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Self-Employment Amongst Migrant Groups: New Evidence from England and Wales

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Abstract: Self-employment constitutes a vital part of the economy since entrepreneurs can provide not only employment for themselves but also for others. The link between self-employment and immigration is however complex, especially given the changing nature of self-employment. We investigate the evolving relationship between self-employment and immigration using recently released microdata from the 2011 Census for England and Wales. Our findings indicate large variations, with high self-employment rates observed for some groups with a long established history of migration to the UK (especially men born in Pakistan) and also for some groups who have arrived more recently (such as from the EU's new member states). We further explore the differences, analyse variations by gender and identify key determining factors. In addition to certain socio-economic characteristics, it is found that migration-related influences, such as English language proficiency and period of arrival in the UK, play an important role for some groups.

JEL Classification: J61, L26, F22, J21.

Keywords: Self-Employment; Entrepreneurship; Immigrants; United Kingdom.

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1. Introduction

There now exists a well-established international literature on immigration and self-employment/entrepreneurship (Fairlie and Lofstrom, 2015). A number of key findings have emerged including large variations between migrants from different countries of origin, which can be linked to factors such as discrimination in the paid labour market or differences in wealth and access to capital. Entrepreneurs can also provide employment opportunities for others, including people from their own countries of origin, other countries or for native-born workers. However, in contrast to countries such as the United States (US), where there is already considerable evidence specifically on immigrant self-employment, much of the previous research for the United Kingdom (UK) has focused on ethnic minorities, many of whom will be native-born, rather than immigrants. There are some exceptions, such as Levie (2007), Clark and Drinkwater (2009) and Jones *et al.* (2015), but the approach taken in most studies has tended to have been from the perspective of examining self-employment differences across ethnic groups. Given the high levels of immigration to the UK in recent years and that migration flows now emanate from a very diverse set of countries (Vertovec, 2007), it is therefore timely to fill this evidence gap. Our analysis is further enabled by the release of microdata from the 2011 Census of the Population, which contains information not only on recent groups of migrants to the UK but also includes some new migration-specific questions.

In addition to the increased volume of migration to the UK over the past two decades, there has also been a shift in countries of origin. In particular, much of the immigration to the UK in the post-war period up until the end of the 1990s

originated from New Commonwealth countries, especially from the Caribbean, India, Pakistan and Bangladesh. However, migrants to the UK since the turn of this century have increasingly arrived from European countries, particularly following the enlargement of the European Union (EU) that took place in May 2004. Continued globalisation more generally has also meant that migrants have started to arrive in the UK from a greater range of countries. The migration flows that have resulted are also likely to have been influenced by new forms of migration such as increased amounts of circular/shorter term migration (Castles *et al.*, 2013). Therefore, given the UK's growing and increasingly diverse immigrant population, previous evidence and perceptions regarding ethnic and immigrant self-employment may now be less relevant. Furthermore, demographic change has continued for the more established immigrant communities and this will have further consequences for their self-employment decisions (Clark and Drinkwater, 2010). Changes in immigration policy can also influence self-employment, through both direct and indirect routes, which we discuss in this paper.

Not only have there been large changes in immigration to the UK in relation to the volume, origin and nature of the migration flows but self-employment/entrepreneurship has also evolved considerably over the past couple of decades. For example, there has been an increase in sub-contracting, part-time and flexible forms of self-employment (Ajayi-Obe and Parker, 2005; Boheim and Muehlberger, 2009). New types of self-employment have also emerged including false self-employment (Behling and Harvey, 2015) as well as the rise of social entrepreneurship (Doherty *et al.*, 2014). Moreover, there is likely to have been an important gender dimension to these changes since self-

employment can offer more flexible work-life opportunities for women, especially for those with high levels of education (Wellington, 2006).

This paper utilises microdata from the 2011 Census of the Population to undertake a detailed analysis of self-employment across a range of migrant groups in England and Wales. Census microdata provide large samples that enable relatively narrowly defined groups to be examined separately for men and women, some years after the EU enlargements took place. In addition to documenting the main differences in the relative concentrations and types of self-employment amongst these groups, we carry out multivariate analysis using the new migration-related variables that were included in the 2011 Census to ascertain the extent to which these are able to provide further explanations for the observed differences. We focus particularly on the influence that period of arrival and English language ability have on self-employment for different categories of migrants, mindful of the context of an increasingly diverse migrant population (Vertovec, 2007).

2. The Migrant Population in England and Wales

In order to provide a background for our analysis, we firstly summarise the key episodes in the UK's recent migration history. For a more detailed discussion, see Castles *et al.* (2013). Migration to the UK in the post-war period was initially concentrated amongst individuals arriving from countries in the New Commonwealth. This was initiated by migration from the Caribbean from the late 1940s to the mid-1970s and then from the Indian Sub-Continent (initially from India, followed by Pakistan and Bangladesh) from the 1960s. Immigration to the UK was partly driven by the need to recruit workers for key sectors of the

economy such as the health service and public transport, following the loss of human capital during the Second World War. Given that many of the migrants arriving from the New Commonwealth settled in the UK for long periods or on a permanent basis, an increasingly large second-generation immigrant population has emerged, especially amongst the Asian groups. These groups also tended to cluster in large cities, especially in London but also in some parts of the Midlands, Northern England, Wales and Scotland.

The migration picture across the UK has become far more complex since the end of the 1990s. It has been heavily influenced by the EU enlargements that took place in 2004 and 2007. In particular, there was a large inflow of migrants following the accession of eight Central and Eastern European Countries (the EUA8) in May 2004. This was mainly the outcome of the UK being one of only three member states, along with Ireland and Sweden, to effectively allow EUA8 migrants unrestricted access to their labour markets immediately following enlargement (Clark and Drinkwater, 2008). The UK government imposed transitional arrangements on migration from Bulgaria and Romania (the EUA2) after these countries joined the EU in 2007. This resulted in far lower levels of migration to the UK from these countries until the restrictions were removed at the end of 2013, in comparison to the levels observed from EUA8 countries after the 2004 enlargement.

There has also been increased migration from other parts of the EU, especially following the Eurozone crisis, in the aftermath of the Great Recession of 2007/8. Migration flows from outside the EU have also become more diverse, partly as a result of the arrival of a relatively large number of refugees at the turn of the century, especially from the former Yugoslavia, the Middle East and some

African countries. There have also been significant policy changes in recent years with regards to migrants from countries from outside of the European Economic Area (EEA), particularly with the introduction of the Points Based System (PBS) in 2008. The PBS aims to simplify routes of entry to the UK but also to attract migrants with particular types of skills (Devitt, 2012). These migration patterns have combined to produce the landscape that was observed in the 2011 Census, the data source that we examine in this paper.

3. Influences on Immigrant Self-Employment

There is a long-standing literature on self-employment amongst immigrants to the US (Borjas, 1986; Yuengert, 1995; Lofstrom, 2002). Such studies have highlighted large differences between immigrants including in identifying the groups that typically have high rates (e.g. migrants from China, Korea and some European countries) and those displaying noticeably lower rates (e.g. migrants from Mexico, Puerto Rico and some African countries). There have also been a range of studies on self-employment amongst immigrants across Europe, such as for Germany (Constant and Zimmermann, 2006), Sweden (Andersson and Hammarstedt, 2010) and Switzerland (Guerra and Patuelli, 2014).

Evidence for the UK is less well established since the literature has tended to focus on ethnic differences, especially amongst Asian groups. This includes studies that have applied quantitative techniques to analyse Census data and large scale government surveys (Basu, 1998; Borooah and Hart, 1999; Clark and Drinkwater, 1998; 2010) or more bespoke surveys (Metcalf *et al.*, 1997; Clark and Drinkwater, 2000; Basu and Altinay, 2002), as well as more detailed (qualitative) analysis on smaller scale data on particular groups (Ram and

Deakins, 1996; Ram *et al.*, 2000). As in the US, some Asian groups have high rates of self-employment, especially Pakistani men, whilst rates are relatively low for Black Africans and Caribbeans. Differences between groups can, at least partly, be explained by compositional effects in terms of group characteristics associated with either general socio-economic factors or migration-specific influences (Clark and Drinkwater, 2010).

The focus of the current paper is on explaining differences between different migrant groups in self-employment rates and the propensity of the self-employed to employ others. Part of any difference between groups will be explained by the composition of each group in term of its overall demographic characteristics. It is therefore vital that a range of individual factors that may influence the choice of self-employment over paid-employment are controlled for. A recent study by Simoes *et al.* (2016) provides a detailed review of the theoretical and empirical literature, covering a wide range of studies and countries, on the determinants of self-employment and we use this to guide our selection of independent variables in the subsequent regression analysis.¹ Several unambiguous influences are identified by Simoes *et al.* (2016) including that men have far higher rates of self-employment than women and that self-employment increases with age but at a decreasing rate, typically peaking around mid-working age.² The presence of family members can also affect the probability of self-employment, with both marriage and children tending to have a positive influence, although there may be differences by gender.

¹ This study essentially updates and extends that of Le (1999).

² Self-employment is also found to increase with experience in the labour market, both in terms of the amount and duration, which is closely related to age. There is, however, some indication that self-employment is becoming increasingly popular amongst older workers, with a growth in the number of 'olderpreneurs' (Fineman, 2014).

Other factors such as health (in terms of either illness or disability) and education may either increase or decrease self-employment both *a priori* and in empirical estimates across a range of countries (Simoes *et al.*, 2016). In the UK context, immigrants tend to have more years of formal education than natives, although this is partly explained by their lower average age. Residential variables can affect self-employment. Regional variations are often related to industrial structure and labour market conditions (Georgellis and Wall, 2000) but may also be due to different entrepreneurial traditions. Housing is also linked with self-employment, especially through wealth effects. Owner occupiers can use their houses as collateral to start-up a business and to increase their chances of getting external funding (Simoes *et al.*, 2016). Changes in house prices can also provide a form of windfall investment for existing or potential entrepreneurs (Disney and Gathergood, 2009).

While these factors are likely to affect immigrants and the native population, there is a range of ethnic or immigrant-related influences on self-employment that may affect only particular groups or have a larger impact for some. We would therefore expect these to help explain differences in self-employment outcomes between groups. Such influences include discrimination in the paid labour market which pushes certain groups into self-employment (Clark and Drinkwater, 2000) or discriminatory behaviour in product (Borjas and Bronars, 1989) or credit markets (Alden and Hammarstedt, 2016; Blanchflower *et al.*, 2003). High concentrations of co-ethnics in specific geographic locations (ethnic enclaves) can boost self-employment through the provision of ethnic specific goods such as food and clothing (Aldrich *et al.*, 1985). Alternatively, if enclaves are areas of high deprivation as is typical in the UK, self-

employment may be lower than in more affluent neighbourhoods (Clark and Drinkwater, 2010).

The number of years that a migrant has resided in the host country is a key variable in many studies of the economic outcomes experienced by immigrants. Time since arrival may be related to several forms of capital: human, physical and financial. Human capital that is obtained in the host country is likely to be more valuable than that obtained overseas. It also takes time to accumulate the financial capital that may be necessary to establish a business, implying that migrants may need to spend a period of time in the paid labour market in order to obtain the required financial resources.

Language skills can affect self-employment but the precise nature of this relationship is ambiguous because of conflicting influences. Poor language skills in the host country's main language can restrict certain self-employment opportunities (Bates, 1997) but can also encourage them for some immigrant groups (Fairlie and Woodruff, 2010). The latter effect can also be related to the enclave economy (Evans, 1989). Therefore, it is not clear what the link between language proficiency and self-employment may be, although with a more service-based economy where communication skills are becoming increasingly important then it is likely that some degree of fluency in the language of the host country would be required for successful entry and survival for entrepreneurs.

Furthermore, group-specific cultures can affect values, social structures, resources, behavioural patterns and coping strategies, all of which can influence self-employment (Simoes *et al.*, 2016). Self-employment may be promoted within certain cultures or religions such as amongst Muslims in the UK (Rafiq, 1992) and Protestants across Europe (Nunziata and Rocco, 2011). There is some

evidence from the US of a home country effect, whereby migrants originating from countries that have high rates of self-employment are more likely to become self-employed in the host country (Yuengert, 1995). However, this result is not replicated in other studies such as Fairlie and Meyer (1996).

Self-employment can also be influenced by immigration policy. It can be boosted through direct attempts to encourage foreign entrepreneurs such as through Tier 1 of the UK's PBS, as well as issuing visas to wealthy individuals from overseas via the investor route (MAC, 2014). Moreover, specific schemes have been introduced given the increased competition between advanced economies for international entrepreneurs, especially amongst young graduates. For example, UK Trade & Investment runs the Sirius Programme, which aims to help graduates from overseas with bright ideas set up and grow businesses in the UK. More indirect policy changes could also induce higher levels of self-employment such as in the lead-up to and then following EU enlargement. In particular, the 1994 Europe Agreement enabled migrants from the EUA8 to work in the UK as self-employees before these countries were admitted into the EU in 2004. This was also the case for migrants from EUA2 countries during the transitional period introduced after the 2007 enlargement.

Ram *et al.* (2013) and Jones *et al.* (2015) have begun to explore some of the issues related to the super-diversity of migrant businesses in the UK. In particular, Jones *et al.* (2015) use pooled information from the Labour Force Survey, and some of their own survey interviews, to split migrants to the UK into an established group, who arrived in the UK before 2004 (mainly from New Commonwealth countries and China) and new immigrants, who arrived in the UK between 2004 and 2013 (from a more diverse set of countries). They report

differences in the distribution of the self-employed in terms of their sector of employment but have relatively small sample sizes, especially for some of the new groups of migrants even though men and women have been combined.

In this paper we extend the literature in several directions. The larger samples of migrants that is provided by Census microdata compared to earlier studies allows us to undertake detailed analysis by gender. We particularly investigate factors influencing self-employment amongst migrant groups in England and Wales, after controlling for a range of demographic characteristics. Furthermore, we focus on English language proficiency and the time of arrival in the UK following their inclusion in the 2011 Census for the first time, allowing us to shed new light on theories of immigrant entrepreneurship. With regards to language, we are especially interested in how the ability to speak English influences self-employment outcomes. Opposing effects have been found in the existing literature, as discussed above, and our empirical analysis aims to establish whether there are differences between migrant groups within a common setting. The time of arrival question enables us to examine differences across migrant groups, which is particularly important given the impact of changes to immigration policy in response to the EU enlargements and towards migrants from outside the EU.

4. Data and Empirical Methods

This paper uses the Sample of Anonymised Records (SARs) from the 2011 Census of the Population that took place in England and Wales on March 27th

2011.³ The SARs is a 5% random sample of all Census returns and contains responses to each of the questions on the Census form for over 2.8 million individuals. As a result, it allows us to undertake a detailed investigation of self-employment amongst migrant groups since we can construct quite narrowly defined groups and investigate the factors that influence self-employment.

The sample is restricted to the working age population i.e. males and females aged between 16 and 64 and excludes full-time students. The self-employment rate is calculated as the percentage of employed workers indicating that their main economic activity was self-employment in the week prior to the Census. Descriptive statistics are initially presented for detailed ethnic groups, separately identifying individuals who were born in the UK from those born overseas, and then for the main migrant groups. Further details on the construction of the migrant groups can be found in the Appendix.

In addition to the descriptive analysis of self-employment, several different sets of models are estimated in the econometric analysis. Pooled probit models are initially estimated based on two empirical specifications. Firstly, a basic specification:

$$SE_i^* = X_i' \beta + \delta_j \sum_{j=1}^{12} COB_j + u_i \quad , \quad (1)$$

where X_i is a vector of standard socio-economic characteristics for individual i , β is their associated coefficients and u_i a standard normal random error term.

COB_j contains a set of country/region of birth dummy variables (measured

³ Separate Censuses are undertaken in Scotland and Northern Ireland and these are administered by different statistical agencies. As a result, each agency has different release policies for Census statistics and data, as well as there being some differences in the questions asked. Moreover, England and Wales captures well over 90% of all immigrants and ethnic minorities in the UK.

relative to the UK born), together with their associated coefficients δ_j . SE_i^* is a latent variable indicating the probability of self-employment and is related to the binary dependent variable in the following way:

$$SE_i = 1 \text{ if } SE_i^* > 0, \text{ the individual is self-employed}$$

$$SE_i = 0 \text{ otherwise, the individual is in paid-employment.}$$

Secondly, an augmented specification adds controls for ethnicity, religion, self-reported health and housing tenure⁴, which are captured in the vector Z_i and their associated coefficients ϕ :

$$SE_i^* = X_i' \beta + Z_i' \phi + \delta_j \sum_{j=1}^{12} COB_i + u_i . \quad (2)$$

A pooled probit model is also estimated for the probability that self-employed individuals employ others:

$$EO_i^* = X_i' \beta + \delta_j \sum_{j=1}^{12} COB_i + \theta_k \sum_{k=1}^{20} IND_i + \varepsilon_i , \quad (3)$$

where IND_i is a set of dummy variables for industrial sector, with their associated coefficients θ_k , and ε_i is a standard normal random error term. The industry dummies are defined according to sections of the 2007 Standard Industrial Classification (SIC2007), and have been included because of the large differences by industrial sector in employing others/working on your own. EO_i^* is a latent variable indicating the probability that a self-employed individual employs others and is related to the binary dependent variable as follows:

⁴ These variables have been included in the augmented specification because of the inter-relationships that exist between migrant group, ethnicity and religion, which will influence the estimates for the different migrant groups (relative to the UK born). There are several data issues in connection to health and self-employment, as discussed in Simoes *et al.* (2016). Housing tenure can have an important effect on self-employment because of the ability to ease credit constraints (Black *et al.*, 1996) but housing tenure is likely to be endogenous in a single equation regression framework (Henley, 2004).

$EO_i = 1$ if $EO_i^* > 0$, the individual employs others

$EO_i = 0$ otherwise, the individual works on their own.

The next set of models is estimated separately for individuals from four migrant categories (as denoted by the j subscript). These categories relate to migrants from Old-EU member states (including Ireland), New-EU member states, Other Europe and Outside Europe. These are four policy-relevant categories since they relate to two groups with freedom of movement: one pre-2004 and another since 2004 and two which do not: one from Europe and another from outside. The models allow for the coefficients on the determinants of self-employment, including time of arrival and English language ability, to vary between the four migrant categories. These models therefore include some immigration-specific variables ($IMMIG_{ij}$) and their coefficients γ_l . This implies that the following models are estimated separately for each migration category for the probability of self-employment:

$$SE_{ij}^* = X'_{ij}\beta_j + \gamma_l \sum_{l=1}^9 IMMIG_{ij} + u_{ij} \quad . \quad (4)$$

Similarly, models are estimated separately for the four migrant categories for the probability of employing others, which can be shown by:

$$EO_{ij}^* = X'_{ij}\beta_j + \gamma_l \sum_{l=1}^9 IMMIG_{ij} + \theta_k \sum_{k=1}^{15} IND_i + \varepsilon_{ij} \quad . \quad (5)$$

A smaller number of industry dummies have been included in these models compared to those estimated in (3) because of some small cell sizes.

5. Descriptive Statistics

The self-employment rates reported in Table 1 for ethnic groups in 2011 share several features with those reported in previous studies (Clark and Drinkwater, 2010). In particular, the rates are highest for Pakistani men and lowest for the Black groups. There are some differences for women, with the highest rates observed for the Chinese and the lowest for Black Caribbeans.⁵ Some interesting differences for certain ethnic groups emerge if self-employment rates are compared according to whether workers were born in the UK or overseas, with rates tending to be slightly lower for those born in the UK for most ethnic groups but not all. The exceptions include men and women from the Other White and African ethnic groups.

TABLE 1 AROUND HERE

The statistics reported in Table 2 provide further detail on some new migrant groups to the UK, especially in relation to the high levels of migration from other parts of Europe that has occurred over the last couple of decades. The increased importance of these groups can be seen by observing the number of observations, which indicate that migrants from new EU member states were the largest group for both men and women, with in excess of 19,000 and 17,000 workers from these countries present in the sample, respectively. Unsurprisingly, the majority (over 80%) of migrants from accession countries arrived after the 2004 enlargement of the EU. This was the only migrant group where the percentage of arrivals after 2003 exceeded the percentage arriving before 2004. To provide some additional context for the self-employment

⁵ Carter *et al.* (2015) discuss barriers to establishing businesses for women from ethnic minority groups in the UK.

statistics for each of the migrant groups, other key labour market indicators have been reported in Table A1 in the Appendix. More specifically, the table contains activity, employment (including and excluding students) and unemployment rates by gender.

TABLE 2 AROUND HERE

Overall self-employment rates for men are highest for those born in Pakistan – with a very similar figure (36%) to that for the Pakistani ethnic group, as reported in Table 1. This is considerably higher than the next closest groups, men from Other European countries (28%) and Ireland (26%). The lowest rates belong to men from the Old-EU, the Americas (both categories) and India, who all have rates below those of the UK born. The self-employment rate for men arriving after 2003 was lower than earlier arrivals for each of the groups. This was particularly noticeable for the Asian groups, with self-employment rates of less than 10% observed for more recent male migrants from India and Bangladesh compared to over 25% for migrants arriving before 2004. Self-employment rates for women are more concentrated across the migrant groups, ranging only between 9% and 15%. Women born in the UK and Bangladesh have the lowest rates and the highest rates are observed for women born in Pakistan and other parts of Europe. There are far smaller differences in the self-employment rates of migrants arriving before and after 2004 in comparison to men. The differences are less than 5 percentage points for most groups, compared to typically over 15 percentage points for men. Moreover, the self-employment rates for women from Central and South America arriving after 2003 are higher than for earlier arrivals from these countries.

Table 3 shows the type of self-employment for the main migrant groups by gender. Self-employment is categorized either on a full-time (working more than 30 hours a week) or part-time (working for 30 hours or less a week) basis and either working on their own or employing others (the actual number of others being employed is not recorded). The majority of self-employed men in each of the migrant groups are full-time and do not employ others. This is least apparent for self-employed men born in Bangladesh since almost 50% of this group work part-time, compared with less than 20% of men from most other groups. Interestingly, a relatively high proportion of men from Bangladesh (almost 20%) are in the part-time and employing others category, which is by far the highest amongst any of the groups.⁶ Over a third of self-employed men born in Pakistan work part-time. In contrast, part-time self-employment is a far more important activity for women, accounting for over half of all self-employed women and in excess of 40% for all migrant groups. The percentage of women employing others is similar to men, at just over 20%, but is relatively high for some of the (South Asian) groups, especially those born in Bangladesh.

TABLE 3 AROUND HERE

Given that the type of self-employment is related to industrial sector, Table 4 reports self-employment by grouped sectors for migrant groups by gender. There are some notable concentrations of self-employment in Transport, Food/Restaurants and Retail for men born in Asia, especially those from Pakistan and Bangladesh. Further information is available by examining more disaggregated industrial categories. For example, over 40% of self-employed

⁶ The denominator for this group is relatively small, with only 746 self-employed men born in Bangladesh in the sample, which is the third smallest of the groups reported in Table 3.

men born in Pakistan work in Transportation & Storage and around two-thirds of self-employed men born in Bangladesh either work in this sector or Accommodation & Food Service Activities. There are also relatively high sectoral concentrations amongst self-employed women born in Indian, Pakistan, Bangladesh and other parts of Asia in these sectors. More than a half of self-employed women from New-EU member states work in Health, Education, Administration and Public Services.

TABLE 4 AROUND HERE

6. Econometric Evidence

Regression analysis is undertaken to examine the influence of socio-economic characteristics on self-employment and also to establish whether the extent of the differences across migrant groups remains after controlling for such characteristics. Table 5 reports marginal effects, calculated at sample means, and associated p-values for the two specifications for men and women.⁷ In accordance with the information provided in Table 2, the highest probability of being self-employed belongs to men born in Pakistan. The estimates in Table 5 reveal that men born in Pakistan have a probability of self-employment that is 15 percentage points higher than the UK born after controlling for a standard set of socio-economic influences. This is similar to the 17 percentage point difference in the raw data in Table 2 which suggests that very little of the difference in self-

⁷ A full set of results for each of the pooled models using the basic specification appears in Table A2 in the Appendix, along with the means of the explanatory variables. The estimates in this table are generally consistent with the empirical regularities summarised in Simoes *et al.* (2016). Other definitions of self-employed, such as where the unemployed have been included in the denominator as opposed to just those in employment, produced very similar results with regards the differences between migrant groups. Results are available from the authors on request.

employment rates between male migrants from Pakistan and the UK born is explained by the independent variables contained in the basic specification (age, education, region, marital status, children). Male migrants from New-EU member states and other parts of Europe are each 7 percentage points more likely to be self-employed than the UK born. In the case of the former group the regression-based estimate of the gap is higher than in the raw data suggesting that New-EU migrants have, on average, characteristics less likely to be conducive to self-employment. Their lower age profile is a contributing factor. Self-employment is significantly lower for men from several migrant groups (Old-EU, Africa, India, North America & Caribbean and Central & South America) than the UK born but the magnitude of the differences are relatively small since they are in the order of 1-3 percentage points.

Women from New-EU member states are most likely to be self-employed after controlling for the basic set of characteristics. Like their male counterparts, the regression-based estimate of the gap exceeds that in the raw data although the magnitude of the change is not as great. Females from Pakistan and other parts of Europe also have relatively high adjusted self-employment probabilities. For the remaining groups of migrant women the marginal effects are between -2 and +2 percentage points, indicating that their probabilities are clustered around those of the UK born. It is worth noting that for a number of these groups, including women from the Old-EU, North America and the Caribbean and Central and South America, the basic set of independent variables explains a relatively high proportion of the raw difference between their self-employment rates and those of the UK born.

TABLE 5 AROUND HERE

The estimates from the augmented specifications are similar for most groups. The largest differences between the basic and augmented models can be seen for men born in Pakistan, where including ethnicity and religion in the model “explains” more of the gap between this group and the UK born. It is difficult to disentangle the separate effects of ethnicity and religion here since the vast majority of Pakistan-born migrants will be non-white Muslims. Clark and Drinkwater (2000) note that Muslims are more likely to be self-employed than other groups even when controlling for a wide range of other variables. One interpretation of this is that some religions, including Islam, positively promote self-employment (Rafiq, 1992), however in the current context it is not possible to disentangle this explanation from the possibility that the higher self-employment rates reflect greater discrimination against non-whites and/or Muslims in the paid labour market. There is a much higher self-employment rate for men born in Pakistan relative to Bangladesh despite that fact that both groups tend to face low earnings and poor employment prospects in the paid labour market (Longhi *et al.*, 2013).

The Pakistani group does not have the highest probability of self-employment in the augmented specification – this distinction belongs to migrants from New-EU member states. Some of the significant relationships in the basic models also become insignificant in the augmented models such as for male migrants from Africa, North America & the Caribbean and Central & South America and female migrants from Ireland and Bangladesh. There is also a change in sign for this latter group, as well as for women from India. Given the importance of ethnicity and religion as determinants of economic activity for

women in the UK (Heath and Martin, 2013) it is not surprising that our estimates are affected in this way.

The final two columns in Table 5 report marginal effects and p-values for the probability that a self-employed person (men and women combined) employs others for each migrant group, relative to the UK born. The explanatory variables included in this probit model consist of the controls in the basic specification for estimating the probability of self-employment plus industry dummies. After controlling for these variables, the probability of having employees is significantly higher than for the UK born for 7 out of the 12 migrant groups.⁸ This is consistent with US evidence by Fairlie and Miranda (2016), who find that Asian and Hispanic owned startups are more likely to hire their first employee than startups owned by Whites. Migrants from Bangladesh, other parts of Asia, India and other European countries have the highest probability of employing others. This probability is at least 6 percentage points higher for these groups than it is for the UK born and 15 and 9 percentage points higher for entrepreneurs from Bangladesh and Other parts of Asia respectively. There is again a stark contrast between Bangladeshi migrants and Pakistanis whose probability of being self-employed with employees is 2 percentage points higher than that of the UK born. This finding is relevant to discussions of the “quality” of self-employment amongst minorities in the UK: concerns have been raised about the high proportions of Pakistani men who are classified as self-employed but who work as taxi drivers (Kapadia, Nazroo and Clark, 2015) for example.

⁸ The industry dummies may be thought to be endogenous. However, removing these from the model does not have a major effect on most of the migrant group dummy variables, with a significantly higher probability of employing others continuing to be observed for 7 of the 12 migrant groups compared to the UK born in the model where the industry dummies have been excluded. Some of the marginal effects do alter for some migrant groups, such as increasing for Bangladeshis and Other Asians when the industry dummies are excluded.

The only migrant groups to have a significantly lower probability of employing others are those born in New-EU member states, Central & South America and Oceania. However, the difference in the probability of employing others between these groups and the UK born is 4 percentage points or less.

The next set of regression models (reported in Tables 6-8) estimate the probability of self-employment and of employing others separately for four migrant categories. Means for the explanatory variables for each category are reported in Table A3 in the Appendix.⁹ This table highlights some interesting differences between the categories including a relatively high proportion of people from immigrant groups in 'other qualifications' category. This is particularly the case for New-EU migrants, where this percentage is in excess of 40%, compared to 6% for the entire sample, as reported in Table A2. Estimating the models for more categories provides more detailed information e.g. on cohort effects but also results in some relatively small cell sizes for some variables, making the estimates less precise.

TABLE 6 AROUND HERE

Table 6 shows that male migrants who have been in the UK for longer are far more likely to be self-employed. This is most noticeable for men from outside Europe, where the difference in the probability of self-employment between those arriving before 1990 compared to those after 2007 is around 12 percentage points. The comparable difference for migrants from Old-EU member states is 3 percentage points. The cohort dummies are far less important for male migrants from New-EU member states. In fact, migrants from this group who

⁹ Some of the dummy variables included in the pooled models, such as for regions and marital status, have been combined because of the relatively small number of observations in some of the categories included in the pooled models for some of the migrant categories.

arrived in the UK between 2001 and 2003 are most likely to be self-employed and have a self-employment rate which is more than 8 percentage points higher than those arriving pre-1990 after controlling for other factors. In a single cross section the coefficients on time since arrival variables cannot distinguish between the separate effects of variations in the quality (i.e. unobservable characteristics) of different cohorts on the one hand and the causal effect of years in the UK on the other (Borjas, 1985). However, this finding does accord with evidence provided by Clark and Drinkwater (2008) who report that a high proportion of EUA8 migrants arriving in this period were self-employed because this group was able to enter the labour market through this route prior to the 2004 enlargement. These estimates suggest that this effect has persisted, with large numbers of EUA8 migrants arriving during this period remaining in the UK as self-employed workers and emphasizes how immigration policy can have substantial, long-term effects on the composition of the labour market.

The results for women migrants with respect to period of arrival in the UK are somewhat different to those for men. Although more recent female arrivals from outside Europe are also significantly less likely to be self-employed, the differentials are far smaller in comparison to their male counterparts (less than a 4 percentage point differential compared to around 12 percentage points). Moreover, the cohort dummies are not significantly different from zero for women migrants from the other three categories: Old-EU, New-EU and Other Europe. Women migrants arriving from New-EU member states and other parts of Europe since 2007 are slightly more likely (by around 1-2 percentage points) to be self-employed compared to earlier arrivals. This suggests that the migration policy-induced effects may be slightly different for men and women

from these countries or that women arriving in the UK more recently are increasingly exploiting opportunities in self-employment.

TABLE 7 AROUND HERE

There is considerable variation in the effect of (English) language proficiency on self-employment. For some categories, such as men from the Old-EU, those with the best English language skills are more likely to be self-employed.¹⁰ Whilst for other categories (e.g. women from Outside Europe), those with the best language skills are more likely to be observed in the paid labour market. It is well known that host country language fluency is well rewarded in the paid labour market (Chiswick, 2008) and, for the UK, Miranda and Zhu (2013) find an earnings penalty in paid employment of around 23% for male immigrants who are not native speakers of English. This might suggest that fluency will lead to lower self-employment rates, other things equal (Clark and Drinkwater, 2000). However it is likely that the particular type of self-employment under consideration will be important with language skills being less relevant in some types of employment or geographical areas.

The mixed results also accord with evidence from the US (Bates, 1997; Fairlie and Woodruff, 2010). The estimates for men born in the Old-EU are particularly interesting, with the difference in self-employment rates between men whose main language is English and those who do not speak English well at all being 9 percentage points. This suggests that migrants from the Old-EU with better language skills may be exploiting niche opportunities in self-employment. In contrast, men born in Other Europe and Outside Europe reporting that they

¹⁰ We make use of two language questions that were asked in the Census. The first relates to the the main language used in the household and the second to how well the migrant speaks English, if their main language is not English. The reference category is main language is English. Individuals in this category may therefore be thought to be most proficient in English.

speak English well are significantly more likely to be self-employed (by 4-5 percentage points after controlling for other influences) than those whose main language is English. There are fewer significant differences for women. In particular, the only significant effects at the 5% level are observed for women from the Old-EU and Outside Europe and the magnitude of these effects is relatively small. Overall, there are no clear patterns across the migrant categories but it certainly does not seem to be the case that self-employment is concentrated amongst migrants with the poorest English language skills.

Tables 6 and 7 also indicate a number of other differences between the migrant groups in relation to the determinants of self-employment. For men, with the exception of the Other Europe category, self-employment increases monotonically with the age categories however this profile is considerably steeper for the Old-EU group. The influence of age is generally smaller for women. Male graduates from the New-EU, Other Europe and Outside Europe are significantly less likely to be self-employed than those with no qualifications. This is also the case for women migrants from New-EU member states. There are significant regional effects, especially for New-EU migrants, where adjusted self-employment rates for men living in London (the excluded category) are in excess of 20 percentage points higher than they are in the other four regions. A similar effect can be observed for women from this group but the differentials compared to the other regions are lower at around 12 percentage points. London, along with other relatively prosperous parts of the UK has seen higher growth in self-employment over recent years (Henley, 2015) and its prosperity may offer opportunities that relatively mobile New-EU migrants are particularly well-placed to take advantage of. The results with regards to marital status tend to

suggest a positive effect of marriage, with significantly positive effects observed for three of the migrant categories for men and women. Workers with dependent children are also more likely to be self-employed, although there are some variations between the groups.

The migration-specific variables also influence the probability of employing others to a varying degree for the different migrant categories, as shown in Table 8. Some of the time of arrival dummies are significant, with a clear indication that more recent arrivals are less likely to employ others observed for migrants from the New-EU and from Outside Europe. This could reflect differences in cohort quality or in the reduced time that recent migrants have had to build the human and physical capital required to start and expand businesses or to establish relevant contacts and networks. There are also some significant effects with regards to the English language indicators. Most notably, migrant entrepreneurs from Outside Europe who speak English as a main language are significantly less likely to employ others in comparison to other comparable workers in the four other language categories, with the difference increasing as the level of language proficiency deteriorates. The marginal effect for entrepreneurs from New-EU member states is also significant at the 10% level but indicates that those who do not speak English well are less likely to employ others.

TABLE 8 AROUND HERE

In terms of the other variables, the probability of employing others is highest for the youngest age category amongst migrants from Outside Europe

after other characteristics have been controlled for.¹¹ Entrepreneurs from Other Europe with degrees are significantly less likely to employ others than those without any qualifications. Whilst some of the other qualifications dummies are significant for migrants from the Old-EU, Other Europe and Outside Europe. There are no significant regional effects. The family variables exert an influence for some of the categories, with an indication that married entrepreneurs with children are more likely to employ others, especially amongst migrants from the Old-EU and Outside Europe. Finally, as expected, part-time entrepreneurs in each of the four groups are significantly less likely to employ others, as are women from all categories apart from the New-EU.

7. Conclusion

The UK experienced an unprecedented increase in immigration in the first decade of the 21st century, especially following EU enlargement in 2004. As well as affecting public attitudes, these inflows have also influenced patterns of labour market activity including self-employment. In this paper we have analysed how self-employment varies across different migrant groups, both in terms of its incidence and broad nature. Moreover, the reasons for the observed differences have been examined in some detail, with particular attention being paid to the influence of some new variables that were included in the 2011 Census, especially year of arrival in the UK and English language proficiency.

Our findings suggest that whilst self-employment has remained high for some established migrant groups, especially men born in Pakistan, high rates are

¹¹ The percentage employing others does increase with age for all migration categories in the raw data but the age differences are relatively small for people born in the New-EU and Outside Europe.

also observed for migrants from countries that acceded to the EU in 2004 and 2007. However, the drivers of these high self-employment rates are likely to be quite different. Previous research has indicated that a lack of suitable opportunities in the paid employment, partly due to discrimination, is important for the more established groups (Clark and Drinkwater, 2000; 2010). In contrast, changes in migration policy including allowing entrepreneurs to access the labour market in the pre-enlargement or transitional periods, as well as the introduction of the PBS for people from non-EEA countries, would appear to have been important influences for newer groups of migrants to the UK. Self-employment is also relatively high amongst several groups of women migrants, in comparison to the UK born. In particular, there are only small differences between recent and earlier arrivals for some groups, such as for women from Old-EU and New-EU member states. In terms of the effect of explanatory variables, some similarities are found amongst the different categories of migrants including in relation to broad regional variations. However, there are also some differences between the categories, including for English language ability and qualifications. Research into understanding why these differences between different migrant groups arise should be a focus for future research in this area.

There are also significant differences in the probability of employing others and its determinants across migrant groups. Entrepreneurs from Bangladesh and Other Asian countries are most likely to employ others, whilst the probability of employing others is highest for those with poorer language skills amongst migrants from Outside Europe. Previous work has noted how the quality as well as the quantity of self-employment matters for ethnic groups

(Clark and Drinkwater, 2010). To the extent that being able to employ others is an indication of entrepreneurial “success”, our results may have implications for policies relating to improving outcomes for the self-employed and by extension affecting the welfare of people from migrant groups for whom this form of activity is quantitatively significant. Furthermore these findings are important in the context of needing to expand and diversify the economic base in the UK following the recession, especially given the cuts to the public sector workforce that have already occurred and others that are planned. Henley (2015) has argued that the continued rise of self-employment in the UK following the financial crisis has been “structural” in the sense of reflecting people taking advantage of positive opportunities for starting businesses rather than being a response to poor employment prospects in the paid labour market. It would be useful in the context of understanding and improving the welfare of migrant groups to establish whether this is as true for those groups and in the areas where they tend to live as it is for the wider labour market.

Taken together, the findings suggest that recent changes in migration policy have had an impact, both directly and more indirectly, on self-employment and entrepreneurship in the UK. This applies both in relation to boosting rates of self-employment, given the high levels observed for some groups of (recent) migrants compared to the UK born – especially amongst women, as well as for the probability of employing others. As a result, there may be scope to further refine and develop migration policy with regards to immigrant entrepreneurship in order to achieve particular targets related to broadening the UK’s economic base. This may well now have heightened importance given the outcome of the EU referendum in June 2016, which has been predicted to result in negative

economic consequences for the UK. The UK's departure from the EU is also likely to usher in changes to UK immigration policy, especially with regards to EU member states. Therefore, further research is required on more specific aspects of the relationship between immigration and self-employment/entrepreneurship, especially once the terms of the UK's withdrawal from the EU have been negotiated. More detailed sectoral analysis should be able to shed further light on the extent to which this can be achieved, especially since self-employment may be concentrated in particular low value/skill sectors for some groups.

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Table 1: Self-Employment Rates by Ethnic Group and Country of Birth (Whether Born in UK), 2011

	Males						Females					
	All		UK Born		Foreign Born		All		UK Born		Foreign Born	
	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N
White: UK	19.6	532,145	19.6	519,237	21.1	12,908	9.3	474,070	9.2	462,199	13.8	11,871
White: Irish	24.6	6,301	22.0	2,680	26.6	3,621	9.7	5,828	9.5	2,189	9.8	3,639
White: Gypsy or Irish	38.2	421	40.1	354	28.4	67	20.2	262	19.1	230	28.1	32
White: Other White	21.9	37,742	23.9	2,575	21.7	35,167	13.9	35,917	14.1	2,252	13.9	33,665
White and Black Caribbean	17.1	2,881	16.5	2,608	22.3	273	6.8	2,845	6.0	2,595	15.2	250
White and Black African	16.3	1,137	15.2	520	17.2	617	9.9	1,087	10.2	547	9.6	540
White and Asian Mixed	19.1	2,589	17.1	1,842	24.1	747	11.1	2,248	9.9	1,673	14.8	575
Other Mixed	19.6	2,312	18.9	1,241	20.5	1,071	10.6	2,308	9.4	1,258	12.0	1,050
Indian	19.8	19,050	18.6	6,319	20.4	12,731	10.0	15,031	8.2	5,628	11.1	9,403
Pakistani	31.9	11,079	24.2	3,915	36.1	7,164	10.6	4,911	7.4	2,701	14.5	2,210
Bangladeshi	20.5	4,240	12.6	988	22.9	3,252	7.3	1,813	4.9	797	9.3	1,016
Chinese	23.2	3,906	16.6	850	25.1	3,056	16.4	4,032	9.0	732	18.0	3,300
Other Asian	19.1	9,238	17.3	1,157	19.3	8,081	10.7	8,160	8.3	998	11.0	7,162
African	15.9	8,734	18.7	1,099	15.5	7,635	8.1	8,558	9.6	1,282	7.9	7,276
Caribbean	16.4	5,802	14.5	3,664	19.6	2,138	6.1	7,173	6.0	4,473	6.2	2,700
Other Black	16.6	2,330	15.9	1,368	17.7	962	9.0	2,074	7.7	1,281	11.1	793
Other: Arab	22.0	2,300	19.4	237	22.3	2,063	14.2	819	14.6	137	14.1	682
Other: Any other group	22.6	4,311	20.3	880	23.2	3,431	13.1	2,790	10.9	678	13.8	2,112
All Ethnic Groups	20.0	656,518	19.6	551,534	22.1	104,984	9.6	579,926	9.1	491,650	12.5	88,276

Notes: The self-employment rate is the self-employed expressed as a percentage of total employment for each group. N is the denominator and relates to the number of individuals in employment (excluding economically active full-time students).

Table 2: Self-Employment Rates by Country/Region of Birth, 2011

	Males						Females					
	All		Arrived Pre-2004		Arrived 2004-11		All		Arrived Pre-2004		Arrived 2004-11	
	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N
UK	19.6	551,534	-	-	-	-	9.1	491,650	-	-	-	-
Ireland	26.1	3,919	27.9	3,137	18.9	782	9.7	3,915	10.4	3,208	6.4	707
Old-EU	16.5	12,439	19.3	7,796	11.7	4,643	12.2	12,325	13.2	8,250	10.2	4,075
New-EU	24.1	19,029	39.1	3,302	21.0	15,727	14.1	17,800	17.7	3,958	13.1	13,842
Other Europe	27.6	4,202	29.8	2,926	22.5	1,276	15.1	3,159	15.6	2,129	13.9	1,030
Africa	19.7	18,578	22.0	13,975	12.9	4,603	10.7	15,977	11.3	12,408	8.7	3,569
India	18.7	10,241	26.0	5,855	8.9	4,386	10.7	7,283	12.9	4,857	6.2	2,426
Pakistan	36.4	7,119	42.7	5,174	19.7	1,945	15.4	2,186	15.8	1,743	13.5	443
Bangladesh	23.2	3,221	26.3	2,597	9.9	624	9.1	1,035	9.3	843	8.3	192
Other Asia	21.9	14,823	26.1	10,549	11.5	4,274	13.6	12,551	15.2	8,574	10.1	3,977
North America & Caribbean	18.8	5,802	22.2	4,003	11.3	1,799	12.1	6,382	12.6	4,786	10.6	1,596
Central & South America	18.2	2,200	19.4	1,198	16.9	1,002	14.2	2,368	13.4	1,403	15.2	965
Oceania	20.8	3,411	23.3	1,894	17.6	1,517	13.0	3,295	15.9	1,715	9.8	1,580
All Countries of Birth	20.0	656,518	-	-	-	-	9.6	579,926	-	-	-	-

Note: See notes to Table 1.

Table 3: Type of Self-Employment by Country/Region of Birth, 2011

	Males				Females			
	% PT with	% FT with	% PT own	% FT own	% PT with	% FT with	% PT own	% FT own
UK	1.7	20.9	15.8	61.6	6.8	14.0	45.0	34.2
Ireland	2.2	25.6	12.4	59.9	5.8	18.2	35.3	40.8
Old-EU	1.9	23.5	17.1	57.6	4.6	10.5	48.3	36.5
New-EU	2.2	16.2	15.2	66.4	5.3	8.6	53.9	32.2
Other Europe	8.3	26.6	19.1	46.0	7.1	10.7	43.5	38.7
Africa	3.5	26.8	18.9	50.8	6.7	17.2	38.3	37.8
India	4.3	31.4	15.3	49.0	10.1	21.1	31.8	37.0
Pakistan	7.8	19.2	32.8	40.2	13.1	13.7	42.6	30.7
Bangladesh	19.2	26.0	28.4	26.4	23.4	16.0	38.3	22.3
Other Asia	6.8	34.3	18.8	40.0	10.5	23.8	32.2	33.5
North America & Caribbean	1.4	21.4	18.5	58.8	3.9	11.5	45.5	39.0
Central & South America	3.2	15.0	23.4	58.4	7.5	9.3	48.1	35.2
Oceania	1.3	19.2	15.1	64.4	5.1	8.4	36.2	50.2
All Countries of Birth	2.2	21.5	16.4	59.9	6.9	14.1	44.5	34.6

Notes: “FT” relates to full-time self-employed (those working more than 30 hours a week in their main job) and “PT” relates to part-time employment (those working 30 or less hours a week). “With” relates to those employing others and “own” relates to those not employing others.

Table 4: Sectoral Distribution of Self-Employment by Country/Region of Birth, 2011

	Males				Females			
	% Sectors A-E	% Sector F	% Sectors G-I	% Sectors J-U	% Sectors A-F	% Sectors G-I	% Sectors N-Q	% Sectors J-M and R-U
UK	11.1	31.4	20.6	36.9	10.2	20.0	33.0	36.7
Ireland	6.1	39.3	15.7	39.0	9.7	17.4	33.2	39.7
Old-EU	6.3	16.7	21.4	55.7	6.8	15.8	36.3	41.1
New-EU	4.6	55.2	19.5	20.8	8.3	16.2	51.4	24.1
Other Europe	4.4	25.3	40.0	30.3	7.6	18.1	31.3	43.1
Africa	5.0	13.6	32.8	48.6	6.0	23.7	37.3	33.1
India	6.4	14.3	39.0	40.3	5.2	41.6	30.2	23.1
Pakistan	5.0	6.3	66.2	22.6	10.1	39.9	32.4	17.6
Bangladesh	3.5	3.6	74.4	18.5	8.5	36.2	33.0	22.3
Other Asia	4.5	9.0	49.9	36.5	5.7	35.7	27.0	31.7
North America & Caribbean	6.1	20.4	15.2	58.3	6.7	12.8	32.0	48.4
Central & South American	3.2	19.5	27.2	50.1	5.4	17.3	37.9	39.4
Oceania	5.8	18.8	11.7	63.7	3.7	11.0	32.9	52.3
All Countries of Birth	10.0	29.9	23.2	36.9	9.6	20.6	33.9	36.0

Notes: Sectors have been constructed according to SIC2007. Sectors A-E are primary & secondary industries, Sector F is Construction, Sectors G-I are Retail, Food/Restaurants & Transport and Sectors J-U are Other Services. The sectors for females are slightly different to those for males, with Sectors A-F combined into one category and Other Services split into two. Sectors N-Q relate to Health, Education, Administration and Public Services.

Table 5: Estimates of Self-Employment Probabilities for Country/Region of Birth

	Males - Self-Employed				Females - Self-Employed				All - With Employees	
	Basic		Augmented		Basic		Augmented		M.E.	p-value
	M.E.	p-value	M.E.	p-value	M.E.	p-value	M.E.	p-value		
Ireland	0.036	0.000	0.021	0.014	-0.013	0.002	-0.005	0.393	0.047	0.000
Old-EU	-0.031	0.000	-0.031	0.000	0.017	0.000	0.008	0.008	-0.009	0.212
New-EU	0.070	0.000	0.084	0.000	0.063	0.000	0.062	0.000	-0.019	0.001
Other Europe	0.070	0.000	0.049	0.000	0.038	0.000	0.026	0.000	0.061	0.000
Africa	-0.017	0.000	-0.002	0.555	-0.005	0.015	0.010	0.002	0.038	0.000
India	-0.015	0.000	-0.027	0.000	0.000	0.942	0.004	0.380	0.067	0.000
Pakistan	0.152	0.000	0.054	0.000	0.050	0.000	0.053	0.000	0.020	0.015
Bangladesh	0.004	0.575	0.027	0.064	-0.015	0.050	0.014	0.369	0.147	0.000
Other Asia	0.010	0.003	0.018	0.000	0.022	0.000	0.017	0.000	0.094	0.000
North Am. & Caribbean	-0.029	0.000	-0.008	0.142	0.003	0.327	0.020	0.000	-0.016	0.089
Central & South America	-0.028	0.000	-0.014	0.111	0.022	0.000	0.026	0.000	-0.036	0.017
Oceania	0.013	0.058	0.013	0.068	0.021	0.000	0.012	0.026	-0.030	0.013
Pseudo R-Squared	0.034		0.037		0.034		0.040		0.081	
Number of Observations	656,518		652,447		579,926		578,485		186,883	

Notes: Augmented specification is the basic specification plus controls for ethnicity, religion, self-reported health and housing tenure. Dependent children not applicable has been included as a control in both specifications. Ethnicity, religion and tenure not applicable have been removed from the augmented specification but religion not stated has been included as a category.

Table 6: Estimates of the Probability of Self-Employment for Men by Migrant Category

	Old-EU		New-EU		Other Europe		Outside Europe	
	M.E.	p-value	M.E.	p-value	M.E.	p-value	M.E.	p-value
Arrived in 1990s	0.007	0.439	0.030	0.188	-0.023	0.284	-0.041	0.000
Arrived 2000-3	-0.024	0.046	0.083	0.000	-0.070	0.005	-0.076	0.000
Arrived 2004-6	-0.024	0.044	-0.033	0.068	-0.062	0.018	-0.110	0.000
Arrived 2007-9	-0.030	0.009	0.003	0.893	-0.078	0.002	-0.120	0.000
Arrived 2010-11	-0.030	0.021	0.004	0.837	-0.099	0.001	-0.117	0.000
Speaks English very well	-0.040	0.000	-0.016	0.258	0.015	0.443	-0.001	0.799
Speaks English well	-0.022	0.034	0.006	0.682	0.051	0.012	0.037	0.000
Does not speak English well	-0.064	0.000	-0.001	0.956	-0.009	0.765	-0.020	0.007
Does not speak English at all well	-0.092	0.041	0.013	0.621	0.004	0.969	-0.055	0.019
Aged 25-34	0.144	0.000	0.050	0.000	0.060	0.066	0.088	0.000
Aged 35-44	0.204	0.000	0.103	0.000	0.051	0.152	0.132	0.000
Aged 45-54	0.302	0.000	0.134	0.000	0.077	0.056	0.157	0.000
Aged 55-64	0.369	0.000	0.149	0.000	0.135	0.009	0.192	0.000
GCSEs or equivalent	-0.033	0.006	0.000	0.969	-0.036	0.128	-0.040	0.000
A Levels/Apprenticeship	0.006	0.630	-0.019	0.157	-0.034	0.232	-0.049	0.000
Degree	-0.043	0.000	-0.078	0.000	-0.120	0.000	-0.066	0.000
Other qualification	-0.009	0.491	0.004	0.699	-0.011	0.605	-0.013	0.025
South/East England	-0.045	0.000	-0.224	0.000	-0.032	0.066	-0.026	0.000
Midlands	-0.048	0.000	-0.238	0.000	-0.095	0.000	-0.014	0.004
North England	-0.064	0.000	-0.242	0.000	-0.076	0.000	0.012	0.011
Wales/South West	-0.038	0.000	-0.217	0.000	0.004	0.875	-0.024	0.000
Married/Civil Partnership	0.000	0.986	0.051	0.000	0.022	0.292	0.028	0.000
Widowed/Divorced/Separated	0.000	0.984	0.052	0.000	0.062	0.024	0.030	0.000
1 dependent child	0.007	0.498	0.005	0.587	0.033	0.136	-0.004	0.465
2 dependent children	0.029	0.009	0.019	0.113	0.024	0.289	0.008	0.139
3+ dependent children	0.040	0.017	0.061	0.007	0.044	0.193	0.073	0.000
Dependent Children N/A	0.014	0.087	-0.009	0.259	0.043	0.049	-0.003	0.569
Pseudo R-Squared	0.051		0.178		0.033		0.052	
Number of Observations	16,358		19,029		4,202		65,395	

Notes: Default categories are arrived before 1990, main language is English, aged 16-24, no qualifications, lives in London, single and no dependent children.

Table 7: Estimates of the Probability of Self-Employment for Women by Migrant Category

	Old-EU		New-EU		Other Europe		Outside Europe	
	M.E.	p-value	M.E.	p-value	M.E.	p-value	M.E.	p-value
Arrived in 1990s	0.000	0.961	-0.003	0.845	-0.035	0.045	-0.011	0.004
Arrived 2000-3	-0.005	0.641	-0.003	0.835	-0.032	0.139	-0.043	0.000
Arrived 2004-6	0.005	0.649	-0.021	0.106	-0.037	0.078	-0.037	0.000
Arrived 2007-9	0.004	0.696	0.013	0.383	-0.004	0.872	-0.034	0.000
Arrived 2010-11	0.010	0.451	0.018	0.298	0.007	0.831	-0.024	0.000
Speaks English very well	0.013	0.047	-0.006	0.524	-0.028	0.055	-0.011	0.006
Speaks English well	0.012	0.252	0.016	0.100	-0.012	0.517	0.015	0.001
Does not speak English well	-0.011	0.598	0.019	0.117	0.002	0.959	0.036	0.000
Does not speak English at all well	-0.046	0.301	0.005	0.817	-0.009	0.905	0.004	0.855
Aged 25-34	0.027	0.042	0.010	0.233	0.043	0.179	0.034	0.000
Aged 35-44	0.088	0.000	0.043	0.000	0.056	0.108	0.061	0.000
Aged 45-54	0.125	0.000	0.044	0.002	0.122	0.006	0.077	0.000
Aged 55-64	0.162	0.000	0.091	0.000	0.159	0.005	0.091	0.000
GCSEs or equivalent	-0.036	0.000	-0.025	0.004	0.073	0.111	-0.037	0.000
A Levels/Apprenticeship	0.004	0.746	-0.036	0.000	0.160	0.004	-0.021	0.001
Degree	0.016	0.144	-0.035	0.000	0.102	0.001	-0.008	0.167
Other qualification	0.003	0.809	-0.005	0.526	0.208	0.000	0.002	0.731
South/East England	-0.028	0.000	-0.122	0.000	-0.013	0.384	-0.003	0.342
Midlands	-0.048	0.000	-0.125	0.000	-0.079	0.000	-0.023	0.000
North England	-0.041	0.000	-0.122	0.000	-0.077	0.000	-0.002	0.708
Wales/South West	-0.005	0.544	-0.113	0.000	-0.038	0.058	0.005	0.360
Married/Civil Partnership	0.021	0.003	0.023	0.001	-0.014	0.472	0.029	0.000
Widowed/Divorced/Separated	0.013	0.162	0.034	0.000	-0.003	0.903	0.006	0.295
1 dependent child	0.010	0.220	0.025	0.001	0.019	0.318	0.000	0.927
2 dependent children	0.051	0.000	0.073	0.000	0.055	0.018	0.022	0.000
3+ dependent children	0.079	0.000	0.146	0.000	0.059	0.161	0.038	0.000
Dependent Children N/A	0.012	0.115	-0.001	0.910	-0.014	0.439	0.019	0.000
Pseudo R-Squared	0.038		0.107		0.040		0.021	
Number of Observations	16,240		17,800		3,159		51,077	

Notes: Default categories are arrived before 1990, main language is English, aged 16-24, no qualifications, lives in London, single and no dependent children.

Table 8: Estimates of the Probability of Having Employees by Migrant Category

	Old-EU		New-EU		Other Europe		Outside Europe	
	M.E.	p-value	M.E.	p-value	M.E.	p-value	M.E.	p-value
Arrived in 1990s	0.010	0.555	-0.033	0.108	0.030	0.399	-0.034	0.000
Arrived 2000-3	-0.017	0.517	-0.077	0.000	-0.012	0.800	-0.039	0.001
Arrived 2004-6	-0.028	0.248	-0.094	0.000	-0.002	0.965	-0.080	0.000
Arrived 2007-9	-0.005	0.859	-0.077	0.000	-0.085	0.070	-0.113	0.000
Arrived 2010-11	-0.066	0.015	-0.085	0.000	0.017	0.816	-0.080	0.000
Speaks English very well	-0.016	0.299	-0.006	0.711	0.078	0.021	0.043	0.000
Speaks English well	-0.014	0.526	-0.004	0.816	0.075	0.030	0.050	0.000
Does not speak English well	-0.035	0.461	-0.030	0.091	0.029	0.578	0.053	0.002
Does not speak English at all well	0.268	0.162	-0.006	0.867	0.018	0.921	0.122	0.057
Aged 25-34	-0.026	0.582	-0.023	0.187	0.016	0.809	-0.073	0.004
Aged 35-44	0.015	0.755	-0.020	0.276	0.023	0.751	-0.062	0.018
Aged 45-54	0.025	0.626	-0.017	0.418	0.041	0.586	-0.075	0.004
Aged 55-64	0.022	0.680	-0.009	0.742	0.080	0.381	-0.064	0.015
GCSEs or equivalent	-0.053	0.020	-0.001	0.951	-0.033	0.415	-0.003	0.784
A Levels/Apprenticeship	-0.024	0.324	-0.021	0.260	-0.054	0.248	-0.029	0.046
Degree	0.016	0.503	-0.028	0.059	-0.092	0.015	0.015	0.195
Other qualification	0.011	0.644	-0.038	0.004	-0.045	0.197	-0.009	0.428
South/East England	-0.017	0.240	-0.018	0.123	-0.029	0.325	-0.012	0.165
Midlands	-0.013	0.544	0.028	0.115	-0.060	0.251	0.004	0.700
North England	-0.006	0.748	0.010	0.570	0.002	0.958	0.008	0.411
Wales/South West	-0.008	0.690	0.009	0.656	-0.036	0.365	-0.019	0.169
Married/Civil Partnership	0.068	0.000	-0.004	0.740	0.024	0.503	0.086	0.000
Widowed/Divorced/Separated	0.044	0.054	0.014	0.386	0.041	0.351	0.049	0.001
1 dependent child	0.039	0.054	0.026	0.059	0.026	0.490	0.023	0.028
2 dependent children	0.030	0.141	0.004	0.803	0.087	0.028	0.047	0.000
3+ dependent children	0.133	0.000	0.044	0.107	0.068	0.238	0.037	0.002
Dependent Children N/A	-0.014	0.430	-0.003	0.805	-0.053	0.138	0.018	0.129
Female	-0.068	0.000	-0.016	0.173	-0.117	0.000	-0.057	0.000
Part-time	-0.156	0.000	-0.091	0.000	-0.093	0.000	-0.146	0.000
Pseudo R-Squared	0.120		0.053		0.160		0.106	
Number of Observations	4,962		7,098		1,636		20,528	

Notes: Default categories are arrived before 1990, main language is English, aged 16-24, no qualifications, lives in London, single and no dependent children. Controls for industrial sector have also been included. In particular, 15 dummies from the 21 SIC 2007 sections have been included in the probit models for each of the four categories. A smaller number of categories have been included in comparison to Table 5 because of the need to combine the smaller industrial sections for some of the categories.

Appendix

Construction of Migrant Groups and Categories

The following categories can be identified in the SARs in terms of the respondents' countries of birth.

Code	Country/Region of Birth
1	England
2	Scotland
3	Northern Ireland
4	Wales
5	United Kingdom not otherwise specified
6	Ireland
7	Germany
8	Poland
9	EU countries: Member countries in March 2001
10	EU countries: Accession countries April 2001 to March 2011
11	Rest of Europe
12	North Africa
13	Central and Western Africa
14	South and Eastern Africa
15	Africa not otherwise specified
16	Middle East
17	Eastern Asia
18	Southern Asia: Bangladesh
19	Southern Asia: India
20	Southern Asia: Pakistan
21	Rest of Southern Asia
22	South-East Asia
23	Central Asia
24	North America and the Caribbean
25	Central and South America
26	Antarctica, Oceania (including Australasia) and other

These codes were then used to construct the following groups as a result of sample sizes and geographical considerations.

Migrant Group	SARs Codes
UK	1, 2, 3, 4, 5
Ireland	6
Old-EU	7, 9
New-EU	8, 10
Other Europe	11
Africa	12, 13, 14, 15
India	19
Pakistan	20

Bangladesh	18
Other Asia	16, 17, 21, 22, 23
North America and Caribbean	24
Central and South America	25
Oceania	26

Migrant Category	SARs Codes
Old-EU	6, 7, 9
New-EU	8, 10
Other Europe	11
Outside Europe	12-26

Table A1: Labour Market Statistics by Country/Region of Birth, 2011

	Males				Females			
	Activity Rate	Emp. Rate	Emp. Rate (no students)	Unemp. Rate	Activity Rate	Emp. Rate	Emp. Rate (no students)	Unemp. Rate
UK	82.2	76.2	80.5	8.3	73.0	69.2	72.2	6.3
Ireland	80.0	74.8	76.9	7.0	70.8	67.9	69.9	4.5
Old-EU	80.8	76.1	85.9	7.3	72.4	68.5	76.0	6.9
New-EU	89.5	85.9	91.0	4.9	80.1	75.7	79.1	6.3
Other Europe	76.5	71.0	79.1	8.5	55.9	50.3	55.5	12.1
Africa	81.4	73.5	78.5	12.2	68.5	61.5	64.7	13.2
India	83.6	80.1	85.5	6.7	64.1	59.0	60.6	9.5
Pakistan	78.3	72.3	77.0	10.4	29.9	24.4	23.8	20.7
Bangladesh	81.4	73.7	75.6	11.8	32.7	26.2	25.0	23.2
Other Asia	68.2	63.0	78.3	10.2	55.8	51.6	60.9	10.1
North America & Caribbean	79.5	72.3	78.8	10.3	70.4	65.4	70.7	8.4
Central & South America	81.6	76.7	84.8	7.8	70.3	65.5	70.1	8.3
Oceania	90.7	87.7	91.5	3.9	83.2	80.4	83.7	3.8
All Countries of Birth	81.9	76.0	80.7	8.4	71.6	67.6	70.9	6.8

Table A2: Estimates of Self-Employment Probabilities from Pooled Models

	Male			Female			With Employees		
	Mean	M.E.	p-value	Mean	M.E.	p-value	Mean	M.E.	p-value
Ireland	0.006	0.036	0.000	0.007	-0.013	0.002	0.008	0.047	0.000
Old-EU	0.019	-0.031	0.000	0.021	0.017	0.000	0.019	-0.009	0.212
New-EU	0.029	0.070	0.000	0.031	0.063	0.000	0.038	-0.019	0.001
Other Europe	0.006	0.070	0.000	0.005	0.038	0.000	0.009	0.061	0.000
Africa	0.028	-0.017	0.000	0.028	-0.005	0.015	0.029	0.038	0.000
India	0.016	-0.015	0.000	0.013	0.000	0.942	0.014	0.067	0.000
Pakistan	0.011	0.152	0.000	0.004	0.050	0.000	0.016	0.020	0.015
Bangladesh	0.005	0.004	0.575	0.002	-0.015	0.050	0.004	0.147	0.000
Other Asia	0.023	0.010	0.003	0.022	0.022	0.000	0.027	0.094	0.000
North America & Caribbean	0.009	-0.029	0.000	0.011	0.003	0.327	0.010	-0.016	0.089
Central & South America	0.003	-0.028	0.000	0.004	0.022	0.000	0.004	-0.036	0.017
Oceania	0.005	0.013	0.058	0.006	0.021	0.000	0.006	-0.030	0.013
Aged 25-34	0.236	0.091	0.000	0.233	0.042	0.000	0.174	-0.002	0.714
Aged 35-44	0.253	0.159	0.000	0.255	0.086	0.000	0.271	0.018	0.003
Aged 45-54	0.244	0.199	0.000	0.259	0.102	0.000	0.293	0.020	0.001
Aged 55-64	0.164	0.257	0.000	0.148	0.142	0.000	0.219	0.008	0.215
0-4 GCSEs or equivalent	0.143	-0.024	0.000	0.148	-0.006	0.000	0.139	-0.002	0.594
5+ GCSEs or equivalent	0.146	-0.029	0.000	0.184	-0.001	0.553	0.143	-0.007	0.062
Apprenticeship	0.059	0.020	0.000	0.010	0.136	0.000	0.061	-0.020	0.000
2+ A Levels or equivalent	0.137	-0.030	0.000	0.145	0.010	0.000	0.128	-0.009	0.017
Degree	0.343	-0.062	0.000	0.379	0.019	0.000	0.336	0.026	0.000
Other qualification	0.063	-0.025	0.000	0.046	0.017	0.000	0.069	-0.004	0.437
North West	0.120	0.035	0.000	0.123	0.013	0.000	0.106	-0.018	0.002
Yorkshire & the Humber	0.092	0.035	0.000	0.091	0.015	0.000	0.081	-0.020	0.000
East Midlands	0.081	0.035	0.000	0.081	0.021	0.000	0.073	-0.024	0.000
West Midlands	0.096	0.042	0.000	0.096	0.017	0.000	0.088	-0.034	0.000
East of England	0.109	0.064	0.000	0.107	0.034	0.000	0.111	-0.038	0.000
Inner London	0.063	0.122	0.000	0.062	0.092	0.000	0.076	-0.034	0.000
Outer London	0.090	0.113	0.000	0.089	0.049	0.000	0.108	-0.041	0.000
South East	0.160	0.072	0.000	0.159	0.042	0.000	0.172	-0.047	0.000
South West	0.095	0.075	0.000	0.097	0.052	0.000	0.106	-0.045	0.000
Wales	0.051	0.047	0.000	0.052	0.021	0.000	0.048	-0.018	0.005
Married	0.505	-0.002	0.154	0.489	0.020	0.000	0.577	0.077	0.000
Civil Partnership	0.003	-0.001	0.859	0.003	0.060	0.000	0.004	0.054	0.003
Separated	0.026	0.004	0.214	0.036	0.001	0.507	0.031	0.044	0.000
Divorced	0.079	0.014	0.000	0.113	0.004	0.018	0.104	0.030	0.000
Widowed	0.006	-0.005	0.434	0.016	0.001	0.828	0.011	0.088	0.000
1 dependent child	0.159	0.011	0.000	0.197	0.008	0.000	0.162	0.022	0.000
2 dependent children	0.145	0.022	0.000	0.156	0.028	0.000	0.163	0.037	0.000
3+ dependent children	0.055	0.062	0.000	0.048	0.052	0.000	0.070	0.057	0.000
Dependent Children N/A	0.203	-0.008	0.000	0.155	0.012	0.000	0.178	0.007	0.033
Female	-	-	-	-	-	-	0.299	-0.017	0.000

Part-time	-	-	-	-	-	-	0.284	-0.144	0.000
Mining & Quarrying	-	-	-	-	-	-	0.001	-0.100	0.000
Manufacturing	-	-	-	-	-	-	0.056	0.005	0.439
Electricity, Gas etc	-	-	-	-	-	-	0.002	-0.086	0.000
Water Supply; Sewerage etc	-	-	-	-	-	-	0.003	0.022	0.208
Construction	-	-	-	-	-	-	0.220	-0.079	0.000
Wholesale and Retail	-	-	-	-	-	-	0.118	0.071	0.000
Transportation and Storage	-	-	-	-	-	-	0.061	-0.068	0.000
Accommodation and Food	-	-	-	-	-	-	0.045	0.265	0.000
Information and Comm.	-	-	-	-	-	-	0.047	-0.088	0.000
Financial and Insurance	-	-	-	-	-	-	0.023	-0.047	0.000
Real Estate	-	-	-	-	-	-	0.016	0.034	0.001
Professional Sci. & Tech.	-	-	-	-	-	-	0.101	0.001	0.862
Administrative and Support	-	-	-	-	-	-	0.064	-0.028	0.000
Public Admin. & Defence	-	-	-	-	-	-	0.010	-0.095	0.000
Education	-	-	-	-	-	-	0.051	-0.087	0.000
Health and Social Work	-	-	-	-	-	-	0.067	0.034	0.000
Arts & Entertainment	-	-	-	-	-	-	0.035	-0.103	0.000
Other Service Activities	-	-	-	-	-	-	0.052	0.013	0.089
Households as Employers	-	-	-	-	-	-	0.002	-0.126	0.000
Extra-Territorial Orgs	-	-	-	-	-	-	0.000	-0.071	0.102
Pseudo R-squared		0.034			0.034			0.081	
Number of Observations		656,518			579,926			186,833	

Note: Table reports marginal effects (calculated at sample means) and p-values (calculated using robust standard errors).

Table A3: Means of Explanatory Variables by Migrant Category

	Old-EU		New-EU		Other Europe		Outside Europe	
	Men	Women	Men	Women	Men	Women	Men	Women
Arrived before 1990	0.099	0.116	0.012	0.015	0.095	0.088	0.221	0.247
Arrived in 1990s	0.213	0.248	0.032	0.046	0.400	0.330	0.236	0.210
Arrived 2000-3	0.118	0.124	0.070	0.084	0.142	0.143	0.165	0.163
Arrived 2004-6	0.173	0.164	0.426	0.397	0.147	0.184	0.163	0.178
Arrived 2007-9	0.228	0.198	0.320	0.341	0.152	0.172	0.151	0.145
Arrived 2010-11	0.168	0.149	0.139	0.117	0.064	0.083	0.063	0.055
English is main language at home	0.570	0.574	0.103	0.138	0.331	0.429	0.573	0.639
Speaks English very well	0.284	0.309	0.204	0.284	0.298	0.339	0.189	0.172
Speaks English well	0.121	0.098	0.449	0.382	0.282	0.170	0.182	0.141
Does not speak English well	0.023	0.017	0.223	0.178	0.083	0.056	0.053	0.043
Does not speak English at all well	0.002	0.002	0.022	0.019	0.006	0.004	0.004	0.004
Aged 16-24	0.068	0.099	0.120	0.149	0.058	0.064	0.045	0.047
Aged 25-34	0.405	0.398	0.566	0.557	0.414	0.414	0.312	0.299
Aged 35-44	0.328	0.304	0.209	0.171	0.329	0.302	0.334	0.323
Aged 45-54	0.138	0.137	0.079	0.091	0.158	0.168	0.207	0.228
Aged 55-64	0.061	0.062	0.025	0.033	0.041	0.053	0.103	0.103
No qualifications	0.064	0.042	0.140	0.119	0.215	0.089	0.183	0.143
GCSEs or equivalent	0.083	0.078	0.138	0.126	0.136	0.100	0.162	0.175
A Levels/Apprenticeship	0.073	0.080	0.068	0.065	0.062	0.075	0.062	0.070
Degree	0.494	0.554	0.189	0.297	0.298	0.509	0.331	0.396
Other qualification	0.286	0.246	0.464	0.393	0.290	0.228	0.261	0.216
London	0.553	0.506	0.315	0.328	0.578	0.573	0.429	0.447
South/East England	0.224	0.267	0.242	0.262	0.198	0.206	0.184	0.209
Midlands	0.064	0.062	0.175	0.160	0.063	0.067	0.161	0.146
North England	0.090	0.091	0.169	0.153	0.100	0.088	0.177	0.137
Wales/South West	0.069	0.074	0.098	0.098	0.060	0.066	0.049	0.061
Single	0.548	0.535	0.496	0.478	0.253	0.252	0.185	0.163
Married/Civil Partnership	0.381	0.367	0.422	0.377	0.623	0.580	0.757	0.695
Widowed/Divorced/Separated	0.072	0.098	0.082	0.145	0.123	0.168	0.059	0.142
No dependent children	0.290	0.326	0.300	0.367	0.244	0.355	0.247	0.345
1 dependent child	0.125	0.158	0.174	0.218	0.188	0.217	0.180	0.223
2 dependent children	0.111	0.124	0.094	0.095	0.195	0.156	0.184	0.178
3+ dependent children	0.040	0.038	0.025	0.022	0.070	0.037	0.143	0.082
Dependent Children N/A	0.434	0.354	0.407	0.298	0.303	0.235	0.247	0.172
Number of Observations	16,358	16,240	19,029	17,800	4,202	3,159	63,395	51,077