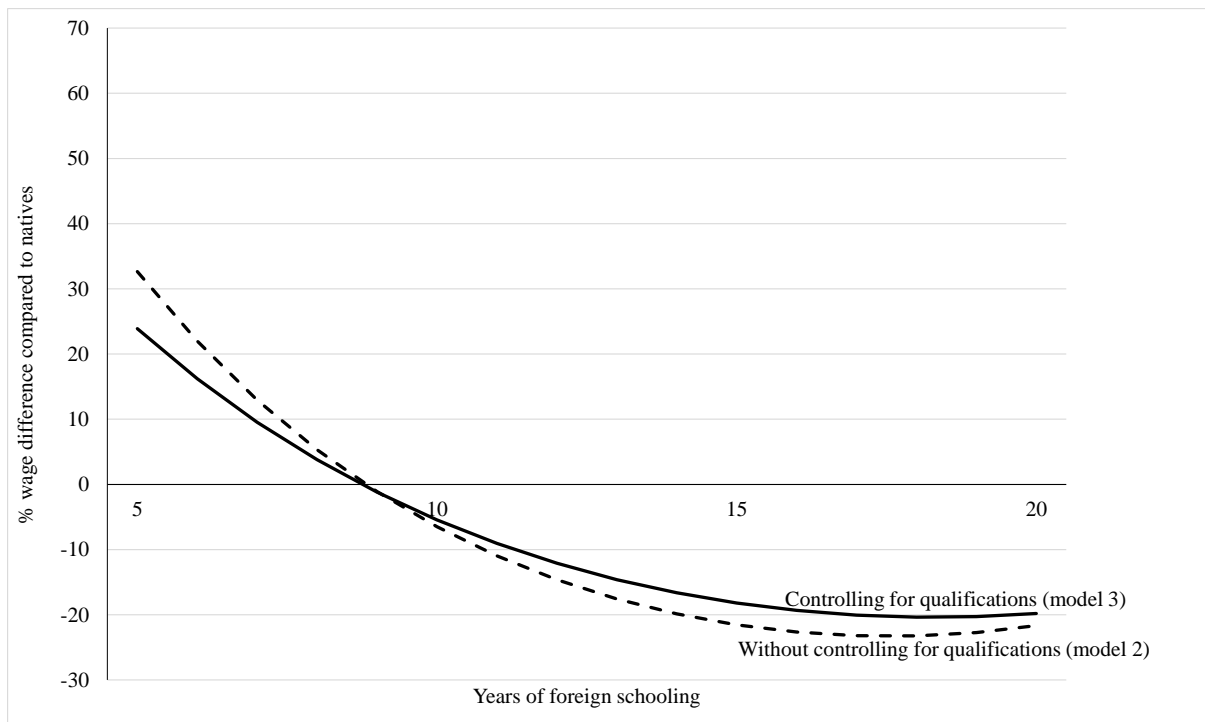
At every point in Figure 3.4 except where the lines cross, the absolute % gap in predicted wages between natives and immigrants is smaller in model (3), which accounts for qualifications. At the sample mean values of schooling and experience, the male immigrant wage penalty is 3 percentage points (17%) lower. For men, the change in the differential is similar across the schooling distribution. For women, the immigrant wage premium is unchanged at the mean after accounting for qualifications, but the differential changes substantially across the schooling distribution. The difference is 8 percentage points (44%) lower with schooling one standard deviation below the mean, and the 5 percentage points (46%) lower with schooling one standard deviation above the mean.

Introducing controls for the level of qualification increases the proportion of variance in wages explained by the model, and causes immigrant and native wages to converge across the distribution of schooling. These results are consistent with a higher degree of heterogeneity in the productive characteristics of immigrants with the same endowment of schooling and experience. As I have noted above, this can partly be attributed to additional variation in years

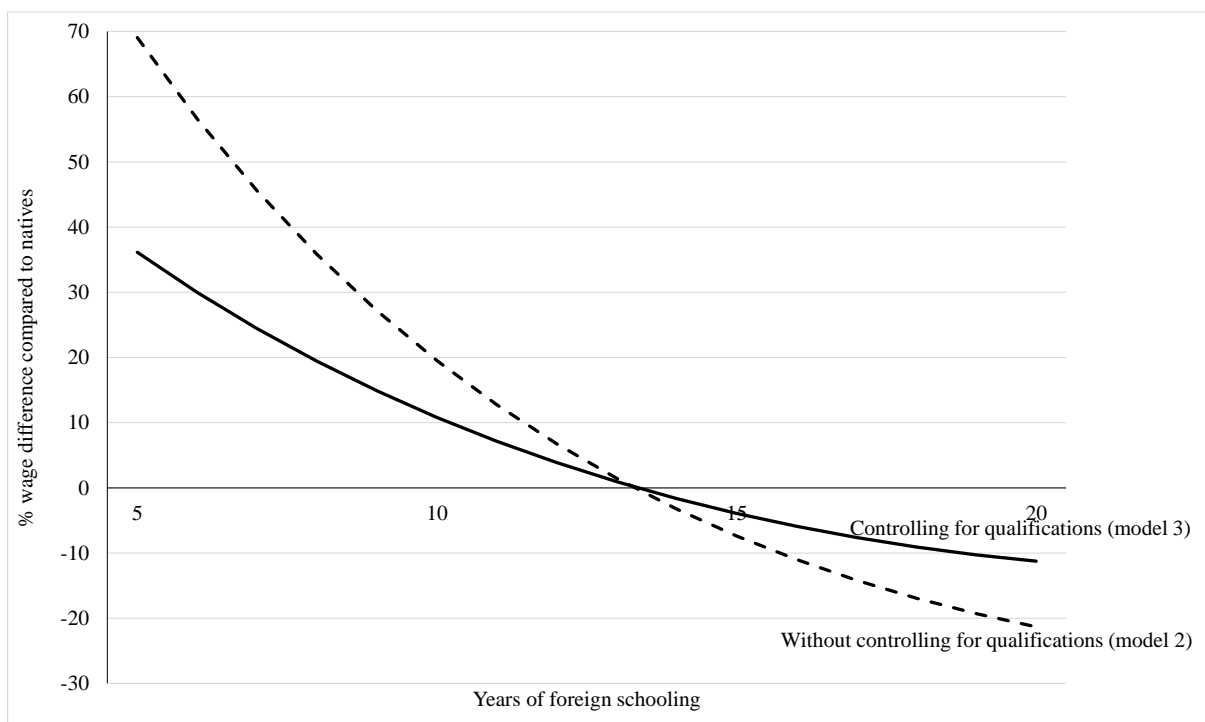
of schooling among immigrants produced by individual-level differences associated with attaining qualifications, grade retention, and level of schooling. However, I also noted that additional variation in years of schooling could be produced by differences associated with broader characteristics of the education system in the immigrant origin country, and I turn to these differences in the next section.

**Figure 3.4: % Difference with native predicted hourly earnings by years of foreign schooling, with and without controls for qualifications (models 2 and 3)**

**(a) Men**



**(b) Women**



Source: LFS, 2010-2014. Notes: Reference person has the sample mean years of domestic (22.5 for both men and women) and foreign (0.8 for both men and women) potential labour market experience.

### 3.4.2 Variation by international origin

Table 3.4 shows the average wages and human capital characteristics of immigrants from five broad regions of the world: the ‘A8’ countries, Africa, the Americas, Asia, and the ‘EU15’ countries (for comparison, the equivalent figures are also listed for the UK born).<sup>42</sup> Broadly, those from the Americas and the EU15 countries are paid more than the UK born on average, those from Africa and Asia earn a similar amount on average, while A8 immigrants stand out as having particularly low wages compared to the UK born and other groups. This group also has particularly few years potential labour market experience in the UK or abroad. The years of schooling are similar across different immigrant groups, but the Americas, Asia, and the EU15 countries stand out as having a high proportion of people with degrees. This is partly because of the relatively high proportion of people from these countries with UK degrees.

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<sup>42</sup> The ‘A8’ countries are those eight that joined the EU in 2004 (the ‘A’ stands for ‘Accession’): Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia. The ‘EU15’ countries are the 15 pre-2004 EU members: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, and Sweden.

**Table 3.4: Wages, experience, years of schooling and highest qualification, by gender and international region of origin**

	Men					
	UK	A8	Africa	Americas	Asia	EU15
Wages (£/h)						
Mean wage	14.1	8.7	14.5	16.4	13.1	16.9
Median wage	11.6	7.5	11.6	13.7	9.7	13.4
Potential labour market experience (mean)						
UK experience	23.9	5.5	15.5	15.8	13.6	15.7
Foreign experience	0.0*	7.6	5.9	5.7	5.7	4.3
Total	23.9	13.1	21.4	21.5	19.3	20.1
Years of schooling (mean)						
UK education	13.0	0.3	3.3	4.6	2.8	4.7
Foreign education	0.0*	12.9	11.1	9.9	11.9	9.7
Total	13.0	13.1	14.3	14.5	14.8	14.4
Years since migration (mean)	0.0*	5.8	19.2	21.0	16.7	21.3
Qualification level (column %)						
UK higher degree	8.6	0.8	13.5	13.0	14.4	11.8
Foreign degree or above	0.3	16.3	17.0	26.8	26.6	26.0
UK degree	18.9	0.9	14.6	11.5	8.0	9.6
Foreign qualification below degree level	0.2	59.2	23.4	17.8	20.7	16.3
UK qualification below degree level	65.6	10.7	26.4	26.4	19.9	29.4
No qualifications	5.5	11.7	4.9	4.2	10.0	6.4
Missing/Don't know	0.9	0.3	0.3	0.4	0.4	0.5
Total	0.9	0.3	100.0	100.0	100.0	100.0
N	45,617	1,185	1,275	523	2,274	1,186
	Women					
	UK	A8	Africa	Americas	Asia	EU15
Wages (£/h)						
Mean wage	11.2	7.8	11.8	14.0	11.3	13.3
Median wage	9.2	6.8	9.6	11.6	9.1	11.3
Potential labour market experience (mean)						
UK experience	23.7	6.3	16.0	18.7	14.1	16.3
Foreign experience	0.0*	6.8	6.2	4.8	5.7	3.4
Total	23.7	13.1	22.3	23.6	19.9	19.7
Years of schooling (mean)						
UK education	13.0	0.4	3.6	4.2	2.8	3.9
Foreign education	0.0*	13.2	9.9	10.0	11.5	10.8
Total	13.0	13.5	13.4	14.2	14.3	14.7
Years since migration (mean)	0.0*	6.7	20.0	23.4	17.3	20.9
Qualification level (column %)						
UK higher degree	9.3	1.7	9.3	14.7	11.4	13.7
Foreign degree or above	0.2	27.5	13.6	25.4	28.0	26.1
UK degree	19.8	2.6	16.0	12.6	8.9	11.6
Foreign qualification below degree level	0.2	48.0	24.2	11.3	24.7	16.1
UK qualification below degree level	64.3	8.6	31.8	31.9	21.2	27.2
No qualification	5.5	11.3	4.9	3.8	5.4	4.9
Missing/Don't know	0.8	0.4	0.2	0.3	0.4	0.4
Total	100.0	100.0	100.0	100.0	100.0	100.0
N	50,339	1,353	1,278	653	1,749	1,380

Source: LFS 2011-2014. Sample consists of employed men and women, age 16-64, who are not in full-time education. The sample is slightly smaller here because I have excluded those from outside the listed regions. n= 91,571 (43,748 men and 53,991 women). \*By construction, the UK born cannot hold foreign experience or foreign years of schooling.

In Table 3.5, I present the results of running models (2) and (3) for five broad groups of immigrant origin (the UK born remain the reference group). Using the results from model (2), I plot the predicted hourly wages of six representative individuals with different endowments of home country education in Figure 3.5, holding UK and foreign experience at their sample mean values. The different plots show the average returns to foreign education for a representative individual educated exclusively abroad, except for the 'UK' individual, who receives the returns to UK education.

**Table 3.5: Returns to human capital by international region of origin**

**(a) Men**

	A8		Africa		Americas		Asia		EU15	
	(2)	(3)	(2)	(3)	(2)	(3)	(2)	(3)	(2)	(3)
<b>Origin</b>										
Foreign born	166.2 (23.7)	119.9 (23.3)	158.5 (12.5)	119.4 (13.4)	123.2 (19.6)	98.4 (21.2)	137.5 (9.7)	98.0 (9.7)	92.7 (13.5)	69.0 (14.6)
<b>Schooling</b>										
UK years of ed/10	187.2 (5.0)	111.7 (5.1)	187.2 (5.1)	111.7 (5.1)	187.2 (5.0)	111.7 (5.1)	187.2 (5.1)	111.7 (5.1)	187.2 (5.0)	111.7 (5.1)
UK years of ed2/10	-3.3 (0.2)	-2.2 (0.2)	-3.3 (0.2)	-2.2 (0.2)	-3.3 (0.2)	-2.2 (0.2)	-3.3 (0.2)	-2.2 (0.2)	-3.3 (0.2)	-2.2 (0.2)
Foreign years of ed/10	-16.7 (32.4)	-12.7 (32.3)	55.9 (10.8)	11.4 (11.2)	86.4 (17.4)	41.3 (18.6)	34.1 (9.0)	-1.1 (9.2)	99.3 (12.6)	46.9 (13.7)
Foreign years of ed2/10	2.2 (1.2)	1.6 (1.2)	-0.5 (0.4)	-0.1 (0.4)	-0.4 (0.6)	0.1 (0.6)	1.2 (0.3)	1.1 (0.3)	-0.4 (0.5)	-0.1 (0.5)
Immigrant*UK years of ed/10	-133.9 (29.2)	-97.7 (29.6)	-147.4 (11.4)	-120.1 (11.8)	-118.6 (19.3)	-76.8 (19.7)	-107.0 (10.5)	-80.4 (10.7)	-88.5 (14.8)	-55.9 (15.4)
Immigrant*UK years of ed2/10	2.2 (3.0)	3.2 (2.9)	4.2 (0.5)	3.6 (0.5)	4.0 (0.8)	2.6 (0.8)	2.5 (0.5)	1.6 (0.5)	2.8 (0.6)	1.5 (0.6)
<b>Experience</b>										
UK exp/100	562.0 (7.0)	545.1 (6.8)	562.0 (7.1)	545.1 (6.9)	562.0 (7.0)	545.1 (6.9)	562.0 (7.1)	545.1 (6.9)	562.0 (7.1)	545.1 (6.9)
UK exp2/100	-8.8 (0.1)	-8.6 (0.1)	-8.8 (0.1)	-8.6 (0.1)	-8.8 (0.1)	-8.6 (0.1)	-8.8 (0.1)	-8.6 (0.1)	-8.8 (0.1)	-8.6 (0.1)
Foreign exp/100	213.3 (57.7)	205.7 (56.1)	-30.0 (55.5)	-27.7 (54.4)	215.3 (101.8)	178.5 (99.9)	121.0 (44.8)	147.6 (44.2)	196.6 (68.1)	195.1 (66.2)
Foreign exp2/100	-6.6 (2.0)	-6.4 (1.9)	1.0 (1.8)	0.5 (1.8)	-3.5 (3.3)	-2.0 (3.2)	-4.7 (1.5)	-4.1 (1.5)	-1.6 (2.3)	-2.0 (2.3)
Immigrant*UK exp/100	-300.8 (85.1)	-240.9 (84.4)	-231.1 (48.9)	-243.5 (47.7)	-200.2 (64.0)	-241.5 (63.0)	-348.0 (35.9)	-281.1 (35.1)	-192.7 (42.5)	-196.7 (41.4)
Immigrant*UK exp2/100	10.8 (3.8)	5.3 (3.9)	3.1 (1.2)	3.7 (1.1)	2.8 (1.5)	3.9 (1.5)	5.7 (0.9)	4.9 (0.9)	2.9 (1.0)	3.2 (0.9)
<b>Qualification level</b>										
UK QBDL		25.3 (1.0)		25.3 (1.0)		25.3 (1.0)		25.3 (1.0)		25.3 (1.0)
UK degree		55.7 (1.3)		55.7 (1.3)		55.7 (1.3)		55.7 (1.3)		55.7 (1.3)
UK higher degree		63.4 (1.4)		63.4 (1.4)		63.4 (1.4)		63.4 (1.4)		63.4 (1.4)
Foreign QBDL		33.4 (5.6)		33.4 (5.6)		33.4 (5.6)		33.4 (5.6)		33.4 (5.6)
Foreign degree		54.4 (4.7)		54.4 (4.7)		54.4 (4.7)		54.4 (4.7)		54.4 (4.7)
Immigrant*UKQBLD		-19.4 (6.1)		9.7 (7.0)		-5.0 (11.7)		5.1 (4.4)		-1.4 (6.7)
Immigrant*UK degree		-34.4 (15.9)		15.4 (7.9)		-2.7 (13.5)		13.8 (5.9)		-1.4 (8.3)
Immigrant*UK higher degree		18.8 (18.8)		17.0 (8.1)		-2.1 (13.4)		13.6 (5.3)		14.3 (8.1)
Immigrant*foreign QBDL		-31.1 (7.2)		-4.5 (9.0)		-18.4 (13.3)		-26.2 (7.0)		-9.8 (8.9)
Immigrant*foreign degree		-35.8 (8.0)		22.3 (8.9)		4.7 (13.6)		11.1 (6.5)		17.9 (8.8)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(Constant)	-8.5 (3.9)	38.8 (4.0)	-8.5 (3.9)	38.8 (4.1)	-8.5 (3.9)	38.8 (4.1)	-8.5 (4.0)	38.8 (4.1)	-8.5 (3.9)	38.8 (4.1)
R <sup>2</sup>	27.0	31.1	25.8	30.2	26.2	30.5	25.9	30.6	26.2	30.6

## (b) Women

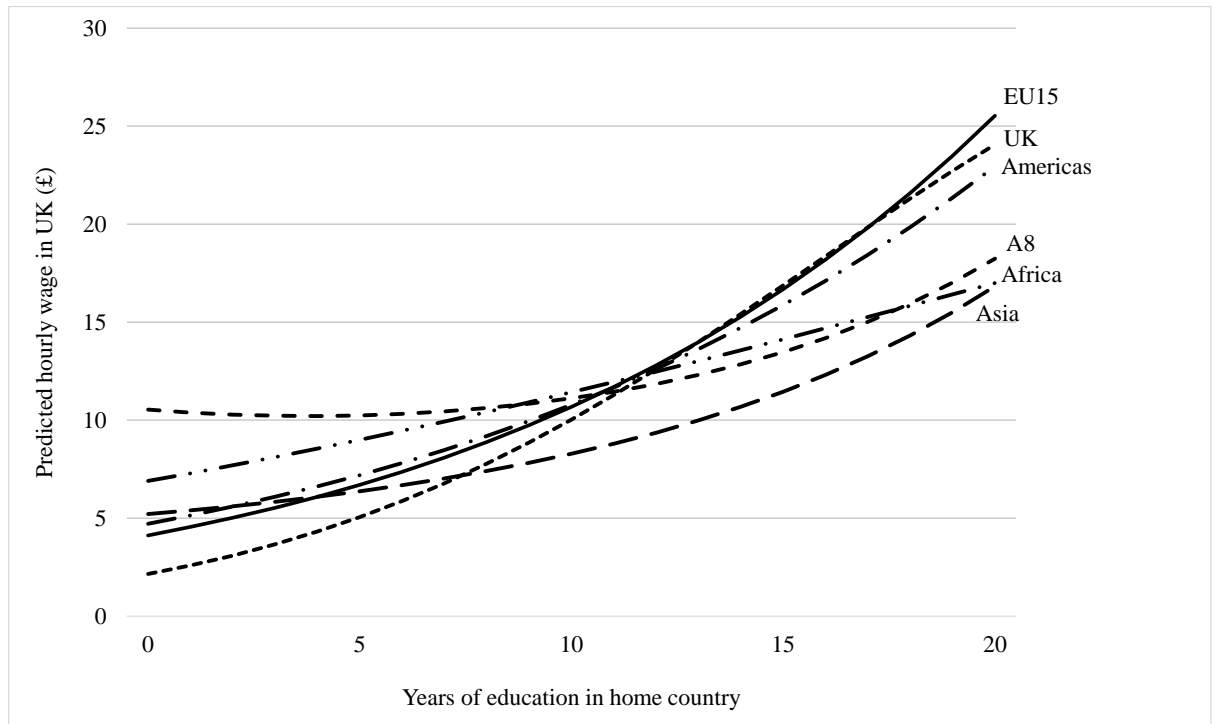
	A8		Africa		Americas		Asia		EU15	
	(2)	(3)	(2)	(3)	(2)	(3)	(2)	(3)	(2)	(3)
Origin										
Foreign born	144.9 (14.5)	108.4 (14.4)	142.8 (11.6)	89.3 (12.2)	140.5 (17.0)	99.2 (18.4)	125.2 (9.9)	83.2 (10.3)	68.0 (11.9)	24.1 (12.6)
Schooling										
UK years of ed/10	184.7 (4.3)	106.5 (4.3)	184.7 (4.3)	106.5 (4.3)	184.7 (4.3)	106.5 (4.3)	184.7 (4.3)	106.5 (4.3)	184.7 (4.3)	106.5 (4.3)
UK years of ed2/10	-2.9 (0.1)	-1.9 (0.1)	-2.9 (0.1)	-1.9 (0.1)	-2.9 (0.1)	-1.9 (0.1)	-2.9 (0.1)	-1.9 (0.1)	-2.9 (0.1)	-1.9 (0.1)
Foreign years of ed/10	26.1 (17.4)	10.9 (17.3)	69.8 (10.4)	41.0 (10.6)	78.8 (16.3)	30.5 (16.7)	76.6 (9.0)	36.6 (9.4)	123.9 (11.3)	82.9 (12.0)
Foreign years of ed2/10	0.0 (0.6)	0.1 (0.6)	-1.5 (0.4)	-1.2 (0.4)	-0.5 (0.6)	0.2 (0.6)	-1.1 (0.3)	-0.5 (0.3)	-1.6 (0.4)	-1.3 (0.4)
Immigrant*UK years of ed/10	-116.6 (23.2)	-74.4 (23.3)	-152.6 (11.4)	-90.2 (11.3)	-146.1 (17.3)	-87.0 (17.1)	-131.3 (11.4)	-86.7 (11.4)	-100.9 (12.5)	-54.8 (12.4)
Immigrant*UK years of ed2/10	0.7 (2.3)	1.3 (2.2)	4.5 (0.5)	2.7 (0.5)	5.3 (0.8)	3.3 (0.8)	4.3 (0.6)	2.9 (0.6)	3.6 (0.6)	2.3 (0.6)
Experience										
UK exp/100	391.3 (6.3)	366.5 (6.1)	391.3 (6.3)	366.5 (6.1)	391.3 (6.3)	366.5 (6.1)	391.3 (6.3)	366.5 (6.1)	391.3 (6.3)	366.5 (6.1)
UK exp2/100	-6.1 (0.1)	-5.6 (0.1)	-6.1 (0.1)	-5.6 (0.1)	-6.1 (0.1)	-5.6 (0.1)	-6.1 (0.1)	-5.6 (0.1)	-6.1 (0.1)	-5.6 (0.1)
Foreign exp/100	-22.5 (45.6)	-22.5 (43.9)	-81.8 (51.6)	-49.7 (49.9)	-1.3 (81.9)	36.0 (79.3)	50.5 (46.6)	125.1 (45.0)	212.8 (63.1)	238.9 (60.8)
Foreign exp2/100	0.5 (1.5)	0.5 (1.5)	3.4 (1.7)	3.2 (1.6)	2.7 (2.8)	1.0 (2.7)	-2.6 (1.6)	-4.3 (1.6)	-7.4 (2.6)	-7.0 (2.5)
Immigrant*UK exp/100	63.6 (63.7)	35.9 (62.0)	-48.9 (47.3)	-21.1 (45.7)	-208.3 (54.8)	-181.3 (53.4)	-181.2 (39.4)	-156.3 (38.0)	-25.7 (36.6)	-13.2 (35.7)
Immigrant*UK exp2/100	-1.0 (2.1)	-0.4 (2.0)	-1.0 (1.1)	-1.1 (1.1)	4.4 (1.2)	4.4 (1.2)	2.2 (1.0)	2.2 (0.9)	0.0 (0.9)	0.0 (0.8)
Qualification level										
UK QBDL		19.9 (0.9)		19.9 (0.9)		19.9 (0.9)		19.9 (0.9)		19.9 (0.9)
UK degree		51.3 (1.1)		51.3 (1.1)		51.3 (1.1)		51.3 (1.1)		51.3 (1.1)
UK higher degree		66.3 (1.2)		66.3 (1.2)		66.3 (1.2)		66.3 (1.2)		66.3 (1.2)
Foreign QBDL		26.6 (4.8)		26.6 (4.8)		26.6 (4.8)		26.6 (4.8)		26.6 (4.8)
Foreign degree		58.0 (4.7)		58.0 (4.7)		58.0 (4.7)		58.0 (4.7)		58.0 (4.7)
Immigrant*UKQBLD		-18.6 (5.7)		-4.6 (6.4)		-12.4 (9.7)		-2.3 (5.5)		2.7 (6.4)
Immigrant*UK degree		-30.6 (9.0)		-11.2 (7.2)		-3.6 (10.9)		5.2 (6.8)		6.2 (7.2)
Immigrant*UK higher degree		-22.3 (10.6)		-0.5 (7.8)		-10.1 (10.9)		0.8 (6.5)		-9.6 (7.4)
Immigrant*foreign QBDL		-28.3 (6.3)		-15.4 (8.0)		-20.3 (11.9)		-20.9 (7.2)		-13.9 (8.0)
Immigrant*foreign degree		-42.9 (6.9)		-2.0 (8.5)		-6.4 (11.6)		-16.3 (7.3)		-2.3 (8.4)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(Constant)	-11.5 (3.4)	43.7 (3.5)	-11.5 (3.4)	43.7 (3.5)	-11.5 (3.4)	43.7 (3.5)	-11.5 (3.4)	43.7 (3.5)	-11.5 (3.4)	43.7 (3.5)
R <sup>2</sup>	24.5	30.4	23.6	29.8	23.9	30.0	23.6	29.8	24.2	30.3

Source: LFS 2011-2014. Sample consists of employed men and women, age 16-64, who are not in full-time education. The sample is slightly smaller here because I have excluded those from outside the listed regions. n= 91,571 (43,748 men and 53,991 women).

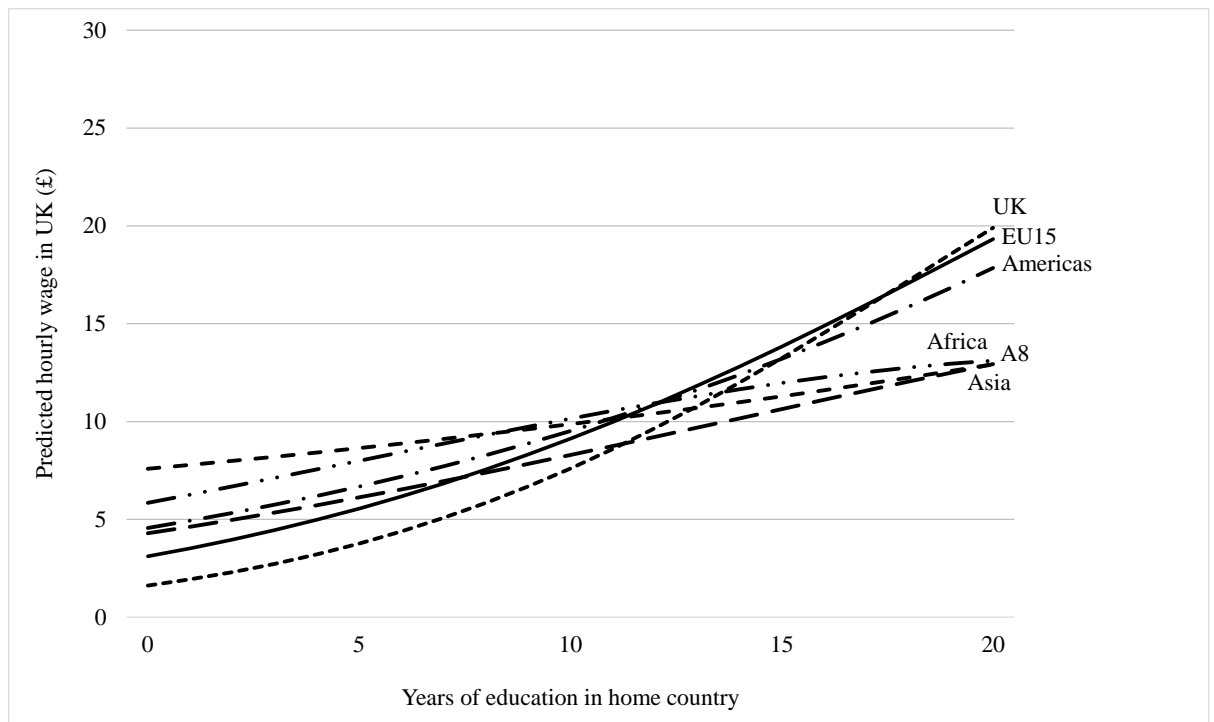


**Figure 3.5: Predicted hourly wages by origin and years of schooling (model 2)**

**(a) Men**



**(b) Women**



Source: LFS, 2010-2014. Notes: Reference person has the sample mean years of domestic (13.0 for men, 13.1 for women) and foreign (0.8 for men, 0.7 for women) potential labour market experience. Sample consists of employed men and women, age 16-64, who are not in full-time education. The sample is slightly smaller here because I have excluded those from outside the listed regions. n= 91,571 (43,748 men and 53,991 women).

Two clear groups emerge in Figure 3.5, with the UK born, those from the EU15 countries, and those from the Americas receiving higher returns to years of schooling accumulated in their home countries than the other groups. This is true for both men and women. Those educated in Asia receive lower returns, and those educated in the A8 and African countries receive much lower returns to years of schooling. At the sample mean level of schooling, the representative man educated in Asia earns 29% less than the representative native, while the A8 man earns 13% less, the African 8% less, and the man educated in the Americas earns 3% less. The EU15 immigrant earns roughly the same as the representative native.

The representative female immigrant educated in an A8 country earns 3% less at the mean, and the representative educated in Asia earns 11% less. The other representative female immigrants earn more than the representative native at the mean: 4% more for Africa, 7% more for the Americas, 9% more for the EU15. These results are broadly consistent with the idea that education received in countries with more similar economies to the host country will receive higher returns in the domestic labour market, and are consistent with results from other immigrant host countries (Friedberg, 2000; Basilio et al, 2014; Sanroma et al., 2009: 13-14).

### ***Does accounting for qualifications affect the immigrant wage gap in different ways for those schooled in different countries?***

Figure 3.6 shows the returns to qualifications for the same five groups of countries and the UK, after accounting for schooling and experience. These are derived from the results of model (3) in Table 3.5.<sup>43</sup> Returns to domestic and foreign tertiary qualifications are broadly similar for the UK born and the other groups. The exceptional case here is foreign degrees held by people from A8 countries, which receive lower returns than those from other countries, and UK degrees held by the same group, which receive almost no returns (although only a small number of people from A8 countries in the sample hold UK degrees).<sup>44</sup> Qualifications below the tertiary level are not generally associated with higher earnings for the different immigrant groups.

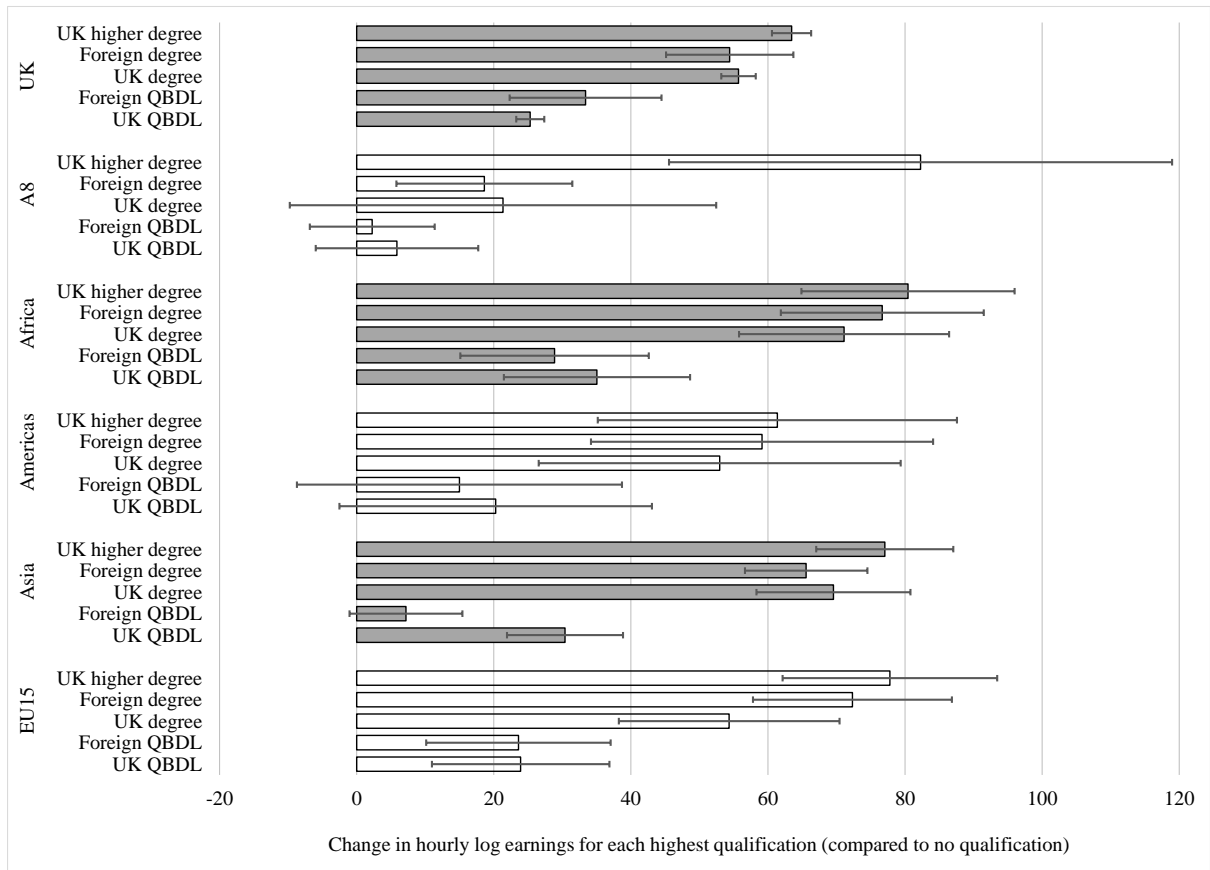
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<sup>43</sup> It should be noted here that the ‘foreign degrees’ held by the UK born could be from any country, while I assume that most of the ‘foreign degrees’ held by people born in other countries were earned in their home countries. The comparison between UK ‘foreign degrees’ and the others is therefore not especially useful.

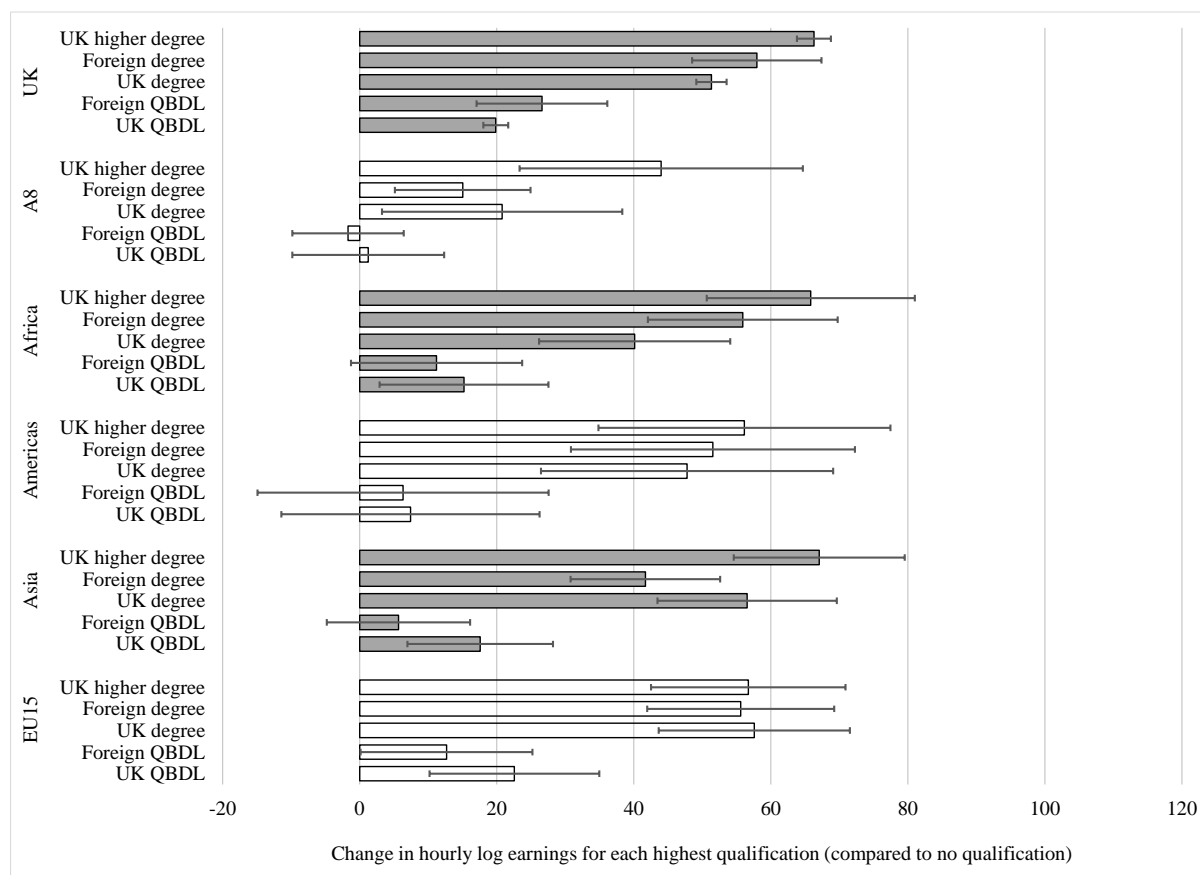
<sup>44</sup> These lower returns may be associated with a lower degree of favourable self-selection on unobserved labour market characteristics for individuals from the A8 countries (see the discussion in chapter 2).

**Figure 3.6: Relative change in log hourly earnings associated with each highest qualification compared to no qualifications (from model 3)**

**(a) Men**



**(b) Women**

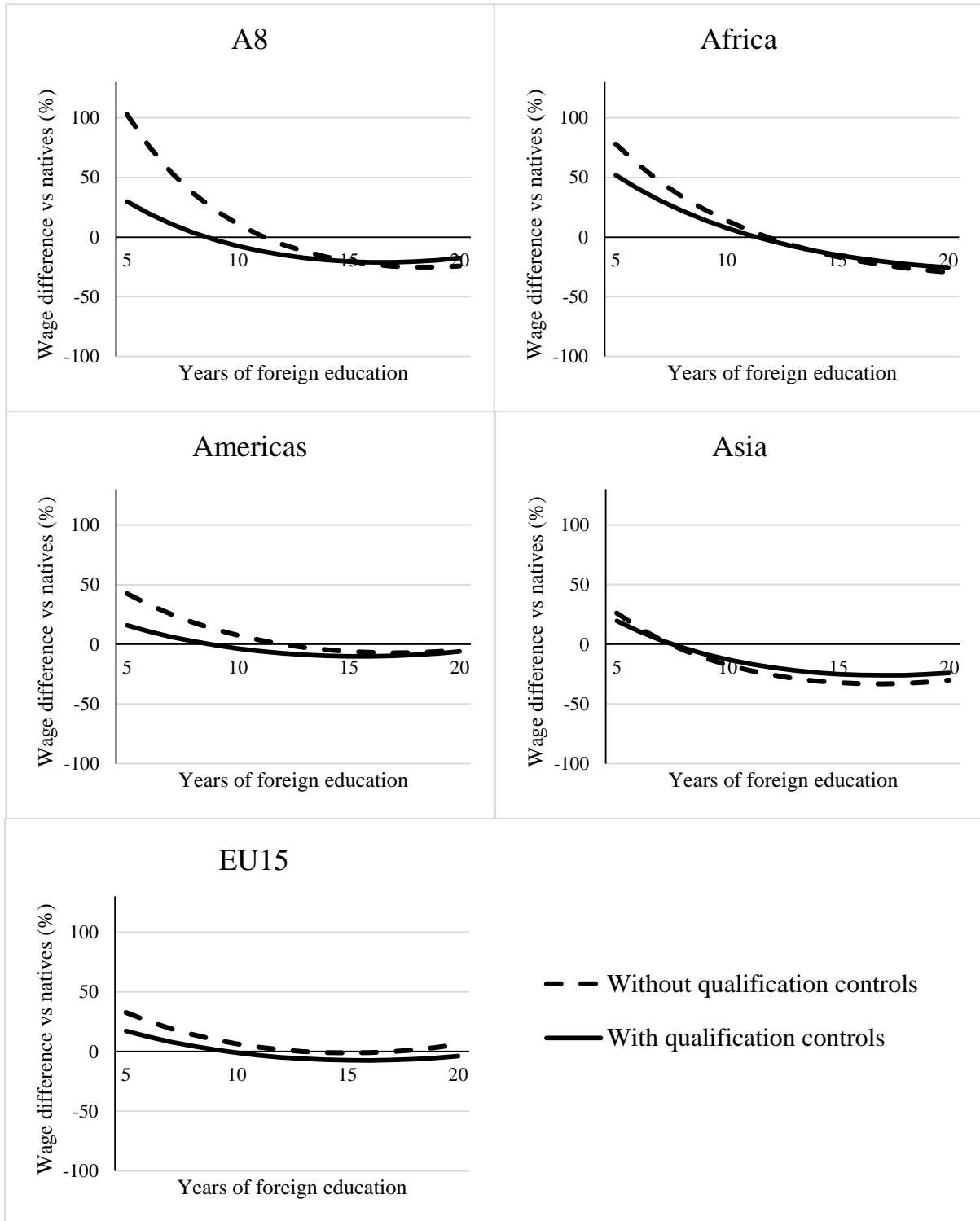


Source: LFS, 2010-2014. Sample consists of employed men and women, age 16-64, who are not in full-time education. The sample is slightly smaller here because I have excluded those from outside the listed regions. n=91,571 (43,748 men and 53,991 women).

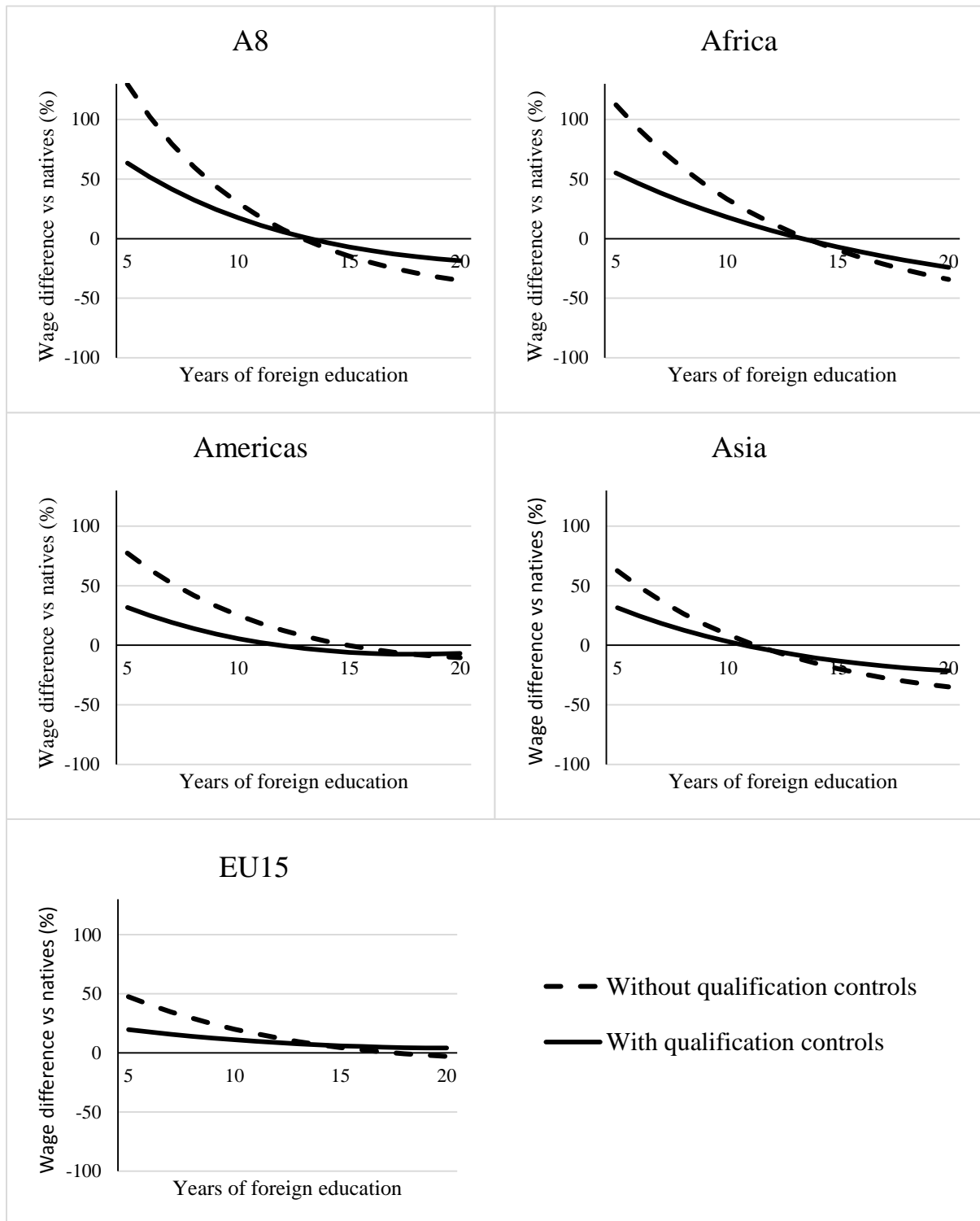
In Figure 3.7, I show the predicted wage gap by international region of origin before and after accounting for qualifications, with UK and foreign experience held at their sample mean values. In every group of countries, the absolute wage gap between natives and foreign-educated immigrants is reduced by controlling for qualifications. However, for both men and women the convergence is smallest for those educated in EU15 countries, while it tends to be larger for those educated in A8 countries and the other groups. This is broadly consistent with the hypothesis that the ‘years of schooling’ attained in less similar economies are less valuable on the host labour market, and that controlling for qualifications will therefore have a bigger effect on the conditional wage penalty.

**Figure 3.7: Returns to education by origin, with and without controls for qualifications**

**(a) Men**



**(b) Women**



Source: LFS 2011-2014. Sample consists of employed men and women, age 16-64, who are not in full-time education. The sample is slightly smaller here because I have excluded those from outside the listed regions. n= 91,571 (43,748 men and 53,991 women).

### **3.5 Conclusion**

In this chapter, I have asked how well the duration of schooling captures the earnings potential of immigrants. I have noted that each additional year of schooling is unlikely to confer the same increase in earnings potential for people who have studied in different education systems, and that the matter is further complicated by the fact that immigrants often hold a combination of domestic and foreign schooling. I have addressed these concerns by allowing the returns to domestic and foreign human capital to vary, and found that returns to schooling and experience obtained abroad were generally lower than the returns to human capital obtained domestically. I noted that accounting for the origin of human capital allowed for some convergence in the predicted wage gap between natives and immigrants.

I extended this literature by addressing heterogeneity in the earnings potential of natives and immigrants with the same endowments of domestic and foreign schooling and experience. I noted that there are both individual- and country-level reasons why we might expect more heterogeneity in earnings potential at any given level of schooling among immigrants than among natives, and that this may be causing us to over-estimate the conditional immigrant wage differential. I addressed this heterogeneity by using new measures of domestic and foreign qualifications in a large national survey, and controlling for the qualifications of immigrants and natives as well as the years of schooling and experience. This produced the anticipated convergence of predicted wages among immigrants and natives. I noted that this convergence in predicted wages appears to be greater for immigrants schooled in countries with less similar economies.

In order to judge the earnings prospects of immigrants, their human capital characteristics, and the potential level of labour market discrimination against them in the host economy, we need to be careful that we are assessing their earnings in relation to those of comparable natives. I have shown that comparing immigrants and natives with the same duration of schooling may produce misleading estimates, and that accounting for the level of qualifications can help. This chapter has also shown the great degree of variation in how foreign qualifications are valued in the UK. There have been some efforts by policymakers to improve the comparability of international qualifications (most notably the Bologna Process in Europe), but my results here suggest that there is still a great deal to be done in providing employers with adequate information on the meaning and worth of qualifications from different countries.

## 4. Does it matter why immigrants came here? Original motives, the labour market, and national identity in the UK

### 4.1 Introduction

The importance of the original motives for migration is often asserted in the economics of migration literature, and rightly so. Such motives drive the process of self-selection, which differentiates those who migrate from those who do not on a collection of influential characteristics. Among those who do migrate, original motives can also inform us about a set of related factors that shape social and economic experiences in the host country. Yet direct measures of motives have seldom been included in empirical models comparing immigrants' behaviour. Our analysis of immigrant outcomes is therefore missing something fundamental.

A standard assertion is that those who migrated for employment purposes are favourably self-selected on labour market ability and motivation (see, for example, Chiswick, 1999: 184). This is an intuitive implication of the human capital analysis of the decision to move: migration is a costly investment with uncertain returns, and as such it makes sense only for those most able to capitalise via the labour market.<sup>45</sup> However, not every migrant is *homo economicus*. Employment is not always the prime motive for migration, and in some countries a majority of immigrants arrive with other expressed intentions.<sup>46</sup>

What might we expect of those who migrated for non-work reasons? Although the human capital approach leads us to anticipate that they will be less favourably self-selected on labour market characteristics, we do not know exactly how different types of non-work immigrant will compare, or the scale of the differences between motive groups. Those driven by non-work motives may bring other qualities that aid or hinder them on the labour market, and may face other constraints. For example, they may have different degrees of access to family and social networks, different aspirations for acquiring local qualifications or the host language, and different intentions regarding integration or return migration. They may also face different legal restrictions on arrival. Any of these factors could produce variation in labour market performance, and hence have an important influence on the economic lives of immigrants. In

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<sup>45</sup> Borjas (1987) notes that the relative income distributions of the sending and receiving countries also affect the immigrant self-selection process. See Bodvarsson and Van den Berg (2013: 81-88) for a recent summary of the long-running debate between Chiswick and Borjas on immigrant selectivity.

<sup>46</sup> In the UK, nearly two thirds of long-term immigrants arriving in the year ending December 2013 came for non-work related reasons, according to Long Term International Migration data (ONS, 2014c).



the first part of this chapter, I examine the employment and wage implications of different original motives for work, student, family, and refugee immigrants who have settled in the UK.

A less frequently noted implication of the human capital analysis is that work immigrants will be favourably self-selected on cultural adaptability: the costs of migration are reduced by an enhanced capacity to adapt to the host culture, and migration is more likely to be a viable investment for those who can adapt more readily.<sup>47</sup> Non-work immigrants will be less favourably self-selected on this trait. However, as with labour market ability and motivation, the variation in cultural adaptability between non-work immigrant groups and the scale of the differences is uncertain.

Cultural adaptability is more difficult to infer from survey data than labour market talent, but one useful indicator is suggested by the recent work of Manning and Roy (2010: F94-F96). Their ‘cultural distance’ model implies that we can observe cultural adaptability through variation in uptake of the native national identity. With other factors held equal, the least culturally adaptable immigrants are the most likely to adopt the native national identity: for them, it is a way to feel part of the host society in the absence of strong behavioural affinities. In the second part of this chapter, I examine this hypothesis through uptake of the British national identity by different motive groups who have settled in the UK.<sup>48</sup>

As well as revealing the significance of original motives, both the labour market performance and the national affiliations of immigrants are matters of substantial public and policy interest in themselves. Labour market performance determines the fiscal and labour market effects of immigration from the host country’s perspective, and these have been the subject of a charged academic and policy debate in recent years (see Manacorda *et al.*, 2012; Dustmann and Frattini, 2014; Devlin *et al.*, 2014). National identity serves an important unifying function in multicultural societies, and the national identities of immigrants have been a topic of enduring public and political fascination in the UK in particular (see the discussions in Manning and Roy, 2010: F73-F74; Nandi and Platt, 2013: 3-6). Indeed, politicians from all three major

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<sup>47</sup> These are equivalent to what Sjaastad (1962: 84-85) and Chiswick (1978: 900n) call the ‘psychic costs’ of migration.

<sup>48</sup> There is also an economics of identity (see Akerlof and Kranton, 2000), but the significance of national identity for economic outcomes has not been firmly established (Dustmann, 1996; Manning and Roy, 2010: F77; Casey and Dustmann, 2010). The related concept of ethnic identity does appear to be associated with labour market outcomes (Battu *et al.*, 2007; Battu and Zenou, 2010; Nekby and Rodin, 2007; Pendakur and Pendakur, 2005).

political parties in the UK have been keen to promote the benign civic nationalism associated with simple identification as ‘British’ (see Uberoi and Modood, 2013).

My results show that original motives are important predictors of labour market outcomes and national identity among immigrants in the UK. I examine only ‘settled’ immigrants, who I define as those who have been in the UK for at least five years. On the labour market, I find that those who originally came as work or student immigrants have the highest employment propensities, and that they also earn the highest wages of the different motive groups. Male family immigrants have similarly high employment propensities, but earn much less. Female family immigrants and refugees do not do as well on the labour market, having low employment propensities, and low wages. These differences remain after accounting for variation in country of origin, time spent in the UK, and other relevant demographic and human capital characteristics. This ranking of work, student, family and refugee immigrants on labour market performance is broadly consistent with expectations based on the human capital model of migration. I investigate use of networks in job search and language ability as possible mechanisms, but find that they explain only a modest proportion of the differences between the motive groups.

On national identity, using the same sample of settled immigrants in the UK, I find that refugee and family immigrants are the most likely to identify as British, and that work and student immigrants are the least so. These differences remain after accounting comprehensively for country of origin and other relevant factors, though country of origin remains an important determinant. This is in line with differential self-selection on cultural adaptability, and the ‘cultural distance’ model of national identity. I suggest that these results are consistent with a well-functioning, culturally-inclusive British national identity.

This chapter advances the literature in three ways. First, it provides new support for the predictions of the human capital analysis of migration, not only in the economic sphere, but also in the cultural lives of immigrants. Second, it provides support for Manning and Roy’s ‘cultural distance’ model of national identity, a recent theory in a relatively new area of economic research. Finally, it examines all four major migrant motives: not only work immigrants, who are the focus of an established literature in economics, but also family, student, and refugee immigrants. Family immigrants and refugees have been the subject of

some social scientific research, but they remain understudied in economics.<sup>49</sup> Student immigrants who go on to settle in the host country have largely been neglected in the scholarly literature, despite their increasing importance for large exporters of international education such as the UK.<sup>50</sup> Crucially, I provide estimates of the scale of the conditional differences between these motive groups, as well as the direction.

These contributions are enhanced by two features of the data:<sup>51</sup> first, the data allow the construction of a large, multinational sample of immigrants, in a relatively large immigrant receiving country. Second, they contain a direct survey measure of original motives, rather than records of visa category, so the mechanism behind self-selection can be explicitly addressed.<sup>52</sup>

The chapter proceeds as follows: in the next section, I describe the data and key variables, and in Section 4.3 I assess the relationship between original motives and labour market outcomes. In Section 4.4 I address the relationship between original motives and national identity, and in Section 4.5 I conclude.

## **4.2 Data**

### **4.2.1 How do we know about immigrants' original motives, labour market outcomes, and national identity?**

The data I use in this study come from the Labour Force Survey (LFS) over 2010-2014. This is the largest regular household survey in the UK, covering approximately 40,000 households per calendar quarter. The LFS has a rotating panel design, and follows each household for five successive quarters, although in this chapter I use only individual-level information, and only one observation per individual.

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<sup>49</sup> Family immigrants are studied by Jasso and Rosenzweig (1995), Husted *et al.* (2001), Constant and Zimmerman (2006), Aydemir (2011), and Bevelander and Pendakur (2014). Refugees are studied by Cortes (2004), Bevelander and Pendakur (2014), Lamba (2003) and Bloch (2008).

<sup>50</sup> Bratsberg (1995) and Rosenzweig (2008) are the only large-scale studies of 'student stayers' of which I am aware.

<sup>51</sup> Jayaweera (2013) and Cooper *et al.* (2014) present non-technical reports related to original motives using the same survey data.

<sup>52</sup> Studies using data on visa category include Husted *et al.* (2001) on Denmark; Aydemir (2011) on Canada; Bevelander and Pendakur (2014) on Canada and Sweden; Constant and Zimmerman (2005) and Constant and Zimmerman (2006) on Denmark and Germany.

Since the first quarter of 2010, a new question in the LFS has sought to identify the main reason that originally led foreign-born adults to migrate to the UK.<sup>53</sup> Respondents may give any of the following reasons:

1. *For employment*
2. *For study*
3. *To get married or form a civil partnership in the UK*
4. *As a spouse or dependent of a UK citizen or settled person*
5. *As a spouse or dependent of someone coming into the UK for work or study reasons or as a spouse or dependent of someone already in the UK*
6. *Seeking asylum*
7. *As a visitor*
8. *Other reasons*

I use the responses to this question to classify the original motives of immigrants.

For the purposes of this chapter, it is useful that the question captures expressed motives, rather than visa category. Visa category gives a clear indication of the legal environment faced by an immigrant, and can also provide clues as to her unobserved characteristics, but it is underlying motives that drive the immigrant self-selection process. It is also useful that the question allows the identification of immigrants with different motives who came from the same country and arrived at the same time. Several authors have used country of origin and year of arrival to indirectly infer refugee and economic immigrant status (Lindley, 2002; Edin *et al.*, 2003; Cortes, 2004; Kausar and Drinkwater, 2010), but this strategy has the potential to produce a large amount of measurement error in some countries, since immigrants arriving from the same country at the same time do not always have the same original motives (Bell *et al.*, 2013, make this point in relation to refugees in the UK).

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<sup>53</sup> This variable is currently only available on the ONS and Government Statistical Service versions of the LFS. Access to academic researchers is available via the UK Data Service Secure Lab, though currently only up to the end of 2013. Questions and responses are from ONS (2014b).

Some respondents may not give their true original intentions. This may be due either to accidental or deliberate misreporting, and I will discuss the potential impact of this kind of measurement error when estimating empirical models below. Respondents can also choose only one answer, when of course migration may be driven by a set of factors.<sup>54</sup> This reduces a potentially complex and multifaceted migration decision to a single-answer, multiple choice question. My analysis is therefore likely to simplify the role of motives somewhat, though this weakness seems unavoidable.<sup>55</sup>

To assess labour market performance, I use information on both employment and wages.<sup>56</sup> The LFS is designed to collect information on employment according to the International Labour Organisation (ILO) definition, and my use of the term therefore corresponds to this. The wage component of my analysis is based on a subsample: questions on wages in the LFS are only asked to employees (not the self-employed), and only to those interviewed in Waves 1 or 5. I use the ‘average gross hourly pay’ variable, which is calculated from the gross weekly pay reported by the respondent in their main job in the week ending the previous Sunday. This value is divided by their reported usual hours of regular work plus their usual paid overtime to produce the average hourly pay figure. Comparison with administrative sources suggests that the LFS tends to underestimate wages (see Fry and Ritchie, 2012, for a recent discussion of measurement error in the LFS wage estimates). I exclude those who report earning more than £99 per hour, in line with the recommendations of the data provider (ONS, 2014b: 299), and do not include any zero values.

The information I use on national identity comes from a question that has been included in the LFS since 2001. All adults (both native and foreign-born) are asked the question:

*How would you describe your national identity? Please choose all that apply*<sup>57</sup>

Respondents are asked to choose from a list of the constituent nationalities of the UK (‘English’, ‘Scottish’, ‘Welsh’, and ‘Northern Irish’), and additional categories for ‘British’ and ‘Other’. I group respondents who report a British national identity with those who report

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<sup>54</sup> See, for example, Gonzalez-Ferrer (2010), on the connections between work and family migration.

<sup>55</sup> See Luthra *et al.* (2014) for a study on recent EU immigrants from Poland, which uses a more detailed measure of original motives.

<sup>56</sup> For descriptions of occupational distribution and skill-level by original motive, see Cooper *et al.* (2014).

<sup>57</sup> Before 2011, the question was worded slightly differently: *What do you consider your national identity to be? Please choose as many as apply* (ONS, 2010).

any of the constituent national identities of Britain.<sup>58</sup> A proportion of respondents report multiple national identities: if one or more of those reported is British, then I also classify them as holding a British national identity, although I do also show the small proportion with ‘mixed’ British and foreign national identities in Section 4.4.2 below.<sup>59</sup> Respondents resident in Northern Ireland were not asked about their national identity until 2011, so the number of respondents from this part of the UK is slightly smaller than it would otherwise be.<sup>60</sup>

I cannot account for different respondents interpreting the national identity question in different ways: indeed, there could be substantial variation in what individuals understand by ‘national identity’. Much has been written on the social-psychological meaning of national identity (see, for example, Cinnirella, 1997; Kelman *et al.*, 1997; Esses *et al.*, 2001), but I do not seek to contribute to this literature. For the purposes of this chapter, it is enough to accept that variation in the uptake of a native national identity can inform us about the cultural characteristics of immigrants. This understanding of national identity is most explicitly promoted by Manning and Roy (2010), but it is also consistent with the theory and evidence elsewhere in the emerging economics of identity literature (Akerlof and Kranton, 2000; Battu *et al.*, 2007; Georgiadis and Manning, 2013).

Several authors have warned that the LFS question on national identity might be interpreted by respondents as a question about citizenship (Nandi and Platt, 2013: 5; Manning and Roy, 2010: F75; Georgiadis and Manning, 2013: 170), and there is a large over-lap between responses to the citizenship and identity questions in my analytical sample (around 80% of immigrants who are British citizens report a British national identity). I take account of this in robustness checks below, and find that controls for citizenship do attenuate my estimates of the association between original motives and national identity, although sizable and statistically significant differences remain. In defence of the survey question, empirical results in the UK have been broadly consistent regardless of the exact question on national identity (as noted by Platt, 2013: 9). It may also be the case that for some immigrants, legal citizenship facilitates the adoption

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<sup>58</sup> I do not address the relationship between British national identity and its constituent identities here, though it is extremely topical. See Nandi and Platt (2013) for recent empirical evidence that ethnic minorities feel more British than the ethnic majority, who tend to identify with their own country within the UK.

<sup>59</sup> The view from sociology is that assimilation into the host identity and out of home identity are two distinct processes (see the discussion in Nandi and Platt, 2013: 25-26). The results here are similar with or without including those with a ‘mixed’ national identity as British.

<sup>60</sup> Respondents resident in Northern Ireland are also given the additional option of declaring an ‘Irish’ national identity, which I classify as ‘foreign’, in contrast to a ‘Northern Irish’ identity, which I classify as ‘British’. Northern Ireland is not strictly part of Britain, but I include this identity as British, as the country is a constituent part of the UK.

of a British national identity in some psychological sense, as is suggested by the refugees interviewed in Stewart and Mulvey (2011: 60-62). These authors note a perceived “...need for official recognition of identity construction”. This would imply that legal citizenship is a mechanism explaining uptake of the native national identity, as well as something potentially confounded with it.

The inclusion of questions on labour market outcomes, original motives, and national identity, alongside information on a large set of demographic and human capital characteristics, make the LFS uniquely appropriate for this investigation. The large sample of immigrants in the survey is also useful for purposes of statistical inference.

#### **4.2.2 Who is included in the analytical sample?**

Most importantly, I focus on ‘settled’ immigrants, and exclude anyone who has been in the country for less than five years, thus reducing the final analytical sample size by just over 20%.<sup>61</sup> This step is necessary in order to remove short-term immigrants, who are likely to have quite distinct labour market characteristics and feelings of national affiliation, and are therefore not representative of the immigrants that go on to settle in the UK. I also restrict the sample to people who are aged between 21 and 65, and who arrived in the UK aged 16 or over. After these restrictions are applied, I have a full set of observations on labour market status, but I exclude those on whom I do not have national identity information (less than 2% of the total).

Table C1 in the Appendix compares the labour market characteristics of ‘recent’ immigrants (those who are within five years of arrival) with ‘settled’ immigrants (those who have been in the country for five years or longer). Recent student immigrants and refugees have particularly distinct characteristics, with, for example, fewer than 40% of male student immigrants employed, and around 25% of male refugees. These low proportions will partly be due to students being in full-time study, and to refugees being legally excluded from the labour market (see my discussion of refugees and asylum seekers below). My removal of those immigrants who are in their first five years therefore allows for a fairer comparison of outcomes between the motive groups. As would be expected, immigrants in their first five years are also unlikely to report a British national identity: around 3% of men and around 4% of women do so. Such early adoption of a British identity among immigrants may reflect existing family connections

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<sup>61</sup> Cooper *et al.* (2014) present demographic and labour market information by motive from the same dataset, using population weights, and without the sample restrictions I have applied here.

to the UK. The five year cut-off point is somewhat arbitrary, but coincides both with the residency requirement for those applying for permanent leave to remain in the UK, and for those who wish to acquire UK citizenship. The five year exclusion will have an impact on the sample via a selected outflow of different kinds of immigrant, which I discuss further below.

I use one observation per individual, and expand the number of individuals in the sample by allowing this observation to come from any of the five waves of the LFS.<sup>62</sup> I prioritise observations that appear in Wave 1, and then those that appear in Wave 5 of the survey, as these are the two waves of the LFS which contain wage information. Table C2 in the Appendix shows the ‘wave origins’ of the sample, demonstrating that the number of sampled individuals is increased by around 55% by drawing observations from all waves of the survey, compared to using the first wave alone.

Table 4.1 shows the composition of the sample by motive and gender, after these restrictions have been applied.

**Table 4.1: Sample by motive and gender, column %**

Motive	Men	Women	Total
Employment	43.1	26.0	33.7
Study	18.2	14.7	16.3
To get married/form a civil partnership	5.3	11.4	8.7
As a spouse/dep. of a UK citizen	7.8	17.2	13.0
As a spouse/dep. of someone coming to UK	4.5	13.1	9.3
Seeking asylum	9.1	5.3	7.0
As a visitor	3.4	4.4	4.0
Other reason	6.9	6.2	6.5
Missing/No answer	1.7	1.5	1.6
Total	100.0	100.0	100.0

Source: LFS 2010-2014. Notes: This table shows the initial sample by original motive and gender. The sample consists of 12,725 men and 15,665 women aged 21-64, who were born abroad, who arrived in the UK aged 16 or older, and who have been in the UK for at least five years. n=28,390.

This initial sample contains over 28 thousand immigrants. The largest motive group overall is immigrants who came for employment purposes, who make up just over a third of the sample. The next largest groups are those who came as student immigrants, and those who came as a spouse or dependent of a UK citizen, who each make up around a sixth of the sample. The biggest difference by gender is that a smaller proportion of women than men came seeking employment (26%, compared to 43% of men), and that a larger proportion of women than men

<sup>62</sup> I use the sample-expansion method described in Chapter 2.



came for one of the three family-related reasons ('To get married/form a civil partnership'; 'As a spouse/dependent of a UK citizen'; and 'As a spouse/dependent of someone coming to UK') (around 42%, compared to 18% of men).

I refer to those who say that they came for employment purposes as 'Work' immigrants, those who originally came to study as 'Student' immigrants, and those who came to seek asylum as 'Refugees'. Given that all the family-related motives suggest the decision to come to the UK was dependent on partners or relatives, I merge these three groups and call them all 'Family' immigrants. I discard those who gave the responses 'As a visitor' or 'Other reason', and thereby lose around 10% of the sample. I do so because those who give these responses are likely to be a very heterogeneous group. I also discard those who give no answer (under 2% of the total). This leaves me with four categories of immigrant: 'Work', 'Student', 'Family' and 'Refugee'. The sample is thus reduced to 24,959 respondents, of whom I have wage information on 9,423. I conduct most of the analysis in this chapter using this sample and subsample.

It may be helpful to clarify the legal distinction between an 'Asylum seeker' and a 'Refugee' in the UK: as I noted above, it is expressed motive rather than legal category that is of most interest for this chapter, but in the case of refugees, legal status makes an important difference in regard to the labour market. An 'Asylum seeker' is someone who arrived in the country independently, and has applied to remain in the country for humanitarian protection. Asylum seekers are not usually allowed to work in the UK, or to claim government welfare benefits, though they are sometimes eligible to receive state support (see Home Office, 2014a).<sup>63</sup> Since 1999, 'Asylum seekers' have also been subject to compulsory geographical dispersal in the UK.<sup>64</sup> A 'Refugee' is someone who has either arrived as part of a refugee resettlement programme, and has therefore been recognised as a refugee by the United Nations High Commissioner for Refugees (UNHCR), or is a previous asylum seeker, who has been recognised as a refugee by the UK government. Refugees are allowed to work and claim benefits in the UK. The majority of refugees in the sample will have been granted indefinite leave to remain in the country.<sup>65</sup>

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<sup>63</sup> Non-EU student and family immigrants also typically face some initial restrictions on their employment rights or access to benefits, although neither group are restricted as completely or for as long as asylum seekers.

<sup>64</sup> For a discussion of the modern history of dispersal in the UK, see Bloch and Schuster (2005).

<sup>65</sup> Since August 2005, refugee status has been granted only for five years, with the expectation of a review at the end of that period (this does not apply to refugees who have been resettled by the UNHCR) (Home Office, 2005). Since those in the sample were interviewed over 2010-2014, and those who have been in the country for less than five years are excluded, most in the sample will not have been affected by this change.

I call all immigrants who report having come to the UK to seek asylum ‘Refugees’. This may include a proportion who are legally ‘Asylum seekers’, but I do not use the term in a strict legal sense. Given that I have excluded anyone in their first five years in the country, the proportion who are legally ‘Asylum seekers’ is likely to be relatively small: Cebulla *et al.* (2010) report that between 2005-2007, around a fifth of asylum seekers had been in the country for five or more years at the time of the decision on their legal status. Further, as the Office for National Statistics (2007) point out, some asylum seekers live in communal accommodation that is not covered by the LFS, while those who live in eligible households may be affected by communication barriers or reluctance to take part in government surveys more than other immigrant groups.

#### **4.2.3 Who is most likely to leave the country?**

The sample I use is drawn from the immigrant ‘stock’ in the UK. I am only able to observe outcomes for those immigrants who have stayed in the country, and I wilfully exclude those who have stayed for less than five years. Many immigrants will return to their home countries over time, and some will move on to different countries after a period in the UK. This process will be non-random, and so the immigrant stock I observe will be selected on outflow as well as on inflow. There is no comprehensive data-source on the rates of immigrant outflow by original motive, but for immigrants from outside the European Economic Area (EEA), it is possible to make some inferences about outflows by legal migration category from administrative data on entry visas and subsequent changes or extensions to these visas.

The UK government has published a series of reports which examine the legal trajectories of non-EEA immigrants by original visa category (Achato *et al.*, 2010; Achato *et al.*, 2011; Home Office, 2013; Home Office, 2014b). For example, in the 2014 report, which examines a cohort of immigrants who arrived in 2007, the authors find that around 33% of those with skilled-work visas remain legally in the country after five years, compared to 7% of those with temporary work visas, two thirds of those with family visas, and 15% of those with student visas (the figures are similar for other cohorts). These figures can be regarded as lower-bounds, since it is not possible to account for those who over-stay their visas illegally, but at least the visa information gives a sense of the relative outflow rates for non-EEA immigrants in the first

five years: family immigrants are the most likely to stay,<sup>66</sup> while student immigrants are the least likely. There is heterogeneity among work immigrants, some of whom have only temporary visas and are unlikely to stay, while the more skilled are more likely to stay. There are no equivalent data on outflow of refugees, but some who are still legal ‘Asylum seekers’ will have to leave the country if their application for refugee status eventually fails. However, once legal status has been granted, refugees seem likely to stay on in the country for a substantial period of time, since, by definition, a return to the home country is difficult or impossible (Cortes, 2004, makes this argument in relation to refugees in the USA).

For EEA immigrants, there is no comparable information available on outflow by visa category, since visas are not required to migrate within the EEA. The Long-Term International Migration (LTIM) survey data (ONS, 2014c) do cover the motive for *emigration* of EEA immigrants leaving the UK, but this does not necessarily bear any relation to the original motive for migration. For example, someone who came to the UK for employment purposes could just as easily leave the country for family reasons. In general, we might expect the outflow of EEA immigrants by motive to be similar to that of non-EEA immigrants: family immigrants are less likely to want to leave, while work and student immigrants are more likely.<sup>67</sup> The lower travel and administrative costs of migration within the EEA imply that both inflows and outflows of EEA immigrants will be greater and less selected in general (see the discussion on European migration costs and self-selection in Chapter 2).

### **4.3 Do original motives matter for employment and wages?**

#### **4.3.1 How might original motives matter for employment and wages?**

Work immigrants should outperform other motive groups on the labour market, once observed demographic and human characteristics have been accounted for. This follows from the most straightforward human capital analysis of migration, the logic of which dictates that people with stronger labour market characteristics from the population of a home country will find migration a more profitable enterprise, and will therefore have a higher propensity to migrate. Further, for a move to be profitable, those who face higher direct costs of migration must be more favourably self-selected than others, and have a lower propensity to return to their origin

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<sup>66</sup> See Bijwaard and van Doeselaar (2014) for evidence on the role of divorce and remarriage on the propensity for return migration among family immigrants in the Netherlands.

<sup>67</sup> There are a few immigrants in the sample from inside the EU who arrived as refugees, all of whom will have arrived during World War II, or the communist era that followed.

country (see Chiswick, 1999: 181-182).<sup>68</sup> By this reasoning, work immigrants will be the most favourably self-selected group on inflow, and the favourable characteristics of the stock are likely to be intensified by the relatively high outflow I have noted in the visa data cited above. Such characteristics would be reflected in a higher employment propensity and higher wages than other motive groups.

Student immigrants who settle in the UK are likely to be more heterogeneous in their labour market abilities than work immigrants, since work is not the explicit motive for migration. However, like work immigrants, students migrate of their own volition, and many of those who stay will have had post-study work in mind when they migrated, which makes the same favourable self-selection mechanisms at least partly applicable. To the extent that more education tends to be accumulated by the more able, we can expect the gap in labour market ability between student and work immigrants to be attenuated. However, the high rate of outflow in this group makes it difficult to form expectations about the characteristics of the remaining stock. Those who took the prospect of remaining in the country into account when migrating are likely to be similar to work immigrants in their characteristics. Others will have stayed on after studying for more idiosyncratic reasons, such as to get married or to gain experience living abroad, and therefore give less reason to expect unusual labour market talent.<sup>69</sup> The net effect of the immigrant outflow on the characteristics of the student immigrant stock is therefore ambiguous.

Family immigrants are likely to perform less well on the labour market than either work or student immigrants. The self-selection mechanism will be weaker in this group, since the migration decision was dependent on partners or relatives, and priorities of family immigrants in the host country are less likely to revolve around work. In particular, female family immigrants may be more engaged with family activity and less likely to participate in the labour market (Reimers, 1985; Duleep and Sanders, 1993; Cobb-Clark and Connolly 2001). However, several authors have noted that family immigrants are likely to have an information advantage over other types of migrant: family networks already in the host country can provide information about the host society and labour market that may be unavailable to other types of immigrant (Jasso and Rosenzweig, 1995: 86; Aydemir, 2011: 453). The existing empirical evidence suggests that such networks tend to improve employment prospects by aiding job

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<sup>68</sup> On the selectivity of return migration, also see Constant and Massey (2002), Dustmann and Weiss (2007) and Dustmann *et al.* (2011).

<sup>69</sup> See Bijwaard and Wang (2013) for recent evidence on the factors which induce student immigrants to stay on in the Netherlands.

search, though they may result in lower quality employment (Battu *et al.* 2011). We may therefore expect to see family immigrants earning lower wages than work or student immigrants.

I expect refugees to have the worst labour market experiences of any motive group, since they have several factors acting against them: the self-selection mechanism will be weakest in this group, since migration is essentially forced. There is no reason why priorities in the host country should revolve around work, and many members of this group would have been excluded from the labour market for some period on arrival in country, since, as I noted above, asylum seekers are not usually allowed to work until refugee status has been granted. Bloch (2008) suggests that this legal exclusion could produce labour market scarring effects. The low proportion of settled refugees who will leave the country means that the average ability of the stock will not be improved by a negatively selected outflow. There is some evidence that refugees make extensive use of family and social networks when seeking work, but that, as with family immigrants, this may lead to lower quality employment (Bloch, 2008; Cebulla *et al.*, 2010). Several authors have also suggested that refugees face a particularly high level of labour market discrimination (Husted *et al.*, 2001: 59; Lamba, 2003: 46; Bloch, 2008: 31).

#### **4.3.2 Are there any differences in employment and wages by original motive?**

I show the proportion of immigrants employed, unemployed, and inactive in Table 4.2, along with median hourly wages, by gender and original motive.<sup>70</sup> In order to get a more detailed picture of the factors driving non-employment, I split economic inactivity into four categories: those inactive for reasons relating to study, those having family or home responsibilities, those inactive due to poor health or disability, and those inactive for other reasons.<sup>71</sup> The total figures for the immigrant sample broadly correspond with those reported in other studies (for example, Dustmann and Fabbri, 2005; Algan *et al.* 2010).

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<sup>70</sup> Wages are adjusted monthly for inflation using the Consumer Prices Index (ONS, 2014a), with January 2010 as the reference month.

<sup>71</sup> Note that some respondents who are economically inactive for each of these reasons do express a desire to work, but are not currently actively searching, so do not meet the ILO criteria for 'unemployed'.

**Table 4.2: Labour market status and median wages, by original motive and gender, column % and £ per hour**

	Motive				Total
	Work	Student	Family	Refugee	
<b>Men</b>					
Employee	69.8	69.9	61.3	48.4	65.9
Self-employed	18.9	13.9	20.0	16.3	17.8
Unemployed	4.0	5.2	6.2	13.8	5.7
Inactive (study)	0.3	5.4	1.0	1.4	1.6
Inactive (home-maker)	0.7	0.6	1.7	2.1	1.1
Inactive (health/disab.)	3.8	1.9	6.4	11.8	4.7
Inactive (other)	2.6	3.1	3.4	6.3	3.2
Total	100.0	100.0	100.0	100.0	100.0
Median hourly wage (£)	10.0	13.7	8.0	6.7	9.8
<b>Women</b>					
Employee	72.2	64.6	41.7	27.3	53.7
Self-employed	8.3	8.5	5.9	2.9	6.9
Unemployed	3.9	4.8	5.4	10.7	5.2
Inactive (study)	0.8	6.1	1.5	4.8	2.3
Inactive (home-maker)	8.9	9.2	31.9	34.6	21.4
Inactive (health/disab.)	1.9	1.5	5.6	12.6	4.3
Inactive (other)	4.0	5.3	8.0	7.2	6.3
Total	100.0	100.0	100.0	100.0	100.0
Median hourly wage (£)	9.5	11.9	8.0	6.5	9.2

Source: LFS 2010-2014. Notes: This table shows the proportion of the sample with each labour market status, and median hourly wages (at January 2010 prices), by original motive and gender. The 'labour market status' sample consists of 11,197 men and 13,762 women aged 21-64, who were born abroad, who arrived in the UK as adults, and who have been in the UK for at least five years. n=24,959. The 'median hourly wages' subsample consists of 4,580 men and 4,843 women who were interviewed in Waves 1 or 5 of the LFS, are employees, and provided wage information. n=9,423.

Within the sample of male immigrants, over-all employment and wages are highest among those who migrated for work, with 89% either employed or self-employed, and a median hourly wage of £10. Male student immigrants have similarly high over-all employment rates, and the highest median hourly wages, at just under £14. Male family immigrants are paid much less than work or student immigrants on average, at £8 per hour, although they have similar overall employment rates. Male refugees have the lowest wages, at under £7, and a particularly high rate of unemployment (at nearly 14%, compared to a sample average of 6%). Among UK-born men in the same age range and time frame, 80% are employed or self-employed, 6% are unemployed, and the median hourly wage is £11.<sup>72</sup>

Within the sample of female immigrants, over-all employment is again highest among work immigrants, with 80% either employed or self-employed, and median hourly wages are highest among student immigrants, at £12. Compared to the other motive groups, female family immigrants and refugees have much lower rates of over-all employment (48% and 30%

<sup>72</sup> I have drawn these figures from the same quarters of the LFS for purposes of comparison, but the UK-born do not feature in the main analytical sample.

respectively), and much lower median hourly wages (£8 and £7). Among UK-born women in the same age range and time frame, 68% are employed or self-employed, 4% are unemployed, and the median hourly wage is £9.

It is worth noting that inactivity due to health problems or disability is particularly high among both male and female refugees, at 12% and 13% respectively, compared to sample averages of 5% and 4%. Bloch (2008) and Cebulla *et al.* (2010) also report poor health among refugees, and both argue that it may explain some of the employment difficulties faced by this group. Such health problems may be associated with the persecution of refugees in their home countries, or with adjustment difficulties after migration, though they are also consistent with lower selectivity on health (see Jasso *et al.*, 2004, for a discussion of immigrant selection on health, and heterogeneity in the ‘healthy immigrant effect’).<sup>73</sup>

#### **4.3.3 Are these differences in employment and wages explained by other observed characteristics?**

The differences apparent in Table 4.2 are broadly consistent with my prior expectations about the relationship between original motives, employment, and wages, but may also be explained by variation in other characteristics. Table C3 in the Appendix shows some of the relevant demographic and human capital characteristics. Age, location, and qualifications are standard variables which affect labour market outcomes, and on which immigrants driven by different motives may differ. Given the factors apparently driving inactivity in Table 4.2, I show the proportion in full-time education, the proportion who are single or joint parents of dependent children, and the proportion who report health problems that affect either the type or amount of paid work they undertake. I also show the proportion of the sample from each international region of origin by motive. This regional information gives a broad approximation of the origins of people in the sample, but I will account for origins more comprehensively in the statistical models below. Of course, a person’s geographic origins do not directly determine labour market outcomes, but they do proxy for various potentially influential characteristics, including ethnicity, religion, and speaking English as a first or second language. Table C3 also shows information on the average age at arrival, which I return to when discussing national identity in Section 4.4.

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<sup>73</sup> There is a clinical literature on the health of refugees: see Burnett and Peel (2001) for a short review.

In Table C4 in the Appendix, I show distributional information on ‘Years since migration’ by motive (recalling that the sample contains no one who has been in the UK for fewer than five years). This is a crucial factor in immigrant labour market assimilation: a large literature in economics shows that labour market performance improves with years since migration, as country-specific skills are acquired, and skills attained abroad are adapted for the host environment (for example, Chiswick, 1978; LaLonde and Topel, 1991; Clark and Lindley, 2009).

The average characteristics of work immigrants are similar to those for the sample as a whole: aged around 41, a third in London, around 40% graduates, and in the country for an average of around 9 years. Student immigrants are better qualified than the average, as would be expected, and a greater proportion have been in the UK for longer than the other groups. Around 10% of both male and female student immigrants are in full-time education (this is a high proportion, recalling that none in the sample arrived in the last five years). Family immigrants are less well qualified but also tend to have been in the UK for longer than the other groups. More than a third of refugees have no qualifications, and they tend to have been in the UK for a shorter time. More than 15% of family immigrants are affected by work-impeding health problems, as are more than a quarter of refugees. Around half of work immigrants come from either the A8 or the EU15 countries, while most family immigrants and refugees come from African or Asian countries.

Using these characteristics as control variables, alongside dummies for each original motive, I estimate binomial probit models of immigrant employment. Given gender differences in the determinants of employment, I estimate the models separately for men and women. The models take the form:

$$\begin{aligned}
 \text{prob}(\text{EMPLOYED}_i = 1) = \Phi & (\alpha + \beta_1 \text{STUDENT}_i + \beta_2 \text{FAMILY}_i + \beta_3 \text{REFUGEE}_i + \\
 & \beta_4 \text{YSM}_i + \beta_5 \text{STUDENT}_i * \text{YSM}_i + \beta_6 \text{FAMILY}_i * \text{YSM}_i + \beta_7 \text{REFUGEE}_i * \text{YSM}_i + \\
 & \gamma X_i)
 \end{aligned} \tag{1}$$

where *EMPLOYED* is a dummy variable taking a value of 1 if individual *i* is employed. *STUDENT*, *FAMILY*, and *REFUGEE* are dummy variables for each original motive group (with work immigrants acting as the reference group). I use a linear term for years since



migration ('YSM'), and interact the YSM variable with each of the motive dummies, to allow trajectories of employment assimilation to vary by motive. I centre the interaction terms using the median of YSM for each group, so the motive dummies should be interpreted as the conditional association of the respective motive with employment, relative to work immigrants, at the median years since migration.

$X$  represents a vector of the control variables discussed above, specifically: highest qualification (5 dummies in total: non-graduate, graduate, and postgraduate qualifications attained in the UK, and non-graduate and graduate qualifications attained abroad, with 'no qualifications' as the reference category), parental status (dummies for single parents and joint parents, with the childless acting as the reference group), location (a dummy for those that live in London), student status (a dummy for those that are full-time students), and health (a dummy for those with health problems affecting either the type or quantity of work they undertake). I include age and its square, to allow for employment to rise and then decline over the lifecycle.<sup>74</sup> Given the likely importance of factors relating to country of origin, I also include 36 origin dummies: 29 dummies for the most prevalent countries of origin in the data (which, when combined with the reference category, cover 75% of the sample), plus 6 dummies for country groups to cover the rest ('Other A8', 'Other Africa', 'Other Americas', 'Other Asia', 'Other EU15', 'Born elsewhere').<sup>75</sup> Poland, the modal origin country in the data, acts as the reference category. I also include year dummies to account for broader changes in the labour market over 2010-2014. The main parameter estimates of interest are  $\beta_1$ ,  $\beta_2$ , and  $\beta_3$ , which give the change in the probit index for employment associated with each original motive group, relative to work immigrants, conditional on the included control variables.

To assess how well employment is rewarded for immigrants with different original motives, I also estimate wage equations, including the same controls as above. As before, given gender differences in the determinants of wages, I estimate models separately for men and women. The wage equations take the form:

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<sup>74</sup> Age and YSM are highly correlated (0.74), but I include both since they have distinct implications for immigrants on the labour market.

<sup>75</sup> Full list of origin variables: Afghanistan, Australia, Bangladesh, China, France, Germany, Ghana, India, Iran, Iraq, Ireland, Italy, Jamaica, Kenya, Lithuania, New Zealand, Nigeria, Pakistan, Philippines, Poland, Portugal, Romania, Slovakia, Somalia, South Africa, Spain, Sri Lanka, Turkey, United States, Zimbabwe, Other A8, Other Africa, Other Americas, Other Asia, Other EU15, Born elsewhere.

$$\ln(w_i) = \alpha + \beta_1 STUDENT_i + \beta_2 FAMILY_i + \beta_3 REFUGEE_i + \beta_4 YSM_i + \beta_5 STUDENT_i * YSM_i + \beta_6 FAMILY_i * YSM_i + \beta_7 REFUGEE_i * YSM_i + \gamma X_i + u_i \quad (2)$$

where  $w_i$  represents the wage of individual  $i$ ,  $u_i$  is an error term, and the other variables are labelled as in equation (1). As with the employment models, I allow the wage trajectory to vary between groups by including interactions between each motive group and YSM (with these interactions centred as before).  $\beta_1$ ,  $\beta_2$ , and  $\beta_3$  therefore give the conditional association between each original motive and log wages, at the median years since migration, relative to work immigrants.

I have mentioned above that the self-reported motives of immigrants are likely to be measured with error. However, any such error seems unlikely to be random, particularly if some proportion of it is due to deliberate misreporting. For example, if more favourable visa requirements lead a proportion of non-EU immigrants to report having been family immigrants when they really migrated primarily to work, then this error would have a systematic component. As such, it is difficult to judge the effect of the measurement error on my estimates.

Ideally, I would cluster standard errors at the household level, since the characteristics of immigrants within the same household are likely to be correlated. Unfortunately, although the LFS is a household survey, the available data do not allow individuals to be linked to households, making clustering at this level impossible: the standard errors I present are therefore likely to be underestimates.<sup>76</sup> Estimates that are near the conventional margins of statistical significance should be interpreted with caution. In the absence of an appropriate identifying instrument, I do not include controls for selection into employment in the wage equations.

The columns labelled ‘A’ in Table 4.3 show the key estimates from running models (1) and (2) with only controls for year. The columns labelled ‘B’ show the estimates after the full set of controls have been introduced, and the columns labelled ‘C’ show the estimates after interactions between each motive group and ‘years since migration’ have been introduced. The

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<sup>76</sup> It has not been possible to create a household identifier for the individual-level LFS data since the end of 2010. A household version of the LFS is available, but does not contain the full set of variables required for this analysis.

coefficients and standard errors are multiplied by 100, and the full results are presented in Tables C5 and C6 in the Appendix.

**Table 4.3: Selected parameter estimates from models of employment and wages by gender**

**a) Employment**

	Probit models of employment					
	Men			Women		
	A	B	C	A	B	C
Motives						
Work	(REF)					
Student	-22.1 (3.8)	-7.1 (5.2)	-15.3 (5.6)	-24.2 (3.6)	-15.0 (4.3)	-18.7 (4.5)
Family	-31.9 (3.8)	-18.7 (4.8)	-24.0 (5.2)	-91.9 (2.7)	-51.6 (3.3)	-53.9 (3.4)
Refugee	-83.0 (4.4)	-53.8 (6.2)	-63.3 (6.4)	-137.6 (5.1)	-79.3 (6.4)	-87.0 (6.6)
Yrs since migration						
YSM		0.6 (0.3)	-0.3 (0.3)		-0.1 (0.2)	-1.8 (0.3)
Student*YSM			1.6 (0.4)			1.7 (0.4)
Family*YSM			1.0 (0.4)			2.0 (0.3)
Refugee*YSM			3.9 (0.7)			4.9 (0.8)
Other controls	No	Yes	Yes	No	Yes	Yes
Interactions	No	No	Yes	No	No	Yes
Intercept	126.9 (5.8)	-144.6 (27.9)	-118.4 (28.5)	93.1 (4.8)	-302.1 (21.2)	275.7 (21.6)
Means	83.7	83.7	83.7	60.6	60.6	60.6

## b) Wages

	Log wage equations					
	Men			Women		
	A	B	C	A	B	C
Motives						
Work						
Student	15.1 (2.3)	-2.2 (2.3)	-4.2 (2.4)	14.8 (3.5)	0.0 (2.2)	-1.5 (2.3)
Family	-25.1 (2.4)	-27.0 (2.3)	-26.9 (2.3)	-13.2 (1.9)	-17.9 (1.8)	-17.2 (1.8)
Refugee	-46.0 (3.5)	-36.1 (3.8)	-36.9 (3.9)	-29.9 (4.8)	-30.2 (4.7)	-33.4 (4.9)
Yrs since migration						
YSM		0.6 (0.1)	0.3 (0.2)		0.6 (0.7)	0.5 (0.2)
Student*YSM			0.9 (0.2)			0.5 (0.2)
Family*YSM			0.2 (0.2)			-0.1 (0.2)
Refugee*YSM			0.9 (0.5)			1.3 (0.6)
Other controls	No	Yes	Yes	No	Yes	Yes
Interactions	No	No	Yes	No	No	Yes
Intercept (All/100)	240.1 (3.6)	78.3 (14.5)	86.1 (-14.6)	225.6 (3.5)	75.5 (13.7)	78.9 (13.8)
Means	2.4	2.4	2.4	2.3	2.3	2.3

Source: LFS 2010-2014. Notes: This table shows selected parameter estimates from models of employment and wages by gender. Standard errors are in parentheses. Coefficients and standard errors are all multiplied by 100. The results in columns labelled 'A' are from models with only controls for year. The results in columns labelled 'B' are from models which also have controls for age, age squared, country of origin, highest qualification, location, health status, and parental status. The columns labelled 'C' are from models which also contain interactions between each original motive and years since migration. The employment sample consists of 11,197 men and 13,762 women aged 21-64, who were born abroad, who arrived in the UK as adults, and who have been in the UK for at least five years. n=24,959. The wage equation subsample consists of 4,580 men and 4,843 women who were interviewed in Waves 1 or 5 of the LFS, are employees, and provided wage information. n=9,423.

Comparing columns A and B in the probit models of employment, introducing the control variables attenuates all of the main effects, but the signs do not change, and they remain statistically significant at conventional levels. This suggests that the differences in employment propensity between the motive groups are only partially explained by the quite distinct characteristics of the groups. For male family immigrants and refugees, the differences become greater again after introducing interaction terms in column C.

In the log wage equations, introducing controls and interactions does not greatly alter most of the main effects, although the relative wage penalty faced by male refugees is attenuated, and

the relative wage penalty faced by family immigrants is increased. The largest impact of introducing controls is on the estimates for student immigrants: both male and female student immigrants enjoy a large wage premium over other motive groups in Column A, but these effectively vanish when controls and interactions are introduced in Columns B and C. This suggests the wage advantage enjoyed by student immigrants over work immigrants is explained by their distinctive characteristics.

For the employment probits with the full set of controls and interactions in Column C, I also calculate the marginal impact of each different motive relative to a reference individual: a work immigrant living in London, whose highest qualification is from abroad and is below degree level, who is from Pakistan, aged 35, in a couple, living with children, and has been in the UK for 10 years. These are not the mean characteristics in the sample, but I choose this reference individual since he or she could plausibly be in any of the motive categories. I refer to these marginal effects in the discussion that follows.

#### **4.3.4 What do these results mean for immigrants in the labour market?**

In line with my expectations, and indeed with much of the theoretical and empirical literature in this area, both male and female work immigrants who have settled in the UK are more economically integrated than those driven by other motives: no other motive group has a higher conditional probability of employment or higher wages. Crucially, work immigrants are not only strong labour market performers because of where they are from or how long they have been in the country: the fact that they were motivated by work is associated with improved performance independent of these and other relevant characteristics. This is consistent with favourable self-selection on labour market ability and motivation.

Student immigrants are not far behind work immigrants on either employment propensity or wages, which suggests similar selectivity. Indeed, the wages of both male and female student immigrants are statistically indistinguishable from those of work immigrants after introducing controls. However, both male and female student immigrants do have a lower employment propensity (2 percentage points lower compared to the reference individual for men, 9 percentage points lower for women). This may be due to more heterogeneity in the intentions and labour market abilities of student immigrants.

Male family immigrants are also relatively close to work immigrants on employment propensity: a male family immigrant is only 3 percentage points less likely to be employed

than the reference work immigrant. However, the wage penalty faced by male family immigrants compared to work immigrants is high (24%). Lower wages are consistent with the anticipated lower degree of self-selection on labour market ability. Female family immigrants are much less economically integrated than their male counterparts, and this may be due to a stronger orientation towards family activities. They are 21 percentage points less likely to be employed than the reference female work immigrant with identical observed characteristics, and those who are employed earn 16% less. This is in line with lower selectivity and reduced focus on the labour market.

As expected, refugees have the worst labour market experiences of any of the motive groups, and the scale of disadvantage is striking: refugees of both sexes are far behind on employment propensity and wages. A male refugee is 13 percentage points less likely to be employed than the reference individual with otherwise identical characteristics, while female refugees are 29 percentage points less likely to be employed. Male refugee employees earn 31% less than male work immigrants, while female refugees earn 28% less than female work immigrants. It is worth reiterating that these differences are not driven by where refugees come from, how long they have been in the UK, or any of the other characteristics included in the models (including the high proportion with no qualifications, and the high proportion who suffer from work-impeding health problems): they are independently associated with the refugee motive. These results are in line with weak self-selection, less focus on labour market outcomes, possible labour market scarring, discrimination, and a low degree of selection on outflow.

Using the parameter estimates for the impact of ‘Years since migration’ and associated interaction effects, I have also calculated predicted probabilities of employment and predicted hourly wages over years since migration: these are displayed in Figures C1 and C2 in the Appendix. They should be interpreted as probabilities for the same reference individual as the marginal effects above, except in this case the probabilities are absolute rather than relative to work immigrants. The charts extend to 30 years since migration, which would cover around 90% of the sample. All of the trajectories are statistically distinct, except the slopes for female work and family immigrants’ wages. The refugee group shows an increase in employment propensity and wages over ‘years since migration’. However, since the models do not include controls for immigrant cohort, these should not be interpreted as assimilation trajectories. These results support my assertion that original motives are critical for understanding immigrant labour market behaviour. The strong performance of work immigrants, and to a lesser extent

student and male family immigrants, contrasts with that of female family immigrants and particularly refugees.

### ***Possible mechanisms: Networks and English language ability***

How exactly are these different original motives affecting employment and wages? Many of the precise mechanisms will be unobservable, but the LFS contains limited information on two possible mechanisms that may give some indication: use of networks to find employment, and English language ability.

I have noted above that family immigrants and refugees are thought to make increased use of family and social networks to find work, and that this has been linked to lower quality employment in these groups. There is information in the LFS on how any respondents looking for work are doing so (regardless of their current labour market status),<sup>77</sup> and also on how employed respondents found their current job (this is only asked to those who got their job in the last year).<sup>78</sup> Tables C7 and C8 in the Appendix show some of the responses to these questions by gender and original motive.

When looking for work, male family immigrants and refugees are the most intensive users of family and social networks, with 11% and 13% reporting that their main method of looking for work was ‘Asking friends, relatives, colleagues or trade unions about jobs’. However, male work immigrants are only slightly less likely to use such networks, with just under 11% reporting this as their main method. Among those who are asked how they found their current job, male family immigrants and refugees again seem the most likely to have used networks, with 34% and 40% reporting that they found their job by ‘Hearing from someone who worked there’. Work immigrants are slightly less likely to have found their job in this way, with 29% reporting that they did so.

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<sup>77</sup> This question is: *Did you do any of these things...? (1) Visit a Jobcentre/Job-market or Jobs and Benefits Centres (2) Visit a Careers Office (3) Visit a Jobclub (4) Have name on the books of a private employment agency (5) Advertise for jobs in newspapers, journals or on the internet (6) Answer advertisements in newspapers, journals or on the internet (7) Study situations vacant columns in newspapers journals, or on the internet (8) Apply directly to employers (9) Ask friends, relatives, colleagues or trade unions about jobs (10) Wait for the results of an application for a job (14) Do anything else to find work.* (ONS, 2014b)

<sup>78</sup> The question is: *Did you get the work that you are doing through...(1) Replying to a job advertisement? (2) A JobCentre/Jobmarket or Training Employment Agency Office? (3) A Careers/Connexions Office? (4) A JobClub? (5) A private employment agency or business? (6) Hearing from someone who worked there? (7) A direct application? (8) Or in some other way?* (ONS, 2014b).

To estimate the wage associations of finding work through networks for different motive groups, I run model (2) on the subset of the sample for whom I have job-finding information, and add a dummy equal to one if the current job was found through ‘Hearing from someone who worked there’. The main parameter estimates from this subsample are qualitatively similar to those from using the full sample. Without introducing other controls, I find that men who found their job in this way earn lower wages (18% lower), and that the estimated wages penalties faced by family immigrants and refugees relative to work immigrants fall by 1 and 2 percentage points respectively when finding work in this way is accounted for. Repeating this test using the full set of controls, the wage penalties faced by family immigrants and refugees still fall, though by less than 1 percentage point. Among women, the effect of this dummy on the main estimates is similar to that for men. This suggests that the association between use of networks and wages is mostly explained by the other control variables, though a modest independent association remains.

Language ability is also important for labour market success among immigrants (see Dustmann and Fabbri, 2003), so if there were systematic variation in language ability by original motive, this could explain some of the variation in labour market outcomes. Some questions on language ability are included in one quarter of the LFS every three years – so I am able to use the five waves of data from the third quarter of 2012 to examine the level of ability by original motive. I apply the same restrictions to this sample as detailed above, but it is a distinct sample, and not all cases within it are in the main analytical sample (since the construction of the main sample prioritises wage information – see the discussion in Section 4.2.2, above). Table C9 in the Appendix shows responses to the three language-related questions by original motive and gender: they cover first language at home, language difficulties in finding or keeping a job, and language difficulties in education.<sup>79</sup>

In order to get a sense of the extent to which these differences in language ability are associated with labour market outcomes, I run OLS models of log wages on the sample with language information, with dummies for the different motive groups, and both with and without a dummy for ‘language difficulties in finding or keeping a job’. The main parameter estimates from these models are qualitatively similar to those from using the full sample, although the small sample size does not allow for the inclusion of controls beyond dummies for international

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<sup>79</sup> The questions are: (i) *What is your first language at home?* (ii) *Have you experienced any language difficulties that have caused problems in finding or keeping a job?* (iii) *Have you experienced any language difficulties that have caused problems with your education?* (ONS, 2014b)



region of origin.<sup>80</sup> Without these origin controls, men who report language difficulties in finding or keeping a job earn 37% less than those who do not, and controlling for language difficulties reduces the earnings penalty for male refugees relative to work immigrants by nearly 3 percentage points. For male family immigrants, the equivalent earnings penalty falls by 1 percentage point. The size of the language penalty and the effect of accounting for language difficulties is similar after introducing controls for international region of origin.

The subgroup analyses I have conducted here confirm findings from elsewhere that use of family and social networks and language difficulties are associated with labour market outcomes among immigrants, and there are some indications that they may help to explain differences by original motive. However, it appears that most of the differences by original motive are driven by unobserved characteristics.

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<sup>80</sup> Dummies for those born in Africa, the Americas, Asia, EU15 countries, and those born elsewhere, with those born in A8 countries as the reference group.

## **4.4. Do original motives matter for national identity?**

### **4.4.1 How might original motives matter for national identity?**

Adopting a new national identity should be much easier than relocating across international borders. There are no financial or administrative costs associated with it, and no requirement to change one's behaviour in response. However, when asked, most settled immigrants report that they have not taken up the national identity of their host country: psychological location is clearly more resistant to change than country of residence.

Why might an immigrant take up a British national identity? The emerging view in economics is that adopting a new national identity is psychologically costly, and will therefore make sense only for those who find the investment particularly rewarding. I noted above that national identity is a concept closely related to legal citizenship, and Manning and Roy (2010: F93) find that immigrants from outside the EEA are more likely to report a British national identity than those from within. This may be because those from outside the EEA have much stronger incentives to take-up legal citizenship,<sup>81</sup> and this in turn leads to a stronger sense of attachment to the host country. The same authors also find that immigrants from Commonwealth countries are more likely to identify with Britain than those from countries without such strong historical links. We know from other empirical work that those who feel they have faced discrimination in the host society are less likely to adopt the native national identity (Georgiadis and Manning, 2013: 176; Platt, 2014: 66), and that those who have lived for a longer time in the host country are more likely to adopt the national identity (Dustmann, 1996: 44-45; Manning and Roy, 2010: F90; Platt, 2014: 56).

These results have an intuitive appeal: adopting a British identity is clearly more rewarding for those with legal citizenship, those who are from a Commonwealth country, and those who have lived in the country for a longer time. It is less rewarding for those who feel they have faced discrimination. However, these factors do not explain one important feature of the evidence on variation in uptake of a British national identity among immigrants: that it is those from the most culturally distinct countries that are most likely to report feeling British.

Explaining their own empirical results on national identity, Manning and Roy (2010: F94-F96) suggest that adoption of the native national identity is used as a psychological adjustment mechanism by immigrants from countries that are more culturally distant from the host country,

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<sup>81</sup> EEA nationals are allowed access to the UK labour market, whereas non-EEA nationals can only enjoy the same rights by taking up an EEA citizenship.

who are thereby able to compensate partially for their own cultural differences. In this theory, immigrants potentially suffer from two psychological losses in the host country relating to their culture and identity: there is one loss from being culturally distinctive, and a second from ‘betraying’ their home country by adopting the host identity. An immigrant can feel better about her cultural distinctiveness by adopting the host identity, but this comes at the cost of betraying her home identity. Those from culturally similar countries therefore have little to gain by adopting the host identity, and have less incentive to endure the psychological costs of betraying their home identity. However, those from culturally very distinctive countries have a much stronger incentive to adopt the host national identity, as a way to engage with the host society in the absence of strong behavioural affinities.

This ‘cultural distance’ theory is consistent with the traditional notion of national identity as a device which unites behaviourally diverse groups in a multicultural society.<sup>82</sup> If a national identity is functioning well, then the most culturally distinct immigrants will be most inclined to adopt it: this is one of the factors that helps diverse societies to cohere.

What would the theory imply for the importance of original motives in determining uptake of the native national identity? While cultural distance may explain much variation in uptake of national identity at a ‘country of origin’ level, within any origin country group there will be individuals who are more or less culturally adaptive. In general, we can expect work and student immigrants to be self-selected on cultural adaptability: in the human capital calculus, the psychological costs of migration are thus lowered, as are the costs of return migration. In the ‘cultural distance’ model, this cultural adaptability reduces the potential loss associated with behavioural differences, and makes the adoption of a native national identity less necessary.

There is less reason to expect the same selectivity on cultural adaptability among those whose decision to migrate was largely dictated by others, or those whose migration was forced. For this reason, we can expect family immigrants and refugees in general to be less culturally adaptive, and more culturally distinct from the host society than work and student immigrants. In the ‘cultural distance’ theory, it is these immigrants who will find adoption of the native national identity most rewarding, since it compensates them for the psychological loss associated with their cultural distinctiveness.

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<sup>82</sup> See the discussion on the functions of national identity in Georgiadis and Manning (2013: 167-168).

We have already seen those on work or student visas have a higher outflow over time, which fits with these expectations: those who migrated by choice are more able to adapt to different environments, and therefore find returning home a less costly exercise. This increased likelihood of returning home will further reduce the psychologically costly take-up of the native national identity among the stock of work and student immigrants. We can also expect these increased outflows to be particularly selected: other things equal, those who leave must be disproportionately those least likely to report a British national identity. This will reinforce the differences in national identity by original motive in the immigrant stock.

#### **4.4.2 Are there any differences in national identity by original motive?**

I show the proportion of immigrants reporting foreign, mixed and British national identities in Table 4.4, by gender and original motive. It is worth bearing in mind that foreign and mixed national identities are extremely rare among the UK-born. In the comparable age range and time frame, less than 1% of UK-born men and women report an exclusively foreign national identity, while almost none report a mixed national identity. This is low by European standards, considering that a proportion of the UK-born will be the children of immigrants. As Platt (2014: 53) points out, identification as British is almost universal among the ‘second generation’ – contrast this with Casey and Dustmann’s (2010: F37) finding that more than half of the children of immigrants in Germany identify more strongly with their parent’s country of birth than their own.

Table 4.4 shows that, overall, around a third of settled immigrants in the UK report feeling only British, and around 60% report only a foreign national identity. Within the motive groups, just under half of refugees report only a British national identity, along with just under half of family immigrants – although female family immigrants are slightly less likely to report an exclusively British national identity than men. Around a third of male student immigrants report only a British national identity, and closer to a quarter of female student immigrants do so. Work immigrants are the least likely to report an exclusively British national identity, with around 20% doing so. Work immigrants are also the least likely to report a mixed national identity, although the proportion of any motive group doing so is relatively small.

**Table 4.4: National identity by gender and original motive, row %**

	National identity			Total
	Foreign	Mixed	British	
Men				
Economic	76.0	3.6	20.4	100.0
Student	61.6	5.2	33.2	100.0
Family	44.3	6.4	49.3	100.0
Refugee	47.5	5.7	46.8	100.0
All	63.7	4.7	31.5	100.0
Women				
Economic	78.7	4.2	17.1	100.0
Student	68.8	6.1	25.1	100.0
Family	50.2	6.2	43.5	100.0
Refugee	46.2	6.8	47.0	100.0
All	61.5	5.7	32.8	100.0

Source: LFS 2010-2014. Notes: This table shows the proportion of the sample with each national identification, by original motive and gender. The sample consists of 11,197 men and 13,762 women aged 21-64, who were born abroad, who arrived in the UK as adults, and who have been in the UK for at least five years. n=24,959.

#### 4.4.3 Are these national identity outcomes explained by other observed characteristics?

The differences in Table 4.4 are broadly in line with my prior expectations about variation in the adoption of a British national identity by original motive. However, we know the observed characteristics of the different motive groups are quite different: recall the descriptive statistics in Table C3 in the Appendix. Many of the same characteristics that were relevant to labour market performance are also associated with national identity. As Dustmann (1996: 52) points out, labour market adjustment and the adoption of a native national identity appear to be parallel processes, in that they are driven by many of the same characteristics, though they do not tend to affect each other.

One additional characteristic of interest that I did not address when looking at labour market performance is age of arrival: adopting a new national identity is likely to be a less worthwhile investment as arrival age increases. The mean arrival age by motive varies from 23 for female family immigrants to just over 28 for male refugees. The sample average is 27 for men and 26 for women.

In order to assess the conditional importance of original motives for feelings of national identity, I estimate binomial probit models. As before, I estimate the models separately for men and women. The models take the same form as model (1), except with **BRITISH** as the dependent variable, which takes a value of 1 if individual *i* reports a British national identity. This is regardless of whether the individual also reports a foreign national identity, so the small proportion with ‘mixed’ national identities will also count as British.

The control variables here include arrival age, education (as before, five dummies with ‘no qualifications’ as the reference category), parental status (as before, two dummies with ‘no children’ as the reference category), and the same set of 36 origin dummies (29 countries plus 6 country groups, and Poland as the reference category). As discussed above, this set of origin dummies will play an important role in establishing whether original motives have a role in distinguishing the identities of people from within the same country or region. These dummies will also account for different country- or region-level visa requirements. In robustness checks below, I also include a control for legal citizenship. Preparatory investigations revealed the relationship between national identity and years since migration to be approximately log-linear: I therefore include the log of ‘years since migration’ in the probit model, along with interactions between this variable and each motive group dummy (centred on the mean of the log of YSM), as a more parsimonious alternative to multiple YSM dummies.

$\beta_1$ ,  $\beta_2$ , and  $\beta_3$  in this case give the change in the probit index for national identity associated with each original motive group, relative to work immigrants, conditional on the included control variables. The columns labelled ‘A’ in Table 4.5 show the key estimates from running the national identity model with no controls. The columns labelled ‘B’ show the estimates after the full set of controls have been introduced, and the columns labelled ‘C’ show the estimates after interaction terms have been introduced. The parameter estimates and their standard errors are multiplied by 100, and the full results are presented in Table C10 in the Appendix.

**Table 4.5: Selected parameter estimates from models of British national identity by gender**

	Probit models					
	Men			Women		
	A	B	C	A	B	C
Motives						
Work	(REF)					
Student	41.0 (3.2)	-1.6 (4.3)	-4.8 (4.4)	30.6 (3.5)	1.1 (4.4)	-0.9 (4.5)
Family	85.0 (3.2)	35.5 (3.9)	34.3 (6.2)	79.0 (2.7)	21.1 (3.4)	22.4 (3.5)
Refugee	76.9 (4.1)	30.1 (5.4)	31.3 (10.6)	89.2 (4.9)	28.6 (6.1)	28.7 (6.1)
Years since migration						
ln_YSM		92.2 (2.8)	85.8 (4.2)		88.8 (2.5)	78.3 (4.7)
Student*ln_YSM			36.1 (6.6)			28.2 (6.9)
Family*ln_YSM			-14.7 (6.2)			6.7 (5.3)
Refugee*ln_YSM			10.4 (10.6)			34.3 (12.0)
Other controls	No	No	Yes	No	Yes	Yes
Interactions	No	No	Yes	No	No	Yes
Intercept	-70.6 (1.9)	-405.3 (12.6)	-386.1 (14.4)	-79.6 (2.2)	-376.6 (11.6)	-350.3 (14.6)
Means	36.3	36.3	36.3	38.5	38.5	38.5

Source: LFS 2010-2014. Notes: This table shows selected parameter estimates from models of British national identity by gender. Standard errors are in parentheses. Coefficients and standard errors are all multiplied by 100. The columns labelled 'A' show results from models with no control variables. The columns labelled 'B' show results from models that also have controls for age of arrival, country of origin, highest qualification, and parental status. The columns labelled 'C' are from models which also contain interactions between each original motive and years since migration. The sample consists of 11,197 men and 13,762 women aged 21-64, who were born abroad, who arrived in the UK as adults, and who have been in the UK for at least five years. n=24,959.

Comparing the main effects in columns A and B for men and women in Table 4.5, introducing the control variables causes a large drop in the parameter estimates. This suggests that a substantial proportion of the variation in uptake of a British national identity is explained by the observed characteristics in the models. Allowing each original motive to interact with 'years since migration' in column C does not change these estimates substantially. For student immigrants, the differences with work immigrants disappear completely in column B. However, for family immigrants and refugees, the effects remain positive and well-determined after introducing controls.

As before, I calculate the marginal impact of each different motive relative to a reference individual who is a work immigrant, whose highest qualification is from abroad and is below degree level, who is from Pakistan, who is in a couple with children, who arrived in the UK aged 25, and who has been in the country for 10 years. I refer to these marginal effects in the discussion that follows.

#### **4.4.4 What do these results mean for the national identity of immigrants?**

In line with my expectations based on the ‘cultural distance’ model, family immigrants and refugees are the most likely to report a British national identity. However, the largest positive effect sizes are associated with national origin: particularly Commonwealth African and Asian countries, but also non-Commonwealth countries (for example, Afghanistan, the Philippines, China, Turkey, and Somalia); see Table C10 in the Appendix for a complete list of estimates. These results are consistent with the findings in Manning and Roy (2010). However, original motives remain a strong, well-determined predictor of uptake of national identity even after these country and region of origin effects are accounted for.

Family immigrants feel the most British of any motive group: male family immigrants are 15 percentage points more likely to report a British national identity than the reference work immigrant with identical observed characteristics, while female family immigrants are 8 percentage points so. This is consistent with the proposition that family immigrants are less selected on cultural adaptability, and that they therefore have a stronger propensity to take up the native national identity. Recall that I have controlled for parental status in this model, so this is not driving the difference, although being in a couple with children does seem to have a modest but significant positive effect on the relative probability of reporting a British national identity.

Refugees have similarly high conditional probabilities of reporting a British national identity. Male refugees are 12 percentage points more likely to report a British identity than the reference work immigrant with identical observed characteristics, while female refugees are 9 percentage points so. As expected, student and work immigrants have lower conditional probabilities of reporting a British national identity.

I show predicted probabilities of British national identity over years since migration in Figure C3 in the Appendix. They should be interpreted as probabilities for the same reference individual as the marginal effects above, except in this case the probabilities are absolute rather



than relative to work immigrants. Most of the trajectories are similar for the different motive groups: indeed, the slopes for male refugees and work immigrants are statistically indistinguishable, as are those for female student and refugee immigrants. As would be expected, those who have arrived more recently are much less likely to report a British national identity than those who have been in the country for a longer time.

Given the relative immigrant outflows by visa category, the effects I have reported for family immigrants, and particularly for refugees, are likely to be underestimates. Work and student immigrants are most likely to leave the country: if those who leave the country are those who feel least British, then they will leave the stock of work and student immigrants feeling more British on average. The outflow of family immigrants and refugees is smaller, so the stock will not be as selected on this characteristic.

These results show that original motives are important for understanding immigrant uptake of the native national identity. Family immigrants and refugees are more likely to feel British than work or student immigrants – even those that come from the same country, and who have been in the country for exactly the same number of years. My expectations were based on the ‘cultural distance’ model, but these empirical results provide a new level of support for it: people from culturally distant home countries are more likely to take up the native national identity, but even when country of origin effects have been comprehensively accounted for, family immigrants and refugees are substantially more likely to feel British than work and student immigrants.

In order to assess whether these results are affected by respondents conflating national identity with legal citizenship, I have run alternative versions of the models of British national identity presented above, including controls for legal citizenship. The most important estimates from these models are presented in Table C11 in the Appendix. In Column A, I reproduce the results of the model in Table 4.5 with full controls. In Column B, I show the same model with an additional control for legal citizenship. The legal citizenship estimate is large and well determined, and its introduction attenuates the estimates associated with each motive group. However, the sign of the main estimates does not change, and the differences for family and refugee immigrants remain strong and statistically significant. This means that even when comparing only immigrants who hold legal citizenship, the higher propensity of family immigrants and refugees to report a British national identity remains. I have also estimated versions of these models excluding proxy respondents, who could potentially misreport the

national identity of the other householders for whom they are responding, but the results are unaffected.

## **4.5 Conclusion**

In this chapter, I asked whether the original motives for migration could help us understand variation in immigrants' labour market performance and uptake of the native national identity. I noted that the human capital approach provides some predictions about both labour market ability and cultural adaptability, which, alongside the 'cultural distance' model of national identity proposed by Manning and Roy (2010), allow us to form expectations about such outcomes. I have shown that original motives are important for the analysis of both these areas of immigrant experience.

My results provide new support for the human capital model of migration in both the economic and cultural spheres, as well as early evidence supporting the 'cultural distance' model of national identity. Beyond highlighting the direction of the conditional differences between motive groups, I have also provided estimates of the scale of variation in employment propensity, wages, and uptake of the native national identity.

I have found that, among those who have been in the UK for at least five years, work immigrants perform exceptionally well on the labour market, with the highest employment propensities and the highest wages, closely followed by student immigrants. Family immigrants do less well, particularly female family immigrants. Refugees have extremely poor labour market outcomes by comparison with the other motive groups, having the lowest employment propensities and the lowest wages. However, turning to uptake of the native national identity, I have found that family immigrants and refugees are the most likely to identify as British. These differences are not completely explained by country of origin, years since migration, age, or qualifications. The differential levels and characteristics of immigrant outflow by original motive are important for understanding my results, as are the role of family and social networks in the host country, and language ability.

I have noted above that the 'cultural distance' model is consistent with the traditional notion of national identity as a device which unites behaviourally diverse groups in a multicultural society, and in this respect, the UK appears to have a well-functioning, culturally-inclusive national identity. However, the employment and wage analysis in this chapter has shown that

we cannot take the successful labour market integration of all immigrants for granted. While the political appeal of promoting uptake of the native national identity among immigrants is clear, policy makers should be wary of neglecting more concrete measures to cultivate social and economic inclusion.

## 5. Thesis conclusions

### 5.1 Contributions and limitations

In this thesis, I have examined the labour market performance of immigrants in the UK, using the Labour Force Survey. I have also touched on some areas of life beyond the labour market.

I summarise my main contributions as follows:

1. I have presented the first large-scale, quantitative evidence on educational mismatch among A8 immigrants in the UK. I have demonstrated an improved method to categorise the educational attainment of immigrants, which takes account of international variation in education systems. I have also introduced a novel method to increase the cross-sectional sample size possible with the Labour Force Survey (LFS).
2. I have advanced our understanding of immigrant wages, showing how measurement of educational attainment makes a substantial difference to our estimates of the conditional gap between immigrant and native earnings.
3. I have presented a novel analysis of the relationship between the original motives for migration and outcomes on the labour market and in national identity. I have provided new support for the human capital model of migration in both the economic and cultural spheres.

My work in this thesis has shown that the labour market performance of immigrants differs from that of natives in several important ways: the education, experience, and qualifications of immigrants are rewarded very differently to those of natives, and immigrants are more likely to end up in employment which is a poor match for their education. However, not all of these differences are due to differences in the opportunities faced by immigrants and natives on the labour market: the two groups differ substantially in their characteristics, both observed and unobserved. This makes meaningful comparisons between immigrants and natives difficult. We can try to take account of observed differences in statistical models, but the unobserved differences remain elusive. As I showed in Chapter 3, problems with measurement can also limit our ability to account for the observed differences.

Moreover, I have emphasised that there is substantial heterogeneity within the immigrant population, both in observed and unobserved characteristics. I have argued in Chapter 2 that the differences in unobserved characteristics between A8 and EU15 immigrants are due to more

heterogeneous motivations, less certain time-horizons, and lower reservation wages on average. I argued in Chapter 3 that the differences in unobserved characteristics between immigrants with the same endowments of schooling and experience are attributable to variation in international education systems and the degree of similarity between the home and host country economies. In Chapter 4 I have argued that the differences in unobserved characteristics between immigrants who migrate for different reasons are due to variation in labour market ability and motivation between motive groups, as well as variation in cultural adaptability. Directly addressing each of these different mechanisms is a challenge for future research.

## **5.2 Investigating the labour market performance of immigrants, in the UK and beyond**

### **5.2.1 The LFS**

I have noted more than once that the UK LFS is a general labour force survey, and therefore we cannot expect it to be an infallible source for the study of immigrant labour market performance. However, this is not to say that the existing measures used to study immigrants in the survey cannot be improved. In the case of foreign qualifications, I have argued in Chapter 3 that the new measures allow us to differentiate the general ‘level’ of a qualification, such as whether it is at secondary or tertiary level, but not to distinguish qualifications any more finely than that. The existing reliance on respondents to identify whether their own qualifications from abroad are ‘equivalent’ to a particular level in the UK qualifications structure is unsatisfactory. It relies on a level of familiarity with the current UK qualification structure which may be unrealistic, and in any case does not specify what ‘equivalence’ might entail. Coping with the heterogeneity of international education systems is not a straightforward exercise for survey designers, but the objective should surely be to capture from the respondent an accurate description of the actual qualification that they hold, and then to map any foreign qualifications onto equivalent UK qualifications using some objective criteria (for example, ISCED levels). This would seem a more sensible way to proceed than the current set of questions, which effectively ask the respondent to do this mapping of international qualifications themselves, spontaneously, and without reference to objective criteria.

‘National identity’ is measured in the LFS using a simple question which requires respondents to list the nations to which they feel affiliated. I have noted in Chapter 4 that several authors have warned that this question may be interpreted as one about citizenship. One way to improve

the credibility of the measure would therefore be to require interviewers to give a clarification that the question is about abstract affiliation rather than legal citizenship. Another possible improvement would be to try to capture the strength of affiliation the respondent feels to any particular nation, whether this be through ranking affiliations, or through a scale representing the strength of attachment (the UK data used in Nandi and Platt, 2013, contain just such a measure).

It would seem quite simple to make a large improvement to the ‘motives for migration’ question in the LFS, by allowing respondents to choose more than one answer. More than one answer is allowed for many questions in the LFS (including the national identity question), and allowing this for the ‘motives for migration’ question would recognise that the decision to migrate is almost invariably multifaceted. Respondents could also be allowed to rank answers, which would allow researchers to see which motives were more important. One possibility is that only one answer is allowed to the ‘motives for migration’ question because it is intended to capture the original visa category of an immigrant. If this is the real intent of the question, this should be specified for respondents, which would remove any ambiguity caused by differences between the motive for migration and visa category. A question about visa category would itself be complicated, since migrants can enter the country in one legal category, but stay on in the country in another legal category (for example, an immigrant who enters on a study visa but stays on after studying because they got married).

### **5.2.2 The policy and research environment**

The last two decades have seen an increasing number of legal and policy changes relating to immigrants entering and staying in the UK (see Home Office, 2015). In the 1990s and early 2000s many of these changes related to asylum seekers and refugees, but from the late 2000s, work, student, and family immigrants were also increasingly subject to new regulations. Under the government coalition from 2010 to 2015, this action has intensified. Given the usual delay between a policy change and the availability of a sufficient quantity of data for analysis, there has not yet been a great deal of quantitative research which addresses the consequences of these policies. This area is likely to provide fertile ground for research in the coming years.

Economics has also changed over recent decades, and my thesis is quite unfashionable in this respect. There has been a distinct shift away from discussing statistical associations in relation to theory, and towards using experimental and quasi-experimental methods to try to causally

identify economic relationships. This is a welcome change scientifically, but not necessarily one which produces an optimal distribution of economic analysis across worthy areas of research interest. The causal approach relies on the availability of data capturing explanatory variables which are subject to a degree of exogenous variation, either through direct laboratory experimentation, or more often through some policy change or natural event. Laboratory experimentation is not usually possible in the economics of migration, but much useful work has been done using other sources of exogenous variation (celebrated examples include Card's 1990 paper using the Mariel boatlift, and Edin et al.'s 2003 paper using the refugee dispersal policy in Sweden). Unfortunately, opportunities to apply causal analysis are rare in many areas of social and economic life. This discourages junior economists from addressing otherwise compelling research questions on these topics, and on current trends there is a risk that some areas of social scientific importance will be denied the benefits of economic analysis in the future. This would be a loss for social science. The research agenda should continue to be led by what is important as well as by what is causally identifiable.

I noted in the introduction to this thesis that a rising proportion of research in the economics of migration deals with the implications of immigration for the material wellbeing of natives. The appeal of research with a focus on host experiences of immigration is clear to natives themselves, and to politicians who are elected largely by natives. However, as social scientists, there is a risk that these popular and political interests will guide our agendas away from the areas of research which are most important for the purposes of human welfare. Organisations that distribute public funds for research are also prone to such influences, particularly when tasked with prioritising research which draws attention outside academia, and this amplifies the risk of distortion. Whatever the exact size or direction of the effects, the impact of immigration on the economic lives of natives is always small compared to the implications for immigrants themselves. The study of immigrants' own lives should therefore remain central to our research agendas. This thesis is my own contribution.

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## Appendix A: Additional material from Chapter 2

### Appendix A1: Comparing the ‘Nationality’ and ‘Country of Birth’ definitions of immigrant.

The main body of this chapter uses a ‘Nationality’ definition of immigrant, based on each respondent’s reported nationality. Table A1.1 compares the proportion of each nationality group that would be classified differently using a ‘Country of birth’ definition of immigrant, based on each respondent’s reported country of birth. Table A1.2 shows the continents of origin for those EU15 nationals in the UK who were born outside the EU.

**Table A1.1: Percentage of each ‘nationality group’ that would be classified differently using a ‘Country of Birth’ definition of immigrant (row %)**

Nationality	Country of birth					Total
	UK	A8	EU15	Non-EU	Pre-2004	
UK	95.3	0.0	0.0	0.2	4.5	100.0
A8	0.2	98.7	0.0	1.1	0.0	100.0
EU15	3.8	0.1	78.9	17.2	0.0	100.0
Non-EU	3.9	0.5	1.4	94.2	0.0	100.0
Pre-2004	0.0	0.0	0.0	0.0	100.0	100.0
Total	89.2	1.6	0.4	2.0	6.8	100.0

Source: LFS. Notes: Men and women, aged 16-64, not in full-time education. n=328,428.

**Table A1.2: Origin of EU nationals born in non-EU countries (%)**

Continent of birth	Column %
Asia	32.8
Africa	46.1
The Americas	16.9
Other	4.3
Total	100.0

Source: LFS. Notes: Men and women, aged 16-64, not in full-time education. n=273.

## Appendix A2: National origins of A8 and EU15 immigrants

**Table A2.1: National origins of A8 sample**

Nationality	Column %
Czech republic	3.1
Czechoslovakia	0.2
Estonia	0.5
Hungary	4.4
Latvia	4.4
Lithuania	9.7
Poland	69.8
Slovakia	7.9
Slovenia	0.1
Total	100.0

Source: LFS. Notes: Men and women, aged 16-64, not in full-time education. n=5,174.

**Table A2.2: National origins of EU15 sample**

Nationality	Column %
Austria	2.1
Belgium	3.1
Denmark	2.4
Finland	1.2
France	17.1
Germany	13.1
Greece	3.6
Ireland	13.9
Italy	13.8
Luxemburg	0.1
Netherlands	5.3
Portugal	12.6
Spain	8.0
Sweden	3.8
Total	100.0

Source: LFS. Notes: Men and women, aged 16-64, not in full-time education. n=1,600.

## Appendix A3: PISA mapping of ISCED levels to age left full-time education

**Table A3.1: Mapping of ISCED to age left full-time education**

Nationality	ISCED levels					
	Primary	Lower	(Upper)	Post-	Vocational	Academic
Austria	10	15	18	19	21	23
Belgium	12	15	18	18	21	23
Czech Republic	11	15	17	19	22	22
Denmark	13	16	19	19	22	24
Estonia	11	16	19	19	22	23
Finland	13	16	19	19	22	24
France	11	15	18	18	20	21
Germany	10	16	19	19	21	24
Greece	12	15	18	18	21	23
Hungary	11	15	18	19	21	24
Ireland	10	13	16	16	18	20
Italy	11	14	18	19	22	23
Latvia	10	15	18	18	23	23
Lithuania	10	15	18	18	22	23
Luxembourg	12	15	18	19	22	23
Netherlands	12	16		18		22
Poland		15	18	19	22	23
Portugal	12	15	18	18	21	23
Slovak Republic	11	15	18	18	20	24
Slovenia	10	14	17	18	21	22
Spain	11	14	16	18	19	23
Sweden	13	16	19	19	21	23
United Kingdom	11	14	17	18	20	21

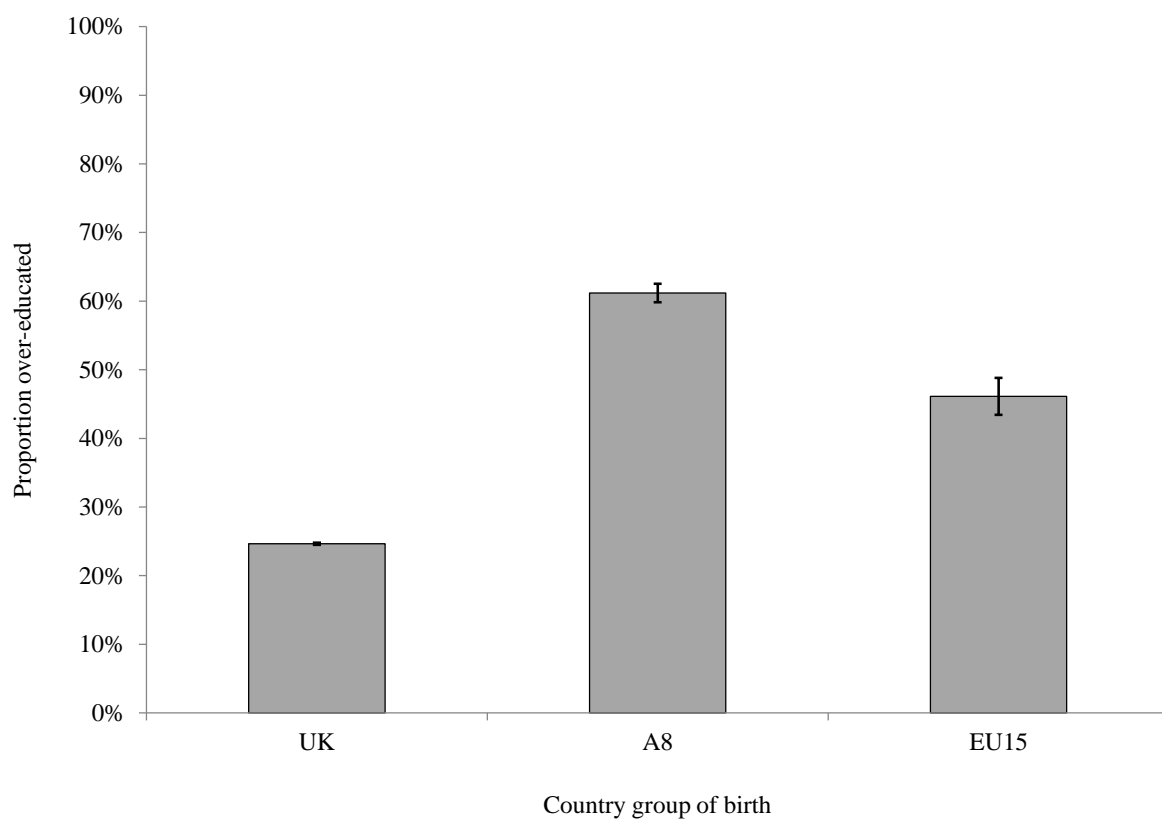
Source: OECD (2012). Notes: Czechoslovakia is set equal to the Czech Republic.

A drawback of assigning ISCED levels based on ‘age left full-time education’ is that this age is sometimes the same for different levels of qualification. With a conservative approach in mind, I have assumed in every case that a person has achieved the lower ISCED level, if they leave school at an age that could indicate two different ISCED levels. For example, in Lithuania, someone leaving school at 18 could either have achieved ‘Upper secondary’ or ‘Post-secondary non-tertiary’ education, but I assume they achieved ‘Upper secondary’. Likewise, In the Czech Republic, someone leaving education at 22 could either have achieved ‘Vocational tertiary’ or ‘Academic tertiary’, but I assume they achieved ‘Vocational tertiary’. Note that this problem does not affect Poland, which is by far the largest nationality group within the A8 sample. I assume that assigning the lower level of education here reduces the level of ‘over-education’ appearing in both the EU15 and A8 groups.

## Appendix A4: Proportion over-educated using ‘Country of birth’ definition

If immigrants were defined by ‘Country of Birth’ rather than nationality in this paper, the proportions classed as over-educated would not change substantially. The difference is less than a percentage point for each group.

**Figure A4.1: Proportion over-educated using ‘Country of birth’ definition of immigrant, by nationality group (%)**



Source: LFS. Notes: Each proportion is a mean value, and bars represent 95% confidence intervals. Employed men and women, aged 16-64, not in full-time education. Sample A in Table 2.5, with a slightly smaller sample size due the different definitions of the groups. n=299,255.

## Appendix A5: Additional wage equations

**Table A5.1: Log wage equations: all non-graduate occupations**

Characteristics	Control variables			
	No controls (1)	Age/gender (2)	Location (3)	Job type (4)
Mismatch				
Over-educated	22.0 (0.3)	27.3 (0.3)	25.0 (0.3)	21.4 (0.2)
Nationality (REF: UK)				
A8	-33.5 (1.6)	-30.0 (1.6)	-29.8 (1.6)	-24.3 (1.5)
EU15	-20.3 (3.3)	-19.1 (3.5)	-24.8 (3.5)	-17.9 (3.3)
Over-educated*A8	-13.0 (2.0)	-17.3 (1.8)	-15.9 (1.8)	-13.8 (1.7)
Over-educated*EU15	16.4 (4.1)	14.2 (3.8)	12.6 (3.8)	10.8 (3.6)
Gender				
Female		-21.7 (0.2)	-21.3 (0.2)	-12.9 (0.2)
Female*A8		16.3 (1.8)	14.9 (1.7)	8.7 (1.6)
Female*EU15		9.7 (3.7)	10.0 (3.6)	4.4 (3.4)
Age (REF: 16-25)				
26-30		27.6 (0.5)	27.2 (0.5)	23.7 (0.4)
31-35		38.1 (0.5)	37.5 (0.5)	33.7 (0.4)
36-45		40.6 (0.4)	42.8 (0.4)	38.5 (0.4)
46-64		40.6 (0.4)	39.9 (0.4)	36.6 (0.3)
Place of work (REF: London)				
South-east			-21.9 (0.5)	-20.0 (0.5)
Regions			-28.7 (0.4)	-26.4 (0.4)
Job				
Part-time				-16.9 (0.3)
Supervisor				24.4 (0.2)
Constant term	202.2 (0.9)	177.4 (0.9)	203.6 (1.0)	197.3 (0.9)
n	157,194	157,194	157,066	157,066

Source: LFS. Notes: Source: LFS. Notes: Standard errors in parentheses. Coefficients and SEs are multiplied by one hundred. Employed men and women, aged 16-64, not in full-time education, in all non-graduate occupations. Sample C in Table 2.5.

## **Appendix A6: Robustness checks**

### *Including additional controls in over-education probit models*

I have noted above that some other studies use additional controls when estimating the probability of over-education. I re-estimated the probit models adding additional controls for relevant variables available in the LFS: a dummy for whether a respondent is married, a set of three dummies representing the size of the firm by which she is employed, and a dummy representing whether she works in the public sector. The main marginal effects of interest reported in Table 2.8 are altered by no more than one decimal place after introducing these additional controls.

### *Allowing for measurement error in assigning ISCED levels to EU15 nationals*

As there is likely to be some measurement error caused by grade retention in the EU15 group, I have repeated the central parts of the analysis, making the assumption that any EU15 respondent who I have assigned to ‘(Upper) secondary’, ‘Post- secondary, non-tertiary’ or ‘Vocational tertiary’, based on the age at which they left full-time education, has achieved only the ‘(Upper) secondary’ level of education. This is a strict assumption, but gives a lower bound for the proportion of over-education, and will highlight any potentially spurious results in the main body of the chapter.

The proportion of EU15 nationals classed as over-educated using this more restrictive definition falls from 46% to 42%. Repeating the probit analysis shows the increased risk of over-education for EU15 nationals falls from 10 percentage points to 6 percentage points, with observed characteristics held constant (the effect is statistically well determined). My central analysis is therefore not substantially affected by these measurement problems, though the over-education estimates I report for EU15 nationals in the main body of the analysis are potentially biased upwards.

## **Appendix B: Additional material from Chapter 3**

### **Appendix B1: LFS questions on foreign qualifications**

In the first quarter of 2011, a series of questions were introduced to the LFS to capture foreign qualifications. I list these questions and the possible answers to them below. I use the responses to question 3 below to identify whether a respondent's highest qualification is from the UK or abroad. To identify the highest qualification, I use a variable produced by the data providers (described in the data section of Chapter 3) which combines information on highest UK qualification collected in the survey, with that on highest foreign qualification derived from questions 3, 4, and 5, below.

- 1. The next section is about education, learning and training. Do you have any qualifications gained from outside of the UK?**
  - a) Yes
  - b) No
  
- 2. Thinking about the qualifications you gained from outside of the UK (and please exclude expired qualifications), did you gain any...**
  - a) from school or home-schooling?
  - b) from college or university?
  - c) related to work?
  - d) from government schemes?
  - e) gained in your leisure time, or by teaching yourself?
  - f) in some other way?
  - g) don't know
  
- 3. Was your highest qualification gained in the UK, or outside of the UK?**
  - a) In the UK
  - b) Outside the UK
  - c) Don't know

**4. Is your highest qualification recognised in the UK? This could mean recognised by a learning institution or an employer.**

- a) Yes
- b) No
- c) Recognition being applied for/process underway
- d) Recognition not attempted

**5. What type of qualification is it?**

- a) Degree level qualification, or higher
- b) Higher qualification below degree level
- c) A-level/Vocational A-level or equivalent
- d) AS-level/Vocational AS-level or equivalent
- e) International Baccalaureate
- f) O-levels or equivalent
- g) GCSE/Vocational GCSE or equivalent
- h) Other work-related or professional qualification
- i) School Leavers Certificate
- j) Don't know

Source: ONS (2014: 111-112).



## **Appendix B2: Qualification categories and ‘other’ qualifications**

Table B2.1 shows the proportion of UK born and foreign respondents who report each level of qualification (‘or equivalent’) as their highest. Note that around 20% of foreign born men report ‘Other’ qualifications as their highest, compared to 8% of the UK born, and just over 15% of foreign born women do so, compared to 6% if of the UK born. This is consistent with my observation in the text that giving ‘Higher education below degree level’, ‘GCE, A-level or equivalent’, ‘GCSE grades A\*-C or equivalent’ as ones highest qualification would require both a fairly advanced knowledge of the UK education system, and a strong view of which UK qualifications were ‘equivalent’ to a particular foreign qualification.

My assumption that all ‘other’ qualifications should go into the ‘below degree level’ categories is supported by the average ‘years of schooling’ by qualification level reported in Table B2.2. For both men and women, the average years of schooling for people with ‘other’ qualifications is 11 for the UK born and 12 for the foreign born. This compares to 16 years for most groups completing degree level qualifications or higher, and 17 years for foreign born men. With this large difference in average duration of education for individuals in these two categories, it does not seem an unreasonable assumption that these ‘other’ qualifications are mostly below degree level.

Table B2.3 shows the key coefficients from re-running my preferred specification (model 3) excluding those who report ‘other’ as their highest qualification. If this category contained a lot of degree level or higher qualifications, we would expect their exclusion from the analysis to cause a drop in the coefficients for ‘below degree level qualification’. Instead, as Table B2.3 shows, the main effects for these qualifications rise by around 5 percentage points. The immigrant interaction terms also change by one or two percentage points, but not consistently. This suggests that ‘other’ qualifications tend to receive lower returns than named qualifications in the ‘below degree level’ category. These checks support my decision to include ‘other’ qualifications in the ‘below degree level’ category.

**Table B2.1: Proportion reporting each qualification**

	Men			Women		
	UK born	Foreign born	Total	UK born	Foreign born	Total
Degree or equivalent	27.8	42.3	29.7	29.3	44.8	31.2
Higher education	9.9	8.3	9.7	11.7	11.1	11.6
GCE, A-level or equivalent	26.9	12.4	25.0	20.7	11.3	19.5
GCSE grades A*-C or equivalent	20.8	8.5	19.1	26.2	9.9	24.2
Other qualifications	8.2	19.7	9.8	5.9	16.5	7.2
No qualification	5.5	8.4	5.9	5.5	6.1	5.5
Missing/Don't know	0.9	0.4	0.8	0.8	0.3	0.7
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: LFS 2011-2014. Sample consists of employed men and women, age 16-64, who are not in full-time education. n= 110,118 (52,669 men and 57,449 women).

**Table B2.2: Mean years of schooling by highest qualification**

	Men			Women		
	UK	Foreign	Total	UK	Foreign	Total
Higher degree	16.8	17.6	17.0	16.4	17.1	16.5
Degree or equivalent	15.7	16.7	15.9	15.5	16.0	15.6
Higher education below degree level	13.0	13.8	13.1	13.1	13.7	13.1
GCE, A-level or equivalent	12.1	12.7	12.1	12.4	12.4	12.4
GCSE grades A*-C or equivalent	11.4	11.7	11.5	11.4	11.5	11.4
Other qualifications	10.9	12.5	11.4	11.0	12.5	11.4
No qualification	10.6	10.2	10.5	10.5	10.2	10.5
Missing/Don't know	11.4	11.3	11.4	11.5	11.6	11.5
Total	13.0	14.3	13.1	13.0	14.1	13.2

Source: LFS 2011-2014. Sample consists of employed men and women, age 16-64, who are not in full-time education. n= 110,118 (52,669 men and 57,449 women).

**Table B2.3: Robustness check: key coefficients from running model (3), excluding 'Other' qualifications**

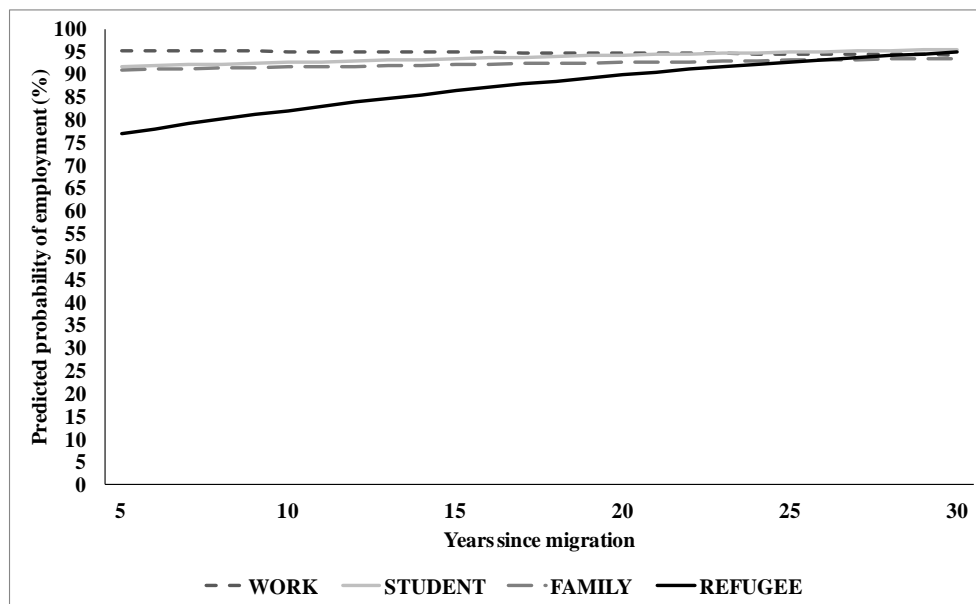
	Men		Women	
	Original	Robust	Original	Robust
UK qualification below degree level	25.3 (1.0)	28.4 (1.1)	19.9 (0.9)	21.9 (0.9)
Foreign qualification below degree level	33.4 (5.7)	37.6 (6.5)	26.6 (4.9)	32.2 (5.5)
Immigrant*UKQBLD	-0.6 (2.7)	-3.0 (3.0)	-5.5 (2.8)	-7.4 (2.9)
Immigrant*foreign QBLD	-19.5 (6.1)	-16.7 (7.0)	-21.6 (5.5)	-23.1 (6.1)

Source: LFS, 2011-2014. Notes: Source: LFS 2011-2014. Other controls are as in Table 3.2. Sample consists of employed men and women, age 16-64, who are not in full-time education, and do not report 'other' qualifications as their highest qualification. n= 100,699 (47,452 men and 53,247 women).

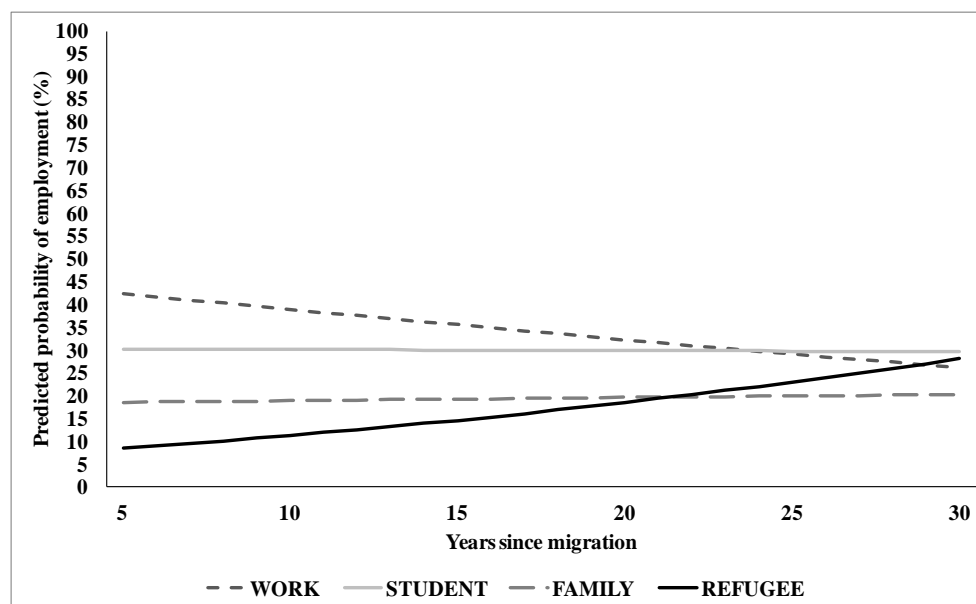
## Appendix C: Additional material from Chapter 4

*Figure C1: Predicted probabilities of employment over years since migration, by gender and original motive*

### a) Men



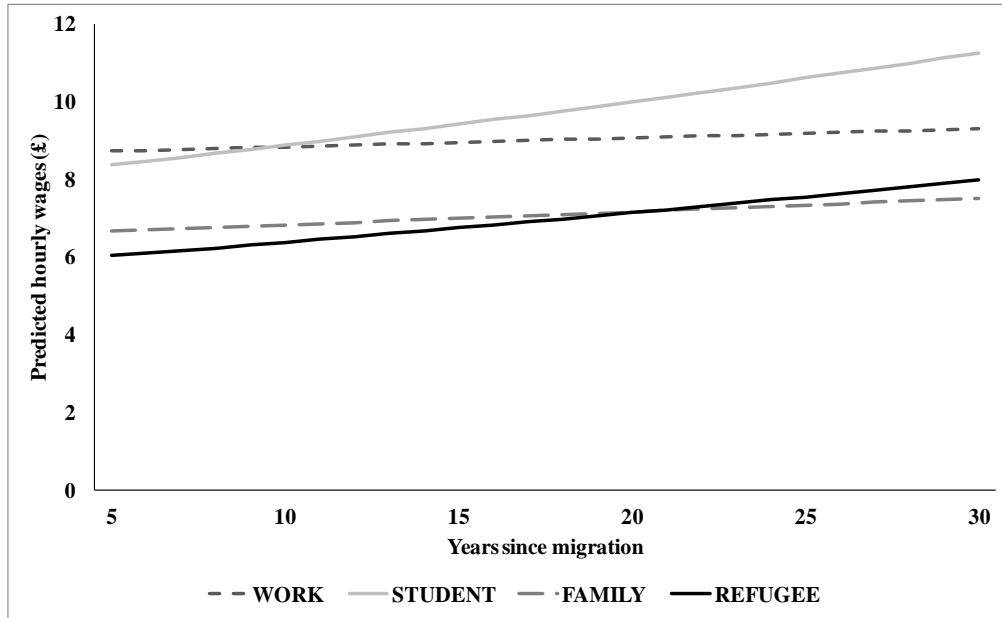
### b) Women



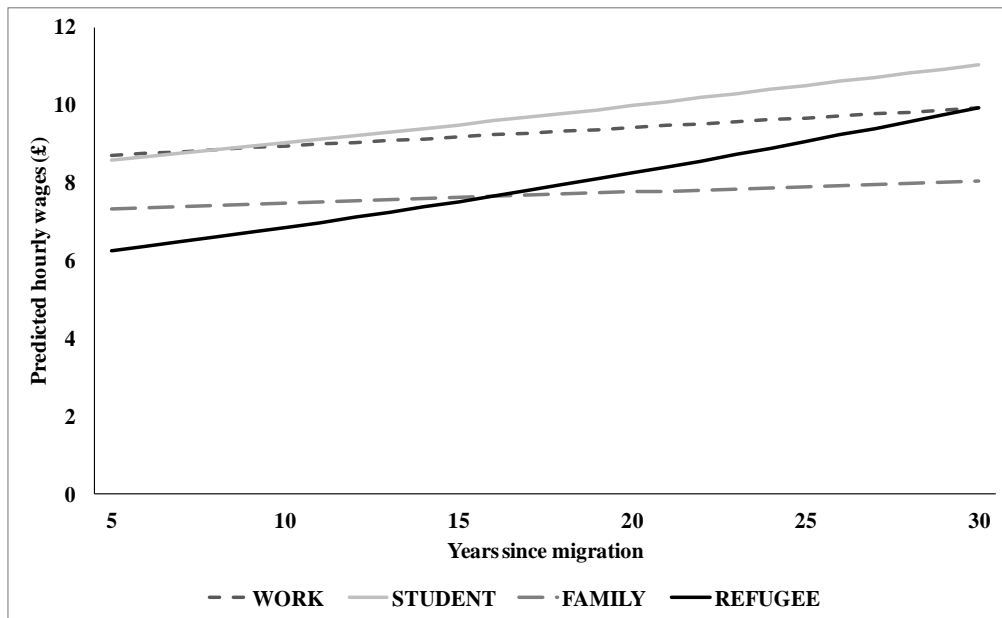
Source: LFS 2010-2014. Notes: These charts show predicted probabilities calculated from probit models of employment, including controls for age, age squared, country of origin, highest qualification, location, health status, and parental status. The reference individual is from Pakistan, with a highest qualification that is from abroad and is below degree level, has a partner and children, and is 35 years old. The sample consists of 11,197 men and 13,762 women aged 21-64, who were born abroad, who arrived in the UK as adults, and who have been in the UK for at least five years. n=24,959.

**Figure C2: Predicted hourly wages over years since migration, by gender and original motive**

**a) Men**



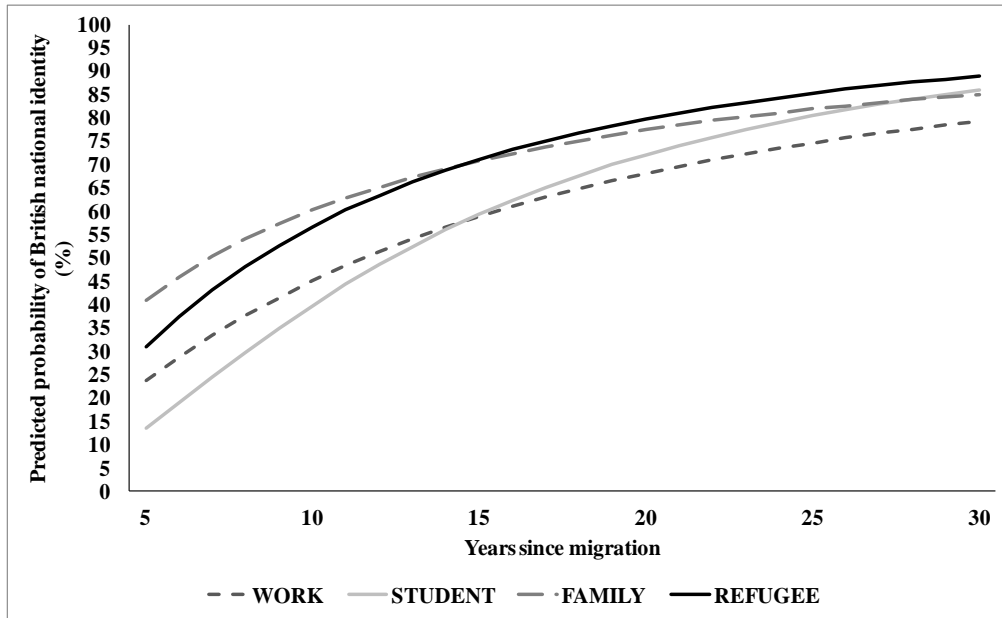
**b) Women**



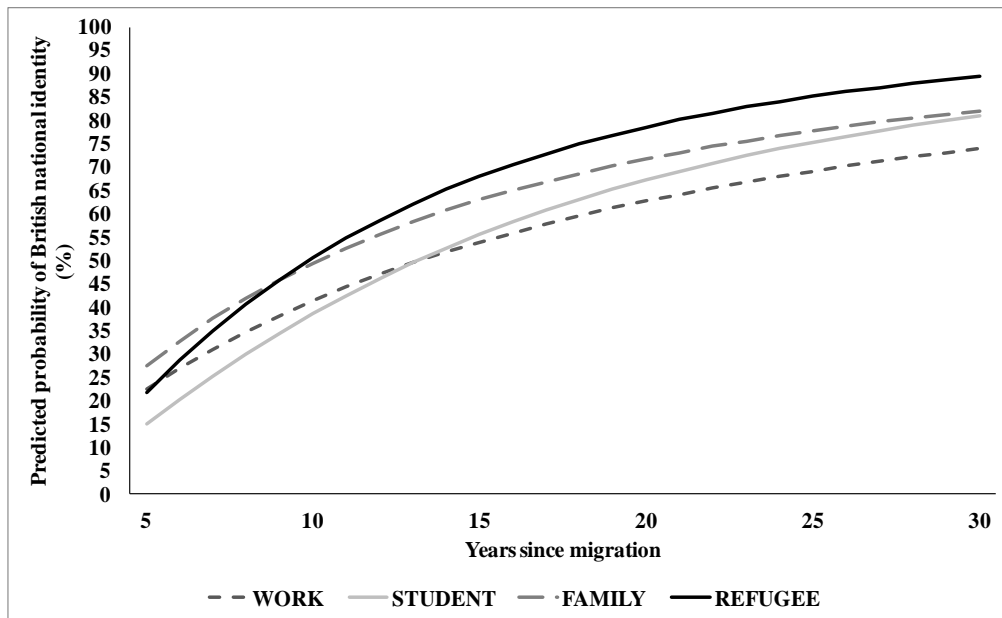
Source: LFS 2010-2014. Notes: These charts show predicted hourly wages calculated from wage equations, including controls for age, age squared, country of origin, highest qualification, location, health status, and parental status. The reference individual is from Pakistan, with a highest qualification that is from abroad and is below degree level, has a partner and children, and is 35 years old. The sample consists of 4,580 men and 4,843 women who were interviewed in Waves 1 or 5 of the LFS, are employees, and provided wage information. n=9,423.

**Figure C3: Predicted probabilities of reporting a British national identity over years since migration, by gender and original motive**

**a) Men**



**b) Women**



Source: LFS 2010-2014. Notes: These charts show predicted probabilities calculated from probit models of British national identity, including controls for age of arrival, country of origin, highest qualification, and parental status. The reference individual is from Pakistan, with a highest qualification that is from abroad and is below degree level, has a partner and children, and arrived in the UK aged 25. The sample consists of 11,197 men and 13,762 women aged 21-64, who were born abroad, who arrived in the UK as adults, and who have been in the UK for at least five years. n=24,959.

**Table C1: Comparison of labour market status among recent and settled immigrants, by gender and original motive**

	Recent				Settled			
	Emp	Unemp	Inact	Total	Emp	Unemp	Inact	Total
<b>Men</b>								
Work	91.6	6.1	2.4	100.0	88.6	4.0	7.3	100.0
Student	38.0	6.2	55.9	100.0	83.8	5.2	11.0	100.0
Family	68.9	13.4	17.8	100.0	81.3	6.2	12.5	100.0
Refugee	25.6	21.1	53.4	100.0	64.6	13.8	21.6	100.0
Total	69.9	7.4	22.7	100.0	83.7	5.7	10.6	100.0
<b>Women</b>								
Work	83.5	6.3	10.1	100.0	80.5	3.9	15.6	100.0
Student	33.3	6.8	59.9	100.0	73.0	4.8	22.2	100.0
Family	32.4	10.8	56.8	100.0	47.6	5.4	47.0	100.0
Refugee	12.6	9.9	77.5	100.0	30.2	10.7	59.1	100.0
Total	49.2	8.3	42.5	100.0	60.6	5.2	34.3	100.0

Source: LFS 2010-2014. Notes: This table shows the proportion of people with each labour market status, by original motive, gender, and 'recent' or 'settled' status. 'Settled' immigrants are defined as those who arrived five or more years ago. The recent group consists of 10,797 immigrants (5,0676 men and 5,721 women), while the 'settled' group consists of 24,959 immigrants (11,1697 men and 24,959 women). n= 35,756.

**Table C2: Wave origins of the sample**

Wave (in order of priority)	Frequency	Percent
1	16,012	64.2
5	5,797	23.2
2	2,016	8.1
3	894	3.6
4	240	1.0
Total	24,959	100.0

Source: LFS 2010-2014. Notes: This table shows the number and proportion of the main analytical sample drawn from each wave of the LFS. I prioritise observations that appear in Wave 1, and then those that appear in Wave 5 of the survey, as these are the two waves of the LFS which contain wage information. The sample consists of 11,197 men and 13,762 women aged 21-64, who were born abroad, who arrived in the UK as adults, and who have been in the UK for at least five years. n=24,959.

**Table C3: General demographic and human capital characteristics of sample, by gender and original motive**

	Motive				Total
	Work	Student	Family	Refugee	
<b>Men</b>					
General:					
Arrival age (mean)	27.8	26.4	23.9	28.2	26.9
Age (mean)	40.9	39.5	42.6	41.4	41.0
London (%)	34.5	42.8	27.3	47.1	36.1
Health prob (%)	11.2	8.5	18.2	29.4	13.9
FT student (%)	1.2	10.5	2.1	4.4	3.7
Parental status (sums to 100%):					
No children	49.5	53.7	37.6	44.1	47.5
Single parent	0.7	1.0	1.4	2.5	1.1
Couple parent	49.7	45.2	61.0	53.4	51.4
Highest qualification (sums to 100%):					
No quals	14.7	2.4	21.2	32.2	15.1
UK qual below deg	5.1	11.7	8.2	7.3	7.3
UK 1st deg	2.0	16.7	3.9	3.8	5.5
UK high deg	4.2	36.2	3.1	3.2	10.5
Foreign qual below deg	42.7	15.5	41.1	44.5	37.0
Foreign deg or above	31.2	17.5	22.5	9.0	24.6
Origin (sums to 100%):					
A8 born	28.9	-	-	-	15.3
African born	13.6	28.8	18.1	34.6	19.8
Americas born	4.6	-	9.2	-	5.4
Asian born	26.0	42.5	56.8	48.9	37.9
EU15 born	16.7	12.0	-	-	12.1
Born elsewhere	10.1	7.2	7.3	15.3	9.5
<b>Women</b>					
General:					
Arrival age (mean)	27.8	26.0	23.0	27.1	26.0
Age (mean)	39.4	38.3	42.7	40.9	40.9
London (%)	33.9	45.3	32.0	55.2	36.2
Health prob (%)	9.1	9.3	21.3	34.3	16.4
FT student (%)	2.4	10.0	2.9	7.8	4.2
Parental status (sums to 100%):					
No children	49.1	53.1	38.0	29.8	43.3
Single parent	10.4	10.7	9.3	35.8	11.5
Couple parent	40.5	36.2	52.6	34.3	45.2
Highest qualification (sums to 100%):					
No quals	10.4	2.4	23.8	35.4	16.7
UK qual below deg	6.7	14.6	7.5	13.5	8.7
UK 1st deg	-	16.5	3.0	-	5.2
UK high deg	-	29.2	3.7	-	8.0
Foreign qual below deg	39.9	16.9	37.1	38.5	34.8
Foreign deg or above	35.0	20.4	24.9	7.8	26.5
Origin (sums to 100%):					
A8 born	33.2	11.6	6.6	1.7	15.0
African born	13.0	20.9	16.1	54.3	18.3
Americas born	5.2	-	7.2	-	6.9
Asian born	18.6	27.3	52.8	27.0	36.8
EU15 born	21.2	20.7	-	-	14.1
Born elsewhere	8.8	8.3	8.3	15.6	8.9

Source: LFS 2010-2014. Notes: This table shows the general demographic and human capital characteristics of sample, by original motive and gender. The full sample consists of 11,197 men and 13,762 women aged 21-64, who were born abroad, who arrived in the UK as adults, and who have been in the UK for at least five years. n=24,959. Three of these variables do not cover the whole sample: the 'Highest qualifications' sample is 16,309 (7,319 men, 8,990 women); the 'Health' sample is 22,161 (9,947 men, 12,214 women); and the 'Parental status' sample is 23,680 (10,599 men, 13,081 women).

**Table C4: Distribution of years since migration in sample, by gender and original motive**

	Distribution					RANGE
	Q10	Q25	Q50	Q75	Q90	
<b>Men</b>						
Work	5	6	9	15	27	43
Student	6	8	12	21	34	41
Family	6	8	12	22	34	43
Refugee	8	9	12	16	22	39
Total	6	7	10	18	30	43
<b>Women</b>						
Work	5	6	9	14	26	43
Student	6	8	12	20	33	42
Family	6	8	13	23	34	43
Refugee	7	9	12	16	21	37
Total	6	7	11	20	32	43

Source: LFS 2010-2014. Notes: This table shows selected quantiles of the distribution of 'years since migration' in the sample, by original motive and gender. The sample consists of 11,197 men and 13,762 women aged 21-64, who were born abroad, who arrived in the UK as adults, and who have been in the UK for at least five years. n=24,959.



**Table C5: Full parameter estimates from probit models of employment, by gender**

	Men		Women	
	Estimate	Std. Error	Estimate	Std. Error
Intercept	-118.4	28.5	-275.7	21.6
Work	REF		REF	
Student	-15.3	5.6	-18.7	4.5
Family	-24.0	5.2	-53.9	3.4
Refugee	-63.3	6.4	-87.0	6.6
Age	13.9	1.3	20.3	1.0
Age2	-0.2	0.0	-0.2	0.0
YSM	-0.3	0.3	-1.8	0.3
Stu*YSM	1.6	0.4	1.7	0.4
Fam*YSM	1.0	0.4	2.0	0.3
Ref*YSM	3.9	0.7	4.9	0.8
No quals	REF		REF	
UK qual below deg	43.4	8.9	73.3	6.6
UK 1st deg	28.5	9.6	94.6	8.3
UK high deg	57.3	8.8	95.0	7.4
For qual <deg	25.9	5.7	45.9	4.8
For qual deg or >	56.8	7.0	68.0	5.2
Missing qual info	36.3	7.0	67.0	5.9
Non-London	REF		REF	
London	0.3	3.5	-11.2	2.7
No health problem	REF		REF	
Health problem	-112.7	4.3	-75.8	3.8
Missing health info	7.0	5.5	-10.9	4.0
Not full-time student	REF		REF	
Full-time student	-105.1	7.3	-71.4	6.1
No children	REF		REF	
Single parent	-11.8	13.9	-42.1	4.6
Couple parent	22.7	3.7	-57.7	3.3
Missing parental status	7.0	8.6	-38.0	6.6
Poland	REF			
Afghanistan	4.9	15.7	-56.8	16.2
Australia	-17.2	18.9	31.0	16.4
Bangladesh	-36.9	11.4	-127.1	9.8
China	-61.4	13.6	-51.9	9.8
France	-21.4	17.1	-26.7	10.0
Germany	-18.0	17.2	-12.9	9.6
Ghana	-53.9	14.1	-6.2	10.7
India	-19.4	8.9	-16.6	5.9
Iran	-46.7	13.6	-60.1	13.0
Iraq	-52.5	12.8	-115.3	17.5
Ireland	-12.7	11.9	-2.8	8.4
Italy	-39.5	14.5	-11.9	12.7
Jamaica	-50.3	17.2	-0.4	13.1
Kenya	-38.3	13.9	-3.5	10.9
Lithuania	4.5	17.1	5.9	10.5
New Zealand	-22.5	23.6	-9.4	17.5
Nigeria	-55.5	11.4	-10.7	9.1
Pakistan	-29.1	9.3	-121.8	6.9
Philippines	26.7	18.6	37.8	9.4
Portugal	-34.8	14.4	-18.0	11.2
Romania	-22.6	17.1	1.0	13.4
Slovakia	-37.1	19.7	-13.1	13.1
Somalia	-75.2	14.3	-111.4	12.1
South Africa	9.5	13.9	5.9	9.1
Spain	-44.6	18.3	-5.4	13.5
Sri Lanka	2.6	12.7	-41.8	9.3
Turkey	-55.5	12.9	-100.3	12.0
United States	-9.5	15.1	3.8	9.9
Zimbabwe	-31.9	12.8	9.3	9.9
Other A8	-14.5	15.0	-21.3	8.9
Other Africa	-51.9	9.0	-36.0	6.6
Other Americas	-24.5	12.1	-30.2	7.6

Other Asia	-44.8	9.8	-30.8	6.5
Other EU15	-26.4	13.9	-2.9	8.8
Born elsewhere	-41.9	9.8	-33.2	6.9
2014.0	REF			
2010.0	-5.8	8.5	-18.0	6.7
2011.0	-0.8	7.1	-5.2	5.5
2012.0	6.5	7.4	-9.9	5.7
2013.0	5.3	7.1	-1.2	5.4

Source: LFS 2010-2014. Notes: This table shows all parameter estimates from models of employment by gender. Coefficients and standard errors are all multiplied by 100. The sample consists of 11,197 men and 13,762 women aged 21-64, who were born abroad, who arrived in the UK as adults, and who have been in the UK for at least five years. n=24,959.

**Table C6: Full parameter estimates from wage models by gender**

	Men		Women	
	Estimate	Std. Error	Estimate	Std. Error
Intercept	85.1	14.6	78.9	13.8
Work	REF		REF	
Student	-4.2	2.4	-1.5	2.3
Family	-26.9	2.3	-17.2	1.8
Refugee	-36.9	3.9	-33.4	4.9
Age	4.5	0.7	4.8	0.7
Age2	0.0	0.0	-0.1	0.0
YSM	0.3	0.2	0.5	0.2
Stu*YSM	0.9	0.2	0.5	0.2
Fam*YSM	0.2	0.2	-0.1	0.2
Ref*YSM	0.9	0.5	1.3	0.6
No quals	REF		REF	
UK qual below deg	32.0	4.4	24.8	4.4
UK 1st deg	50.8	5.0	44.6	4.8
UK high deg	67.8	4.2	55.5	4.5
For qual <deg	10.0	3.3	6.8	3.7
For qual deg or >	50.6	3.5	39.9	3.7
Missing qual info	22.4	4.0	14.0	4.3
Non-London	REF		REF	
London	11.7	1.7	15.9	1.6
No health problem	REF		REF	
Health problem	-14.4	3.1	-6.4	2.8
Missing health info	-1.9	2.4	-1.2	2.2
Not full-time student	REF		REF	
Full-time student	-21.4	5.0	2.9	4.3
No children	REF		REF	
Single parent	7.1	9.7	-12.3	2.6
Couple parent	5.6	1.7	0.3	1.7
Missing parental status	-1.2	3.8	1.8	3.7
Poland	REF		REF	
Afghanistan	9.9	9.5	8.7	16.1
Australia	79.9	7.6	51.3	6.8
Bangladesh	-10.3	5.4	-3.9	9.5
China	23.9	7.0	13.3	6.1
France	40.6	6.2	40.6	5.1
Germany	57.3	6.8	39.5	5.0
Ghana	14.6	6.5	2.2	6.0
India	31.7	3.2	25.3	3.1
Iran	20.8	7.7	23.8	9.2
Iraq	14.3	7.7	23.5	15.1
Ireland	58.5	5.0	45.5	4.2
Italy	19.9	6.4	18.2	6.4
Jamaica	20.8	9.0	21.0	7.2
Kenya	29.1	7.6	15.9	6.3
Lithuania	3.8	6.5	-4.9	5.0
New Zealand	58.0	8.9	65.6	7.5
Nigeria	15.7	5.0	21.0	5.0
Pakistan	9.2	4.2	16.1	5.6
Philippines	8.3	5.1	12.5	4.0
Portugal	3.6	6.3	4.7	6.1
Romania	17.8	9.8	8.0	8.3
Slovakia	6.0	8.5	4.4	6.6
Somalia	-6.8	8.8	22.4	10.5
South Africa	51.2	8.3	42.7	6.7
Spain	18.2	5.2	8.5	6.0
Sri Lanka	55.4	4.6	50.5	4.2
Turkey	0.7	8.2	20.4	9.7
United States	59.0	6.3	52.6	5.3

Zimbabwe	34.8	5.4	29.3	4.9
Other A8	10.1	5.9	-0.8	4.5
Other Africa	20.9	3.9	20.0	3.9
Other Americas	40.9	5.0	25.1	4.2
Other Asia	23.5	4.3	18.2	3.6
Other EU15	55.3	5.3	43.5	4.4
Born elsewhere	25.8	4.8	26.8	4.0
2014.0	REF		REF	
2010.0	17.5	4.3	17.2	4.1
2011.0	6.7	3.4	2.9	3.3
2012.0	3.8	3.5	1.1	3.4
2013.0	1.0	3.4	0.4	3.3

Source: LFS 2010-2014. Notes: This table shows full parameter estimates from models of log wages by gender. Coefficients and standard errors are all multiplied by 100. The sample consists of 4,580 men and 4,843 women who were interviewed in Waves 1 or 5 of the LFS, are employees, and provided wage information. n=9,423.

**Table C7: Main methods of seeking work by gender and original motive, column %**

	Work	Student	Family	Refugee	Total
<b>Men</b>					
Ask friends, relatives, colleagues about jobs	10.6	6.3	11.3	13.1	10.3
Studying situations vacant in newspapers or journals	37.9	45.4	38.7	32.1	38.7
Other method	51.5	48.3	50.0	54.8	51.1
Total	100.0	100.0	100.0	100.0	100.0
<b>Women</b>					
Ask friends, relatives, colleagues about jobs	9.1	-	8.0	-	7.6
Studying situations vacant in newspapers or journals	41.1	-	45.7	-	43.1
Other method	49.9	51.3	46.4	56.8	49.3
Total	100.0	100.0	100.0	100.0	100.0

Source: LFS 2010-2014. Notes: This table shows main method of seeking work for the subsample that is currently seeking employment, by original motive and gender. Respondents are included regardless of current labour market status. The sample consists of 1,658 men and 1,544 women aged 21-64, who were born abroad, who arrived in the UK aged 16 or older, and who have been in the UK for at least five years. n=3,202. Some cells are censored due to small cell size, in line with the requirements of the data provider.

**Table C8: Methods of finding current job by gender and original motive, column %**

	Work	Student	Family	Refugee	Total
<b>Men</b>					
Hearing from someone who worked there	28.8	21.0	34.0	39.5	29.2
Replying to a job advertisement	21.5	26.2	20.4	20.2	22.2
Other method	49.7	52.8	45.6	40.3	48.6
Total	100.0	100.0	100.0	100.0	100.0
<b>Women</b>					
Hearing from someone who worked there	22.5	17.5	24.9	24.0	22.4
Replying to a job advertisement	29.7	33.3	24.4	26.0	28.4
Other method	47.8	49.2	50.6	50.0	49.3
Total	100.0	100.0	100.0	100.0	100.0

Source: LFS 2010-2014. Notes: This table shows the method that employed respondents used to find their current job, restricted to those who found their job in the last 12 months. The sample is shown by original motive and gender. The sample consists of 1,076 men and 1,096 women aged 21-64, who were born abroad, who arrived in the UK aged 16 or older, and who have been in the UK for at least five years. n=2,172.

**Table C9: Language indicators by gender and original motive, %**

Language measure	Motive				Total	n
	Work	Student	Family	Refugee		
<b>Men</b>						
Language difficulty finding or keeping a job	14.5	-	20.0	-	15.5	1,044
Language difficulty in education	6.7	-	14.0	-	9.0	1,042
Non-English first language at home	64.3	48.9	56.4	76.9	60.6	1,732
<b>Women</b>						
Language difficulty finding or keeping a job	13.8	-	23.5	-	20.4	1,169
Language difficulty in education	8.7	-	16.2	-	14.2	1,172
Non-English first language at home	54.7	43.1	58.2	75.8	55.8	2,112

Source: LFS 2012. Notes: This table shows three language indicators, drawn from the third quarter of the LFS in 2012. A slightly different group of respondents answered each question, so separate sample sizes are shown in the final column on the right. The sample is shown by original motive and gender. Some cells are censored due to small cell size, in line with the requirements of the data provider.

**Table C10: Full Parameter estimates from probit models of national identity by gender**

	Men		Women	
	Estimate	Std. Error	Estimate	Std. Error
Intercept	-386.1	14.4	-350.3	14.6
Work	REF		REF	
Student	-4.8	4.4	-0.9	4.5
Family	34.3	3.9	22.4	3.5
Refugee	31.3	5.5	28.7	6.1
Arrival Age	0.5	0.2	0.2	0.2
In_YSM	85.8	4.2	78.3	4.7
Stu*In_YSM	36.1	6.6	28.2	6.9
Fam*In_YSM	-14.7	6.2	6.7	5.3
Ref*In_YSM	10.4	10.6	34.3	12.0
No quals	REF		REF	
UK qual below deg	38.1	7.8	24.5	6.4
UK 1st deg	23.8	8.8	17.4	8.0
UK high deg	31.8	7.4	21.8	7.1
For qual <deg	5.3	5.5	15.4	4.7
For qual deg or >	23.4	5.9	20.7	5.1
Missing qual info	27.1	5.1	20.8	4.4
No children	REF		REF	
Single parent	28.4	13.2	9.2	4.4
Couple parent	16.0	3.0	10.4	3.0
Missing parental status	4.2	6.5	10.5	6.0
Poland	REF		REF	
Afghanistan	136.5	13.7	139.1	15.2
Australia	49.2	14.7	13.6	15.6
Bangladesh	147.4	10.6	154.8	9.5
China	56.1	13.9	74.6	10.8
France	-41.8	18.5	-43.9	13.2
Germany	107.8	15.7	113.8	12.9
Ghana	-6.4	16.1	6.4	10.8
India	77.4	12.7	100.6	11.0
Iran	123.3	8.2	119.6	7.0
Iraq	91.2	12.9	88.4	13.5
Ireland	113.1	12.4	141.8	15.0
Italy	-52.6	12.2	-48.4	10.1
Jamaica	-24.0	15.6	-28.5	15.8
Kenya	151.5	14.1	135.1	11.7
Lithuania	-61.1	27.7	-24.7	16.6
New Zealand	61.5	18.0	49.4	16.7
Nigeria	111.7	10.5	120.5	9.5
Pakistan	143.4	8.8	149.2	7.6
Philippines	133.2	11.4	126.4	8.6
Portugal	15.6	15.4	-8.8	14.3
Romania	51.2	16.3	71.2	14.1
Slovakia	-43.9	44.9	33.7	15.6
Somalia	114.7	13.7	117.9	11.2
South Africa	134.2	10.2	122.7	9.0
Spain	-29.4	21.3	-36.3	16.9
Sri Lanka	116.0	10.8	103.4	10.0
Turkey	82.5	12.0	95.1	11.4
United States	5.9	13.9	5.8	11.1
Zimbabwe	103.3	11.4	111.0	9.8
Other A8	-12.4	19.9	13.9	11.7
Other Africa	106.2	8.9	120.6	7.7
Other Americas	80.9	10.6	70.5	8.5
Other Asia	85.9	9.4	72.9	7.6
Other EU15	-20.6	14.2	-18.4	10.6
Born elsewhere	94.2	9.5	87.2	7.9

Source: LFS 2010-2014. Notes: This table shows full parameter estimates from models of British national identity by gender. Coefficients and standard errors are all multiplied by 100. The sample consists of 11,197 men and 13,762 women aged 21-64, who were born abroad, who arrived in the UK as adults, and who have been in the UK for at least five years. n=24,959.

**Table C11: Robustness check: selected parameter estimates from probit models of national identity by gender, with and without control for legal citizenship**

	Probit models			
	Men		Women	
	A	B	A	B
Citizen		168.3 (3.6)		167.7 (3.1)
<b>Motives</b>				
Work	REF		REF	
Student	-4.8 (4.4)	-1.2 (4.8)	-0.9 (4.5)	5.2 (4.9)
Family	34.3 (6.2)	22.0 (4.4)	22.4 (3.5)	14.9 (3.9)
Refugee	31.3 (10.6)	16.2 (6.2)	28.7 (6.1)	23.6 (6.9)
<b>Years since migration</b>				
ln_YSM	85.8 (4.2)	42.3 (4.7)	78.3 (4.7)	42.4 (5.2)
Student*ln_YSM	36.1 (6.6)	11.6 (7.2)	28.2 (6.9)	9.9 (7.6)
Family*ln_YSM	-14.7 (6.2)	-11.8 (6.9)	6.7 (5.3)	3.4 (5.8)
Refugee*ln_YSM	10.4 (10.6)	16.2 (6.2)	34.3 (12.0)	10.1 (13.3)
<b>Other controls</b>				
Intercept	-386.1 (14.4)	-295.6 (15.6)	-350.3 (14.6)	-278.3 (15.9)
Means	36.3	36.3	38.5	38.5

Source: LFS 2010-2014. Notes: This table shows selected parameter estimates from models of British national identity by gender. Standard errors are in parentheses. Coefficients and standard errors are all multiplied by 100. The columns labelled 'A' show results from models with controls for origin, arrival age, highest qualification, and parental status, and the columns labelled 'B' show results from models with an additional control for legal citizenship. The sample consists of 11,197 men and 13,762 women aged 21-64, who were born abroad, who arrived in the UK as adults, and who have been in the UK for at least five years. n=24,959.