



Labour force composition in low skilled sectors of the UK economy (Lot 1)

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Executive Summary	8
1 Introduction	13
2 Context	15
2.1 <i>Definition of sector</i>	15
2.2 <i>Definition of skill</i>	16
2.3 <i>Categorising sectors by skill</i>	17
2.4 <i>Migrant definition</i>	20
2.5 <i>Trends in migration to the UK</i>	20
2.6 <i>Factors driving migration</i>	23
3 Literature review	26
3.1 <i>Summary of findings</i>	26
3.2 <i>Migrants in the UK labour market</i>	27
3.3 <i>Sectoral and occupational distribution of migrants</i>	31
3.4 <i>Self-employment and temporary working</i>	36
3.5 <i>Employment, unemployment and benefits</i>	38
4 Empirical work	42
4.1 <i>Data processing and definitions</i>	42
4.2 <i>Research questions</i>	43
4.3 <i>Regression analysis</i>	83
5 Conclusions	87
6 References	91
Annexe 1: Additional tables and figures	95

Labour force composition in low skilled sectors of the UK economy (Lot 1)

Figure 1. The share of migrants in the UK working age population	21
Figure 2. Evolution of UK workforce composition 1992-2012	22
Figure 3. Correlation between GDP per head in country of origin and proportion of the population registering on the WRS	25
Figure 4. Skill distribution of migrants and natives in 2000	27
Figure 5. Cross country comparison of migrant education levels	30
Figure 6. Unemployment rates by demographic group	30
Figure 7. Cross country comparison of migrant employment by sector	33
Figure 8. Occupational distribution of A8 migrants	34
Figure 9. Migrant workers in self-employment	36
Figure 10. Changes in temporary working 2008-2011	37
Figure 11. Evolution of employment rates	39
Figure 12. Evolution of unemployment rates	39
Figure 13. Distribution of migrant shares in sectors 1994-2012	45
Figure 14. Changes in workforce composition (15:food,beverage manufacture)	51
Figure 15. Changes in migrant shares across sectors 2002-2008 and 2008-2012	60
Figure 16. Age distribution of workforce groups	66
Figure 17. Variation in educational attainment of native workers by sector	69
Figure 18. Variation in educational attainment of migrant workers by sector	70
Figure 19. Skill ratios (native over migrant) by sector	71
Figure 20. Top 10 sectors in terms of self-employment rates 2012	72

Figure 21. Bottom 10 sectors in terms of self-employment rates 2012	72
Figure 22. Variation in self-employment rates by workforce group (2012)	73
Figure 23. Top 10 sectors in terms of agency worker employment (2012)	75
Figure 24. Top 10 sectors by proportion of agency workers (2012)	76
Figure 25. Proportion of employees who are not permanent by workforce group (2012)	77
Figure 26. Reason for temporary job by workforce group (2012) – I	79
Figure 27. Reason for temporary job by workforce group (2012) – II	79
Figure 28. Employment rates of UK-born and migrants	82
Figure 29. Unemployment rates of UK-born and migrants	83
Figure 30. Proportion of foreign-born workers in UK workforce 1975 - 2012	95
Figure 31. Long-term international migration into the UK from A8, 2004–2012	96
Figure 32. Employment and participation rates 1979-2000	97
Figure 33. Employment patterns 1979-2000 (men)	98
Figure 34. Employment patterns 1979-2000 (women)	99
Figure 35. Percentage point change in migrant share in sector 1994 - 2012 (sectors with highest increase)	100
Figure 36. Percentage point change in migrant share in sector 1994 - 2012 (sectors with lowest increase)	101
Figure 37. Changes in migrant share by sector 2008-2012	102
Figure 38. Percentage point change in migrant share in sector 1994 - 2012 (top half)	103
Figure 39. Percentage point change in migrant share in sector 1994 - 2012 (bottom half)	103
Figure 40. Changes in workforce composition (18:clothing,fur manufacture)	104

Figure 41. Changes in workforce composition (17:textile manufacture)	104
Figure 42. Changes in workforce composition (73:research,development)	105
Figure 43. Changes in workforce composition (37:recycling)	105
Figure 44. Changes in workforce composition (55:hotels,restaurants)	106
Figure 45. Changes in workforce composition (23:coke,petrol prods, nuclear fuel man.)	106
Figure 46. Changes in workforce composition (14:other mining, quarrying)	107
Figure 47. Changes in workforce composition (60:transport by land,pipeline)	108
Figure 48. Changes in workforce composition (67:other financial (not insurance, pensions))	108
Figure 49. Industry self-employment rate and migrant shares	109
Figure 50. Industry self-employment rate and change in migrant shares	109
Figure 51. Industry pay and migrant shares	110
Figure 52. Industry pay and change in migrant shares	110
Figure 53. Industry part-time working rate and migrant shares	111
Figure 54. Industry part-time working rate and change in migrant shares	111
Figure 55. Industry occupational structure and migrant shares	112
Figure 56. Industry occupational structure and change in migrant shares	112
Figure 57. Industry educational attainment and migrant shares	113
Figure 58. Industry educational attainment and change in migrant shares	113
Figure 59. Industry temporary working and migrant shares	114
Figure 60. Industry temporary working and change in migrant shares	114

Figure 61. Industry agency working and migrant shares	115
Figure 62. Industry agency working and change in migrant shares	116
Figure 63. Variation in average age by sector of UK workers	117
Figure 64. Variation in average age by sector of migrant workers	118
Figure 65. Ratio of average age (native over migrant) by sector	118
Table 1. SOC 2000 major occupation groups	18
Table 2. Sectors by skill level 2012	19
Table 3. Top ten countries of birth for working age migrants in the UK, 2012	23
Table 4. Employment patterns 1979-2000 (men)	31
Table 5. Largest migrant employing sectors 1994-2012	44
Table 6. Top 10 industry sectors by share of non-UK born workers (1994-2012)	46
Table 7. Bottom 10 industry sectors by share of non-UK born workers (1994-2012)	47
Table 8. Sectors with highest change in migrant shares between 1994 and 2012	48
Table 9. Sectors with lowest change in migrant shares between 1994 and 2012	49
Table 10. Decomposition of change in migrant share by sector 1994-2012, top 10 sectors	50
Table 11. Decomposition of change in migrant share by sector 2008-2012	52
Table 12. Changes in the shares of different workforce groups 1994-2012	53
Table 13. Top 10 occupations by share of non-UK born workers (2002-2012)	54
Table 14. Occupations with no foreign-born workers (2002-2012)	55
Table 15. Occupations with highest increase in migrant shares between 2002 and 2012	56

Table 16. Occupations with declining migrant shares between 2002 and 2012	57
Table 17. Decomposition of change in migrant share by occupation 2002-2012, top 10 occupations	58
Table 18. Changes in migrant shares pre and post- recession	61
Table 19. Correlation coefficients of sectoral migrant shares and changes thereof	62
Table 20. Characteristics of different categories of sectors (2012)	64
Table 21. Characteristics of different workforce groups 2012	65
Table 22. Educational attainment by workforce group and age 2012	67
Table 23. Agency working by workforce group, 2012	76
Table 24. Benefits eligibility for immigrants	81
Table 25. Regression results (industry sectors)	85
Table 26. Regression results (occupations)	86
Table 26. Correlation coefficients between sector characteristics and migrant shares and changes thereof	119
Table 27. Correlation coefficients of sectoral migrant shares and changes thereof: low skilled sectors only	120
Table 28. Characteristics of sectors with highest migrant shares in 2012	121
Table 29. Characteristics of sectors with highest growth in migrant shares between 1994 and 2012	122
Table 30. Characteristics of sectors with low migrant shares in 2012	123
Table 31. Characteristics of sectors with low growth in migrant shares between 1994 and 2012	124

Members of the Migration Advisory Committee (MAC) and its secretariat met and corresponded with the research authors in order to develop and steer this research project. However, the robustness of the findings are the responsibility of the authors, and the findings and views presented in this report do not necessarily reflect those of the MAC.

Executive Summary

The Migration Advisory Committee (MAC) wishes to increase its understanding on the drivers of demand for migrant labour in low skilled sectors and why such demand is persistent. Frontier Economics has been commissioned to conduct a quantitative study to inform recommendations the MAC may make on any future commission relating to migration for work in low skilled sectors.

The primary purpose of the research is to establish robust evidence about various segments of the labour market. This study looks to build on and update existing quantitative work looking at the characteristics of the low skilled labour market that was largely conducted prior to the current recession. The focus of this report is on broadening the existing evidence base on the low skilled labour market, relative to other sectors of the economy.

Specifically, the study sought to address a number of research questions of which the following were prioritised:

- How has the composition of the workforce (in terms of different migrant groups - A8, A2, British-born, non-EEA) changed over time in different sectors?
- Is there any evidence that the ratio of British-born to migrant workers in different sectors changed during the recession?
- What characterises sectors with a relatively high migrant share in their workforce, or a growing migrant share?
- Are there any differences in characteristics between groups of workers in terms of skills, age etc.? Does this vary by sector? How do these compare to the characteristics of the unemployed?

It is well documented that immigration to the UK has been on the rise in recent years. Since 1992 the share of migrant workers in the working age population has doubled. Currently one in seven working age people in the UK were born abroad. While general migration trends are well understood, less is known about the sectors of the economy that employ different migrant groups. In particular there is need for evidence around the use of migrant labour in the low skilled labour market, relative to other sectors of the economy in recent years. Below, we summarise our findings in relation to the specific research questions relating to this issue.

How has the composition of the workforce (in terms of different migrant groups - A8, A2, British-born, non-EEA) changed over time in different sectors?

- Overall, the mix of migrants (in terms of country of origin), their skill composition, performance in the labour market and sectoral distribution has changed in recent years.
- Notably the share of migrants from the new EU member states has increased dramatically over the past ten years. In 2002 0.2% of the UK workforce was from the A8¹ countries. By 2012 this had increased to 2%. Polish migrants now account for a tenth of all recent migrants to the UK.
- We found evidence that the sectoral and occupational distribution of migrants has changed over time. Despite the fact that more recent migrants are relatively more skilled (in terms of educational attainment) than both natives and previous migrants, the industries and occupations that have increased their use of migrant labour most are those that offer relatively more low-skilled jobs.
- Of the ten sectors where migrant shares have increased the most over the last twenty years, seven are low skilled.
- On average, migrant shares increased by six percentage points in low skilled sectors compared with three percentage points in other sectors over the last decade.
- Of the ten occupations where migrant shares have increased the most over the last twenty years, eight are low skilled.
- On average, migrant shares increased by five percentage points in low skilled occupations compared with three percentage points in other occupations over the last decade.

Is there any evidence that the ratio of British-born to migrant workers in different sectors changed during the recession?

- Migration from the new EU states grew strongly between 2004 and 2008 but has since slowed down - net migration from A8 states was around a quarter of its peak level during 2008-09. It is not clear what the drivers of this change are. The slowing down could be due to a natural tailing off following a period of unusually high inflows. Alternatively, it could be driven by labour

¹ Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia

market restrictions being relaxed in other EU states which are attractive to A8 migrants, or by economic conditions in the UK relative to other EU states.

- The change in workforce composition driven by immigration was much larger before the recession than after. Post 2008 migrant shares changed little or declined in almost half of all sectors in the economy.
- Before the recession, the majority of sectors where the use of migrant labour increased the most were low skilled. There is some evidence that these sectors have actually reduced their use of migrant labour since 2008. Post-recession the use of migrant labour declined in seven of the ten sectors where migrant shares increased most between 2002 and 2008. Four of the sectors that experienced high growth in migrant shares pre-recession and declines post-recession are low skilled.
- Since the recession, the use of migrant labour increased most in sectors where total employment was falling between 2008 and 2012.

What characterises sectors with a relatively high migrant share in their workforce, or a growing migrant share?

- We explored a number of sector characteristics including pay, self-employment, part-time working and within sector occupational distribution.
- We found that contrary to popular intuition there is no strong link between sectoral pay and high or growing migrant shares. Although sectors with higher pay tend to attract relatively more migrant workers, the association between the two is weak.
- Other factors we considered such as self-employment and part-time working also did not explain why some sectors employ migrant labour more intensively than others.
- The strongest association we found was between temporary working and migration – sectors that offer relatively more temporary jobs are clearly more attractive to migrants than the rest.

Are there any differences in characteristics between groups of workers in terms of skills, age etc.? Does this vary by sector? How do these compare to the characteristics of the unemployed?

- We found evidence that the skill composition of migrants has changed over time. In 2000, the skills of natives and migrants were broadly similar. However, recent migrants are on average younger and better educated than

natives. Migrants who have been in the UK less than five years are on average nine years younger than natives, more than twice as likely to be educated to degree level² and more likely to be female.

- These differences vary by sector. They are particularly stark in some low skilled sectors where the gap in educational attainment between natives and migrants is very large.
- Recent migrants are more similar in age to the unemployed but are three times as likely to be highly educated and considerably more likely to be female. Traditionally, migrant workers had lower employment rates and higher unemployment rates than UK-born workers. However, in recent years there has been convergence in the employment and unemployment rates of migrant and native male workers.

In addition to the four prioritised questions we were asked to consider a number of additional research questions. These were addressed as far as possible given availability of data and limitations in existing data. Our findings in relation to these questions are summarised next.

How prevalent is self-employment in low skilled sectors? How did this compare to high skilled sectors? Do self-employed contractors tend to be migrants or British-born?

- Self-employment is more common in low skilled sectors (17%) than other sectors (10%).
- One in seven self-employed workers in the UK are migrants. Migrants are no more likely to be self-employed than natives. Self-employment rates are 10% for both groups.
- Self-employment rates are relatively high in low skilled sectors. In some sectors (such as Agriculture and Hunting) the majority of the workforce is self-employed. Of the ten sectors with the highest self-employment rates, six are low skilled.

To what extent do employers use agencies to recruit workers, particularly in low skilled sectors? Is there any evidence to suggest that different worker groups differ in their propensity to accept agency work?

- The use of agencies is no more common in low skilled sectors than other sectors of the economy: of the ten sectors where this form of recruitment is most common four are low skilled.

² Proxy used is age left full time education greater than 21

- Less than 2% of individuals in employment in the UK are recruited through an employment agency. Migrant employees are three times as likely to be recruited through an agency as native workers. The use of agencies is most common among A8 workers. This group is six times more likely to be recruited through an employment agency than the general UK workforce.

Are migrant workers more or less likely to accept temporary work than the UK-born?

- Migrants are more likely than natives to be in temporary jobs. One in twenty native workers describe their job as not permanent in some way. For migrant the number is one in eleven. There are no significant differences in the incidence of temporary working across different migrant groups.

How do rules regarding eligibility for benefits vary across different groups? Do employment and unemployment rates vary across different groups?

- The employment rates of migrant men, which were historically around eight percentage points lower than those of their UK-born counterparts, have increased by ten percentage points. Consequently, migrant men are now more likely than native men to be in employment. The employment gap between native and migrant women has remained roughly constant.
- Unemployment rates reveal a similar pattern. Historically unemployment was highest among migrant men followed by native men, migrant women and native women. Unemployment rates were generally declining until the mid-2000s but have started to increase for all groups since the start of the recession. Increases have been particularly large for native men. There has been a convergence in the unemployment rates of native men and migrant men and women. Currently these groups have roughly the same probability of being unemployed. UK-born women continue to have the lowest unemployment rates at around 5%.

1 Introduction

The focus of this report is on broadening the existing evidence base on the low skilled labour market, relative to other sectors of the economy. The following research questions form the basis of this study:

- How has the composition of the workforce (in terms of different migrant groups - A8, A2, British-born, non-EEA) changed over time in different sectors?
- Is there any evidence that the ratio of British-born to migrant workers in different sectors changed during the recession?
- What characterises sectors with a relatively high migrant share in their workforce, or a growing migrant share?
- Are there any differences in characteristics between groups of workers in terms of skills, age etc.? Does this vary by sector? How do these compare to the characteristics of the unemployed?

Six further questions are also within the scope of this study and it was agreed that these would be addressed where possible, subject to limitations in the data. These are:

- How prevalent is self-employment in low skilled sectors? How did this compare to high skilled sectors? Do self-employed contractors tend to be migrants or British-born?
- If the rate of self-employment varies among different groups, how does this relate to wages? Is there evidence that self-employment can lead to the undercutting of British workers or is the pay of self-employed migrants higher than sector averages?
- To what extent do employers use agencies to recruit workers, particularly in low skilled sectors? Is there any evidence to suggest that different worker groups differ in their propensity to accept agency work?
- Are migrant workers more or less likely to accept temporary work than the UK-born?
- How do rules regarding eligibility for benefits vary across different groups? Do employment and unemployment rates vary across different groups?
- What features of the current benefit system, if any, reduce incentives for those claiming benefits to return to work at present?

Our empirical work addresses the four prioritised questions. Data issues³ limited our ability to address all of the remaining questions but we did explore these as far as possible.

In this report, we first summarise the findings in the literature relevant to the specific research questions. We then summarise the findings in our quantitative analysis which builds on and expands the existing evidence base.

This report is organised as follows:

- Section 2 provides some context and key definitions;
- Section 3 reviews the relevant literature looking at immigration to the UK;
- Section 4 shows the results of our empirical work;
- Section 5 contains our concluding remarks;

A number of tables and figures are presented in the Annex.

³ In particular the lack of earnings data of self-employed persons.

2 Context

2.1 Definition of sector

The chief purpose of this study is to establish facts about the low skilled labour market as compared to other sectors. The main data source used in this study is the Labour Force Survey (LFS) which contains several industrial sector variables:

- industry class (4 digit);
- industry group (3 digit);
- industry division (2 digit); and
- industry section (1 digit).

These vary in their level of disaggregation. The most disaggregated measure is ‘industry class’ which segments the labour market into 600 categories. At the other end is ‘industry section’ which splits the labour market into 21 sections. In choosing which variable to use in this study we considered the following factors:

- sample size – does categorisation provide sufficiently high sample sizes in order to calculate reliable statistics?;
- level of disaggregation – is categorisation sufficiently disaggregated to capture the complexity of the labour market;
- precedent for use – which measure has been used by the MAC in the past.

On balance, we consider ‘industry division’ to be the most suitable variable for this study. This is because:

- sample sizes in most categories are relatively high;
- there is a good number (59) of labour market segments;
- this variable has been used in previous studies conducted by MAC.

2.2 Definition of skill

This study explores how the use of migrant labour in low skilled sectors of the economy compares to that in other sectors of the economy. To make this comparison we need to split sectors into low-skilled and others. This can be done in a number of ways. Skill is typically thought of in terms of:

- Formal qualifications;
- Observed labour market performance (in terms of earnings/occupation); or
- A combination of the two.

The MAC has conducted extensive work in this area focusing primarily on the skilled sectors of the economy where occupational skill level is measured in terms of formal qualifications, earnings and occupational classification. Certain threshold values are applied to qualify occupations as skilled. Recent work by the MAC proposed that the following threshold values be used to classify occupations as skilled (to NQF 6+):

- Median hourly earnings of full-time workers in occupation of £14.75 or more;
- 36.4% or more of the workforce within an occupation to be qualified to NQF 6+; and
- Occupation needs to be classified at level 4 in the SOC 2010 hierarchy.

Since this study is concerned with sectors of the economy rather than occupations, we cannot use the exact same methodology to define sector skill. Nonetheless, in defining sector skill we have been guided by MAC's broad methodology. We consider three metrics: formal qualifications, occupational distribution and earnings.

2.3 Categorising sectors by skill

In defining sector skill we consider formal qualifications, earnings and occupational distribution within sector. Sectors which employ more workers with low formal qualifications and/or offer more low-paid jobs and elementary occupations relative to the wider economy are then categorised as low skill. We define a sector as low skill if two or more of the three metrics (education, wages, and occupation) indicate the sector is low skill. The results of our analysis are shown in **Table 2**.

2.3.1 Using educational attainment to define sector skill

One measure that is widely used to measure skill is levels of education which are recorded in survey data. It is possible to use the educational attainment of the UK workforce to divide sectors of the economy into skill categories. We consider the categorisation below to be uncontroversial:

- Low-skilled: sectors which employ a relatively high proportion of individuals who left full-time education aged 16 or below. This category corresponds to O-levels or GCSE and individuals with no formal qualifications;
- Semi-skilled: sectors which employ a relatively high proportion of individuals who left full-time education aged between 17 and 20. This category corresponds to AS or A-levels;
- High-skilled: sectors which employ a relatively high proportion of individuals who left full-time education aged 21 or above. This category corresponds to degree level.

Sectors which employ more individuals educated up to GCSE level than the economy (50% of the UK workforce left full-time education aged 16 or less) as a whole can be categorised as low skill.

2.3.2 Using occupational distribution to define sector skill

An alternative way to define sector skill is to look at occupational distribution within sectors. Sectors which provide relatively more 'low skill' occupations in comparison to the wider economy can then be classified as low skill. Conversely, sectors with a higher concentration of professional occupations can be classed as high skill. We considered the nine major occupations in the Standard Occupational Classification 2000 shown in **Table 1**. We classify 1 digit occupations beginning with 4, 6, 7, 8 and 9 as low-skill, in line with official ONS skill level classifications (skill levels 1 and 2). Nationally, these occupations employ around 45% of the workforce. Therefore, we categorise sectors where more than 45% of the workforce is employed in low-skill occupations as low skill.

Table 1. SOC 2000 major occupation groups

Occupation group	Low skill
1.Managers and senior officials	X
2.Professional occupations	X
3.Associate professional and technical	X
4.Administrative and secretarial	√
5.Skilled trades occupations	X
6.Personal service occupations	√
7.Sales and customer service occupation	√
8.Process, plant and machine operatives	√
9.Elementary occupations	√

Source: Frontier analysis of LFS data

2.3.3 Using earnings to define sector skill

An alternative way to define sector skill is to look at sector median full-time wages and compare those with national median full-time wages. Currently the median-wage for full-time employees stands at £10.60. We categorise sectors with wages lower than the national median wage of £10.60 as low skill.

2.3.4 Composite measure of skill

Using the three metrics outlined above, we are able to categorise some sectors of the economy as low skilled. Exactly which sector is categorised as low skilled depends on which measure of skill is used. For the purpose of this study we define a sector as low skilled if at least two of the following conditions are satisfied (shown as composite skill in **Table 2**):

- Median full-time sector pay is below £10.60;
- More than half the workforce in sector left full-time education aged 16 or less;
- More than 45% of workforce in sector is employed in low skilled occupations.

Context

Table 2. Sectors by skill level 2012

	Wages	Occupation	Education	Composite
01:Agriculture,hunting,etc	✓		✓	✓
02:Forestry,logging etc	✓	✓	✓	✓
05:Fishing,fish farms,hatcheries etc			✓	
10:Coal,lignite mining,peat extraction		✓	✓	✓
11:Oil,gas extractn etc (not surveying)			✓	
13:Mining of metal ores			✓	
14:Other mining,quarrying		✓	✓	✓
15:Food,beverage manufacture	✓	✓	✓	✓
16:Tobacco products manufacture				
17:Textile manufacture	✓	✓	✓	✓
18:Clothing,fur manufacture	✓	✓		✓
19:Leather,leather goods manufacture			✓	
20:Wood,straw,cork,wood prods(not furn)	✓		✓	✓
21:Pulp,paper,paper prods manufacture		✓	✓	✓
22:Printing,publishing,recorded media				
23:Coke,petrol prods,nuclear fuel man				
24:Chemicals,chemical products man				
25:Rubber,plastic products manufacture	✓	✓	✓	✓
26:Other non-metallic products man		✓	✓	✓
27:Basic metals manufacture			✓	
28:Fabric-metal prod (not mach,eqt) man			✓	
29:Mach,eqt manufacture			✓	
30:Office mach,computer manufacture				
31:Elec mach,eqt manufacture				
32:Radio,TV,communication eqt man		✓	✓	✓
33:Medical,precision,optical eqt man			✓	
34:Motor veh,trailer,etc manufacture			✓	
35:Other transport eqt manufacture			✓	
36:Furniture etc manufacture	✓		✓	✓
37:Recycling		✓	✓	✓
40:Elec,gas,steam etc supply				
41:Water collection,purif.,supply etc				
45:Construction			✓	
50:Sales of motor vehs,parts,fuel etc	✓		✓	✓
51:Wsale,commiss. trade (fee,contract)	✓	✓	✓	✓
52:Retail trade (not motor veh) repairs	✓	✓	✓	✓
55:Hotels,restaurants	✓	✓		✓
60:Transport by land,pipeline		✓	✓	✓
61:Water transport	✓	✓	✓	✓
62:Air transport		✓		
63:Aux transport activ.,travel agents	✓	✓		✓
64:Post,telecommunications		✓	✓	✓
65:Financl intermed(not insur.,pensn.)				
66:Insurance,pensions (not Social Sec)				
67:Other financial (not insur.,pensn.)				
70:Real estate activities				
71:Personal,hhld,mach,eqt rental(no op)	✓	✓	✓	✓
72:Computer,related activities				
73:Research,development				
74:Other business activities				
75:Public admin,defence,social security				
80:educ				
85:Health,social work		✓		
90:Sanitation,sewage,refuse disposal etc	✓	✓	✓	✓
91:Activ. of membership organisations				
92:Recreational,cultural,sporting activ	✓			
93:Other service activities	✓	✓	✓	✓
95:Private hhlds with employed persons	✓	✓	✓	✓

Source: Frontier analysis of 2012 LFS data

2.4 Migrant definition

In this study we define migrants as individuals who were born outside the UK. This is the definition used most widely in the literature⁴.

There are two main methods of defining a migrant: using country of birth or using nationality. Neither definition is ideal and each captures different aspects of many people's perception of what a migrant is. However, in most of the immigration literature a migrant is defined as a person who was born outside the country in question. According to this definition British nationals born abroad but now resident in the UK count as immigrants whereas foreign nationals born and resident in the UK do not.

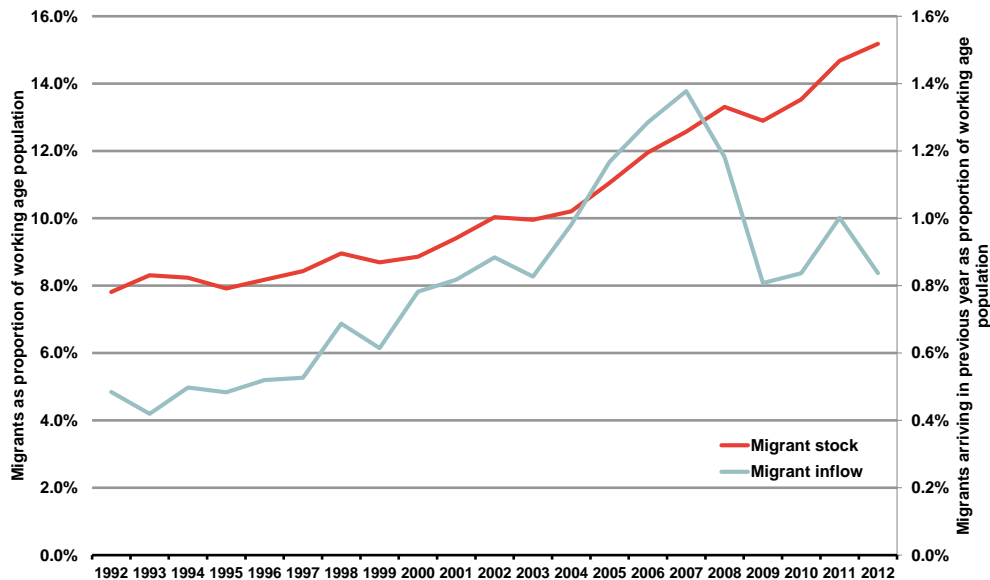
On the other hand, using nationality to define migrants would exclude persons who gained citizenship after arriving in the UK. Further, a definition based on nationality divorces the concept of migration from actual movement so that a government would induce a change in migration statistics without anyone actually moving by adjusting nationality regulations. In addition, different countries have different rules on nationality so that international comparisons become close to impossible if this measure were used.

Hence, country of birth is more prevalent in the literature because it allows consistent comparisons over time and across countries and is not dependant on changes in nationality policy over time. Typically, the literature also separates recent migrants from the total pool of migrants. Recent migrants are typically defined as those residing in a given country for less than five years.

2.5 Trends in migration to the UK

Immigration to the UK has been on the rise recently, but this was not always the case. In the 1970s and 1980s the stock of migrants in the UK workforce was relatively stable at approximately seven per cent (see **Figure 30** in the Annex). This remained the case until the early 1990s when immigration gradually started to increase as shown in **Figure 1**. The growth rate accelerated in the mid-1990s and by 2004, the share of the UK workforce that was foreign born had increased to ten per cent.

⁴ See Dustmann, C., Fabbri, F., and Preston, I., (2005) or Blanchflower, D. and Shadforth, C., (2009) for example

Figure 1. The share of migrants in the UK working age population

Source: Frontier analysis of QLFS data. Migrant inflow defined as share of working age population of migrants arriving in the UK in last year

EU expansions in 2004⁵ and 2007⁶ resulted in 12 new countries joining the EU. The 2004 expansion in particular sparked a significant increase in immigration to the UK from A8 countries. (The UK was one of few⁷ EU countries not to impose any restrictions on the rights of citizens from A8 member states to work. A2 citizens on the other hand have the right to live in the UK and to be self-employed, but are still subject to restrictions when it comes to being employees.)

By 2012, the share of foreign born workers in the UK workforce had almost doubled from a base of less than 8% in 1992. In absolute terms, migration increased the UK working age population by around three million. In terms of magnitude, this change is commensurate to the change caused by the baby boom generation reaching adulthood.

We also look at how inflows of migrants have changed over time. The blue line in **Figure 1** shows the proportion of the workforce that is accounted for by

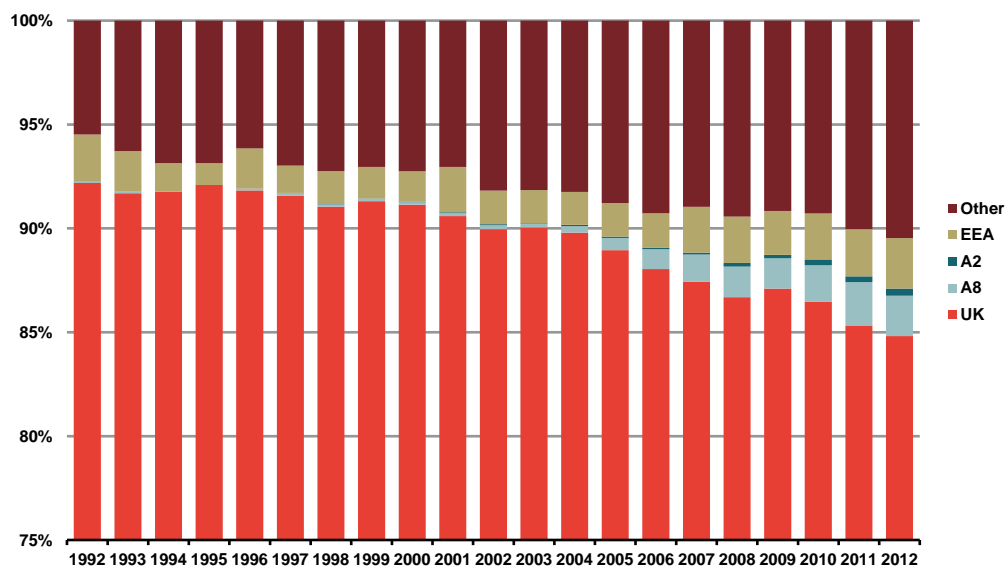
⁵ The first wave of expansions in 2004 included Cyprus, Malta and the A8 countries (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia).

⁶ The second wave of expansions in 2007 included Romania and Bulgaria also known as the A2 countries.

⁷ The other two EU states that imposed no restrictions on the right to work of A8 citizens were Sweden and Ireland.

recent arrivals (those who have resided in the UK for less than one year). As can be seen from the figure, migrant inflows were increasing steadily throughout the 1990s. In 1992, recent arrivals represented 0.5% of the UK workforce. By 2002 this had increased to 0.9%. There was an acceleration in the inflow of migrants after 2003 which peaked in 2007. At that point recent arrivals accounted for almost 1.4% of the UK workforce. Since 2007 there has been a sharp drop in the proportion of recent arrivals in the UK workforce. The rate appears to have stabilised around 0.8% to 1%. Despite the recent fall in migrant inflows, the stock of migrants in the workforce has continued to grow indicating that migrants inflows still outweigh outflows.

Figure 2. Evolution of UK workforce composition 1992-2012



Source: Frontier analysis of QLFS data. EEA excludes A8 and A2.

Figure 2 shows how the composition of the UK workforce has changed over time. Changes in the migrant stock have been driven largely by increases in migration from ‘Other’ countries and A8 countries while EEA migration has remained stable over the last two decades (A2 migration has been on the rise but remains small). Migrants from ‘Other’ countries accounted for 5.5% of the UK workforce in 1992. By 2012 this had increased to 10.5%. The change in the share of A8 migrants has been even more pronounced. In 1992, A8 migrants accounted for 0.1% of the UK workforce. In 2012, this had increased to 1.9%.

Almost half of all working age migrants in 2012 came from ten countries. These are shown in the second column of **Table 3**. The country with the highest share was India (9.6%) followed by Poland (8.5%) and Pakistan (7.1%). For recent

Context

migrants (arriving to the UK in the five years preceding 2012) the countries look slightly different. We now see other A8 countries (not Poland) such as Latvia and Lithuania appear in the top ten, but also Italy, Australia and Canada.

Table 3. Top ten countries of birth for working age migrants in the UK, 2012

	% of all migrants		% of migrants arriving in last 5 years		% of migrants arriving in last year
India	9.6%	India	12.1%	India	10.9%
Poland	8.5%	Poland	9.8%	Poland	6.2%
Pakistan	7.1%	Romania	4.4%	United States	5.0%
Ireland	4.0%	Pakistan	4.1%	Ireland	3.4%
Bangladesh	3.6%	United States	3.3%	Lithuania	3.4%
Germany	3.6%	Lithuania	3.2%	Pakistan	3.4%
United States	2.5%	Latvia	2.8%	China	3.1%
South Africa	2.5%	China	2.5%	Italy	3.1%
Sri Lanka	2.2%	Nigeria	2.4%	Australia	2.8%
Kenya	2.1%	Bangladesh	2.3%	Canada	2.8%
Others	54.4%	Others	53.1%	Others	55.9%

Source: Frontier analysis of 2012 LFS data

2.6 Factors driving migration

Economic factors are major drivers of international migration, with evidence suggesting that wage and income differentials are among the most important drivers of international migration⁸. Immigration policy is a key non-economic factor driving international migration.

Generally, migration flows depend on differences in prospects in different countries. The factors driving migration are largely divided into ‘push’ and ‘pull’. ‘Push’ factors refer to those that drive individuals away from their home country. ‘Pull’ factors are those that attract individuals to particular destinations. ‘Push’ and ‘pull’ factors include economic factors, political instability, conflict and weak institutions.

⁸ See Czaika and De Haas (2011) or Gilpin et al.(2006)

'Pull' factors are usually associated with favourable economic conditions in the recipient country, typically high employment and wage rates and high economic growth. Conversely, 'push' factors are those which spur migration due to poor economic performance in the immigrant's native country, such as low wages, high unemployment and poor GDP growth. Non-economic factors driving migration include among others immigration policy (and changes thereof), political instability, conflict, weak institutions.

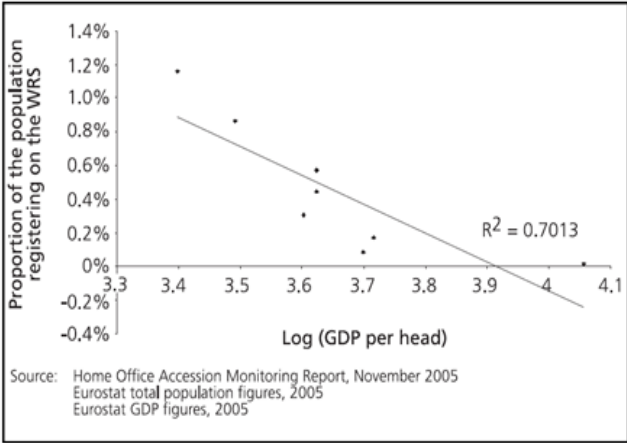
Other drivers of migration include network and institutional effects. Social networks can be a primary pull factor in a potential migrant's destination due to the local knowledge that contacts can provide. For example, Bartel (1989) found that migrants tend to be more concentrated in areas where other migrants live. Conversely, such ties may hinder migration as social networks in an individual's place of origin may create ties that dissuade migration.

Cultural and institutional obstacles may also affect migration through, for example, communication barriers or regulations that may deter migration by discriminating against foreign qualifications and providing poor access to benefits and pensions (Belot and Ederveen, 2012). Some of these barriers can be circumvented by recruitment agencies, which can facilitate migration through the provision of logistical and other support.

Whilst the increase in immigration in recent years may be due to the relative attractiveness of the UK economy, this influx of workers also coincides with changes to the UK's migration policy. Evidence suggests that the rising rate of immigration to the UK in recent years is in part attributable to expansive immigration policies in the UK that accompanied the enlargement of the EU in 2004 and 2007 (Blanchflower and Shadforth, 2009).

However, whilst immigration policy can be an important factor in migration, it is rarely the primary determinant of migration, with the effects of policies relatively small in comparison to more significant economic, social and political factors (Czaika and De Haas 2011; Castles 2004). Gilpin et al. (2006) find that citizens of countries with lower GDP per capita, such as Lithuania, were more likely to be on the UK Worker Registration Scheme than those from higher income countries.

Figure 3. Correlation between GDP per head in country of origin and proportion of the population registering on the WRS



Source Gilpin et al. (2006)

3 Literature review

3.1 Summary of findings

In this section we discuss the existing quantitative work which this study aims to update. We note that most of the literature we reviewed covers the period up to 2008 but in some cases the data used was from earlier periods. Therefore, whilst the findings in this review are important to set the historical context for this study, they should not be construed as representing the current status quo.

Specifically, we explore how migration patterns and characteristics (skills and demographics) of migrants have changed over time and what sectors of the economy migrant workers have tended to congregate in.

Overall, the literature we reviewed suggested that migration in the 2000s was different to earlier migration. Prior to the EU expansion of 2004 the skills and demographic characteristics of migrants and natives were broadly similar. In contrast immigrants arriving in the mid-2000s (particularly from the new EU member states) have tended to be younger and better educated than natives.

The literature also suggests that the composition of the workforce in different sectors and occupations changed in the last decade. The pattern of use of migrant labour remained stable for some sectors and occupations but changed dramatically for others. There was a clear shift in the occupational distribution of migrants between 2002 and 2008. The occupations that experienced the highest growth in migrant shares tended to be those that were low-skilled.

The literature generally suggests that historically migrant workers have tended to have a higher propensity to be self-employed than UK workers. Self-employment among migrants in the UK increased slightly between 1999 and 2004 but there are indications that the rates may have fallen since 2008. Self-employment rates among UK migrants are around the OECD average.

There is evidence in the literature that migrant workers are considerably more likely to use agencies and to be employed on a temporary basis than natives. This has been found to be particularly true for recent migration from the A8 states. The evidence suggests that one third of A8 migrants are employed through agencies and half of A8 migrants are employed on a temporary basis although this varies considerably by sector. In 'agriculture', approximately 70% of migrants are employed on a temporary basis while in other sectors such as 'hospitality and catering' this rate is only 20%.

Historically native men had considerably higher employment rates than migrant men. However, since the mid-2000s employment among migrant men increased and has tracked that of native men since the start of the recession. By 2011

migrant men were slightly more likely to be in employment than native men. Unemployment rates followed a very similar pattern.

3.2 Migrants in the UK labour market

There is little doubt that the nature and destination of migrants have changed over time. Christian Dustmann, Francesca Fabbri and Ian Preston (2005) looked at the skills distribution (in terms of education) of natives, immigrants and recent immigrants (defined as those arriving in the 1990s) nationally. They found that at the turn of the millennium the skill composition of immigrants and natives was very similar. The result held if occupation (instead of education) was used to define skill – where occupations were ranked according to their average hourly wage. Interestingly, there was little difference in the skill composition of recent migrants and the general population.

Figure 4. Skill distribution of migrants and natives in 2000

Table 1
Educational and Occupational Distribution, Immigrants and Natives

Education	Advanced education	Intermediate education	Low education
Natives	0.509	0.318	0.172
Immigrants	0.423	0.393	0.183
Recent immigrants	0.304	0.551	0.145
Occupation	Skilled	Semiskilled	Unskilled
Natives	0.246	0.397	0.356
Immigrants	0.313	0.361	0.326
Recent immigrants	0.312	0.363	0.324

Source: British Labour Force Survey 2000.

Source: Christian Dustmann, Francesca Fabbri and Ian Preston (2005)

There is clear evidence that this picture started to change in the early to mid-2000s. Gilpin et al. (2006) studied the correlation between immigrant inflows and native outcomes in the immediate aftermath of the 2004 EU expansion. Using LFS data they studied the characteristics of A8 migrants, their settlement patterns, and the industries they work in. The authors found that most A8 migrants were young and single. They also found that migrants tended to concentrate in London and the South East and to work in low-skilled occupations with most earning close to the minimum wage.

There is further evidence that migrants from the recent accession countries frequently acquire positions that require less skill than their level of education would suggest. Saleheen and Shadforth (2006) found that in 2005, 66% of the UK-born workers had finished their secondary school education, with 17%

attaining a degree. This is in stark contrast to migrant labour in the UK, of which 45% had degrees.

A paper by Lemos and Portes (2008) updated and extended the analysis in Gilpin et al. (2006). Lemos and Portes (2008) used LFS and the Worker Registration Scheme (WRS) to study the effects of A8 migration to the UK over a longer term. They found that A8 migrants were more geographically dispersed than previously thought with significant numbers in all geographical regions of the UK. Similar to Gilpin et al. (2006), the authors found that A8 migrants were predominantly young and concentrated in low skilled occupations earning relatively low wages.

Dustmann, C, T Frattini and I Preston (2008) showed that while natives and earlier immigrants (those who have been in the UK for 2 years or more) had similar characteristics, new immigrants (2 years or less) were considerably younger and better educated than natives. Turning to occupations, the authors found that new immigrants, although better educated than natives, were concentrated in low skill occupation categories. This suggested some degree of downgrading is possible, i.e. new arrivals started lower down the occupational distribution than would be expected given their educational attainment.

It is not obvious on the whole why recent highly educated migrants come in to work in low paid jobs whereas earlier highly educated migrants seemed to arrive to take up jobs more suited to their education. One possibility is that recent (A8) migrants were unrestricted in the jobs they were allowed to come in for while earlier migrant cohorts may have faced different rules restricting their ability to take jobs.

Manacorda, Manning and Wadsworth (2012) looked at the impact of immigration on the wage structure in the UK. They too found that recent migrants were on average more skilled than natives.

Blanchflower and Shadforth (2009) found that of those migrants who applied to the Worker Registration Scheme between May 2004 and March 2007, over 80% were aged 18-34 – the majority of whom were single with only 7% of those who registered during this period living with dependents. (Dustman et al., 2010) found distinctions between the domestic and immigrant population in the UK with male A8 migrants on average almost 12 years younger their native counterparts (26 vs. 38) and migrant women from the A8 accession countries are on average 15 years younger than their UK-born equivalents (25 vs. 40).

More recent evidence from the CEP (2012) also suggests that recent immigration has caused the skill distributions of natives and migrants to diverge. Now immigrants are more educated than their British counterparts and the educational attainment gap has been widening since recent immigrants are on average more educated than other immigrants.

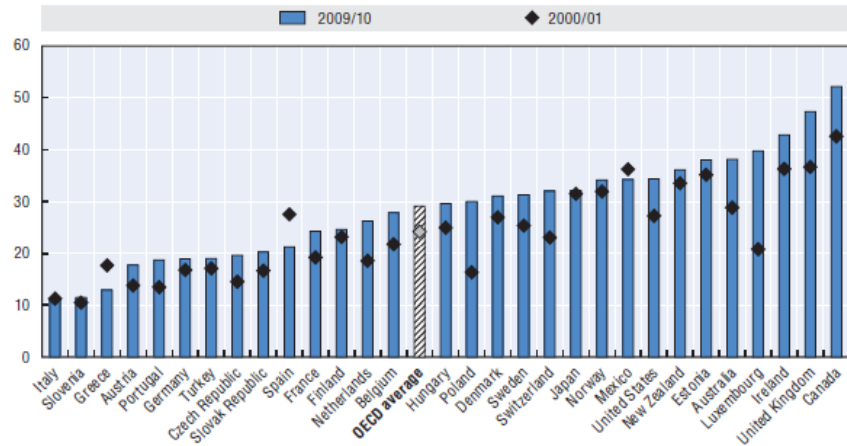
Literature review

Figure 5 shows that the UK attracts relatively more highly educated migrants than other OECD states and this trend has grown between 2000 and 2010. In 2009-10, Canada was the only OECD country whose migrant population was better educated than that of the UK.

Next we compare the characteristics of migrants and those of the UK workforce most likely to be unemployed. **Figure 6** shows how unemployment rates vary for different demographic groups in the UK. Unemployment rates are highest among natives aged 18-24 and individuals with low qualifications. In contrast, migrants arriving in the mid-2000s have been better educated than natives. Therefore the characteristics of these migrants differ considerably from those of the UK workforce most likely to be unemployed.

Figure 5. Cross country comparison of migrant education levels

Figure I.15. Percentage of high-educated among the foreign-born population, 2000 and 2010

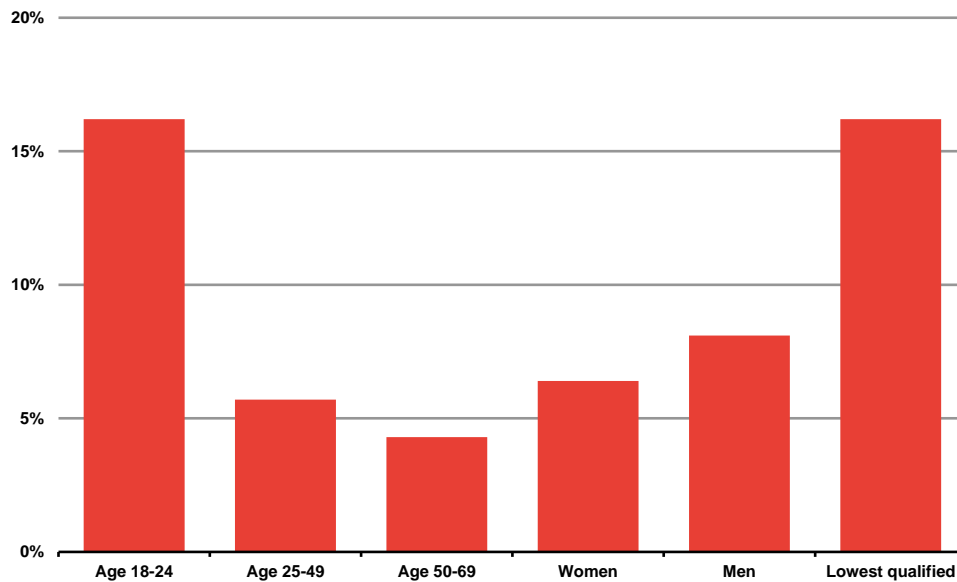


Sources: DIOC, Labour Force Surveys.

StatLink <http://dx.doi.org/10.1787/888932615251>

Source: OECD, International Migration Outlook 2012

Figure 6. Unemployment rates by demographic group



Source: DWP 2009, Monitoring the impact of the recession on various demographic groups

3.3 Sectoral and occupational distribution of migrants

There is evidence in the literature of significant changes in the sectoral distribution of migrant workers over time. **Table 4** compares the employment patterns of UK and migrant workers between 1979 and 2000. There was a remarkable shift in the sectors that used migrant labour intensively. In 1979, a third of male migrants were employed in the ‘manufacturing’ sector, 3% in ‘finance’ and 3% in ‘health’. By 2000, 19% of male migrants were employed in ‘finance’, 8% in ‘health’ and only 17% in ‘manufacturing’.

Table 4. Employment patterns 1979-2000 (men)

	UK (white)		Migrant	
	1979	2000	1979	2000
Manufacturing	34%	24%	36%	17%
Construction	10%	13%	9%	7%
Transport	8%	10%	8%	11%
Retail	8%	6%	8%	8%
Hotels and restaurants	1%	4%	5%	9%
Finance	4%	15%	3%	19%
Education	3%	4%	2%	4%
Health	2%	3%	3%	8%

Source: Data from Dustmann, C., Fabbri, F., Preston, I. and Wadsworth, J., (2003)

The literature further suggests that changes in the sectoral distribution of migrants continued in the 2000s. Aldin, James and Wadsworth (2010) studied the sectoral (using LFS 2 digit industry codes) distribution of migrants in 2002 and 2008. The authors found that the largest employer of migrant workers in 2002 was the ‘health and social work’ sector employing one in seven of all immigrants in the UK. This sector remained the largest employer of immigrants in 2008. The other major employers of immigrants were the retail sector, other business activities, hospitality and education.

The overall increase in the share of migrant workers in the UK workforce from 8% in 2002 to 13% in 2008 led to an increase in the share of migrant workers in all industrial sectors bar one, forestry. In fact, by 2008 only a handful of sectors

had workforces that consisted of less than 5% of immigrant labour. In 2002, the industries with the highest share of immigrant labour were ‘clothing manufacturing’, where 19% of the labour force was foreign born, and ‘hotel and restaurant workers’, where 16% of the workforce was born outside of the UK. These remained the top two sectors in 2008, but the share of migrant workers in their workforce had increased to 28% and 22% respectively.

However, Aldin, James and Wadsworth (2010) found that the changes in the composition of the workforce in different sectors between 2002 and 2008 were not uniform. Some sectors experienced high growth in migrant labour while others remained relatively static. The ‘recycling’ industry rapidly increased its use of migrant labour, so much so that it moved from the lowest 5 immigrant sectors to the top 5.

More recently, in-house research by the MAC Secretariat in 2010⁹ examined the sectoral and occupational distribution of migrant workers between 1994 and 2008. The study found that although migrant shares changed over time, six of the sectors in the top ten were consistent across 1994, 2002 and 2008. These were: ‘mining of metal ores’, ‘clothing and fur manufacture’, ‘hotels and restaurants’, ‘private households’, ‘air transport’ and ‘computer related activities’. The study also found evidence that there was a shift in the occupational distribution of migrants between 2002 and 2008. While in 2002 migrant workers were predominantly concentrated in high skill occupations. By 2008, the occupations that had increased their shares of migrant workers the most were largely those at the lower skill end of the spectrum such as ‘elementary process plant’, ‘food preparation trades’ and ‘process operatives’.

Relatively lower skill sectors employ relatively fewer migrants in the UK than in other OECD countries (**Figure 7**). 17% of UK migrants are employed in ‘Agriculture and Fishing’, ‘Mining, manufacturing and Energy’ and ‘Construction’. In comparison these sectors employ 30% of migrants in Austria, 25% of migrants in France, 33% of migrants in Germany and 38% of migrants in Italy.

⁹ “Which sectors and occupations use more immigrant labour and what characterises them? A quantitative study”, MAC Secretariat working paper, November 2010

Figure 7. Cross country comparison of migrant employment by sector

I. TRENDS IN INTERNATIONAL MIGRATION

Table I.B4.2. Employment of foreign-born persons by sector, 2011
Percentage of total foreign-born employment

	Agriculture and fishing	Mining, Manufacturing and Energy	Construction	Wholesale and retail trade	Hotels and restaurants	Education	Health	Households	Admin. and ETO	Other services
Austria	0.9	17.8	11.8	14.6	12.1	4.3	9.5	–	2.6	25.8
Belgium	0.6	13.3	9.6	11.8	8.2	5.5	10.9	2.2	9.9	28.0
Czech Republic	1.2	31.1	10.1	15.1	5.6	5.2	4.6	–	3.1	23.9
Denmark	2.4	13.9	1.8	11.8	7.5	9.5	21.5	–	3.2	28.0
Finland	2.6	15.3	6.1	12.8	8.5	8.1	11.7	–	2.5	32.3
France	1.3	11.7	12.3	11.7	7.0	5.2	11.6	5.4	6.4	27.5
Germany	0.7	25.6	7.0	12.7	8.8	4.5	10.7	1.1	2.4	26.6
Greece	8.9	13.4	19.2	14.6	12.1	1.5	3.2	14.7	0.9	11.5
Hungary	–	23.9	7.9	16.1	5.7	9.8	9.4	–	4.5	20.0
Iceland	–	19.1	–	8.2	11.2	8.9	14.5	–	–	26.6
Ireland	2.2	17.1	4.2	16.3	11.7	4.9	14.4	1.0	2.2	26.0
Israel	1.2	19.7	4.9	13.3	4.1	9.2	13.5	3.7	3.4	25.7
Italy	4.0	20.6	13.6	10.1	8.8	1.9	4.8	17.0	1.4	17.7
Luxembourg	–	6.8	9.9	10.8	5.9	4.1	7.4	3.5	14.4	37.0
Netherlands	1.7	14.5	4.2	12.6	6.8	6.6	16.4	–	6.3	30.8
Norway	–	12.0	6.2	11.2	6.8	6.5	24.3	–	3.0	28.5
Portugal	–	14.1	9.9	13.3	10.5	9.1	7.2	5.1	7.1	22.2
Slovenia	–	31.0	17.7	7.9	8.2	5.0	5.9	0.0	2.8	20.0
Spain	5.7	9.3	10.5	13.6	16.1	2.2	5.0	14.9	2.0	20.6
Sweden	0.6	13.2	4.1	11.1	7.2	11.3	19.3	–	3.7	29.4
Switzerland	1.2	18.4	8.0	14.2	7.7	5.3	13.1	1.3	2.2	28.6
Turkey	12.2	20.5	11.1	15.9	4.7	6.6	3.0	2.0	5.9	18.1
United Kingdom	0.5	10.6	5.7	13.2	9.2	8.2	15.6	0.4	4.1	32.4
United States	2.2	12.9	9.3	13.9	10.5	5.8	12.1	1.4	2.4	29.5

Source: OECD, International Migration Outlook 2012

Turning to occupation the literature suggests that the occupational distribution of migrants changed in the 2000s. Aldin, James and Wadsworth (2010) found that in 2002 migrant shares were highest in high-skill occupations with *healthcare and research* topping the list. However, the occupations that experienced the highest growth in migrant shares more recently were those at the lower skill end of the spectrum, despite the fact that more recent migration was on average more skilled than earlier migration. Aldin et al., (2010) found that the most common occupations for migrant workers were those at the lower end of the skill spectrum such as ‘process operatives’, ‘storage and warehouse workers’, ‘food preparation professionals’, ‘cleaners’ and ‘agricultural and construction labourers’.

Blanchflower and Shadforth (2009) found similar patterns of work for A8 migrants between July 2004 and December 2007. ‘Process operative’ was the occupation employing the largest proportion of A8 migrants (26%), followed by ‘warehouse operative’ (8%) and ‘packer’ (8%).

Figure 8. Occupational distribution of A8 migrants

Occupations of A8 Workers

Process operative	197,845
Warehouse operative	59,070
Packer	43,835
Kitchen and catering assistants	42,295
Cleaner, domestic staff	39,290
Farm Worker	30,810
Waiter, waitress	26,090
Maid, room attendant	25,210
Care Assistants and Home Care	20,015
Labourer, building	20,680
Sales and retail assistants	20,325
Crop harvester	12,620

Source. Home Office (2008), Accession Monitoring Report May 2004–December 2007.

Source: Blanchflower and Shadforth (2009)

More recent evidence from the CEP (2012) suggests that the educational gap between immigrants and natives is to some extent reflected in the occupations they work in. Immigrants are over-represented in high skilled occupations. However, they are also over-represented in elementary occupations which appear counterintuitive given their greater educational attainment. This is consistent with the hypothesis that migrants ‘downgrade’ when they first arrive in the UK. That is, new arrivals started lower down the occupational distribution than would be expected given their educational attainment, and gradually move up as they acquire skills specific to the UK labour market such as language etc.

There may be a number of factors that drive different rates of migration in different sectors and occupations. Sectors with high rates of in-migration could be those where there are UK labour shortages either as evidenced in high wages (relative to what can be earned for those of similar skills abroad) or unfilled vacancies. They could also be sectors where foreign skills are easily transferred to the UK labour market because of low dependence on country-specific skills such as linguistic skills or requirement for country-specific knowledge of some other type.

Alternatively, if migrants have lower reservation wages than the rest of the population it may be that firms are able to recruit workers at lower wages than would otherwise be the case. Aldin, James and Wadsworth (2010) and MAC (2010) studied the characteristics of the sectors with high or growing migrant

shares considering factors such as pay, occupational distribution, part-time working and self-employment patterns and levels of training. They found no evidence to support the hypothesis that average sectoral pay can explain differences in usage of migrant labour. Similarly, the other factors considered in this study did not explain differences in immigrant utilisation.

The quantitative evidence on why certain sectors use migrant labour more intensively than others is inconclusive. As outlined above, Aldin, James and Wadsworth looked at factors such as pay, occupational structure and organisation of work (such as part-time working and self-employment). They found no clear link between these factors and changes in migrant shares in specific industries. Consequent work by the MAC Secretariat (2010) found no conclusive results explaining why different sectors differ in their propensity to use migrant labour. This study looked at differences in workforce composition of migrants and UK-born workers focusing on factors such as pay, part-time working, geography, gender and occupational use.

However there is qualitative evidence which may help explain why certain sectors are more reliant on migrant labour than others. For example, migrant workers may be perceived to be harder workers or to have a 'better work ethic' and be 'more reliable' than native workers (Green et al., 2008, House of Lords 2008). Atfield et al. (2011) found that skills and attributes that employers particularly associated with migrant workers were that they were hard-working, trustworthy and reliable, well-educated and well-qualified, flexible and willing to work extra hours and a willingness to do jobs other people would not want to do. Findlay et al. (2012) suggest that these attributes associated with the 'good' migrant are of particular significance when there is a geographical distance and/or an institutional distance (i.e. when recruitment is via an agency) between the employee and the employer. These issues are explored in more detail in the qualitative research commissioned in conjunction with this work on the determinants of the composition of the workforce in low skilled sectors of the UK economy

3.4 Self-employment and temporary working

Self-employment rates among migrant workers have increased across the OECD since the turn of the millennium as shown in **Figure 9**. In 1999, 10.2% of migrant workers in the UK were self-employed. Five years later the number had increased slightly to 10.9% such that self-employment rates among UK migrants are around the average in other OECD states. There is evidence in the literature suggesting that until 2007, migrants (A8) had higher self-employment rates than natives (Blanchflower and Shadforth 2009).

Figure 9. Migrant workers in self-employment

	1999	2004
Austria	6.0	9.2
Belgium	10.0	12.4
Denmark	5.2	8.4
France	10.4	11.2
Germany	9.2	10.3
Greece	1.9	2.6
Ireland	7.5	8.0
Luxembourg	31.7	38.7
Netherlands	7.2	8.7
Norway	6.1	8.0
Portugal	2.8	3.8
Spain	2.7	4.5
Sweden	9.9	13.7
UK	10.2	10.9

Source: OECD 2006, in Blanchflower and Shadforth (2009)

According to Blanchflower and Shadforth (2009) A8 and A2 workers had higher probability to be self-employed than the general population of the UK between 2004 and 2007. The authors also found that the proportion of self-employed migrants from the accession countries fell considerably since 2004. This is consistent with Drinkwater (2010) who found that following accession only a small proportion of A8 migrants were self-employed in the UK, with the majority preferring a fixed wage. This was, in contrast to employment conditions pre accession when A8 migrants could enter the UK more easily as self-employed.

Historically, migrant workers have also been more likely to use employment agencies and to be employed on a temporary basis than natives. This was particularly true for A8 migrants. Blanchflower and Shadforth (2009) found that between 2004 and 2007 one third of A8 migrants were employed through agencies and half of A8 migrants were employed on a temporary basis. The

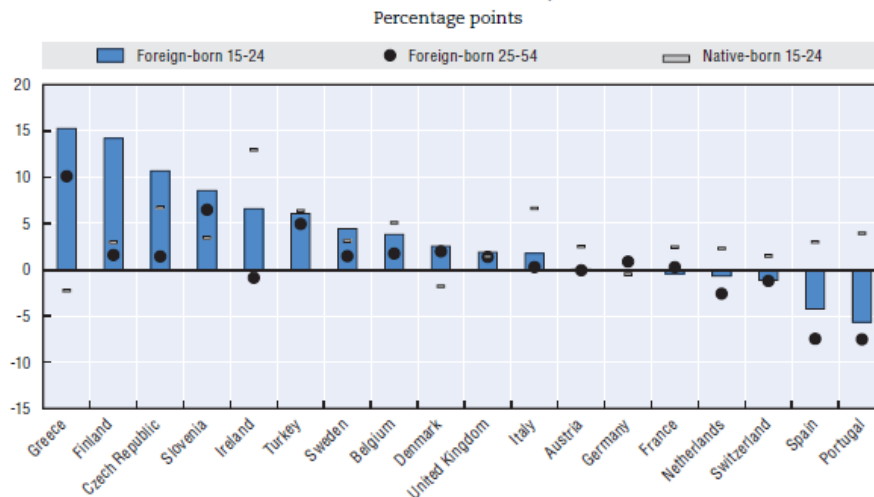
authors also found considerable variation in temporary working by sector. In ‘agriculture’, approximately 70% of migrants were employed on a temporary basis while in other sectors such as ‘hospitality and catering’ this rate was only 20%.

This finding is consistent with earlier work which found that migrant workers had a higher propensity of being employed on a temporary basis than native workers. Dustmann, Fabbri, Preston and Wadsworth (2003) found that temporary working was twice as common among migrants as among UK-born white individuals in 2000. More recently, BIS estimated that there were around 1.3m agency workers in the UK in 2008, around 3% of the working age population. This is considerably lower than the proportion of recent A8 migrants who hold temporary jobs.

Temporary working among migrant workers increased very slightly since the start of the recession as shown below.

Figure 10. Changes in temporary working 2008-2011

Figure I.26. Changes in temporary employment by place of birth and age in selected OECD countries, 2008-11



Note: Data refer to changes between Q1-Q3 2008 and Q1-Q3 2011.

Sources: European Labour Force Surveys (Eurostat), Q1-Q3 2008 and Q1-Q3 2011.

Source: OECD, International Migration Outlook 2012

In conclusion, the literature generally suggests that historically migrant workers have tended to have a higher propensity to be self-employed than UK workers. Self-employment among migrants in the UK increased slightly between 1999 and 2004 but there are indications that the rates may have fallen since 2008. Self-employment rates among UK migrants are around the OECD average.

Migrant workers are considerably more likely to use agencies and to be employed on a temporary basis than natives. This is particularly true for recent migration from the A8 states. One third of A8 migrants are employed through agencies.

Further, half of A8 migrants are employed on a temporary basis although this varies considerably by sector. In ‘agriculture’, approximately 70% of migrants are employed on a temporary basis while in other sectors such as ‘hospitality and catering’ this rate is only 20%.

3.5 Employment, unemployment and benefits

This section looks at historic differences in the employment and unemployment rates of migrants and natives (as described in the literature). It also summarises findings in the literature exploring the relationship between immigration and the benefits system focusing on the propensity of migrants to claim working age benefits¹⁰.

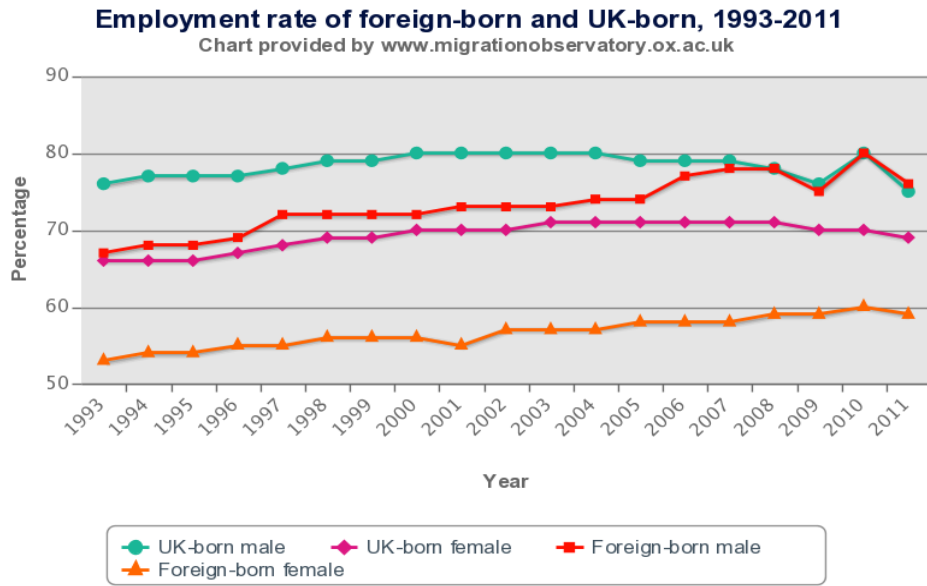
Historically native men have had considerably higher employment rates than migrant men. The differential was approximately ten percentage points in 1993 as shown in **Figure 11**. The employment rates among migrant men increased since the mid-2000s and have tracked those of native men since the start of the recession. By 2011 migrant men were slightly more likely to be in employment than native men. **Figure 12** reveals that male unemployment rates followed a very similar pattern such that migrant men had higher unemployment rates than native men in the early 1990s but there is currently little difference between the two groups.

For female migrant workers, employment rates have remained lower and unemployment rates higher than those of their UK-born counterparts although the difference between the two groups has become smaller over time.

This evidence is consistent with earlier studies examining this issue. Further, here is evidence in the literature that migrants from A8 states arriving in the mid-2000s may be different to earlier cohorts of migrants. In terms of employment rates, work from Gilpin et al. (2006) and Blanchflower and Shadforth (2009) showed that migrants from the new EU member states were more likely to be in employment than their native counterparts with the propensity to work even higher amongst A10 workers since their accession to the EU. Dustmann, et al. (2010) showed that between 2005 and 2009 90% of working age A8 males and 74% of females had a job. This compared with 78% and 71% of native men and women of working age.

¹⁰ Nationality is a qualifying factor only for non-contributory benefits (such as Disability Living Allowance) while contributory benefits such as Jobseeker’s Allowance are determined by the National insurance contributions made by the claimant. Recent migrants are eligible to claim contributory benefits after 12 months of continuous employment. On the other hand eligibility for contributory benefits is not nationality dependent but is determined by the National Insurance contributions made by the claimant (DWP 2012).

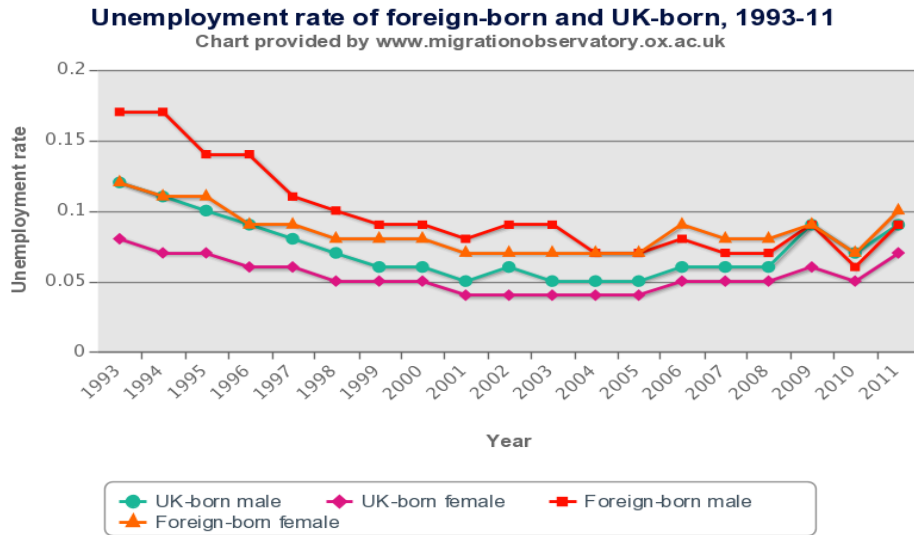
Figure 11. Evolution of employment rates



Source : Labour Force Survey

Source: Rienzo, Cinzia. "Characteristics and Outcomes of Migrants in the UK Labour Market." Migration Observatory Briefing, COMPAS, University of Oxford, UK, May 2012

Figure 12. Evolution of unemployment rates



Source : Labour Force Survey

Source: Rienzo, Cinzia. "Characteristics and Outcomes of Migrants in the UK Labour Market." Migration Observatory Briefing, COMPAS, University of Oxford, UK, May 2012

There is evidence in the literature that historically migrants in general and recent migrants (A8) have had lower propensity to claim working age benefits than UK nationals. Research looking at migration from the A8 countries suggests that these migrants are entitled to in-work benefits only after residing in the country for 12 months, although they may not be entitled to all benefits from the welfare system. Thus, income-support, job seeker's allowance, housing benefit and council tax benefits are available to A8 workers but only after 12 months of continuous employment (Blanchflower and Shadforth, 2009; Dustmann et al., 2012).

Research by DWP shows that as of February 2011 there were 5.5million people receiving DWP working age benefits in the UK, of which 371,000 (6.4%) were non-UK¹¹ nationals. That is, 16.6% of the working age UK nationals were claiming a working age benefit compared with 6.6% of the working age non-UK nationals. There is significant variation in the claim rate by benefit type: 8.5% of jobseekers were non-UK nationals compared with 3.5% of working age disabled benefit claimants. Of the non-UK claimants, 34% were from Asia and the Middle East, 27% from Africa and 25% from the EU.

Historically, the proportion of European migrants in the UK claiming income-related benefits, tax credits and housing support was relatively low. Dustmann et al. 2010 examined benefit claims between 2005-06 and 2008-09. They found that A8 migrants who arrived post EU enlargement and have at least one year of residency in the UK (and are thus entitled to claim benefits) were 59% less likely to claim benefits and 57% less likely to reside in social housing than natives. Furthermore, when accounting for the differing characteristics between migrant and native workers, such as age, education, number of dependents etc., migrants were still 13% less likely to receive state benefits and 29% less likely to acquire social housing rights. These coefficients only fluctuated slightly with the relationship remaining the same if the sample was limited to those migrants who resided in the UK for at least two years. Thus, if we compare the A8 immigrant population in the UK over the period between 2005 and 2009, the probability of claiming state benefits or tax credits is substantially smaller for A8 immigrants than for natives (Dustmann et al. 2010).

In conclusion, the literature suggests that the employment and unemployment rates of migrant men have converged with those of native men over time. For women, there has been a narrowing of the employment and unemployment gap between natives and migrants though the effect has been much smaller. The literature also suggests that historically, migrants in general and recent migrants

¹¹ Individuals who at the time of application for a National Insurance Number were non-UK nationals. Initial research from DWP suggests that approximately half of these individuals will have obtained British citizenship.

(A8) have had lower propensity to claim working age benefits than UK-born workers.

4 Empirical work

This section presents the findings from our empirical work. First we discuss the data used and how it was processed. We then outlined what variables and definitions we used in our analysis before presenting our findings ordered by research question.

4.1 Data processing and definitions

In this analysis we used Quarterly Labour Force Survey (QLFS) data covering the period 1994-2012¹². We constructed annual data by appending quarters together. In doing so we kept only the first wave of each quarter to eliminate repeat observations. We kept only individuals of working age: males aged 16-64 and females aged 16-59.

Below we explain what variables we used and relevant processing we undertook.

- **Migrant:** person born abroad -identified using variables ‘cry’¹³ and ‘cryo’
 - **A8:** persons born in Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia;
 - **A2:** Persons born in Romania and Bulgaria;
 - **EEA:** Persons born in EU states (excluding A8 and A2) plus Norway and Iceland;
 - **Other:** all other countries.
- **Recent migrant:** migrants who have been in the UK 5 or fewer years. Derived using ‘cameyr’.
- **Sector:** 2 digit industry division level in the Standard Industrial Classification (SIC) 92;
- **Pay:** derived from QLFS variable ‘hourpay’. Outliers were removed. Outliers defined as values below the minimum apprentice¹⁴ wage of £2.60 and values above £100;
- **Age left full time education:** derived using QLFS ‘edage’.

¹² The latest available data covers the first three quarters of 2012.

¹³ Note that the names of the variables and coding change periodically. For example cry changes to cry01 and then cry12.

¹⁴ In “National Minimum Wage”, Low Pay Commission Report 2012

- **Part-time:** used QLFS variable ‘ftpt’
- **Self-employment:** derived from variable ‘inecac05’;
- **Agency work:** derived from variable ‘agwrk’
- **Temporary work:** derived from ‘jobtyp’ variable. Reason for temporary nature of work derived from ‘restmr6’ and ‘jbtp101’ variable.
- **Occupation:** 1 digit and 4 digit Standard Occupational Classification (SOC) 2000

4.2 Research questions

4.2.1 How has the composition of the workforce changed over time in different sectors?

In this section we examine how the relative use of migrant labour varies by sector and over time. We first look at the overall trends identifying sectors that have high or growing migrant shares as well as those with low or static shares. We then look at changes in workforce composition within sector.

Over the last decade, the growth in migrant shares was higher in low skilled sectors than other sectors. On average, migrant shares increased by 6 percentage points in low skilled sectors compared with 3 percentage points in other sectors.

Interestingly we find that relative to the wider economy¹⁵, sectors with high and rising migrant shares, as well as those with low or static migrant shares, are more likely to be low skilled. There is some evidence that different migrant groups concentrate in different sectors. Specifically, the sectors where A8 migration has been the key driver of workforce composition change tend to be low skill.

Migrant shares by sector

The size of industrial sectors varies considerably which partly influences estimates of industry shares over time. **Table 5** shows the sectors that employ the highest numbers of UK migrants in 1994 and 2012 using the UK Standard Industrial Classification of Economic Activities 1992. In both years, the largest employer of migrants is ‘85: health, social work’ sector which employs one in seven foreign workers. This is followed by the retail sector ‘52: retail trade (not motor vehicles)’ repairs and ‘55: hotels, restaurants’ each of which employ one in ten migrants. There has been little change in the sectors employing the majority

¹⁵ Half of all sectors are classed as low skill using our methodology.

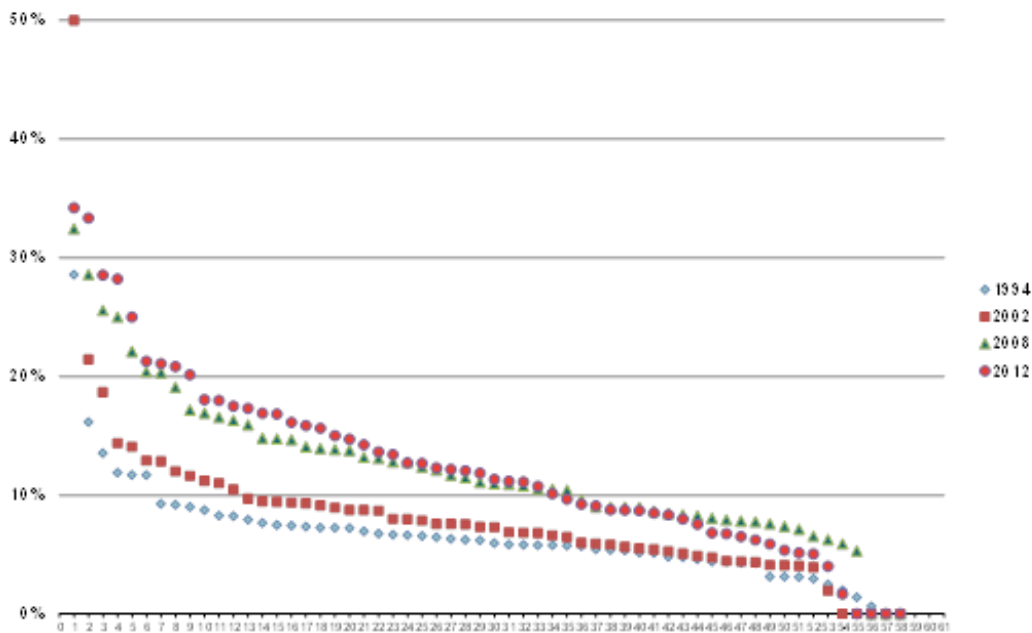
of migrant labour over time. In 1994, the top five sectors employed just under half of all migrants. In 2012, the same five sectors employed just over half of all migrants. Two of the top five sectors in both years are low skill ‘55: hotels, restaurants’ and ‘52:retail trade (not motor vehicle) repairs’.

Table 5. Largest migrant employing sectors 1994-2012

Rank	1994 sectors		2012 sectors	
1	85:health,social work	14%	85:health,social work	16%
2	52:retail trade (not motor vehicle) repairs	10%	74:other business activities	11%
3	55:hotels,restaurants	9%	55:hotels,restaurants	10%
4	80:education	8%	52:retail trade (not motor vehicle) repairs	9%
5	74:other business activities	7%	80:education	9%

Source: Frontier analysis of LFS data. Industry sectors defined as ‘2-digit’ industry division level. Low skill sectors highlighted in grey.

As the share of migrant workers in the whole UK workforce doubled between 1992 and 2012 (from less than 8% to 15%), there were significant changes in migrant shares across many industries. **Figure 13** shows the distribution of migrant shares across sectors in all four years. Sectors are ordered in terms of migrant shares from highest to lowest in each year. There is a clear shift in the distribution with the biggest change occurring between 2002 and 2008.

Figure 13. Distribution of migrant shares in sectors 1994-2012

Source: Frontier analysis of QLFS data. Sectors ordered by migrant share in each year.

We show the industrial sectors with the highest shares of immigrant labour in 1994, 2002, 2008 and 2012 in **Table 6** (low skill sectors in grey).

The sector with the highest proportion of migrant workers in 1994 was ‘mining of metal ores’¹⁶ where 29% of the workforce was foreign born. This was followed by ‘clothing, fur manufacture’ where 16% of the workforce was foreign-born and ‘hotels, restaurants’ where 14% of the workforce was foreign born. In 2012, the sector with the highest share of migrant workers was ‘clothing, fur manufacture’ with 34%.

Five of the top 10 sectors are consistent across all four time periods. These are ‘mining of metal ores’, ‘clothing, fur manufacture’, ‘hotels, restaurants’, ‘private households with employed persons’ and ‘computer related activities’. Migrant shares doubled in all but one of the five sectors that appear in the top 10 in all four time periods. Most of the top 10 sectors in 2012 are relatively small. In total, they employ 3.6 million workers or 12% of the UK workforce. Of the top 10, by far the most significant are (total employment in brackets) ‘hotels, restaurants’ (1.5m); ‘transport by land, pipeline’ (0.7m); ‘computer related activities’ (0.6m);

¹⁶ We note that this sector is very small in size with sample sizes of 10 or fewer observations. Hence the calculated migrant shares should be treated with caution.

and ‘food, beverage manufacture’ (0.4m). The remaining sectors in the top 10 are small, each employing fewer than 100,000 workers across the whole of the UK.

Most of the sectors with high migrant shares in 2008 and 2012 are low skill which was not the case in 1994 and 2002.

Table 6. Top 10 industry sectors by share of non-UK born workers (1994-2012)

Rank	1994	2002	2008	2012
1	13: mining of metal ores (29%)	13: mining of metal ores (50%)	12: uranium, thorium ore mining (33%)	18: clothing, fur manufacture (34%)
2	18: clothing, fur manufacture (16%)	18: clothing, fur manufacture (21%)	18: clothing, fur manufacture (32%)	13: mining of metal ores (33%)
3	55: hotels, restaurants (14%)	55: hotels, restaurants (19%)	13: mining of metal ores (29%)	15: food, beverage manufacture (29%)
4	34: motor veh, trailer, etc manufacture (12%)	72: computer, related activities (14%)	55: hotels, restaurants (26%)	55: hotels, restaurants (28%)
5	95: private hhlds with employed persons (12%)	62: air transport (14%)	37: recycling (25%)	17: textile manufacture (25%)
6	62: air transport (12%)	23: coke, petrol prods, nuclear fuel man. (13%)	95: private hhlds with employed persons (22%)	73: research, development (21%)
7	72: computer, related activities (9%)	30: office mach, computer manufacture (13%)	15: food, beverage manufacture (20%)	60: transport by land, pipeline (21%)
8	85: health, social work	95: private hhlds with employed persons (12%)	73: research, development (20%)	95: private hhlds with employed persons (21%)
9	11: oil, gas extractn etc (not surveying) (9%)	74: other business activities (12%)	72: computer, related activities (19%)	72: computer, related activities (20%)
10	19: leather, leather goods manufacture (9%)	85: health, social work (11%)	63: aux transport activ., travel agents (17%)	62: air transport (18%)

Source: Frontier analysis of LFS. Industry sectors defined as ‘2-digit’ industry division level. Low skill sectors highlighted in grey.

By 2012, only six sectors had workforces comprised of less than five per cent migrant workers (shown in **Table 7**). These are ‘tobacco products manufacture’, ‘coal, lignite mining, peat extraction’, ‘forestry, logging etc.’ ‘fishing, fish farms, hatcheries etc.’, ‘water collection, purification, supply etc.’ and ‘radio, tv, communication eqt. man.’. In terms of their overall significance in the UK economy, sectors with low migrant shares are very small. In 2012, they employed 0.7million workers in total equivalent to 2% of the UK workforce in employment. Most of the sectors with low migrant shares are low skill.

Empirical work

Table 7. Bottom 10 industry sectors by share of non-UK born workers (1994-2012)

Rank	1994	2002	2008	2012
1	02:forestry,logging etc. (3%)	40:elec,gas,steam etc. supply (4%)	01:agriculture,hunting,etc (8%)	20:wood,straw,cork,wood prods(not furn) (6%)
2	10:coal,lignite mining, peat extraction (3%)	01:agriculture,hunting,etc (4%)	35:other transport eqt. manufacture (7%)	66:insurance,pensions (not social sec) (5%)
3	20:wood,straw,cork,wood prods(not furn.) (3%)	26:other non-metallic products man. (4%)	40:elec,gas,steam etc. supply (7%)	61:water transport (5%)
4	40:elec,gas,steam etc. supply (3%)	14:other mining, quarrying (4%)	71:personal,hhld,mach,eqt rental(no op) (7%)	90:sanitation,sewage,ref use disposal etc (5%)
5	01:agriculture,hunting,etc (2%)	20:wood,straw,cork,wood prods(not furn.) (2%)	28:fabric-metal prod (not mach,eqt) man. (6%)	32:radio,tv,communication eqt man. (4%)
6	23:coke,petrol prods, nuclear fuel man. (2%)	02:forestry,logging etc. (0%)	41:water collection, purification, ,supply etc. (6%)	41:water collection, purification, supply etc. (2%)
7	14:other mining, quarrying (1%)	05:fishing,fish farms, hatcheries etc. (0%)	50:sales of motor vehs,parts,fuel etc (5%)	02:forestry,logging etc. (0%)
8	41:water collection, purification, supply etc. (1%)	10:coal,lignite mining, peat extraction (0%)	02:forestry,logging etc. (0%)	05:fishing,fish farms, hatcheries etc.(0%)
9	05:fishing,fish farms, hatcheries etc. (0%)	16:tobacco products manufacture (0%)	10:coal,lignite mining, peat extraction (0%)	10:coal,lignite mining, peat extraction (0%)
10	37:recycling (0%)	37:recycling (0%)	16:tobacco products manufacture (0%)	16:tobacco products manufacture (0%)

Source: Frontier analysis of LFS data. Industry sectors defined as '2-digit' industry division level. Low skill sectors highlighted in grey.

Changes in migrant shares across sectors have been far from uniform. They were largest in ‘food, beverage manufacture’. This sector increased its share of migrant workers by 23 percentage points, from 6% in 1994 to 29% in 2012. The sector moved from being the 30th largest (in terms of migrant shares) in 1994 to the third largest in 2012. Another sector that saw a large increase in its migrant workforce was ‘recycling’. In 1994, this sector employed no migrant workers. By 2012, one in seven of its workforce was born abroad. Seven of the sectors that experienced high growth in migrant shares are low skill.

Table 8. Sectors with highest change in migrant shares between 1994 and 2012

	1994-2002	2002-2008	2008-2012
15:food,beverage manufacture	3.4%	11.1%	8.2%
18:clothing,fur manufacture	5.3%	11.0%	1.8%
17:textile manufacture	1.9%	3.8%	11.8%
73:research,development	5.1%	9.9%	1.0%
37:recycling	0.0%	25.0%	-10.3%
55:hotels,restaurants	5.1%	6.9%	2.7%
23:coke,petrol prods, nuclear fuel man.	10.9%	-3.3%	6.0%
14:other mining, quarrying	2.5%	12.4%	-1.3%
60:transport by land, pipeline	3.4%	5.5%	4.5%
67:other financial (not insur.,pensions)	0.2%	6.6%	5.4%

Source: Frontier analysis of LFS data. Industry sectors defined as ‘2-digit’ industry division level. Low skill sectors highlighted in grey.

We also plot the percentage point change in migrant shares between 1994 and 2012 in specific sectors. Only a handful of sectors did not experience an increase in the share of migrant workers over this time period. There were four sectors where the use of migrant labour changed little or not at all. These are ‘28: fabric-metal prod (not mach,eqt) man.’ (+1 percentage point), ‘90: sanitation,sewage,refuse disposal etc.’ (+0.7 percentage points), ‘66: insurance,pensions (not social sec)’ (+0.2 percentage points) and ‘05: fishing,fish farms, hatcheries etc. (no change)’.

Six sectors saw the share of migrant workers decline. These are ‘19: leather,leather goods manufacture’ (-0.4 percentage points), ‘61: water transport’ (-1.6 percentage points), ‘02: forestry,logging etc.’ (-3.1 percentage points), ‘10: coal,lignite mining, peat extraction’ (-3.1 percentage points), ‘32: radio,tv,communication eqt man.’ (-3.9 percentage points) and ‘16: tobacco products manufacture’ (-4.8 percentage points).

Five of the sectors with little growth in migrant shares are low skill.

Table 9. Sectors with lowest change in migrant shares between 1994 and 2012

	1994-2002	2002-2008	2008-2012
28: fabric-metal prod (not mach,eqt) man.	-1.4%	1.9%	0.5%
90: sanitation,sewage,refuse disposal etc	1.6%	2.0%	-2.9%
66: insurance,pensions (not social sec)	3.5%	2.2%	-5.5%
05: fishing,fish farms,hatcheries etc	0.0%	10.5%	-10.5%
19: leather,leather goods manufacture	-0.7%	0.3%	0.0%
61: water transport	-2.4%	3.7%	-2.9%
02: forestry,logging etc	-3.1%	0.0%	0.0%
10: coal,lignite mining,peat extraction	-3.1%	0.0%	0.0%
32: radio,tv,communication eqt man.	0.8%	5.2%	-9.9%
16: tobacco products manufacture	-4.8%	0.0%	0.0%

Source: Frontier analysis of LFS data. Industry sectors defined as ‘2-digit’ industry division level. Low skill sectors highlighted in grey.

Changes of workforce composition by sector

In this section we explore how the composition of the migrant workforce changed within individual sectors over the period 1994-2012. We concentrate on the ten sectors that experienced the highest increase in the proportion of migrant labour they employ. **Table 10** shows the overall change in migrant share by sector, and the different migrant groups driving this change. On the whole, the groups driving most changes in workforce composition are A8 and Other migrants. However, there is variation in the extent to which different workforce groups drive changes in workforce composition in different sectors.

Table 10. Decomposition of change in migrant share by sector 1994-2012, top 10 sectors

	Total change	share of change driven by:			
		A8	A2	EEA	Other
15:food,beverage manufacture	23%	14%	1%	2%	5%
18:clothing,fur manufacture	18%	5%	0%	4%	9%
17:textile manufacture	18%	3%	0%	2%	13%
73:research,development	16%	2%	0%	4%	10%
37:recycling	15%	9%	0%	0%	6%
55:hotels,restaurants	15%	5%	0%	1%	8%
23:coke,petrol prods, nuclear fuel man.	14%	0%	0%	2%	12%
14:other mining, quarrying	14%	5%	0%	0%	9%
60:transport by land, pipeline	13%	2%	1%	1%	9%
67:other financial (not insur.,pensions)	12%	1%	0%	3%	8%

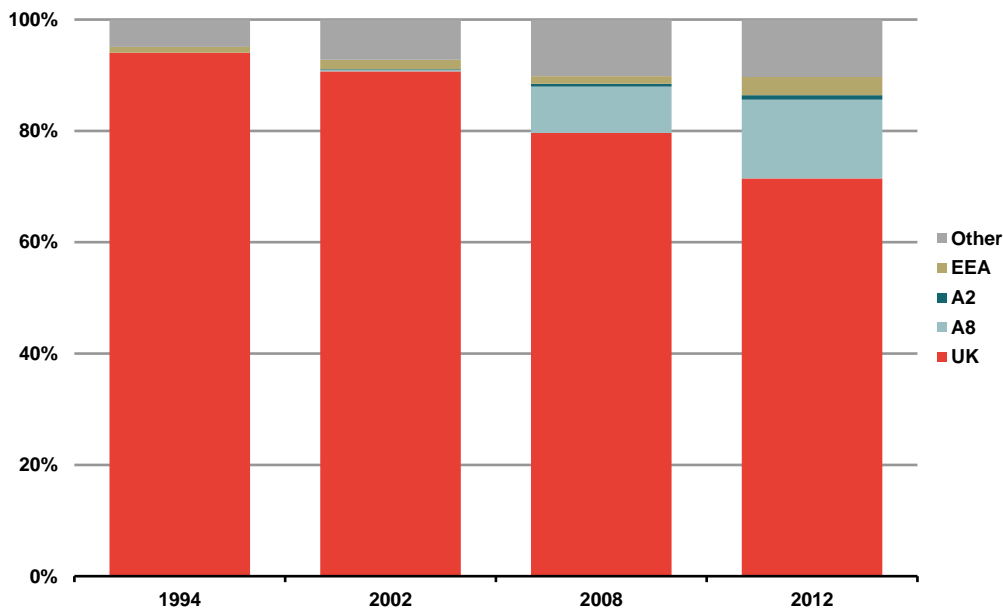
Source: Frontier analysis of LFS data. Industry sectors defined as '2-digit' industry division level. Low skill sectors highlighted in grey.

For example, changes in the composition of the workforce in '15: food, beverage manufacture' were predominately driven by A8 migration. This can be seen in **Figure 14** (similar figures for the remaining nine sectors can be found in the Annex) which plots the composition of the workforce in '15:food,beverage

Empirical work

manufacture' over time. In 1994, 94% of employees in this sector were UK-born. 5% were born outside the EEA and 1% of workers were born in EEA states. By 2012, foreign-born workers accounted for 29% of the workforce in this sector. The share of EEA workers increased moderately from 1% to 3%. The share of non-EEA workers doubled from 5% to 10%. But the largest change in this sector was the increase in the use of A8 workers. In 1994, the sector employed no A8 workers but by 2012, one in seven workers were born in the A8.

Figure 14. Changes in workforce composition (15:food,beverage manufacture)



Source: Frontier analysis of LFS data. Industry sectors defined as '2-digit' industry division level

A similar pattern is evident in the '37: recycling' sector, where the share of A8 workers increased from zero in 1994 to 9% in 2012 (see **Figure 43** in the Annex). Both '15:food,beverage manufacture' and 'recycling' are sectors that utilise relatively high proportions of workers with lower educational attainment and can therefore be considered as low-skill.

Migration from Other countries was the largest driver of changes in workforce composition in all other sectors depicted in **Table 10**.

In **Table 11**, we explore if changes in migrant shares since the recession are related to sector size (in terms of total employment) and changes thereof. We show the five sectors with the largest increases/decreases of migrant shares in the workforce. Since the recession, total employment increased in 24 and declined in 34 sectors of the economy. Interestingly, the use of migrant labour increased most in sectors which were in decline between 2008 and 2012. Three of the top five sectors are low skill. The use of migrant labour declined in sectors that are

very small in size. Some of these sectors were shrinking while others were expanding. Two of these sectors are low skill. In general, there is a negative correlation between changes in sector size and changes in migrant shares (correlation coefficient of -0.28) indicating that since the recession, some migrant flows have been in sectors with declining total employment. An additional explanation for the negative correlation might be that outflows were disproportionately among non-migrants.

Table 11. Decomposition of change in migrant share by sector 2008-2012

	Total change	share of change driven by:				Sector size 2008*	Sector size change**
		A8	A2	EEA	Other		
Highest growth sectors (top 5)							
17:textile manufacture	12%	-1%	0%	2%	11%	94,340	-23%
15:food,beverage manufacture	8%	6%	0%	2%	0%	405,793	-3%
23:coke,petrol prods,nuclear fuel man.	6%	0%	0%	-1%	7%	54,542	-37%
50:sales of motor vehs,parts,fuel etc	5%	1%	0%	1%	4%	534,084	-2%
67:other financial (not insur.,pensions)	5%	-1%	0%	1%	6%	428,314	-12%
Lowest growth sectors (top 5)							
66:insurance,pensions (not social sec)	-6%	0%	0%	0%	-5%	101,238	158%
33:medical,precision,optical eqt man.	-7%	-3%	-1%	2%	-6%	127,782	-4%
32:radio,tv,communication eqt man.	-10%	-1%	0%	-3%	-6%	56,290	-36%
37:recycling	-10%	3%	0%	0%	-13%	10,261	229%
05:fishing,fish farms,hatcheries etc	-11%	0%	0%	0%	-11%	12,273	-31%

Source: Frontier analysis of LFS data. Industry sectors defined as '2-digit' industry division level. Low skill sectors highlighted in grey. *Total sector employment **Change in total sector employment

In **Table 12** we show the sectors where different migrant groups contributed most to changes in migrant share in total sector employment. A8 migration was a

Empirical work

key driver in migrant share growth in some low-skilled sectors such as ‘37: recycling’ and 51: wsale, commission trade (fee, contract). Except for ‘11: oil, gas extraction etc. (not surveying)’, all sectors where A2 migration was a significant driver of migrant share change are also low-skilled.

EEA migration on the other hand drove changes in high-skill sectors such as ‘62:air transport’ and ‘30:office machine, computer manufacture’ and 73:research,development. Migrants from other states added significantly to sectors of all skill levels.

Table 12. Changes in the shares of different workforce groups 1994-2012

Rank	A8		A2		EEA		Other	
1	15:food,beverage manufacture	14%	95:private hhlds with employed persons	4%	62:air transport	5%	17:textile manufacture	13%
2	37:recycling	9%	20:wood,straw,cork,wood prods(not furn)	1%	30:office mach,computer manufacture	5%	23:coke,petrol prods,nuclear fuel man.	12%
3	51:wsale,commission trade (fee, contract)	5%	45:construction	1%	73:research,development	4%	73:research,development	10%
4	55:hotels,restaurants	5%	11:oil,gas extractn etc (not surveying)	1%	18:clothing,fur manufacture	4%	60:transport by land,pipeline	9%
5	18:clothing,fur manufacture	5%	01:agriculture,hunting,etc	1%	31:elec mach,eqt manufacture	4%	14:other mining,quarrying	9%

Source: Frontier analysis of LFS data. Industry sectors defined as ‘2-digit’ industry division level

Migrant shares by occupation

In this section, we look at the occupations which have made extensive use of migrant labour over the last decade and compare them to those that have used migrant labour less. Periodic changes to the official occupational classifications restrict our analysis to the last decade. We use 4-digit SOC (2000) since this can be mapped to SOC 2010 allowing us to study the whole period between 2002 and 2012¹⁷.

We show the occupations with the highest shares of immigrant labour in 2002, 2008 and 2012 in **Table 13**. We define low skill occupations as occupations beginning with 4,6,7,8,9 corresponding to skill levels 1 and 2 in the SOC 2000

¹⁷ We have restricted the analysis to occupations with ten or more observations since small samples can cause volatility in the data.

classification. Of the 353 4 digit occupations, 38% are low skilled. Low skill occupations are highlighted in grey in subsequent tables.

Table 13 shows the occupations with the highest shares of immigrant labour in 2002, 2008 and 2012. Low skill occupations have increased their use of migrant labour over time. Of the ten occupations with the highest migrant shares two were low skill in 2002. By 2012, this number had doubled. In some low skill occupations, increases in the share of migrant workers were very pronounced. For example, in 2002 16% of workers occupied in ‘9134 packers, bottlers, canners, filler’ were foreign-born. By 2012, this had increased to 60%.

On average, migrant shares increased by five percentage points in low skill occupations and three percentage points in the rest.

Table 13. Top 10 occupations by share of non-UK born workers (2002-2012)

Rank	2002	2008	2012
1	2211 medical practitioners (34%)	9134 packers, bottlers, canners, filler (41%)	9134 packers, bottlers, canners, filler (60%)
2	2321 scientific researchers (33%)	8111 food, drink & tobac process operat (40%)	8137 sewing machinists (42%)
3	8113 textile process operatives (32%)	2215 dental practitioners (39%)	8111 food, drink & tobac process operat (40%)
4	1223 restaurant and catering managers (32%)	1223 restaurant and catering managers (35%)	2419 legal professionals n.e.c. (37%)
5	3412 authors, writers (28%)	7124 mrkt and street traders and assist (35%)	2321 scientific researchers (35%)
6	2452 archivists and curators (25%)	3412 authors, writers (34%)	2215 dental practitioners (35%)
7	3216 dispensing opticians (25%)	2211 medical practitioners (33%)	2213 pharmacists & pharmacologists (35%)
8	3536 importers, exporters (24%)	8112 glass and ceramics process opties (31%)	2211 medical practitioners (34%)
9	2124 electronics engineers (23%)	3536 importers, exporters (31%)	1223 restaurant and catering managers (32%)
10	6231 housekprs and related occupations (23%)	2216 veterinarians (30%)	8214 taxi, cab drivers and chauffeurs (31%)

Source: Frontier analysis of LFS. ‘4-digit’ SOC (2000) occupations. Low skill occupations highlighted in grey.

At the same time, certain low skill occupations appear to attract no migrant labour. Some of these are shown in **Table 14**. In 2002 there were 46 occupations where the share of foreign labour was zero. In 2012, there were 33 such occupations. The majority of these occupations in all time periods are low skill.

Table 14. Occupations with no foreign-born workers (2002-2012)

Rank	2002	2008	2012
1	8114 chem and related process operative	5212 moulders, core makers, die casters	5311 steel erectors
2	8117 mtl mknng & treating procss operatv	5243 lines repairers and cable jointers	5499 hand craft occupations n.e.c.
3	8123 quarry workers and related optive	5311 steel erectors	6112 amb staff (excluding paramedics)
4	8126 water and sewerage plant operative	6131 veterinary nurses and assistants	6291 undertakers and mortuary assistant
5	8138 routine laboratory testers	6291 undertakers and mortuary assistant	7123 rounds(wo)men and van salesperson
6	8221 crane drivers	8135 tyre, exhaust and windscrn fitters	8124 energy plant operatives
7	8223 agricultural machinery drivers	8216 rail transport operatives	8135 tyre, exhaust and windscrn fitters
8	9131 labourers in foundries	8223 agricultural machinery drivers	8138 routine laboratory testers
9	9141 stevadores, dockers and slingers	9112 forestry workers	8141 scaffolders, stagers, riggers
10	9243 school crossing patrol attendants	9243 school crossing patrol attendants	8216 rail transport operatives

Source: Frontier analysis of LFS. '4-digit' SOC (2000) occupations. Low skill occupations highlighted in grey.

Table 15 shows the ten occupations which increased their use of migrant labour the most between 2002 and 2012. The greatest increase occurred in ‘9134 packers, bottlers, canners, filler’ where the share of migrant workers increased by 43 percentage points, from 16% to 60%. Some of these occupations experienced sustained increases both before and after the recession while in others growth slowed down after 2008. The vast majority of these occupations are low skill.

Table 15. Occupations with highest increase in migrant shares between 2002 and 2012

	2002-2008	2008-2012
9134 packers, bottlers, canners, filler	25.2%	18.0%
8111 food, drink & tobac process operat	28.5%	0.3%
3114 build & civil eng technicians	8.6%	14.8%
8117 mtl mkng & treating procss operatv	3.6%	19.5%
9129 lab oth const trades n.e.c.	0.3%	21.0%
8137 sewing machinists	9.0%	11.5%
5432 bakers, flour confectioners	6.4%	13.9%
9119 fishng & agric reltd occupatns nec	20.3%	-0.3%
4137 market research interviewers	16.7%	3.3%
9132 indust cleaning process occupation	8.2%	11.8%

Source: Frontier analysis of LFS. ‘4-digit’ SOC (2000) occupations. Low skill occupations highlighted in grey.

Table 16 shows the ten occupations the share of migrants in the workforce declined the most between 2002 and 2012. The greatest decline occurred in ‘8113 textile process operatives’ (- 17 percentage points) and ‘8216 rail transport operatives’ (-21 percentage points). Four of the ten occupations shown in **Table 16** are low skill.

Table 16. Occupations with declining migrant shares between 2002 and 2012

	2002-2008	2008-2012
5499 hand craft occupations n.e.c.	-2.0%	-8.0%
5245 comp engineer, installn & maintnce	-3.9%	-6.1%
3413 actors, entertainers	-10.8%	0.3%
6114 houseprnts and residential wardens	-5.1%	-5.6%
3432 broadcasting associate prfssnals	-10.7%	-0.2%
8143 rail constructn & maintnce oprtive	-11.1%	-0.8%
2124 electronics engineers	-5.4%	-10.1%
2452 archivists and curators	-25.0%	9.1%
8113 textile process operatives	-25.8%	8.8%
8216 rail transport operatives	-21.1%	0.0%

Source: Frontier analysis of LFS. ‘4-digit’ SOC (2000) occupations. Low skill occupations highlighted in grey.

Changes of workforce composition by occupation

In this section we explore how the composition of the migrant workforce changed within individual occupations over the period 2002-2012. We concentrate on the ten occupations where migrant shares increased the most. **Table 17** shows the overall change in migrant share by occupation, and the different migrant groups driving this change.

On the whole, the groups driving most of the change in workforce composition are A8 and Other migrants. However, there is variation in the extent to which different workforce groups drive changes in workforce composition in different sectors. Most of the change in ‘9134 packers, bottlers, canners, filler’ and ‘8111 food, drink & tobac process operat’ was driven by A8 migration. Migration from ‘Other’ countries was the key driver of workforce change in ‘3114 build & civil eng technicians’, ‘8117 mtl mkng & treating procss operatv’ and 4137 market research interviewers. A2 migration was a significant driver of workforce change in several low skill occupations including ‘9129 lab oth const trades n.e.c.’, ‘9119

fishng & agric reltd occupatns nec' and '9132 indust cleaning process occupation'.

Table 17. Decomposition of change in migrant share by occupation 2002-2012, top 10 occupations

	Total change	share of change driven by:			
		A8	A2	EEA	Other
9134 packers, bottlers, canners, filler	43.2%	38.8%	1.8%	-0.4%	2.9%
8111 food, drink & tobac process operat	28.8%	26.5%	1.4%	-0.8%	1.0%
3114 build & civil eng technicians	23.3%	6.7%	0.0%	0.0%	16.7%
8117 mtl mkng & treating procss operatv	23.1%	3.8%	0.0%	7.7%	11.5%
9129 lab oth const trades n.e.c.	21.3%	8.7%	8.7%	1.8%	-0.2%
8137 sewing machinists	20.5%	7.5%	1.9%	0.5%	8.1%
5432 bakers, flour confectioners	20.3%	9.8%	2.0%	2.3%	6.2%
9119 fishng & agric reltd occupatns nec	20.1%	14.3%	5.7%	-5.7%	5.7%
4137 market research interviewers	20.0%	0.0%	0.0%	0.0%	20.0%
9132 indust cleaning process occupation	19.9%	9.7%	3.2%	1.4%	5.6%

Source: Frontier analysis of LFS. '4-digit' SOC (2000) occupations. Low skill occupations hight in grey.

4.2.2 Is there evidence that the ratio of British-born to migrant workers in different sectors changed during the recession?

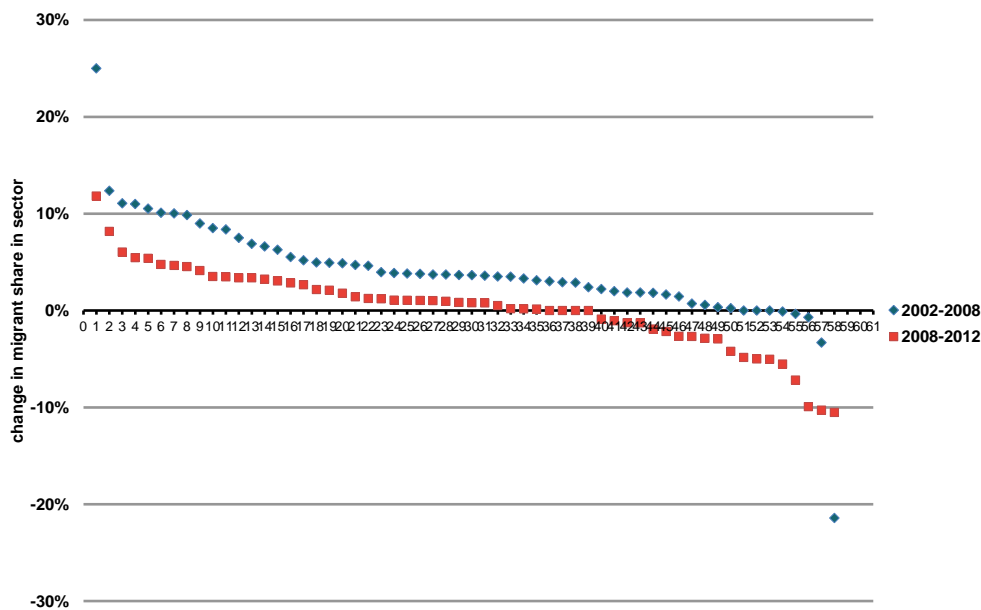
In this section we examine how the relative use of migrant labour varies before and after the recession. We note that our findings here cannot be attributed solely to the recession¹⁸.

In general we find higher changes in migrant shares across all sectors pre-recession than post-recession. Further, the majority of sectors that increased their use of migrant labour pre-recession were low skill. There is some evidence that the sectors which increased their use of migrant labour most before the recession, reduced their use of migrant labour after the recession.

General trends pre and post-recession

To address this question, we compare migrant shares across sectors in 2008 (at the start of the recession) with migrant shares across sectors in 2012. We rank sectors by the percentage change in migrant shares in the period preceding the recession (2002 to 2008) and after (2008 to 2012). These are plotted in **Figure 15**. Changes in migrant shares were in general considerably higher during the period preceding the recession than after. Moreover, there is a considerably larger number of sectors in the post-recession period that experienced small increases or indeed declines in their migrant shares, relative to the earlier period. Migrant shares changed little or declined in nearly half of all sectors post 2008. Between 2002 and 2008 one in six sectors saw little change in the share of migrant labour they employed.

¹⁸ Migration patterns would change over time even in the absence of the recession. For example, the opening of the UK labour market in 2004 to A8 workers would have been expected to draw relatively large numbers of migrants in the immediate aftermath but inflows would have been expected to tail off over time regardless of economic conditions.

Figure 15. Changes in migrant shares across sectors 2002-2008 and 2008-2012

Source: Frontier analysis of LFS data. Industry sectors defined as '2-digit' industry division level

Changes by sector

Table 18 shows the ten sectors where the use of migrant labour increased the most during the pre-recession period. The second column of the table shows how the use of migrant labour in these sectors has changed since.

Post-recession the use of migrant labour declined in seven of the ten sectors where migrant shares increased most between 2002 and 2008. In fact half of these sectors are also the sectors where migrant shares declined most rapidly after 2008. The share of migrant labour in '37:recycling' and '05:fishing, fish farms, hatcheries etc.' fell by approximately 10 percentage points between 2008 and 2012 having grown by 25 and 10 percentage points in the preceding period. Only one sector experienced growth in migrant shares comparable to that of the pre-recession period - '15: food, beverage manufacture'.

Six of the sectors that experienced high growth in migrant shares pre-recession and four of the sectors that saw declines in migrant shares post-recession are low-skilled.

Empirical work

Table 18. Changes in migrant shares pre and post- recession

	Low skill	2002-2008	2008-2012
37:recycling	√	25.0%	-10.3%
14:other mining, quarrying	√	12.4%	-1.3%
15:food,beverage manufacture	√	11.1%	8.2%
18:clothing,fur manufacture	√	11.0%	1.8%
05:fishing,fish farms, hatcheries etc.		10.5%	-10.5%
95:private households with employed persons	√	10.1%	-1.3%
11:oil,gas extract etc. (not surveying)		10.0%	-4.9%
73:research,development		9.9%	1.0%
20: wood, straw, cork, wood prods (not furn.)	√	9.0%	-5.0%
29:mach,eqt manufacture		8.5%	-5.0%

Source: Frontier analysis of LFS data. Industry sectors defined as '2-digit' industry division level. Skill levels as defined in **Table 2**.

In order to establish if this pattern applies universally we examine the correlation between changes in migrant shares pre and post-recession across all sectors. Migrant shares in 2008 are uncorrelated with changes in migrant shares between 2008 and 2012. However, there is a relatively strong negative correlation between changes in migrant shares over time. That is, migrant shares declined in sectors where migrant shares increased between 2002 and 2008. This pattern holds generally as well as if only low skilled sectors are analysed (see **Table 28** in the Annex).¹⁹

¹⁹ However, we note that correlations between changes in migrant shares over time should be interpreted with caution since a negative correlation can be expected to occur because of sampling error even if there were none in reality.

Table 19. Correlation coefficients of sectoral migrant shares and changes thereof

	1994 share	2002 share	2008 share	2012 share	change 94-02	change 02-08	change 08-12
1994 share	1						
2002 share	0.8897	1					
2008 share	0.5989	0.6565	1				
2012 share	0.6606	0.7331	0.8351	1			
change 94-02	0.5288	0.858	0.5467	0.6195	1		
change 02-08	-0.4354	-0.5084	0.3158	0.0312	-0.4552	1	
change 08-12	0.3019	0.3471	0.0169	0.5642	0.3056	-0.4173	1

Source: Frontier analysis of LFS data. Industry sectors defined as '2-digit' industry division level.

4.2.3 What characterises sectors with a relatively high migrant share in their workforce, or a growing migrant share?

In this section we analyse the characteristics of sectors with high or growing migrant shares and compare them to those of sectors with low or static migrant shares. We find no strong association between sectoral migrant shares (and changes thereof) and key sector characteristics such as pay, part-time working self-employment and occupational distribution within sector. The strongest association we find is between temporary working and migrant shares. (We explore these associations further in Section 4.3.)

In this analysis we focus on the following sector characteristics (consistent with earlier studies exploring this issue²⁰):

- Pay: average sectoral wages;
- Part-time: incidence of part time working in sector; and
- Self-employment: incidence of self-employment in sector;

²⁰ For example see Aldin, James and Wadsworth (2010)

- Occupation: distribution of occupations within industry; and
- Temporary and agency working.

We have divided sectors into four categories:

- Rising migrant share: the sectors where migrant shares increased the most between 1994 and 2012 (top 10);
- Static migrant share: the sectors where migrant shares increased the least between 1994 and 2012 (bottom 10);
- High migrant share: the sectors with highest migrant shares in 2012 (top 10);
- Low migrant share: the sectors with lowest migrant shares in 2012 (bottom 10);

Our calculations are shown in **Table 20** (detailed results by sector can be found in the Annex see **Table 29** through to **Table 32** and Figures **53-58**). We find that the sectors with high or growing migrant shares have lower average wages than the UK economy as a whole, but also relative to sectors with low or static migrant shares. However, examining the correlation between migrant shares (and changes thereof) and wages across all sectors reveals that there is no strong association between the two. The correlation coefficients between migrant shares, changes in migrant shares and sectoral wages are below 0.05. (For scatter plots of both in **Figure 51** and **Figure 52** in the Annex.)

Sectors with high or growing migrant shares are ones where self-employment is relatively more common compared with the economy as a whole. Self-employment in those sectors is twice as common as it is in sectors with low or static migrant shares. However, the correlation between self-employment rates and migrant shares (and changes thereof) across all sectors is also very low. (For scatter plots of both in **Figure 49** and **Figure 50** in the Annex.)

The incidence of part-time working in sectors with high or rising migrant shares is similar to that of the economy as a whole. On the other hand, part-time working is less common in sectors with low or static migrant shares. The correlation coefficients between migrant shares, changes in migrant shares and incidence of part-time working are not high at 0.2 and 0.1. Interestingly, changes in migration shares post-recession are negatively correlated with part-time working suggesting recent migrants may be less likely to congregate in sectors where this form of employment is more common. (For scatter plots of both in **Figure 53** and **Figure 54** in the Annex.)

Turning to occupational distribution within sector, it is evident from **Table 20** that sectors with high and rising shares of migrant workers offer relatively more 'low-skill' occupations. However, this is also true for sectors that do not use

migrant labour intensively. 45% of the general UK workforce is employed in 'low-skill' occupations compared with 47% of workers in sectors with static migrant shares and 52% of workers in sectors with rising migrant shares. On the whole sectors with high or growing migrant shares are also sectors which offer jobs in relatively more low-skill occupations.

Temporary working is more common in sectors with high or rising migrant shares compared to sectors with low or static migrant shares. Relative to the wider economy, agency working is more common in sectors with high and rising migrant shares but also those with low or static migrant shares.

Table 20. Characteristics of different categories of sectors (2012)

	Pay	Self-employment	Part-time working	% low-skill occupations	Temporary working	Agency working
All sectors	13.15	10%	26%	45%	5.6%	0.9%
Rising migrant share	11.11	14%	30%	52%	7.0%	1.1%
Static migrant share	14.24	7%	12%	47%	3.8%	1.6%
High migrant share	11.83	15%	27%	54%	6.8%	1.3%
Low migrant share	14.82	7%	11%	47%	3.9%	1.7%

Source: Frontier analysis of LFS data. Industry sectors defined as '2-digit' industry division level. Low-skill occupations defined as those beginning with 4,6,7,8,9 corresponding to skill levels 1 and 2 in the SOC 2010.

4.2.4 Are there any differences in characteristics between groups of workers in terms of skills, age etc.? Does this vary by sector? How do these compare to the characteristics of the unemployed?

In this section we explore the extent to which the observable characteristics of various groups of workers differ overall and by sector.

We find that migrants tend to be younger and better educated than native workers. Differences in education levels persist within age groups. General differences in characteristics between natives and migrants vary by sector.

Aggregate difference in characteristics

Table 21 compares the characteristics of UK people of working age with those of migrants, recent migrants (less than five years in the UK) and the unemployed. Recent migrants are on average aged 31, considerably younger than the UK workforce as a whole, but also relative to other migrants and the unemployed. In particular, the majority (73%) of recent migrants are aged 34 or less. In contrast, two thirds of the UK workforce is aged over 35.

Table 21. Characteristics of different workforce groups 2012

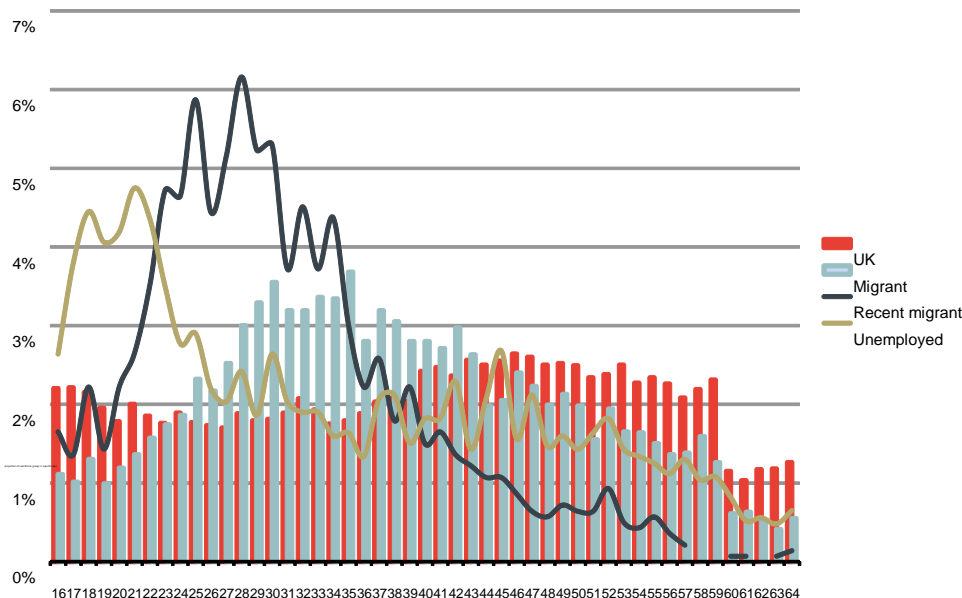
	UK	Migrant	Recent migrant	Unemployed
Mean age	40	38	31	34
% aged 16-34	36%	42%	73%	56%
% aged 35-64	64%	58%	27%	44%
% male	50%	47%	45%	56%
% low-skill (left education aged 16 or less)	50%	24%	13%	54%
% medium-skill (left education aged 17 to 20)	30%	35%	35%	30%
% high-skill (left education aged 21 or more)	20%	41%	52%	16%

Source: Frontier analysis of LFS data. LFS Q1, Q2 and Q3 of 2012 pooled together.

Overall, in terms of age, recent migrants appear more similar to the unemployed than the general UK workforce and other migrants. This can be seen on **Figure 16** which shows the proportion of individuals in each workforce group by age. Recent migrants and the unemployed are relatively more concentrated in the age

band 16-34 than the general UK workforce. There are proportionately more of the youngest age group (16-20) among the unemployed than any other group.

Figure 16. Age distribution of workforce groups



Source: Frontier analysis of LFS data. LFS Q1, Q2 and Q3 of 2012 pooled together.

Recent migrants and migrants in general are slightly more likely to be female. 55% of recent migrants and 53% of all migrants are women, compared with half of the UK workforce and 44% of unemployed people.

Migrants have different skills (in terms of education) relative to the other workforce groups. Relative to natives and the unemployed, migrants are considerably more likely to have left full-time education later on in life. Specifically, more than half of recent migrants left full-time education aged 21 or more. This compares with one in five natives and one in six unemployed persons. Conversely half of the native workforce and more than half of all unemployed individuals left education aged 16 or less. In contrast, one in eight recent migrants and one in four migrants did.

Table 22 shows the skill distribution of workforce groups broken down by age. The data shows that younger groups are generally better educated than older groups. What is also clear is that the skill differential between natives and migrants applies within age group too. This is particularly pronounced in the age group 25-34 where most recent migrants are concentrated. 8% of recent migrants in this age group have low-skills compared with 37% of natives and 51% of the

unemployed. On the other hand, 64% of recent migrants are highly skilled compared with 30% of the general UK workforce and 22% of the unemployed.

Table 22. Educational attainment by workforce group and age 2012

	UK	Migrant	Recent migrant	Unemployed
Age 25-34				
% low-skill (left education aged 16 or less)	37%	15%	8%	51%
% medium-skill (left education aged 17 to 20)	33%	33%	28%	27%
% high-skill (left education aged 21 or more)	30%	52%	64%	22%
Age 35-44				
% low-skill (left education aged 16 or less)	46%	21%	16%	51%
% medium-skill (left education aged 17 to 20)	30%	35%	29%	28%
% high-skill (left education aged 21 or more)	24%	44%	55%	20%
Age 45-64				
% low-skill (left education aged 16 or less)	59%	34%	17%	65%
% medium-skill (left education aged 17 to 20)	16%	35%	48%	23%
% high-skill (left education aged 21 or more)	25%	31%	35%	12%

Source: Frontier analysis of LFS data. LFS Q1, Q2 and Q3 of 2012 pooled together. Age group 16-24 excluded from analysis as half of individuals in this group are still in education.

Variation in characteristics by sector

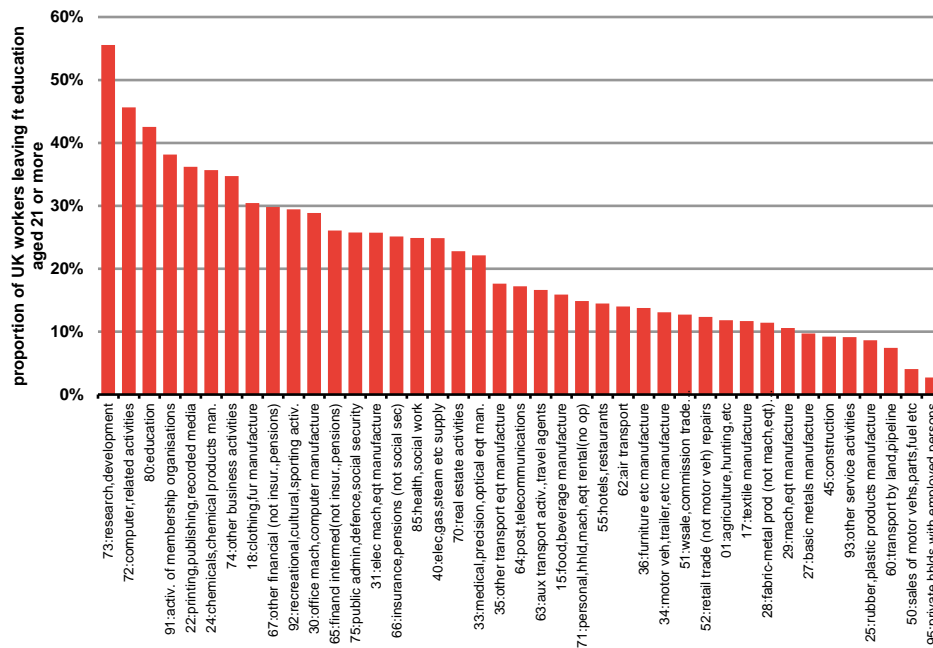
In this section we explore the extent to which the characteristics of different workforce groups vary by industrial sector. (**Figure 63** in the Annex depicts the variation in mean age of UK workers.) It is clear that some sectors employ older workers than others. Average age is highest in ‘95:private households with employed persons’ at 49 years. At the other end of the spectrum is ‘55:hotels,restaurants’ where workers have an average age of 36 years.

Turning to migrant workers we observe similar variation in average age across sectors (shown in **Figure 64** in the Annex). Mean age is highest in ‘62:air transport’ (45 years) and lowest in ‘34:motor vehicle ,trailer, etc. manufacture’ (34 years).

Finally we compare the age differential between natives in migrants in different sectors. (This is plotted in **Figure 65** in the Annex.) For each sector we divide the mean age of UK workers by the mean age of migrant workers. We then compare this ratio with the aggregate age ratio obtained by dividing the average age of all native workers by the average age of all migrant workers (depicted by the horizontal line). The age differential is most pronounced in ‘34:motor vehicle ,trailer, etc. manufacture’. Average age in this sector is 44 for UK workers and 34 for migrant workers. Conversely, migrants are on average four years older than natives in ‘62: air transport’ and ‘18:clothing,fur manufacture’.

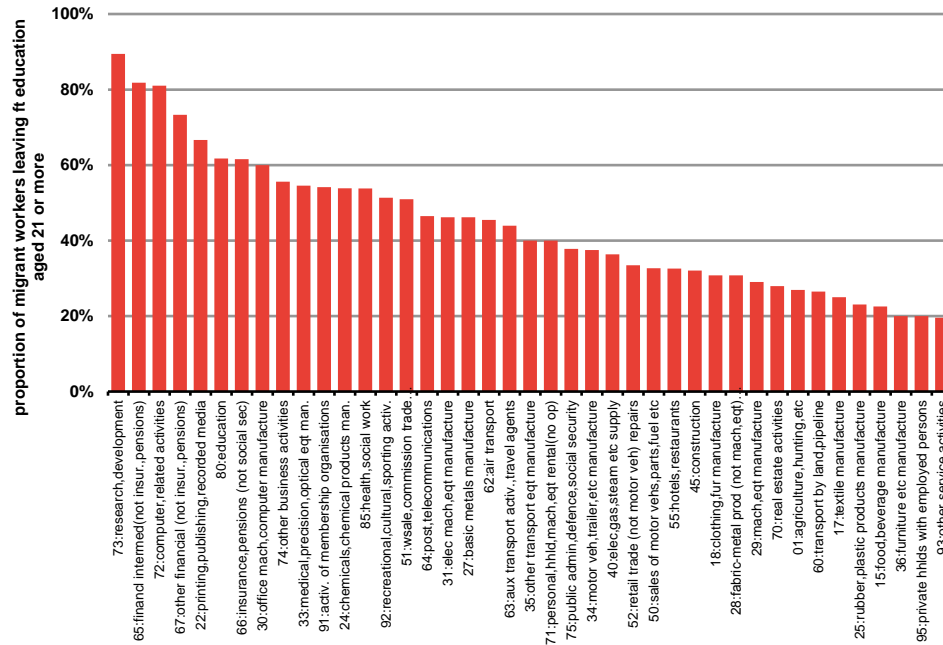
Turning to skill, we observe considerable variation in the educational attainment of native workers by sector. In **Figure 17** we show the proportion of native workers leaving full-time education aged 21 or more by sector. The differences are stark. More than half of workers in ‘73: research, development’ and 46% of workers in ‘72: computer, related activities’ are highly-skilled. In contrast, the corresponding figure in ‘50:sales of motor vehicles, parts, fuel etc.’ and ‘95:private households with employed persons’ less than five per cent.

Figure 17. Variation in educational attainment of native workers by sector



Source: Frontier analysis of LFS data. LFS Q1, Q2 and Q3 of 2012 pooled together.

Variation in skill is also observed among migrant workers, though the extent of the variation is not as large. Almost 90% of migrant labour in ‘73: research, development’ is high skill, followed by approximately 80% in ‘65: financial intermediation (not insurance, pensions)’ and ‘72: computer, related activities’. The sectors with the lowest concentration of high-skill migrants are ‘36: furniture etc. manufacture’, ‘95: private households with employed persons’ and ‘93: other service activities’ where one in five migrants left full-time education aged 21 or more.

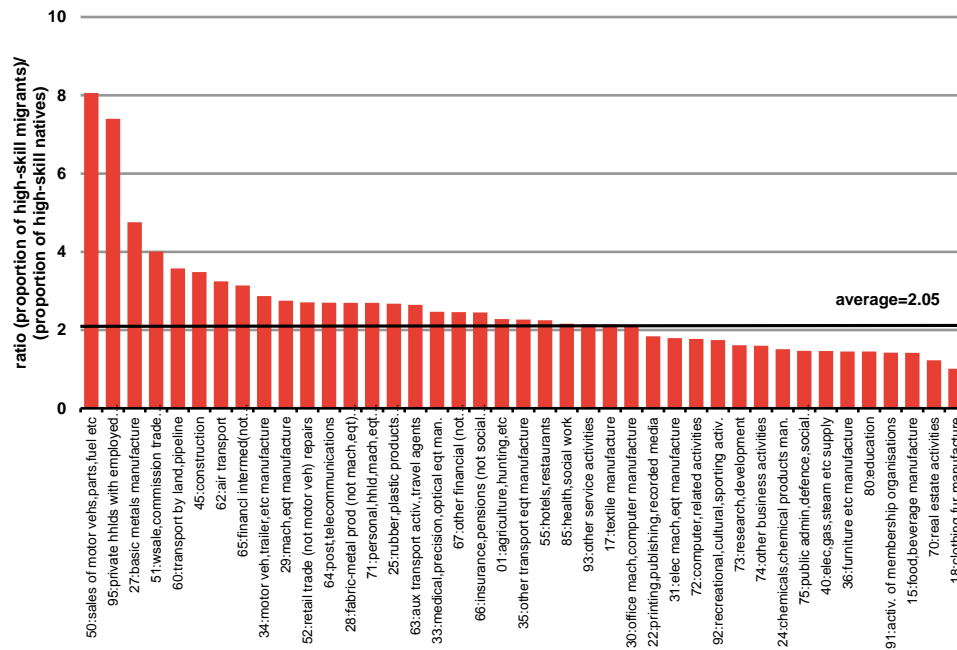
Figure 18. Variation in educational attainment of migrant workers by sector

Source: Frontier analysis of LFS data. LFS Q1, Q2 and Q3 of 2012 pooled together.

Finally we compare the high-skill differential between natives and migrants in different sectors. This is plotted in **Figure 19**. For each sector we divide the proportion of UK high-skill workers by the proportion of high-skill migrant workers. We then compare this ratio with the aggregate ratio obtained by dividing the proportion of all native high-skill workers by the proportion of all high-skill migrant workers (in **Table 21** 41% of migrants are high-skilled compared with 20% of natives, a ratio of 2.05).

Figure 19 reveals very large differences in educational attainment. This is particularly true in low skilled sectors. For example, one in three migrants employed in '50: sales of motor vehicles, parts, fuel etc.' is highly skilled compared with 4% of natives employed in the same sector. Similarly one in five migrants employed in '95: private households with employed persons' is highly skilled compared with 3% of native employees.

Figure 19. Skill ratios (native over migrant) by sector



Source: Frontier analysis of LFS data. LFS Q1, Q2 and Q3 of 2012 pooled together.

4.2.5 How prevalent is self-employment in low skilled sectors? How did this compare to high-skilled sectors? Do self-employed contractors tend to be migrants or British born?

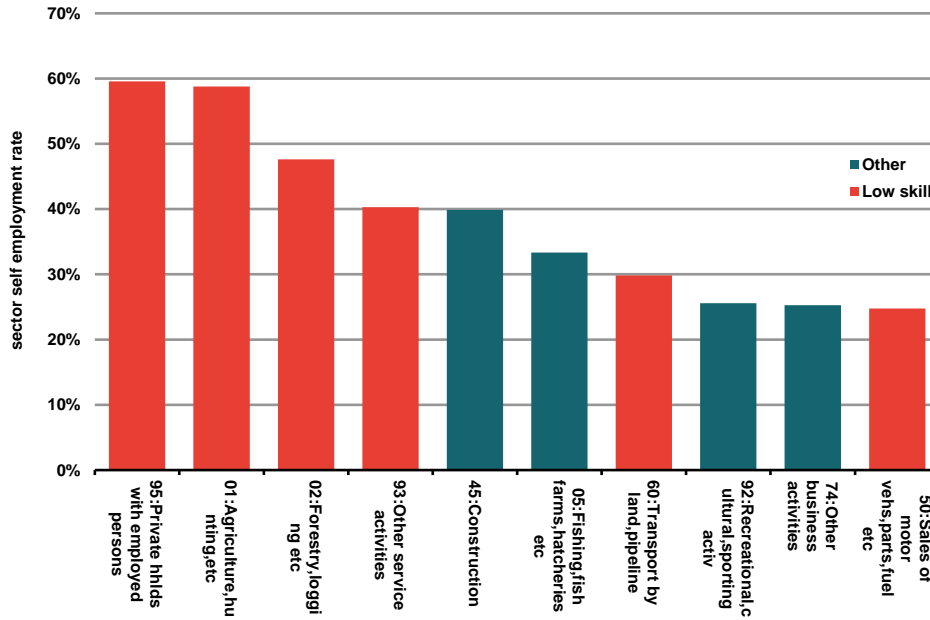
Self-employment is relatively more common in low skill sectors than the rest – the average self-employment rate in low skilled sectors is 17% compared with 10% in other sectors²¹.

In 2012, 10% of the UK workforce was self-employed. The rate of self-employment varies by sector and level of skill. Low-skilled sectors have the highest rates of self-employment as illustrated on **Figure 20** which ranks sectors by rates of self-employment (showing the top 10). Six of the top 10 sectors are low-skilled (compared with half of all sectors which are low-skilled). Self-employment is highest in ‘95: private households with employed persons’ and ‘01: agriculture, hunting, etc.’ where more than half of the workforce is self-employed.

Figure 21 shows the rates of self-employment in those sectors where this form of working is less common. Less than half of these sectors are low skill.

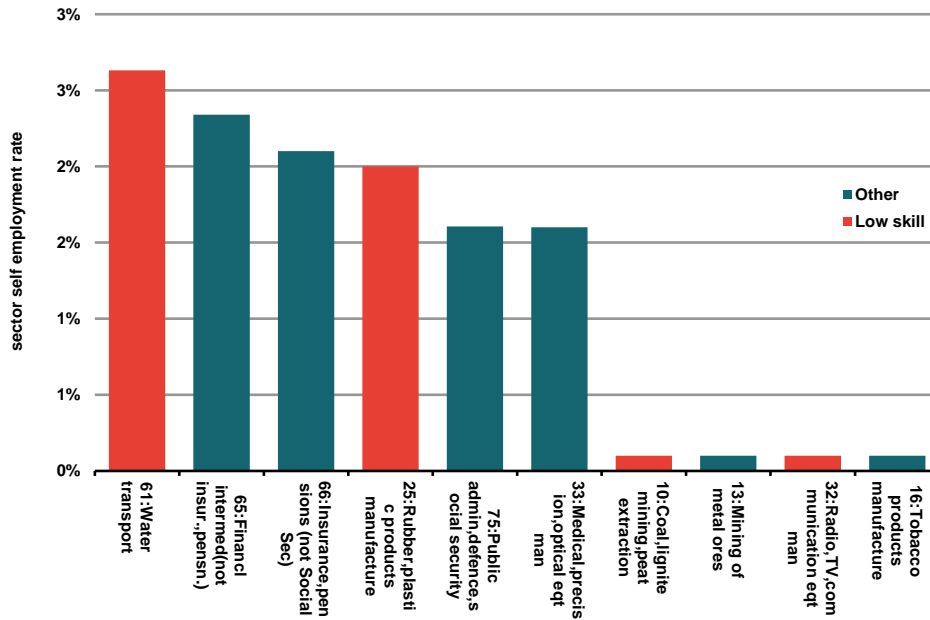
²¹ Straight average across sectors

Figure 20. Top 10 sectors in terms of self-employment rates 2012



Source: Frontier analysis of 2012 LFS data

Figure 21. Bottom 10 sectors in terms of self-employment rates 2012



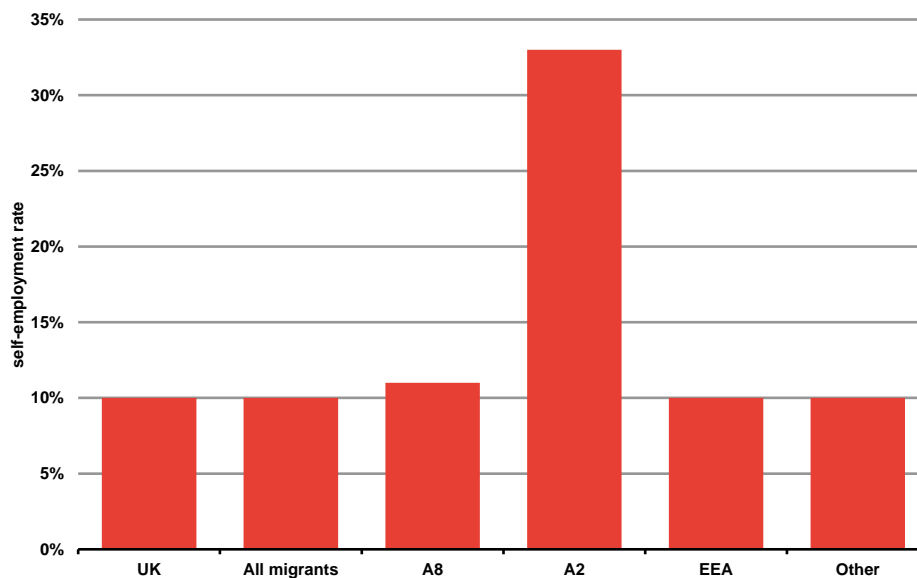
Source: Frontier analysis of 2012 LFS data

15% of all self-employed individuals are migrants. The rates of self-employment of UK-born workers and most migrant groups are the same at 10%. Moreover, we found no evidence that sectors with high self-employment rates are correlated with high or rising migrant shares (see **Figure 49** and **Figure 50** in the Annex)

Notably one in three A2 workers are self-employed compared with one in ten of workers in other workforce groups. This is not altogether surprising given that at the moment A2 workers require permission to work as employees. Self-employed A2 workers are concentrated in two sectors of the economy (% of all A2 self-employed workers in brackets):

- 45: Construction (44%); and
- 74: Other business activities (32%).

Figure 22. Variation in self-employment rates by workforce group (2012)



Source: Frontier analysis of 2012 LFS data

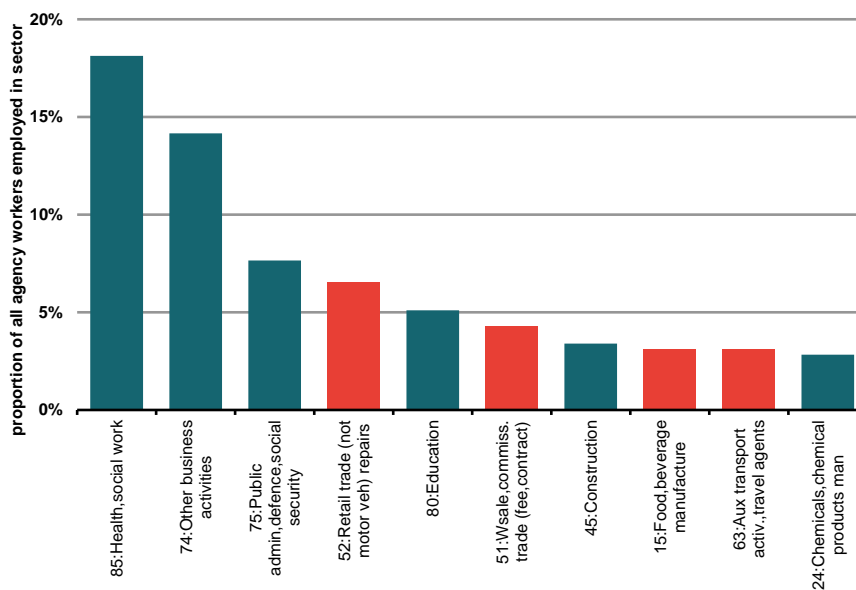
4.2.6 If the rate of self-employment varies among different groups, how does this relate to wages? Is there evidence that self-employment can lead to the undercutting of British workers or is the pay of self-employed migrants higher than sector averages?

This question has not been addressed due to data limitations. In particular, the LFS does not record earnings information for self-employed individuals which makes the comparison difficult in the absence of administrative data. Further, the data does not reveal any significant variation in the rates of self-employment of the different workforce group with the exception of A2 migrants who represent a very small proportion of all migrants.

4.2.7 To what extent do employers use agencies to recruit workers, particularly in low skilled sectors? Is there any evidence to suggest that different worker groups differ in their propensity to accept agency work?

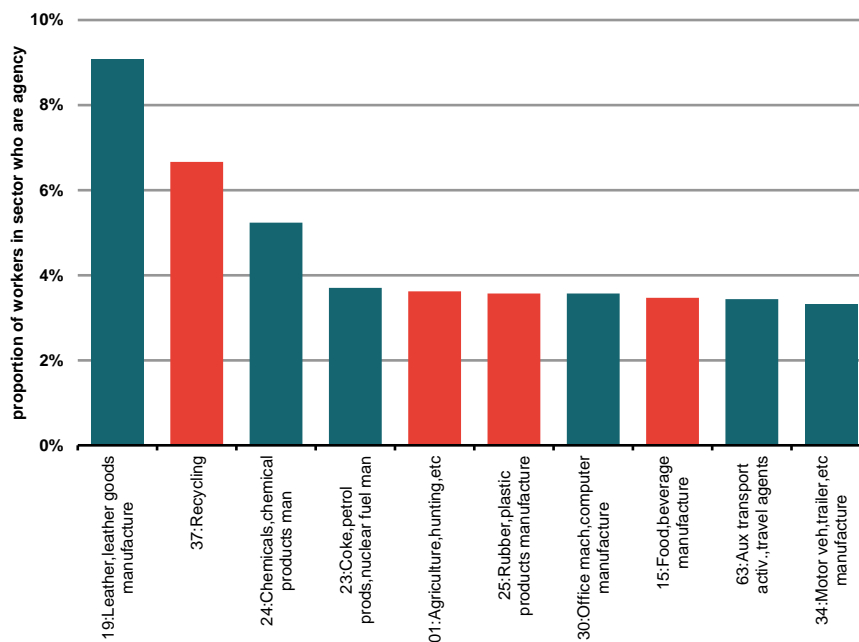
Two thirds of agency workers are employed in the ten sectors depicted in **Figure 23**. The greatest employer of agency workers is ‘85: Health, social work’, followed by ‘74: Other business activities’ and ‘75: Public admin, defence, social security’. These three sectors together employ 40% of all agency workers. Of the top ten sectors, four are low-skilled (depicted with red bars). These are ‘52: Retail trade (not motor vehicles) repairs’, ‘51: Wholesale, commission trade (fee, contract)’, ‘15: Food, beverage manufacture’ and ‘63: Aux transport activ., travel agents’. Overall, low skill sectors employ a third of agency workers.

Figure 23. Top 10 sectors in terms of agency worker employment (2012)



Source: Frontier analysis of 2012 LFS data

On **Figure 24** we show the relative shares of agency workers in different sectors. Shares are highest in ‘19: Leather, leather goods manufacture’ and ‘37: Recycling’ where 9% and 7% of the workforce are recruited through an agency. Overall, four of the top 10 sectors are low skill (depicted with red bars).

Figure 24. Top 10 sectors by proportion of agency workers (2012)

Source: Frontier analysis of 2012 LFS data

1.6% of all employees in the UK are recruited through an employment agency. Migrant employees are three times as likely to be recruited through an agency as native workers. The use of agencies is most common among A8 workers. This group is six times more likely to be recruited through an employment agency than the general UK workforce.

Table 23. Agency working by workforce group, 2012

	UK	Migrant	A8	A2	EEA	Other
% of employee recruited through agency	1.6%	3.9%	10.2%	4.3%	2.9%	2.8%

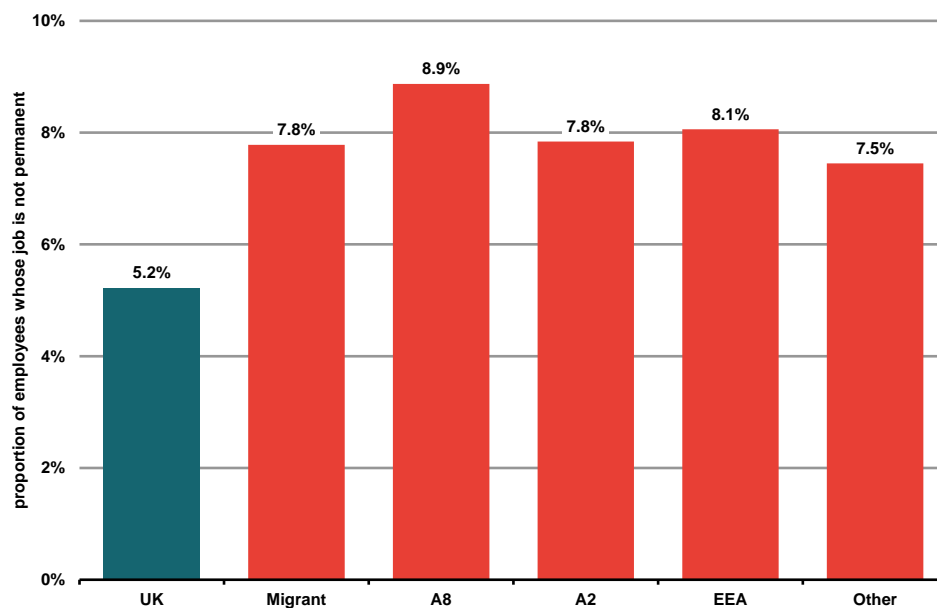
Source: Frontier analysis of 2012 LFS data

4.2.8 Are migrant workers more or less likely to accept temporary work than the UK-born?

Migrants are more likely than natives to be in temporary jobs. There are no significant differences in the incidence of temporary working across different migrant groups. The incidence of temporary working is similar in low skilled sectors (4.7%) and other sectors (3.8%).

The LFS records job type differentiating between permanent and temporary work. Therefore we are able to observe how widespread temporary working is across different workforce groups. The incidence of temporary working is plotted in **Figure 25**. Migrant workers are more likely to be in temporary jobs than native workers. 5 per cent of UK-born workers describe their job as not permanent in some way, while 8 per cent of migrants do. Temporary working is most common among A8 migrants but the variation between different migrant groups is small.

Figure 25. Proportion of employees who are not permanent by workforce group (2012)



Source: Frontier analysis of 2012 LFS data

We do not directly observe the willingness of different groups of workers to accept temporary jobs in the LFS data. That is, it is not clear whether the differences in observed incidence of temporary working are due purely to differences in the propensity to accept temporary jobs or other factors.

The LFS asks respondents to explain the reason why their job is temporary which could shed some light on this issue. Overall, similar proportions of native and migrant workers (around 30%) state that the reason for their job being temporary is because they were unable to find permanent work (see **Figure 26**). At the same time almost twice as many natives (proportionately) as migrants reported that their job was temporary because they did not want a permanent job.

Additional insight into the reasons for temporary employment is provided in **Figure 27**. Here we see quite stark differences in reported reasons between natives and migrants. 28% of migrants (proportionately almost twice as many as natives) report working for an employment agency as the reason for their job being temporary.

Overall this suggests that there may be differences in preferences for temporary working, as well as methods of looking for work between migrants and natives which may drive some of the observed difference in the take up of temporary jobs.

Figure 26. Reason for temporary job by workforce group (2012) – I

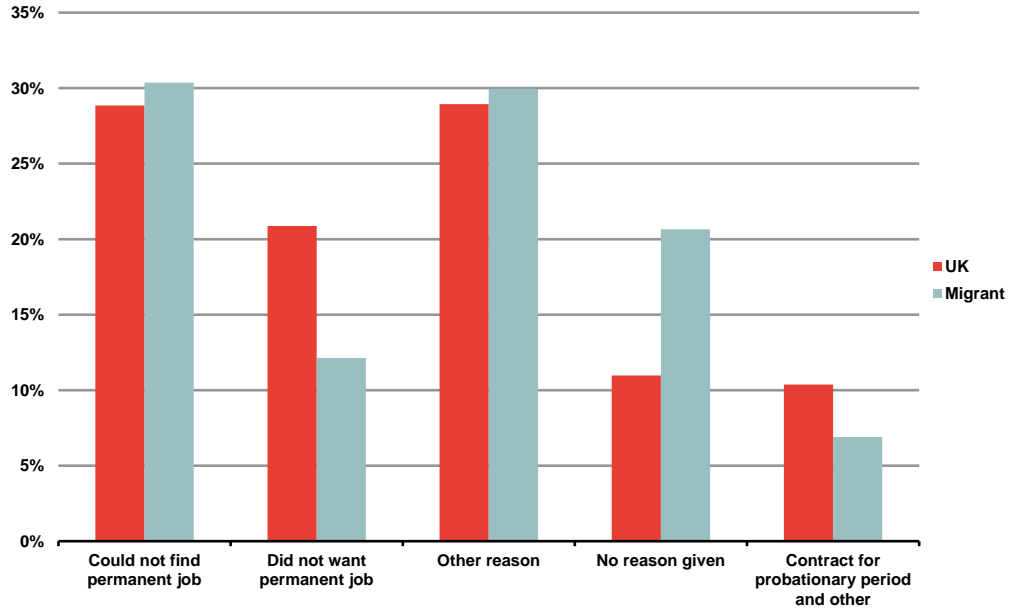
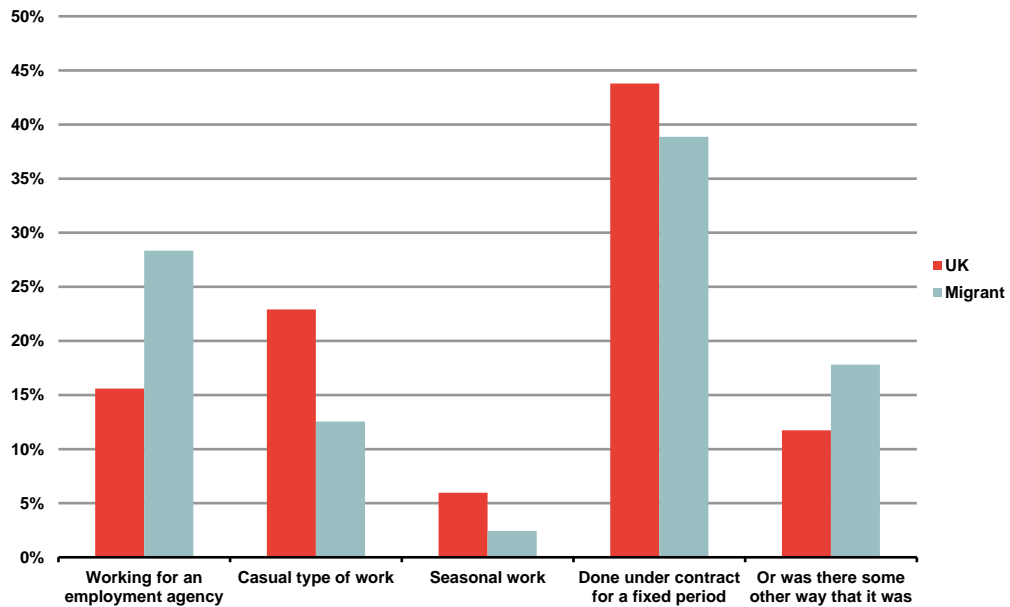


Figure 27. Reason for temporary job by workforce group (2012) – II



Source: Frontier analysis of 2012 LFS data

4.2.9 How do rules regarding eligibility for benefits vary across different groups? Do employment and unemployment rates vary across different groups?

There has been a convergence in the employment and unemployment rates of natives and migrants. This trend is more pronounced for men than women. Migrant men and native men have roughly the same probability of being unemployed while migrant men are slightly more likely to be employed than native men.

Nationality is a qualifying factor only for non-contributory benefits (such as Disability Living Allowance) while contributory benefits such as Jobseeker's Allowance are determined by the National insurance contributions made by the claimant. Recent migrants are eligible to claim contributory benefits after 12 months of continuous employment. On the other hand eligibility for contributory benefits is not nationality dependent but is determined by the National Insurance contributions made by the claimant (DWP 2012).

The level of residency required to access welfare payments in the UK differs depending on the benefit, but individuals who are subject to immigration control are often ineligible for many benefits (IFS, 2012). The majority of benefits not only depend on residency status but also on National Insurance (NI) contributions. Those immigrants who have never resided in the UK are unlikely to have paid NI and are ineligible for the 'contributory benefits' listed below unless their current/late spouse/civil partner has contributed over their working life (DWP, 2006). Immigrants to the UK may be eligible for Pension Credit, Income Support, income-based Jobseeker's Allowance, Housing Benefit, Council Tax Benefit, Disability Living Allowance, Attendance Allowance, and Carers Allowance, with these benefits broken down into contributory and non-contributory factors (DWP, 2006). Eligibility for these benefits will also depend on the individual conditions required for each benefit, such as whether you are looking for employment.

Table 24. Benefits eligibility for immigrants

Contributory benefits	Non-contributory benefits
State Pension	Industrial Injuries Disablement Benefit
Bereavement Payment	Attendance Allowance, Disability Allowance, Carer's Allowance
Widowed Parent's Allowance	Child Benefit and Guardian Allowance
Bereavement Allowance	Income based Job-seeker's Allowance, Income Support, Pension Credit
	Child Tax Credit, Working Tax Credit
	Housing Benefit, Council Tax Benefit

Source: Frontier Economics

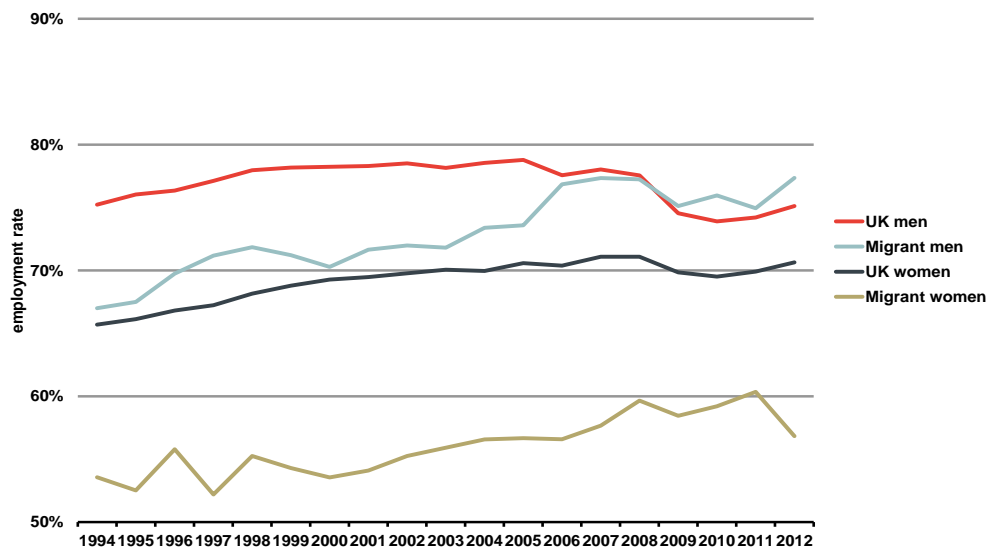
We show the evolution of the employment rates of natives and migrants in **Figure 28** differentiating between men and women. Historically UK-born men have had the highest employment rates, followed by migrant men, UK-born women and migrant women. Employment rates increased for all groups in the 1990s. Since the turn of the millennium employment rates continued to grow for migrant men and women and plateaued for UK-born men and women. Employment rates fell for all groups during the recession though the decline was largest for UK-born men. Employment rates started to recover gradually in 2010.

The employment rates of migrant men, which were historically around eight percentage points lower than those of their UK-born counterparts, have increased by ten percentage points. Consequently, migrant men are now more likely than native men to be in employment. The employment gap between native and migrant women has remained roughly constant.

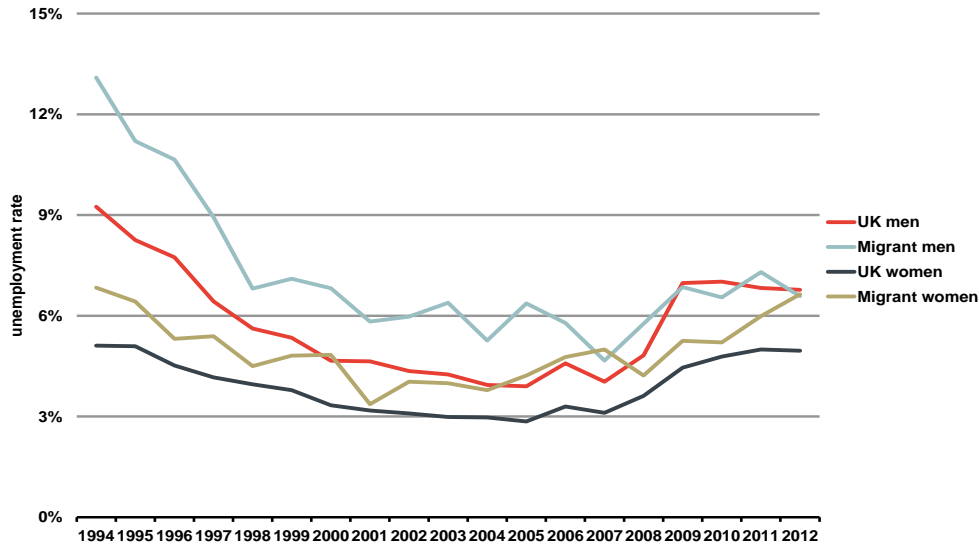
Unemployment rates reveal a similar pattern. Historically unemployment was highest among migrant men followed by native men, migrant women and native women. Unemployment rates were generally declining until the mid-2000s but have started to increase for all groups since the start of the recession. Increases have been particularly large for native men. There has been a convergence in the unemployment rates of native men and migrant men and women. Currently these groups have roughly the same probability of being unemployed. UK-born women continue to have the lowest unemployment rates at around 5%. Given the convergence in unemployment rates, it is interesting to explore whether changes in sectoral migrant shares are correlated with transitions to unemployment of native workers. We conducted some exploratory analysis which did not reveal a clear link between the two. The LFS asks unemployed

individuals what sector their last job was in. In general, the sectors that increased their use of migrant labour most were not the same sectors that saw the highest numbers of native workers transition to unemployment. The exception is '55: Hotels, restaurants' where migrant shares increased by 10 percentage points between 2002 and 2012. 9% of unemployed natives in 2012 reported that their last job was in this sector. Overall however, the correlation between changes in migrant shares and reported transition to unemployment is low at 0.04.

Figure 28. Employment rates of UK-born and migrants



Source: Frontier analysis of LFS data

Figure 29. Unemployment rates of UK-born and migrants

Source: Frontier analysis of LFS data

4.3 Regression analysis

In this section we examine the extent to which different factors considered in section 4.2 can explain differences in immigrant utilisation in different sectors of the economy. To do this we use panel regression analysis. The advantage of this approach is that it allows us to control for a number of potential explanations of differences in immigrant utilisation simultaneously.

However, we note that the results from this analysis remain descriptive and no inferences about causality can be made on the basis of them.

We use regression analysis to do this showing two specifications:

- A pooled OLS regression: all observations are pooled together and treated as independent - no controls for sector or time are used.
- A fixed-effects panel regression: this specification takes into account that the data has both a cross-sectional and time series element, that is for each industrial sector we have eleven data points corresponding to each year between 2002 and 2012. This specification controls for unobserved variables that vary between industries but are constant over time.

In both specifications we regress sectoral/occupational migrant shares or changes thereof on a number of independent variables including average

sector/occupation pay, incidence of temporary and part-time working, self-employment, skill level, age and gender. All independent variables are averages calculated for native workers only rather than the workforce as a whole including migrants. If averages were based on total workforce (including migrants), effects associated with differences in concentrations of migrants and natives may simply be due to their different characteristics. Since the purpose of this analysis is to understand which sectors are attracting migrants, we have constructed independent variables that just reflect composition among natives. We use data spanning the last decade. Our results are summarised in **Table 25** and **Table 26**.

Overall, we find that the variables considered offer only a partial explanation of the variation in migrant shares and the magnitude of the effects is relatively small.

Two variables are statistically significant in all specifications looking at industrial sectors: pay and temporary working.

Average pay is positively associated with migrant shares. That is, sectors with relatively higher average pay tend to attract relatively more migrants. The effect is significant both for migrant stocks and changes thereof. However, although statistically significant this effect is very small in magnitude: a £1 increase in average sectoral pay is associated with an increase in migrant share of between 0.4% and 0.9%.

Temporary working is also positively associated with migrant shares, i.e. sectors where this form of working is relatively more common attract more migrants. A 1 percentage point increase in the incidence of temporary working is associated with up to 0.26 percentage point higher migrant share. The effect is almost twice as strong when changes in migrant shares are considered.

The remaining variables considered in the analysis do not explain why certain sectors use migrant labour more intensively than others.

No variables are significant in all specifications looking at occupations. Average pay, temporary working, self-employment and gender are statistically significant only in the pooled OLS specification but the effects are modest. For example a £1 increase in average occupational pay is associated with an increase in migrant share of around 0.1% while a 1 percentage point increase in the incidence of temporary working is associated with up to 0.07 percentage point higher migrant share.

Overall, the regressions looking at occupations have little explanatory power so they provide little insight into why certain occupations use migrant labour more intensively than others.

Table 25. Regression results (industry sectors)

	Pooled OLS		Fixed effects panel regression	
	Migrant share	Δ Migrant share	Migrant share	Δ Migrant share
Average pay	0.009	0.004	0.007	0.006
	(10.98)**	(4.17)**	(4.73)**	(3.05)**
Temporary working	0.162	0.386	0.257	0.506
	(2.65)**	(5.04)**	(2.67)**	(3.48)**
Part time	0.124	-0.075	-0.008	-0.119
	(3.61)**	(1.70)	(0.11)	(1.25)
Self-employment	0.035	0.027	0.006	0.089
	(1.97)*	(1.20)	(0.13)	(0.79)
Low education	-0.018	0.054	-0.004	0.162
	(0.78)	(1.83)	(0.08)	(1.54)
Low skill occupation	0.148	0.044	0.016	0.142
	(8.25)**	(1.92)	(0.38)	(1.36)
Age	-0.002	-0.003	0.043	0.021
	(2.42)*	(2.58)*	(0.55)	(0.24)
Sex	-0.079	-0.077	-0.004	-0.007
	(3.78)**	(2.87)**	(1.08)	(1.09)
Recession	0.011	0.040	-	-
	(2.29)*	(6.43)**	-	-
Year dummies	No	No	Yes	Yes
R^2	0.37	0.16	0.18	0.15
N	638	584	638	584

* $p < 0.05$, ** $p < 0.01$

Panel regressions with robust standard errors.

Table 26. Regression results (occupations)

	Pooled OLS		Fixed effects panel regression	
	Migrant share	Δ Migrant share	Migrant share	Δ Migrant share
Average pay	0.001	0.001	-0.001	-0.000
	(3.64)**	(1.55)	(0.80)	(0.22)
Temporary working	0.073	0.001	-0.004	-0.021
	(3.68)**	(0.04)	(0.14)	(0.57)
Part time	0.008	0.010	0.002	0.012
	(0.81)	(0.76)	(0.11)	(0.34)
Self-employment	0.021	0.004	0.031	0.061
	(3.33)**	(0.46)	(1.33)	(1.35)
Low education	-0.011	0.014	-0.029	0.045
	(1.42)	(1.35)	(0.99)	(1.06)
Age	-0.000	-0.000	-0.005	0.011
	(1.51)	(0.39)	(0.20)	(0.35)
Sex	-0.025	-0.005	-0.001	-0.000
	(3.89)**	(0.58)	(1.20)	(0.30)
Recession	0.018	0.025	-	-
	(6.99)**	(7.31)**	-	-
Year dummies	No	No	Yes	Yes
R^2	0.05	0.02	0.07	0.04
N	3,851	3,530	3,851	3,530

* $p < 0.05$, ** $p < 0.01$

Panel regressions with robust standard errors.

5 Conclusions

The focus of this study was to establish facts around the use of migrant labour in low skilled sectors relative to the rest of the economy. In addressing this issue we explored four research questions in depth. The key findings in relation to these questions are summarised below.

How has the composition of the workforce (in terms of different migrant groups - A8, A2, British-born, non-EEA) changed over time in different sectors?

Overall, the mix of migrants (in terms of country of origin), their skill composition, performance in the labour market and sectoral distribution has changed in recent years. Notably the share of migrants from the new EU member states has increased dramatically over the past ten years. In 2002 0.2% of the UK workforce was from the A8 countries. By 2012 this had increased to 2%. Polish migrants now account for a tenth of all recent migrants to the UK.

There have also been changes in the labour market performance of migrants over time. Historically migrants were more likely to be unemployed and less likely to be employed than native workers, but this trend appears to be changing in recent years. Now migrant men are more likely to be in employment than native men.

There is evidence that the sectoral and occupational distribution of migrants has changed over time. Despite the fact that more recent migrants are relatively more skilled (in terms of educational attainment) than both natives and previous migrants, the industries and occupations that have increased their use of migrant labour most are those that offer relatively more low-skilled jobs:

- of the ten sectors where migrant shares have increased the most over the last twenty years, seven are low skilled;
- on average, migrant shares increased by six percentage points in low skilled sectors compared with three percentage points in other sectors over the last decade;
- of the ten occupations where migrant shares have increased the most over the last twenty years, eight are low skilled;
- on average, migrant shares increased by five percentage points in low skilled occupations compared with three percentage points in other occupations over the last decade.

Is there any evidence that the ratio of British-born to migrant workers in different sectors changed during the recession?

There is evidence that migration from the new EU states which grew strongly between 2004 and 2008 has slowed down since the start of the recession. In 2012 net migration from A8 states was around a quarter of its peak level during 2008-

09. It is less clear what the drivers of this change are. It is possible that the slowing down is driven by economic conditions. On the other hand it could be the consequence of a natural tailing off following a period of unusually high inflows. It could also be driven by labour market restrictions being relaxed in other EU states which are attractive to A8 migrants.

The change in workforce composition driven by immigration was much larger before the recession than after. In fact, post 2008 migrant shares changed little or declined in almost half of all sectors in the economy.

Before the recession, the majority of sectors where the use of migrant labour increased the most were low skilled. There is some evidence that some of these sectors have actually reduced their use of migrant labour since 2008.

Post-recession the use of migrant labour declined in seven of the ten sectors where migrant shares increased most between 2002 and 2008. Four of the sectors that experienced high growth in migrant shares pre-recession and declines post-recession are low skilled.

Since the recession, the use of migrant labour increased most in sectors where total employment was falling between 2008 and 2012.

What characterises sectors with a relatively high migrant share in their workforce, or a growing migrant share?

In general, it is clear that certain sectors appear to be more willing or able to make use of the increased supply of labour brought on by the immigration than others. The reasons for this are less clear. We explored a number of sector characteristics including pay, self-employment, part-time working and within sector occupational distribution.

We found that contrary to popular intuition there is no strong link between sectoral pay and high or growing migrant shares. Although sectors with higher pay tend to attract relatively more migrant workers, the association between the two is weak. Other factors we considered such as self-employment and part-time working also did not explain why some sectors employ migrant labour more intensively than others.

The strongest association we found was between temporary working and migration – sectors that offer relatively more temporary jobs are clearly more attractive to migrants than the rest.

Are there any differences in characteristics between groups of workers in terms of skills, age etc.? Does this vary by sector? How do these compare to the characteristics of the unemployed?

We found evidence that the skill composition of migrants has changed over time. In 2000, the skills of natives and migrants were broadly similar. However, recent migrants are on average younger and better educated than natives. Migrants who have been in the UK less than five years are on average nine years younger than

Conclusions

natives, more than twice as likely to be educated to degree level and more likely to be female.

Differences in characteristics (such as age and educational attainment) between migrants and natives vary by sector. They appear to be most pronounced in certain low skilled sectors of the economy.

Recent migrants are more similar in age to the unemployed but are three times as likely to be highly educated and considerably more likely to be female. Traditionally, migrant workers had lower employment rates and higher unemployment rates than UK-born workers. However, in recent years there has been convergence in the employment and unemployment rates of migrant and native male workers.

Further questions considered in this study

In addition to the four prioritised question we were asked to consider a number of additional research questions looking at self-employment, use of employment agencies and temporary working. We found that self-employment is more common in low skilled sectors (17%) than other sectors (10%) but there is no difference between the self-employment rates of native and migrant workers.

The use of agencies is no more common in low skilled sectors than other sectors of the economy and migrant workers are three times as likely to be recruited through an agency as native workers. The use of agencies is most common among A8 workers. This group is six times more likely to be recruited through an employment agency than the general UK workforce.

Concluding remarks

There is little doubt that immigration over the last two decades has changed the complexion of the UK labour market. Whilst immigration has been on the rise generally, its impact on the labour market has not been uniform. Migration patterns have changed over time. In many low skilled sectors of the economy, the share of migrant workers expanded dramatically before the recession. In a number of the same sectors, migrant shares declined between 2008 and 2012: post-recession, migrant shares declined in seven of the ten sectors that expanded their use of migrant labour most in the pre-recession period.

It is clear that some sectors make more extensive use of migrant labour than others. Interestingly sectors that offer relatively more temporary jobs are clearly more attractive to migrants than the rest. Other factors such as pay, self-employment and part-time working do not explain why some sectors employ migrant labour more intensively than others

Migrant characteristics (e.g. origin countries, education levels, age) are changing and so are the segments of the labour market where migrants find employment. Although recent migrants have been better educated than natives and previous migrants, they have found employment in parts of the labour market that offer

relatively more low-skilled jobs. This pattern may lead to stark differences in characteristics (such as age and educational attainment) between migrant and native workers in certain low skilled sectors of the economy. Future research in this area may wish to explore how this type of migration affects the labour market outcomes of native workers.

Conclusions

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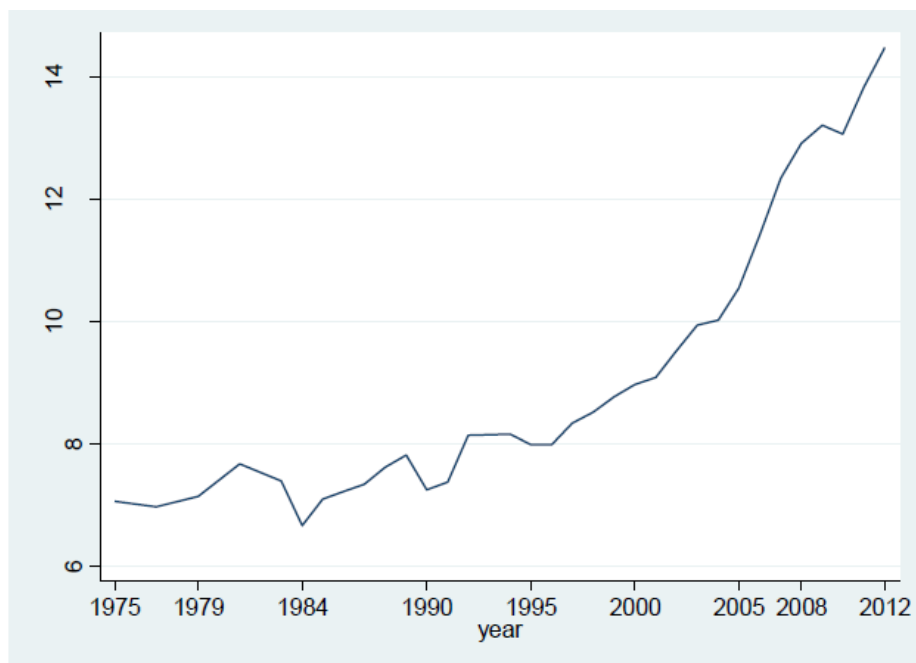
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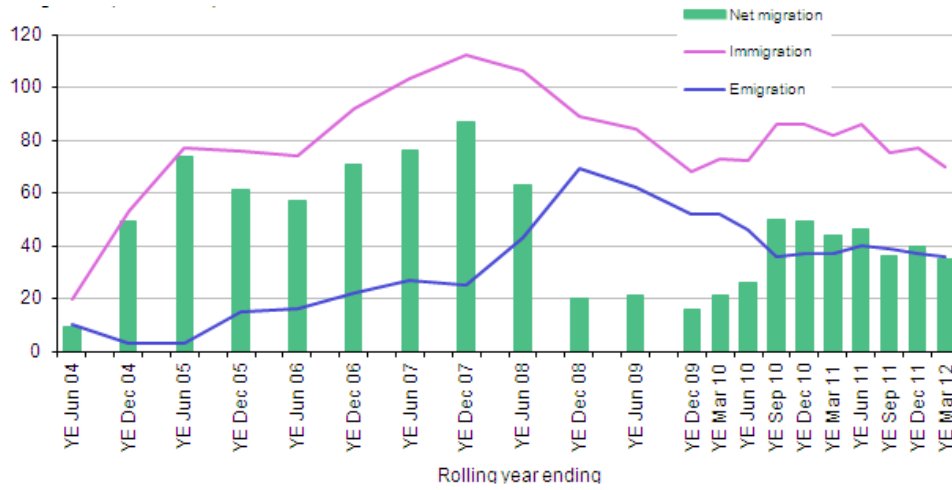
Annexe 1: Additional tables and figures

Figure 30. Proportion of foreign-born workers in UK workforce 1975 - 2012



Source: Centre for Economic Performance (CEP) 2012

Figure 31. Long-term international migration into the UK from A8, 2004–2012



Source: ONS, Migration Statistics Quarterly Report, November 2012

Figure 32. Employment and participation rates 1979-2000

Table 3.2: Employment and participation rates of UK-born whites and immigrants 1979-2000

	UK-born white	West Indian	African	Indian	Pakistani	Bangladeshi	Chinese	Other
Men								
Employment								
79	96	95	91	95	91	99	100	94
84	89	78	77	87	68	65	96	90
90	93	89	86	91	85	75	84	89
93	88	76	61	87	71	72	93	83
2000	95	83	89	93	87	81	95	85
Participation								
79	95	96	98	96	97	93	99	95
84	92	91	90	92	89	92	91	93
90	91	84	77	93	86	77	92	86
93	89	85	81	89	82	74	87	85
2000	88	74	80	84	76	73	77	76
Women								
Employment								
79	94	91	88	91	70	65	98	91
84	90	86	66	82	71	41	87	86
90	93	89	80	88	79	89	94	87
93	93	90	73	90	68	47	86	81
2000	96	86	86	92	83	66	96	90
Participation								
79	66	78	74	58	16	25	53	51
84	68	77	62	62	19	10	69	58
90	74	77	62	65	28	15	65	63
93	74	67	60	64	22	21	53	63
2000	76	74	60	61	24	20	59	54

Source: LFS. Excludes those in full-time education. All figures use population weights.

Dustmann, C., Fabbri, F., Preston, I. and Wadsworth, J., (2003)

Figure 33. Employment patterns 1979-2000 (men)

Table 3.3: Employment patterns of immigrants and UK-born whites in Britain - men (population of working a

	Year	UK-born white	UK-born non-white	Immigrants	West Indian	African	Indian	Pakistani	Bangladeshi	Chinese	Other Non-White	Irish	Old Comm.	EU	Non-EU	Other white
% self-emp:	1979	9	5	11	3	3	12	10	13	26	11	10	9	16	10	16
	2000	14	12	15	13	13	24	34	16	25	18	18	12	12	25	16
% part-time:	1979	0.5	2	1	0.5	1	0.2	1	3	2	2	1	0.5	2	1	1
	2000	4	7	10	5	11	5	15	21	7	9	3	4	5	15	5
% temp.	2000	5	8	10	8	15	7	8	7	15	13	6	14	13	12	8
	1979															
% manufact.		34	27	36	43	35	41	55	51	10	24	28	25	38	50	28
% constructn.		10	7	9	9	2	4	1	N/a	1	3	26	6	5	7	5
% transport		8	2	8	14	14	10	11	4	2	6	8	6	6	6	7
% retail		8	13	8	4	9	15	8	10	7	9	5	7	8	6	8
% hotel/rest.		1	3	5	1	5	1	2	19	57	6	2	1	14	2	7
% finance		4	5	3	1	4	3	4	N/a	10	6	2	2	3	2	6
% education		3	2	2	1	3	1	1	N/a	2	5	1	9	2	4	3
% health		2	3	3	2	5	5	2	7	5	9	2	4	3	2	3
	2000															
% manufact.		24	17	17	29	9	20	22	12	8	14	12	14	21	17	13
% constructn.		13	6	7	12	1	6	2	1	2	3	26	4	5	10	6
% transport		10	12	11	15	13	14	27	5	5	12	14	7	8	5	8
% retail		6	12	8	5	9	16	12	7	2	8	5	3	5	10	5
% hotel/rest.		4	6	9	3	8	3	11	55	39	12	1	3	13	13	6
% finance		15	23	19	10	23	18	9	4	19	16	15	30	20	20	28
% education		4	3	4	1	3	2	1	3	8	5	4	7	7	9	5
% health		3	5	8	8	16	8	3	3	11	11	7	5	5	3	9
% public		16	14	16	18	29	12	9	7	18	19	18	22	12	10	18

Notes: All figures population weighted. Excludes those in full-time education. Figures are percentage of all employees in each origin category. Part-time workers are all employees

Dustmann, C., Fabbri, F., Preston, I. and Wadsworth, J., (2003)

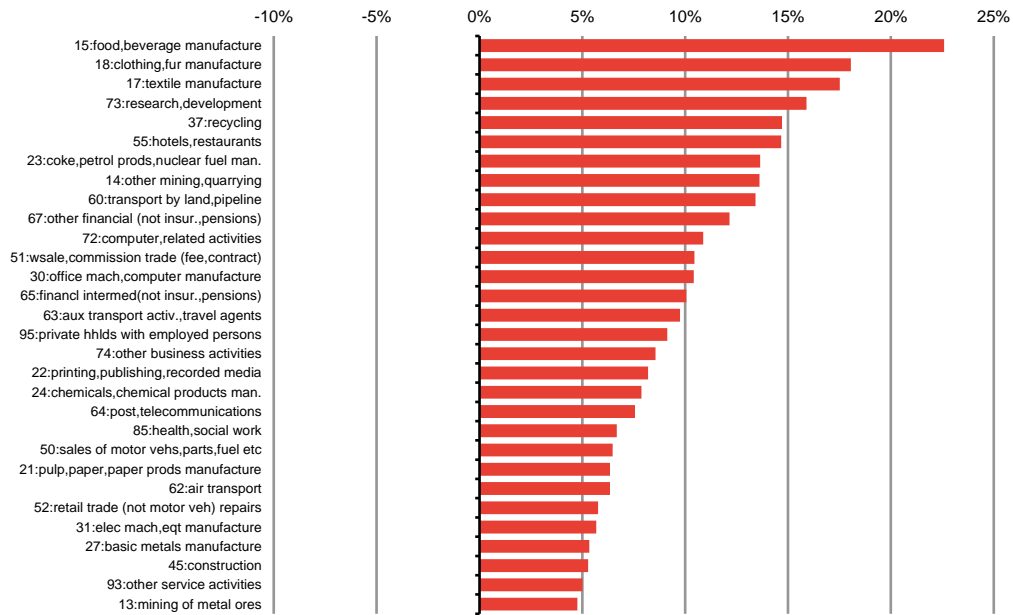
Figure 34. Employment patterns 1979-2000 (women)

Table 3.4: Employment patterns of immigrants and UK-born whites in Britain - women (population of work

	Year	UK-born white	UK-born non-white	Immigrants	West Indian	African	Indian	Pakistani	Bangladeshi	Chinese	Other Non-White	Irish	Old Comm.	EU	Non-EU	Other white
% self-emp:	1979	3	1	4	1	N/a	5.9	3.9	N/a	14.2	4.9	2.4	3.8	5.3	3.1	4.1
	2000	6	4	6	3	6	12	10	1	15	11	7	13	13	9	13
% part-time:	1979	38	15	33	26	28	16	24	N/a	23	30	50	24	36	36	32
	2000	39	27	35	24	31	26	48	43	30	26	29	23	27	31	31
% temp.	2000	7	8	12	7	15	10	17	12	11	11	7	19	13	19	12
	1979															
% manufact.		15	16	16	22	17	26	5	8	4	10	14	8	16	24	13
% retail		11	11	6	5	3	7	1	4	4	5	6	5	8	5	6
% hotel/rest.		3	5	4	2	3	1	N/a	4	23	2	5	4	6	2	4
% finance		4	3	3	2	1	2	1	N/a	7	3	2	6	3	2	5
% education		8	3	5	4	4	1	1	N/a	1	3	9	10	9	4	6
% health		6	3	10	21	26	6	1	N/a	7	10	11	10	8	2	7
	2000															
% manufact.		10	9	10	7	4	20	13	2	5	8	7	8	9	11	8
% retail		13	11	10	7	11	20	16	5	9	10	9	8	7	8	10
% hotel/rest.		5	4	5	1	6	3	6	13	23	8	3	3	9	5	3
% finance		16	24	18	18	17	14	15	19	15	15	15	29	19	16	23
% education		14	9	12	13	6	7	18	25	5	10	13	15	14	9	13
% health		20	17	23	41	37	19	19	26	22	26	32	17	15	18	20
% public		33	31	31	49	37	28	35	36	33	31	38	27	26	20	31

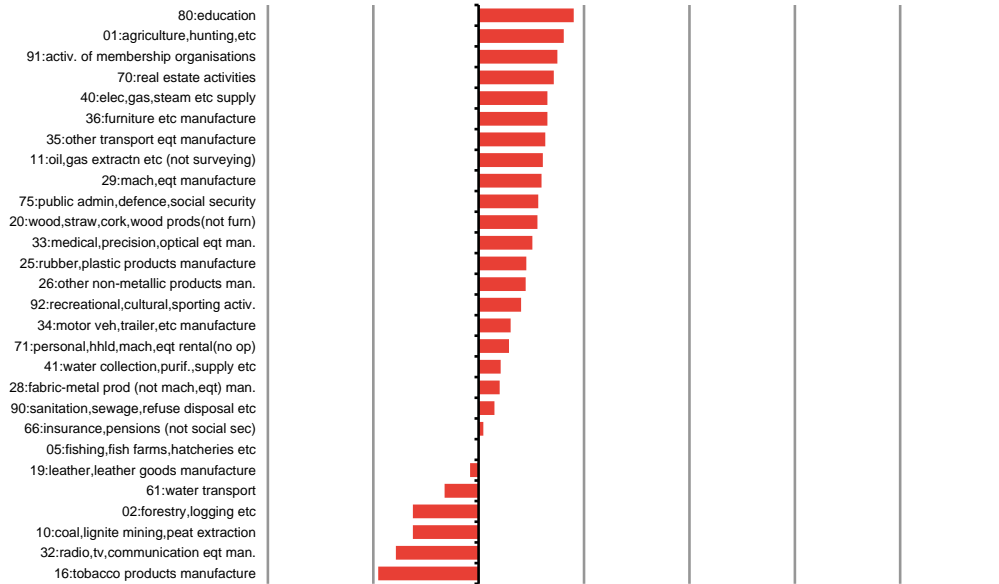
Notes: All figures population weighted. Excludes those in full-time education. Figures are percentage of all employees in each origin category. Part-time workers are all employees

Figure 35. Percentage point change in migrant share in sector 1994 - 2012 (sectors with highest increase)



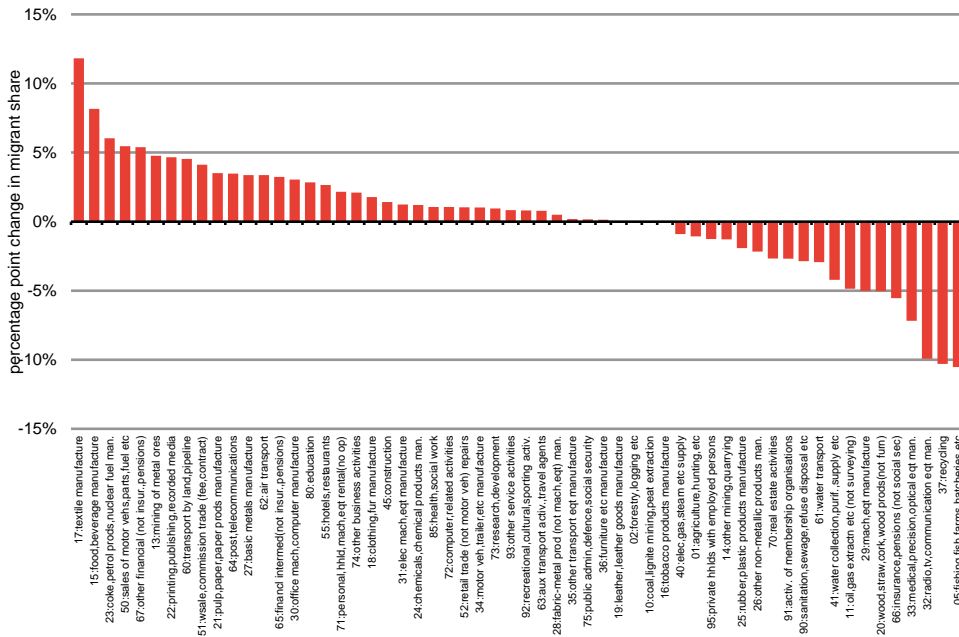
Source: Frontier analysis of QLFS data.

Figure 36. Percentage point change in migrant share in sector 1994 - 2012 (sectors with lowest increase)



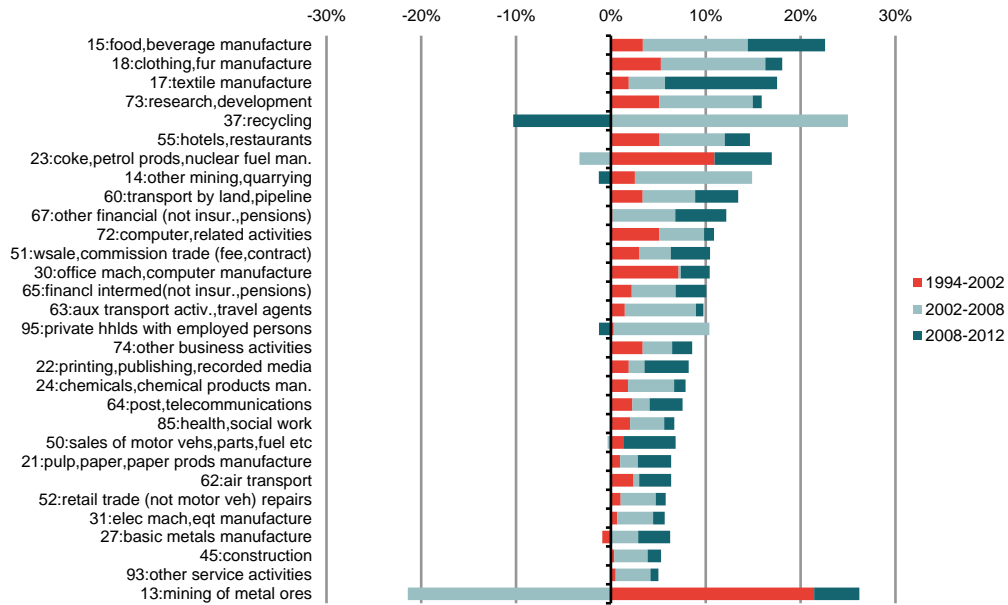
Source: Frontier analysis of QLFS data.

Figure 37. Changes in migrant share by sector 2008-2012



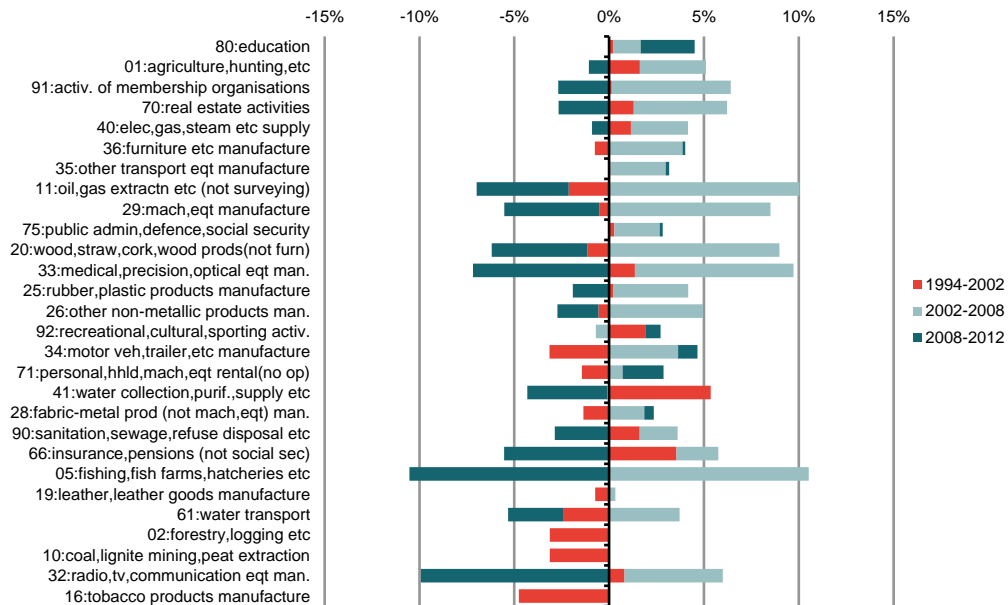
Source: Frontier analysis of LFS data

Figure 38. Percentage point change in migrant share in sector 1994 - 2012 (top half)



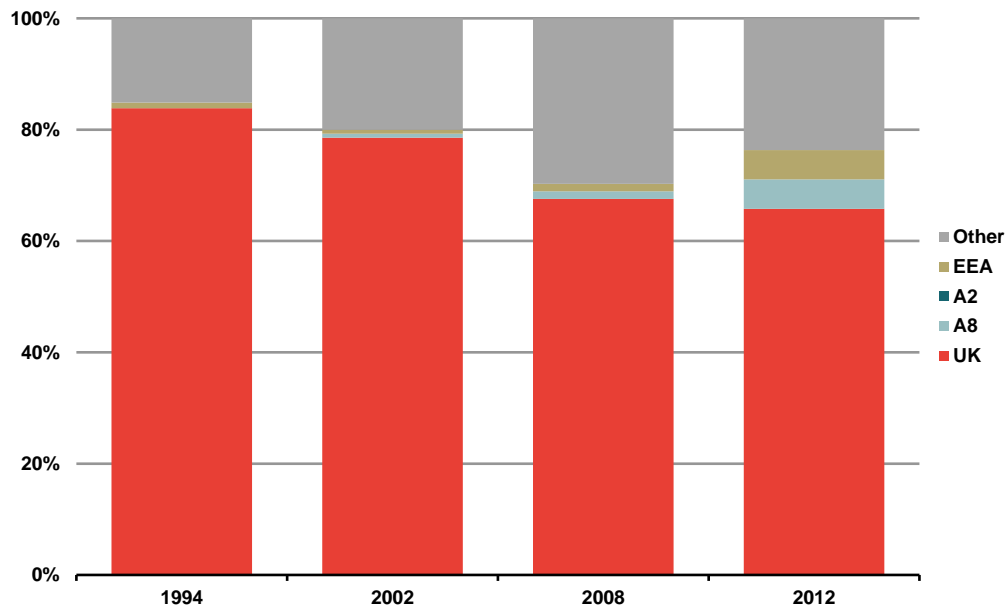
Source: Frontier analysis of QLFS data.

Figure 39. Percentage point change in migrant share in sector 1994 - 2012 (bottom half)



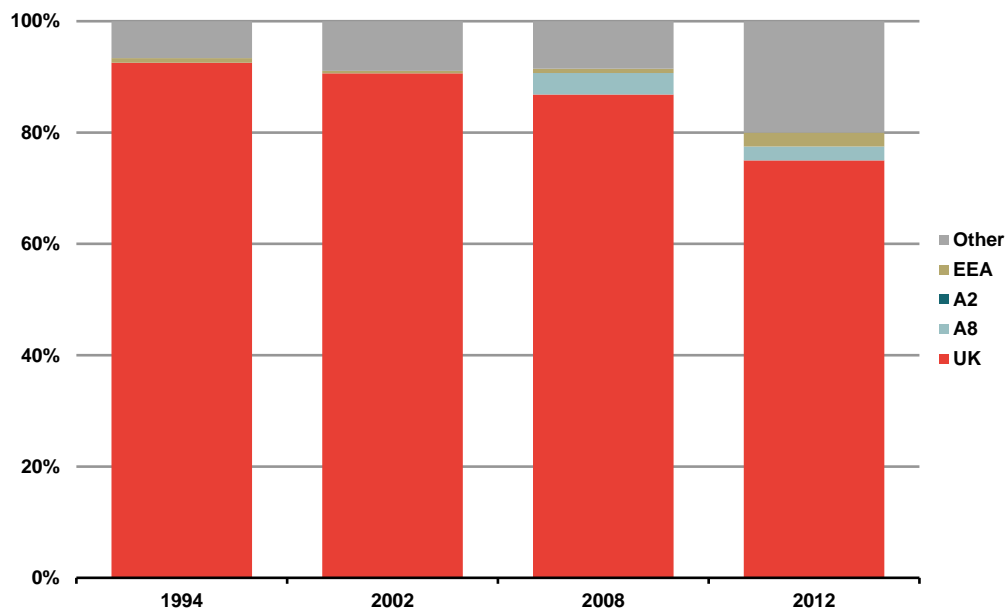
Source: Frontier analysis of QLFS data.

Figure 40. Changes in workforce composition (18:clothing,fur manufacture)



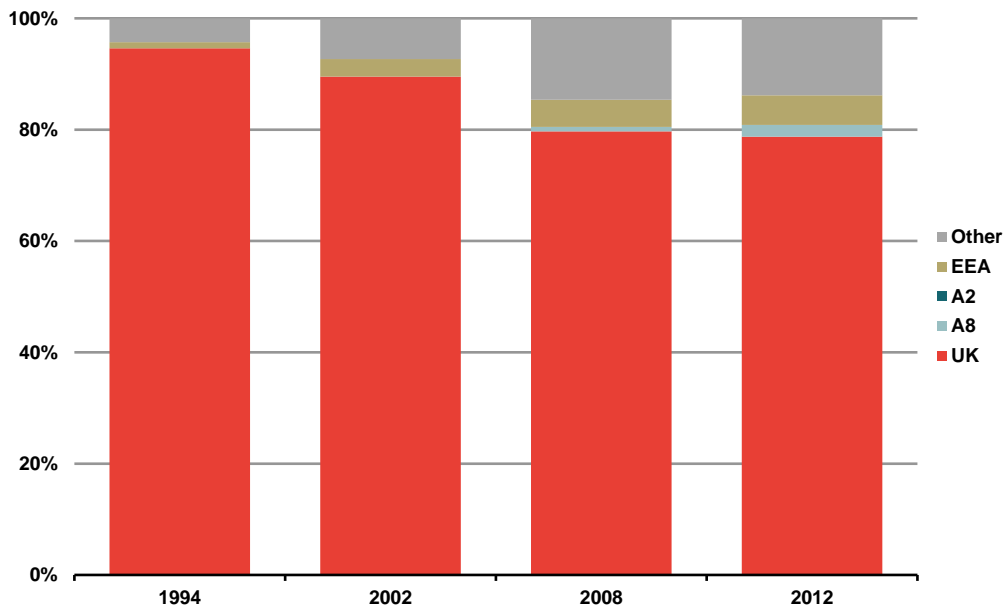
Source: Frontier analysis of LFS data. Industry sectors defined as '2-digit' industry division level

Figure 41. Changes in workforce composition (17:textile manufacture)



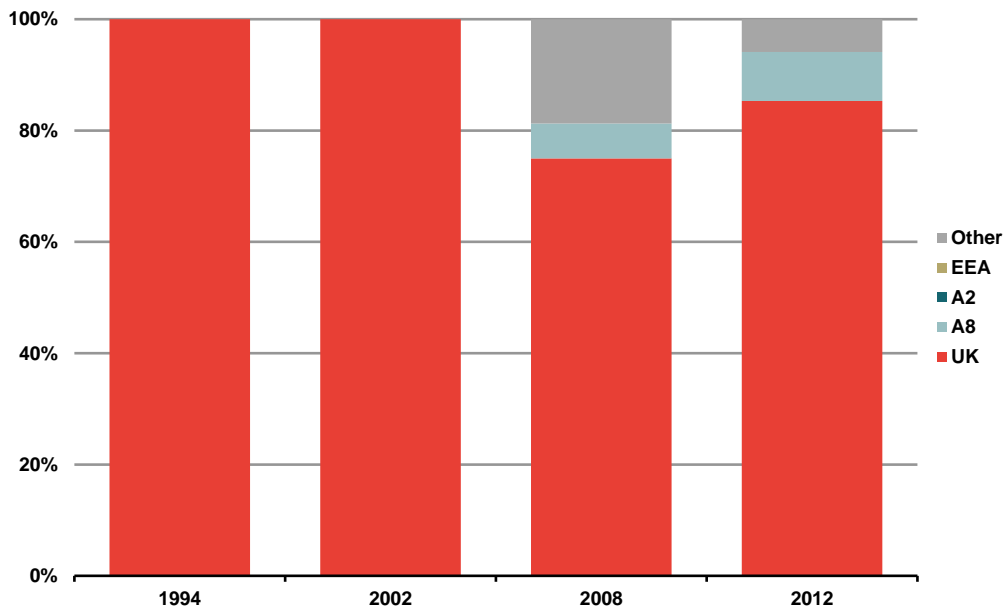
Source: Frontier analysis of LFS data. Industry sectors defined as '2-digit' industry division level

Figure 42. Changes in workforce composition (73:research,development)



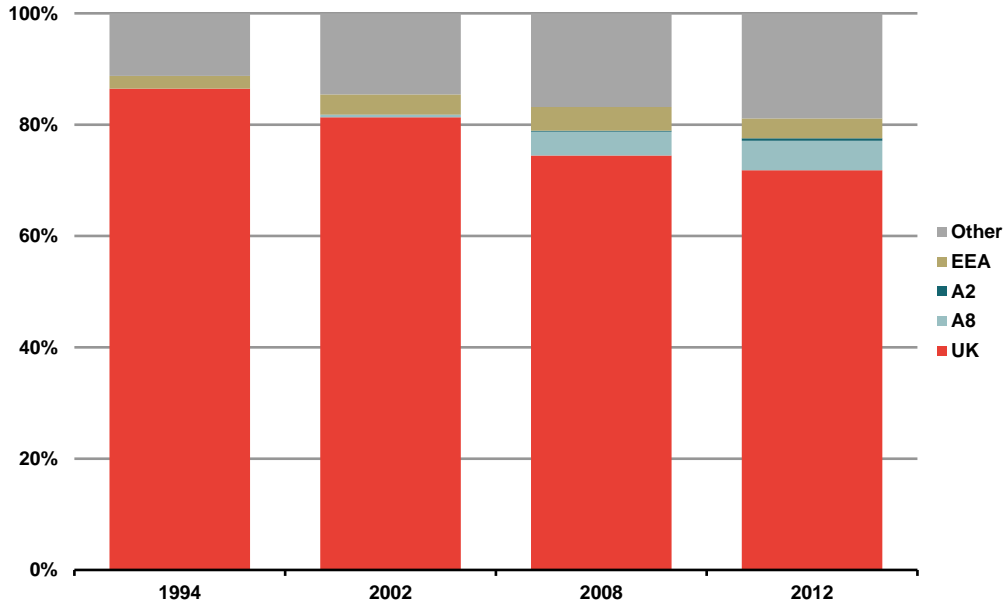
Source: Frontier analysis of LFS data. Industry sectors defined as '2-digit' industry division level

Figure 43. Changes in workforce composition (37:recycling)



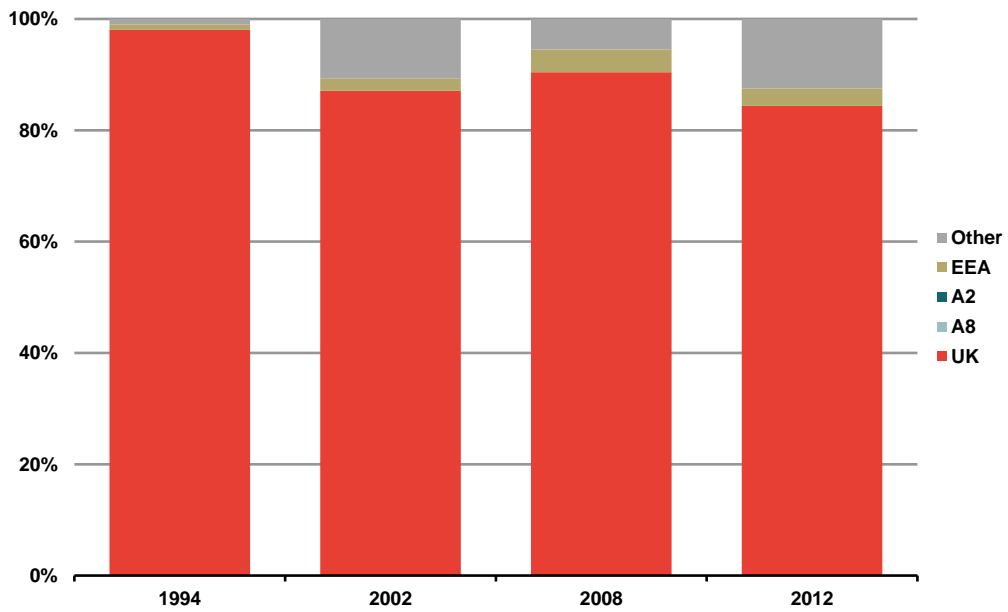
Source: Frontier analysis of LFS data. Industry sectors defined as '2-digit' industry division level

Figure 44. Changes in workforce composition (55:hotels,restaurants)



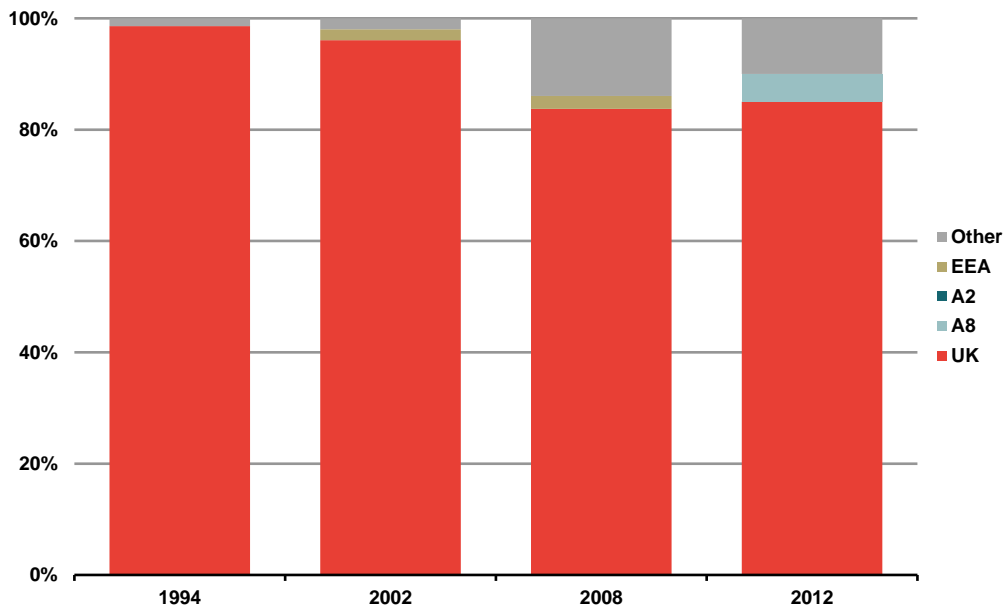
Source: Frontier analysis of LFS data. Industry sectors defined as '2-digit' industry division level

Figure 45. Changes in workforce composition (23:coke,petrol prods, nuclear fuel man.)



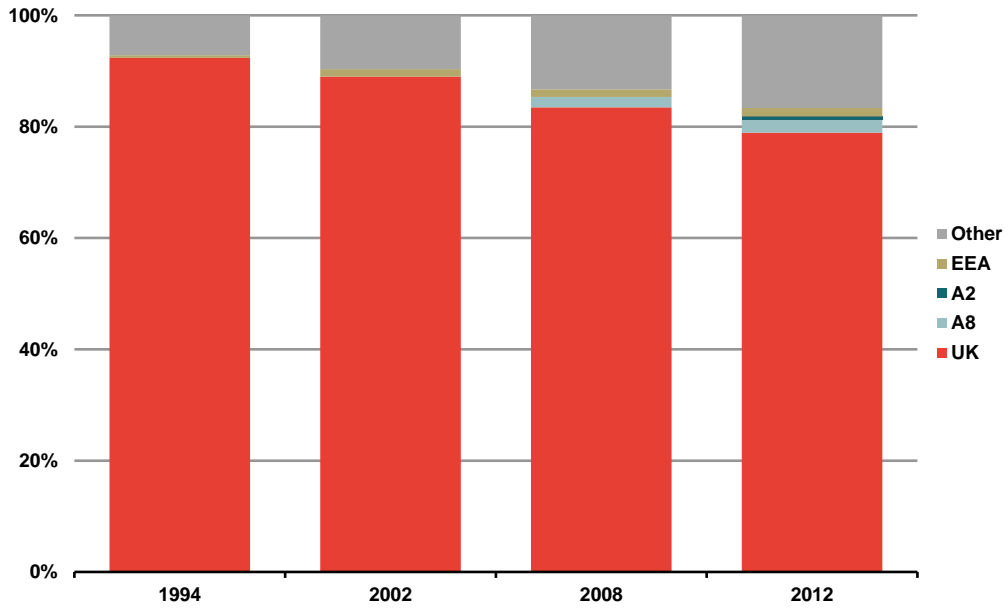
Source: Frontier analysis of LFS data. Industry sectors defined as '2-digit' industry division level

Figure 46. Changes in workforce composition (14:other mining, quarrying)



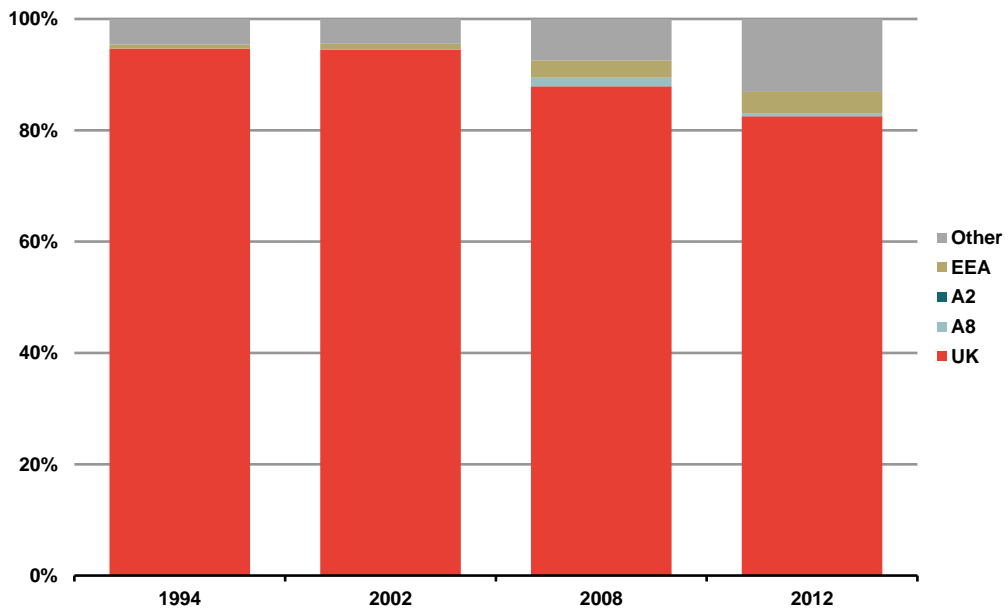
Source: Frontier analysis of LFS data. Industry sectors defined as '2-digit' industry division level

Figure 47. Changes in workforce composition (60:transport by land,pipeline)



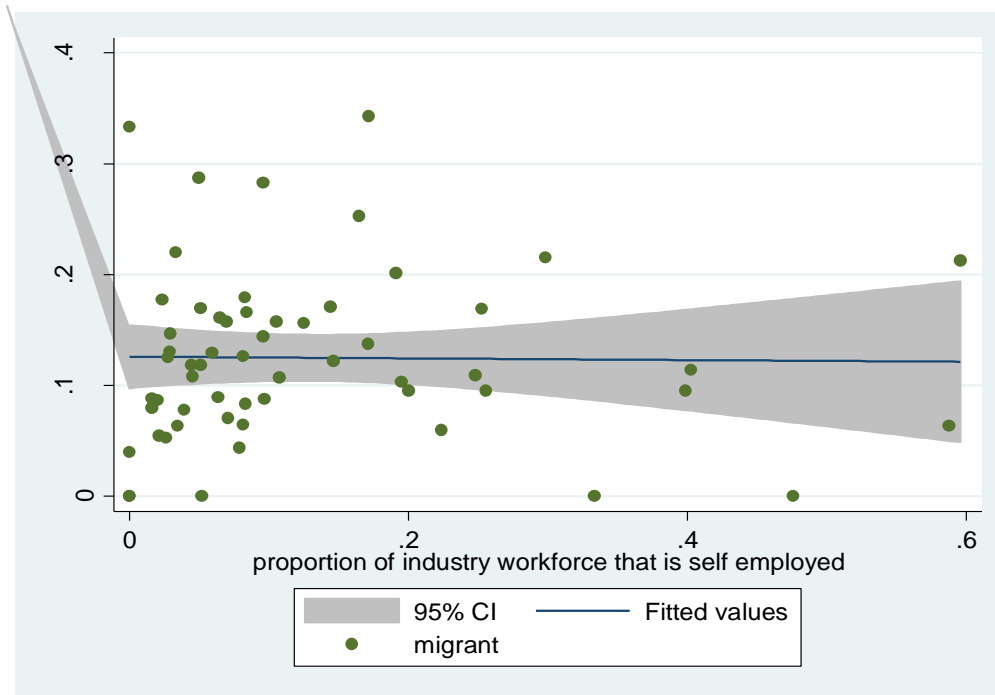
Source: Frontier analysis of LFS data. Industry sectors defined as '2-digit' industry division level

Figure 48. Changes in workforce composition (67:other financial (not insurance, pensions))



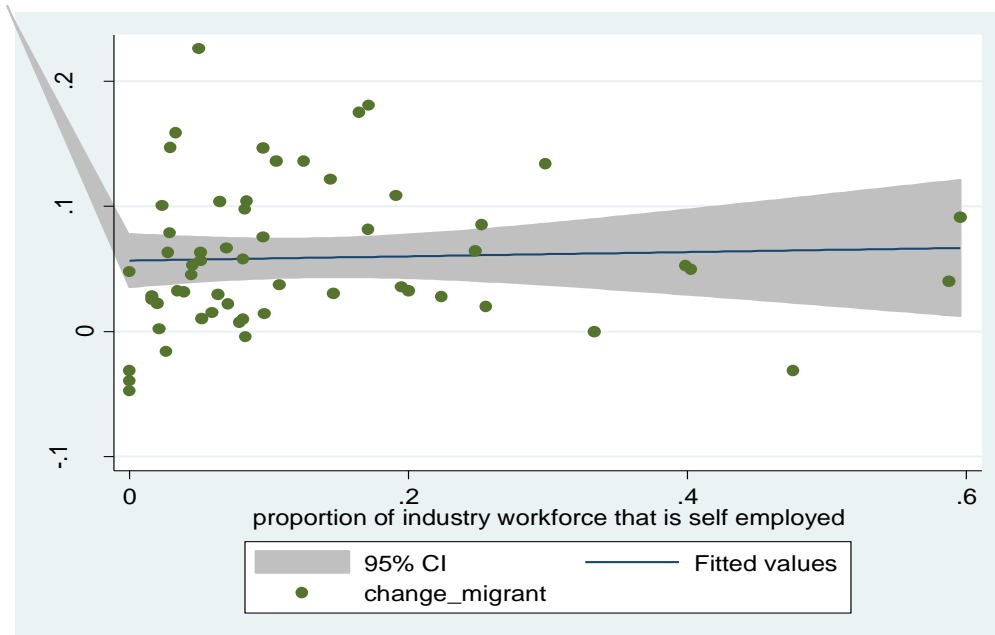
Source: Frontier analysis of LFS data. Industry sectors defined as '2-digit' industry division level

Figure 49. Industry self-employment rate and migrant shares



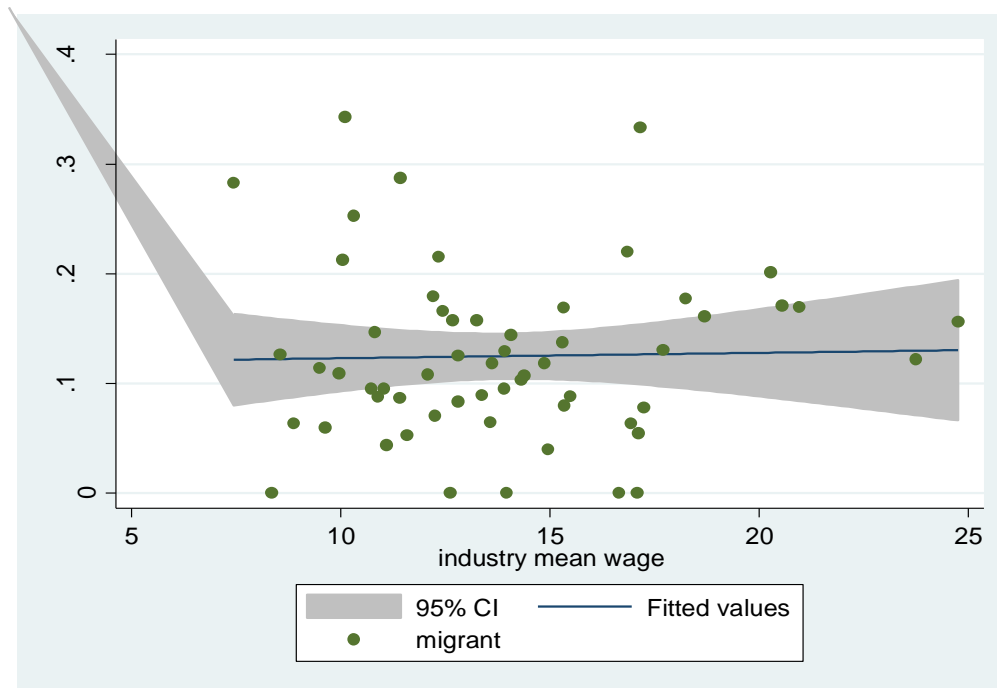
Source: Frontier analysis of 2012 LFS data

Figure 50. Industry self-employment rate and change in migrant shares



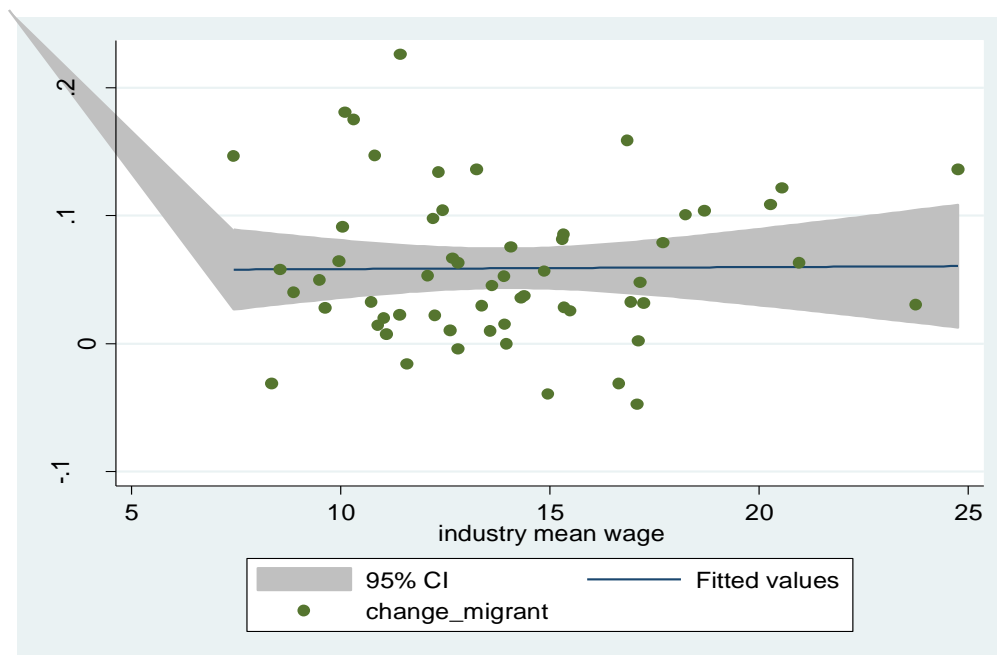
Source: Frontier analysis of 1994 and 2012 LFS data

Figure 51. Industry pay and migrant shares



Source: Frontier analysis of 2012 LFS data

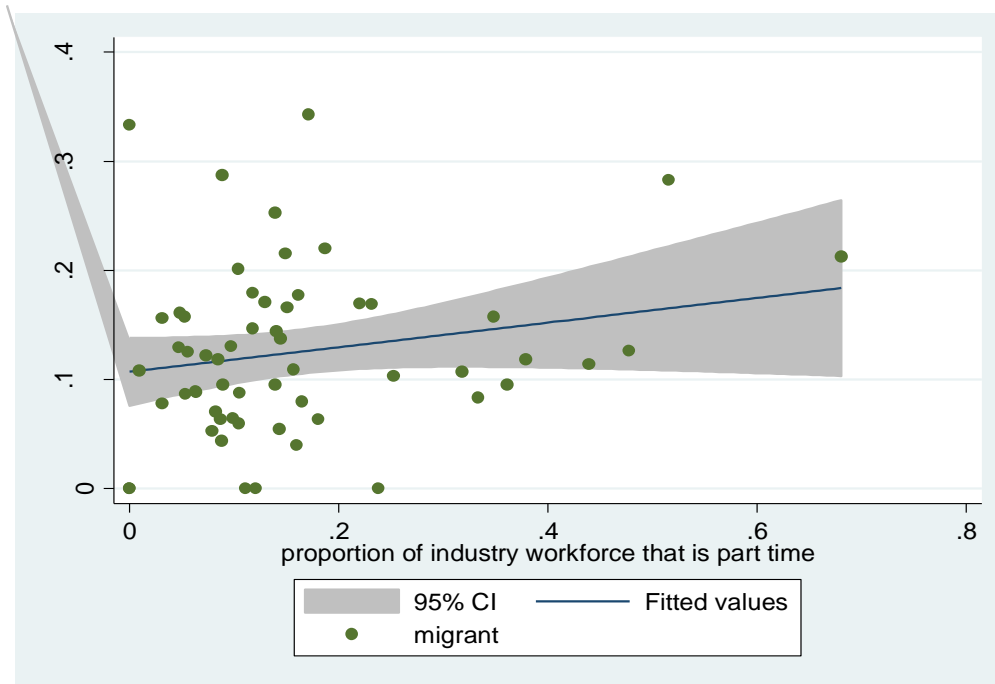
Figure 52. Industry pay and change in migrant shares



Source: Frontier analysis of 1994 and 2012 LFS data

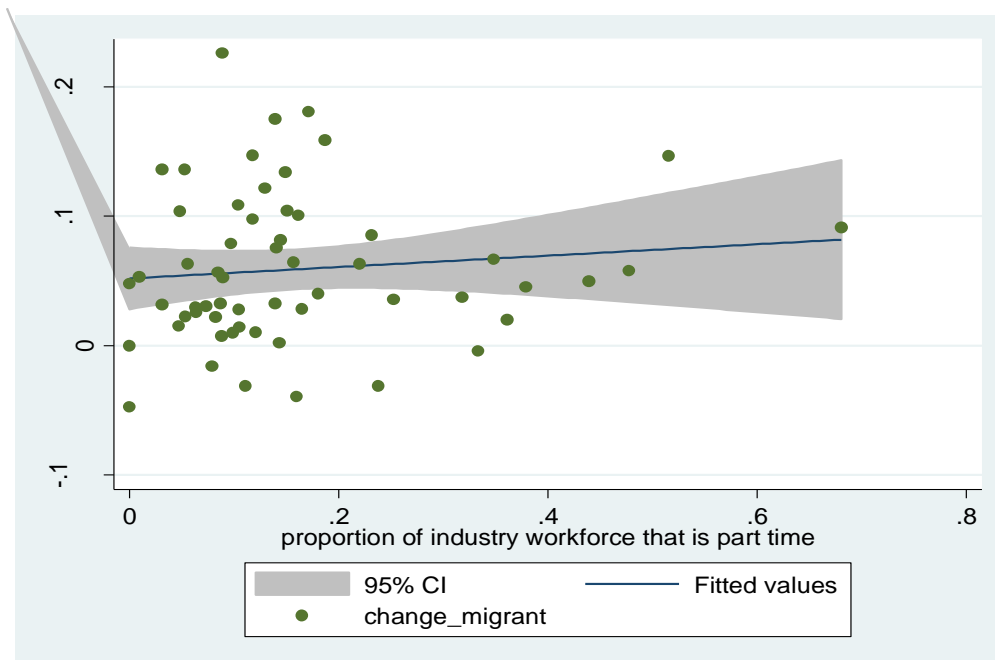
Annexe 1: Additional tables and figures

Figure 53. Industry part-time working rate and migrant shares



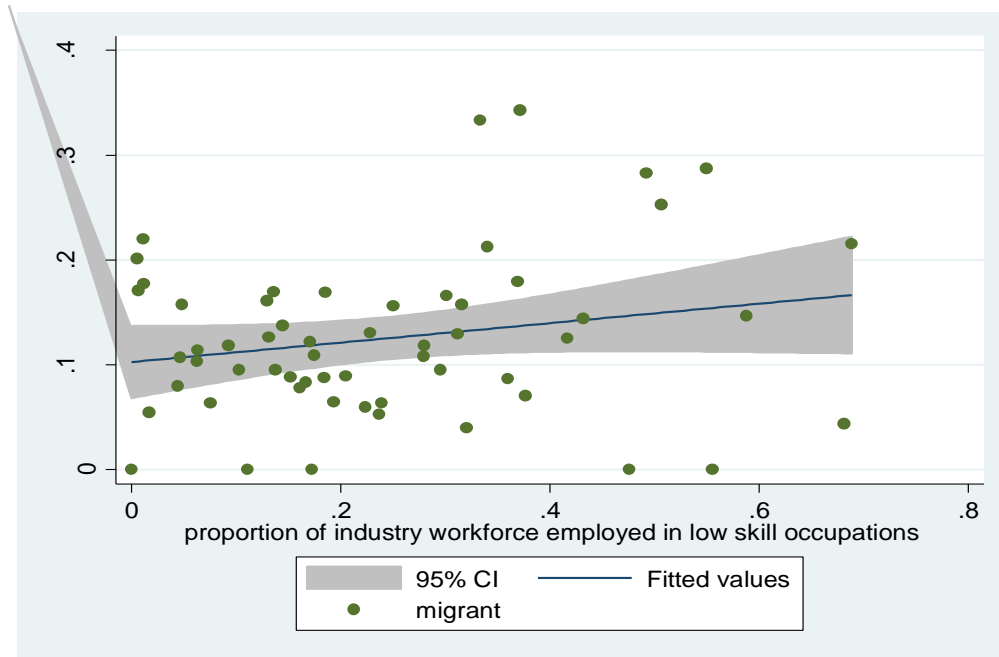
Source: Frontier analysis of 2012 LFS data

Figure 54. Industry part-time working rate and change in migrant shares



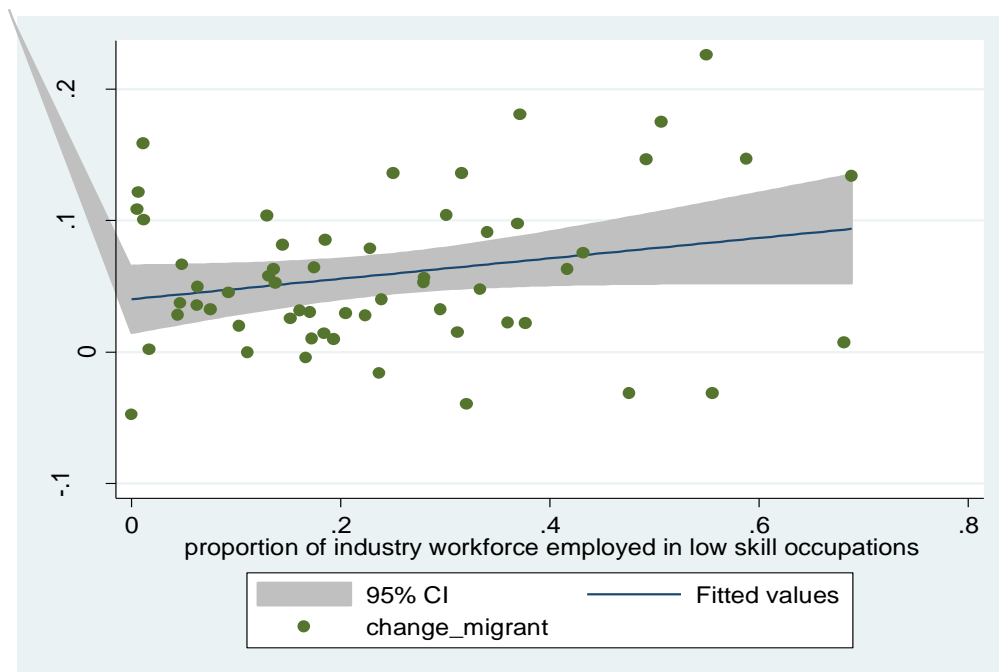
Source: Frontier analysis of 1994 and 2012 LFS data

Figure 55. Industry occupational structure and migrant shares



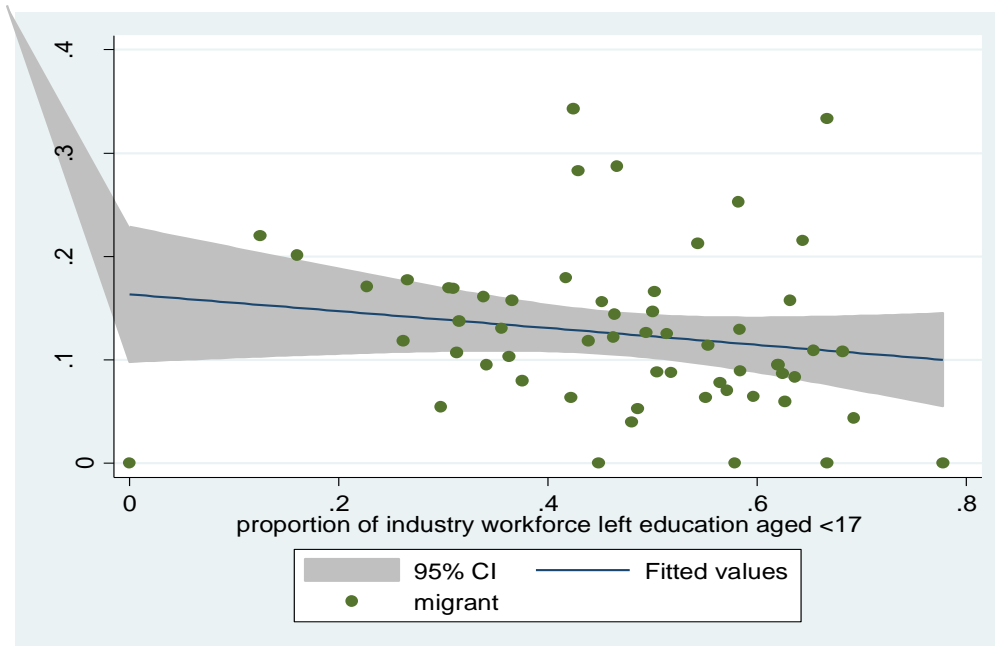
Source: Frontier analysis of 1994 and 2012 LFS data

Figure 56. Industry occupational structure and change in migrant shares



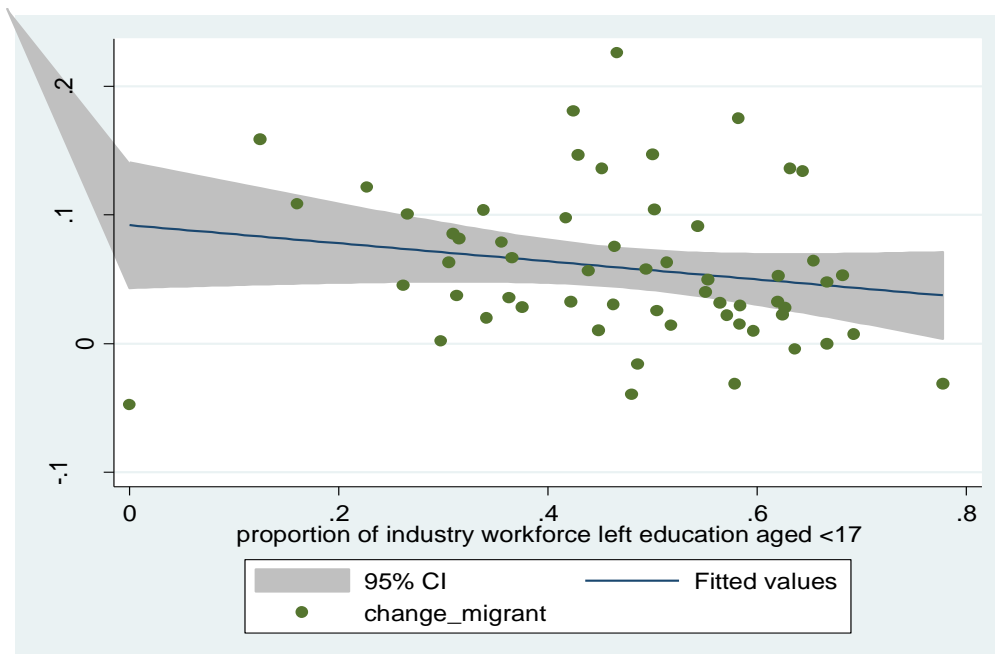
Source: Frontier analysis of 1994 and 2012 LFS data

Figure 57. Industry educational attainment and migrant shares



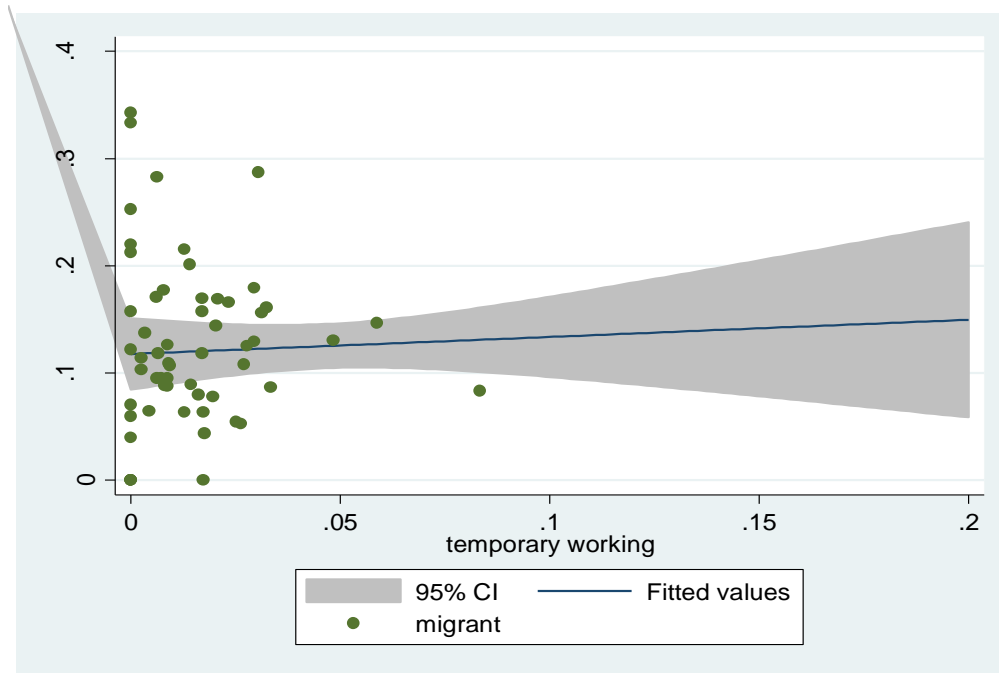
Source: Frontier analysis of 1994 and 2012 LFS data

Figure 58. Industry educational attainment and change in migrant shares



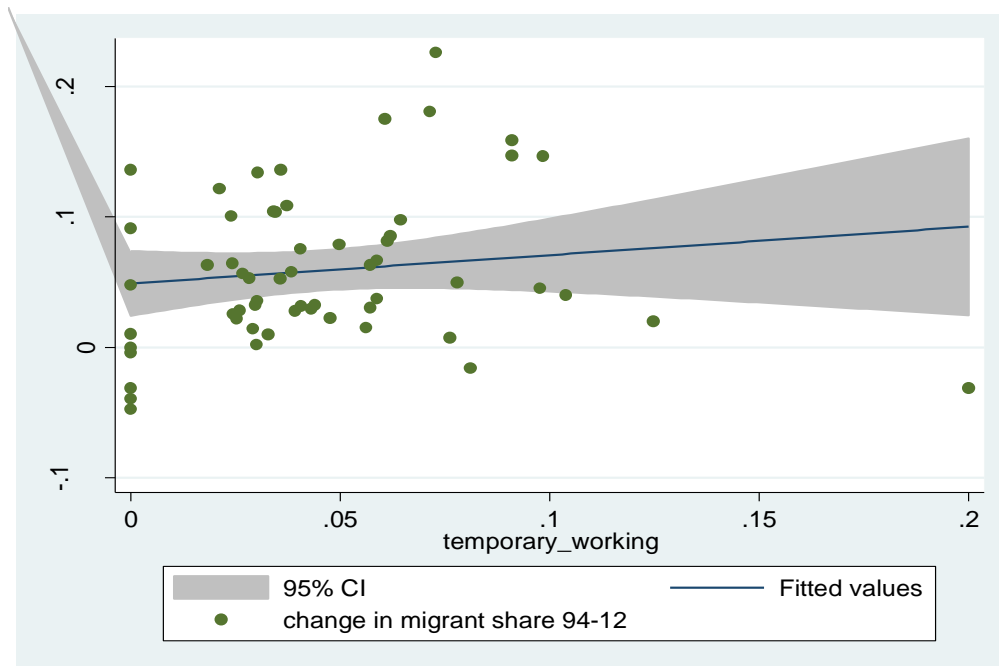
Source: Frontier analysis of 1994 and 2012 LFS data

Figure 59. Industry temporary working and migrant shares



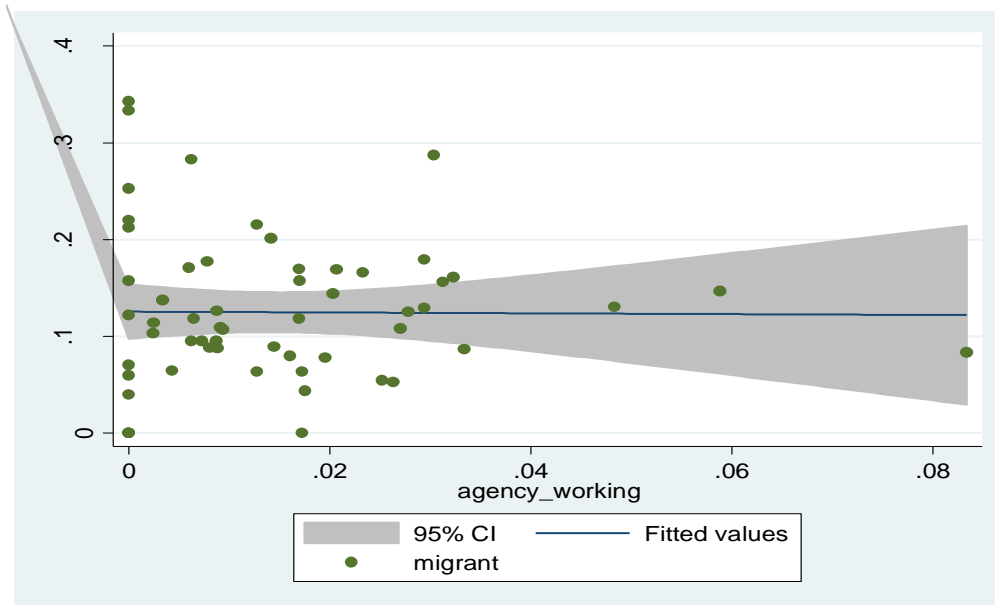
Source: Frontier analysis of 1994 and 2012 LFS data

Figure 60. Industry temporary working and change in migrant shares



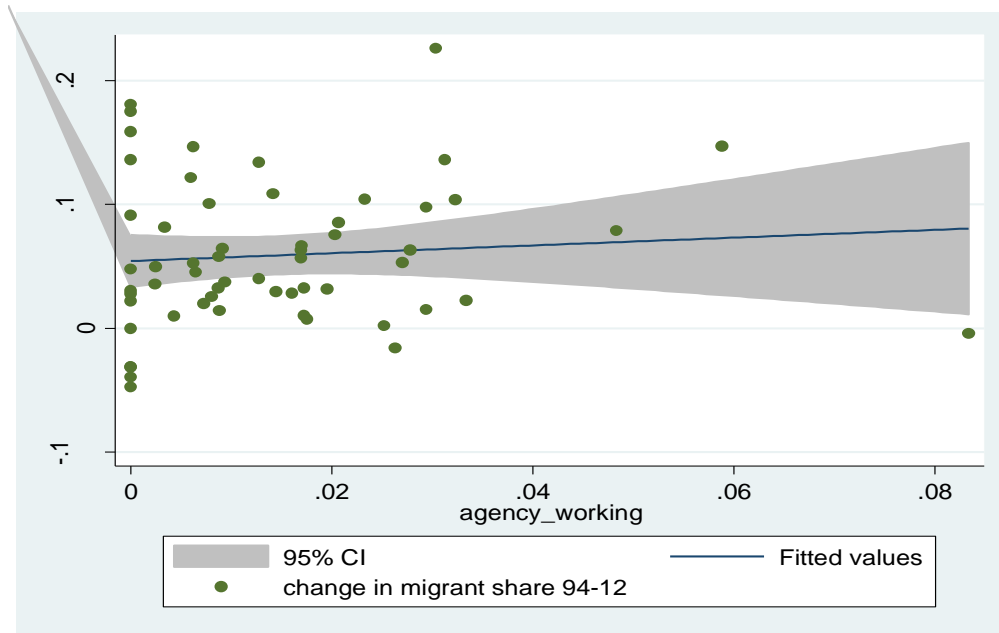
Source: Frontier analysis of 1994 and 2012 LFS data

Figure 61. Industry agency working and migrant shares



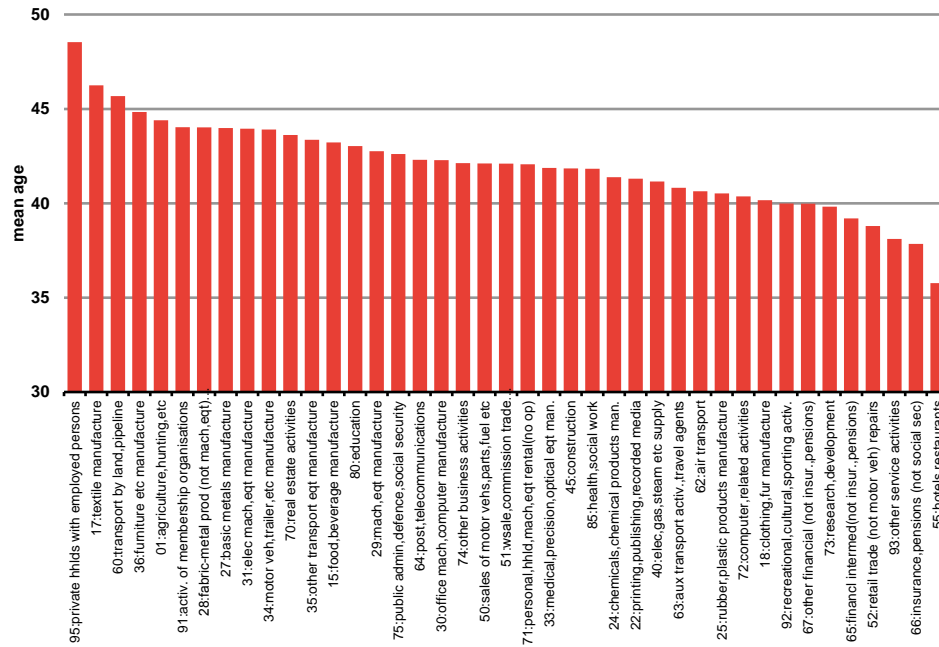
Source: Frontier analysis of 1994 and 2012 LFS data

Figure 62. Industry agency working and change in migrant shares



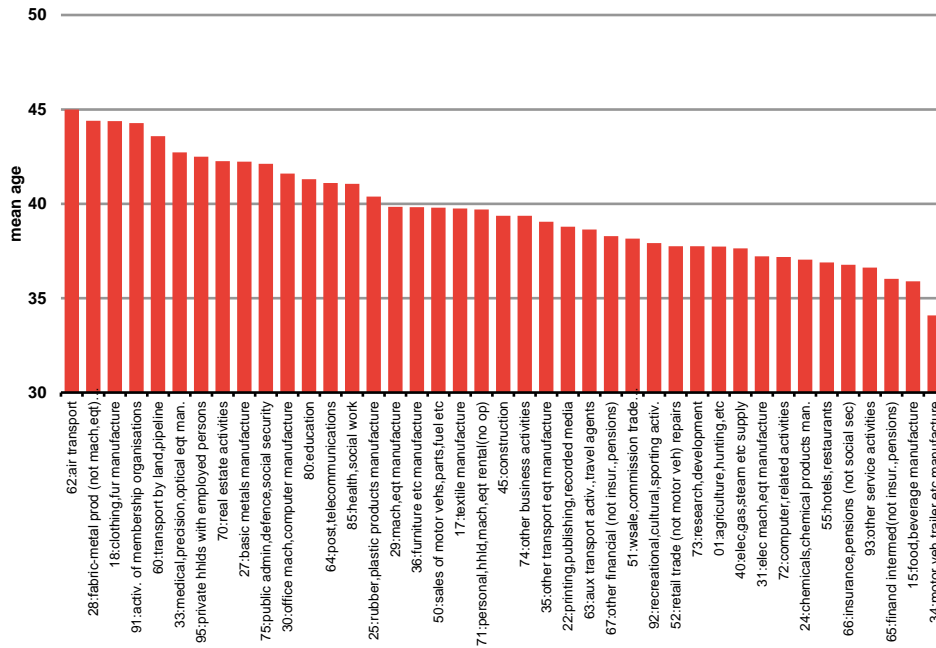
Source: Frontier analysis of 1994 and 2012 LFS data

Figure 63. Variation in average age by sector of UK workers



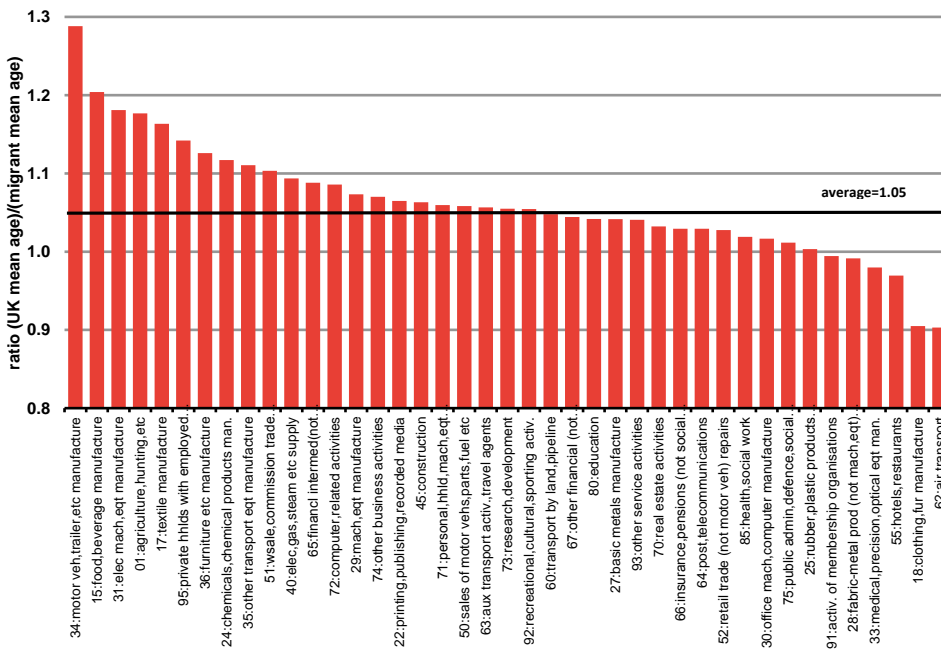
Source: Frontier analysis of LFS data. LFS Q1, Q2 and Q3 of 2012 pooled together.

Figure 64. Variation in average age by sector of migrant workers



Source: Frontier analysis of LFS data. LFS Q1, Q2 and Q3 of 2012 pooled together.

Figure 65. Ratio of average age (native over migrant) by sector



Source: Frontier analysis of LFS data. LFS Q1, Q2 and Q3 of 2012 pooled together.

Table 27. Correlation coefficients between sector characteristics and migrant shares and changes thereof

	Pay	Self-employment	Part-time	Low-skill occupations	Temporary work	Agency working	Migrant share	Δ migrant share 94-12	Δ migrant share 08-12
Pay	1.00								
Self-employment	-0.35	1.00							
Part-time	-0.40	0.41	1.00						
Low-skill occupations	-0.42	0.04	-0.09	1.00					
Temporary working	-0.37	0.30	0.26	0.20	1.00				
Agency working	0.06	-0.30	-0.11	0.13	0.00	1.00			
Migrant share	0.02	-0.01	0.20	0.21	0.07	-0.01	1.00		
Δ migrant share 94-12	0.01	0.04	0.10	0.23	0.13	0.09	0.84	1.00	
Δ migrant share 08-12	0.05	0.02	0.07	0.11	0.10	0.00	0.56	0.52	1.00

Source: Frontier analysis of LFS data

Table 28. Correlation coefficients of sectoral migrant shares and changes thereof: low skilled sectors only

	1994 share	2002 share	2008 share	2012 share	change 94-02	change 02-08	change 08-12
1994 share	1						
2002 share	0.8192	1					
2008 share	0.1508	0.4739	1				
2012 share	0.4551	0.7657	0.7522	1			
change 94-02	0.1398	0.6824	0.626	0.7419	1		
change 02-08	-0.3621	-0.1151	0.8202	0.351	0.2628	1	
change 08-12	0.4983	0.5641	-0.1117	0.5708	0.3389	-0.4925	1

Source: Frontier analysis of LFS data. Industry sectors defined as '2-digit' industry division level.

Table 29. Characteristics of sectors with highest migrant shares in 2012

	Skill (education)	% low-skill occupations	Mean Pay	Part- time	Self- employment
18:clothing, fur manufacture	High	60%	10.1	17%	17%
15:food, beverage manufacture	Low	62%	11.4	5%	9%
55:hotels, restaurants	Semi	62%	7.4	10%	52%
17:textile manufacture	Low	62%	10.3	16%	14%
73:research, development	High	11%	16.9	3%	19%
60:transport by land, pipeline	Low	82%	12.3	30%	15%
95:private households with employed persons	Low	72%	10.0	60%	68%
72:computer, related activities	High	9%	20.3	19%	10%
62:air transport	Semi	58%	21.0	5%	22%
63:aux transport activities, travel agents	Semi	63%	12.2	8%	12%

Source: Frontier analysis of LFS data. Industry sectors defined as '2-digit' industry division level. Low-skill occupations are 4-digit occupations beginning with '4,6,7,8,9' corresponding to skill levels 1 and 2 in the SOC 2000.

Table 30. Characteristics of sectors with highest growth in migrant shares between 1994 and 2012

	Skill (education)	% low-skill occupations	Mean Pay	Part- time	Self- employment
15:food,beverage manufacture	Low	62%	11.4	5%	9%
18:clothing,fur manufacture	High	60%	10.1	17%	17%
17:textile manufacture	Low	62%	10.3	16%	14%
73:research,development	High	11%	16.9	3%	19%
37:recycling	Low	74%	10.8	3%	12%
55:hotels,restaurants	Semi	62%	7.4	10%	52%
23:coke,petrol product., nuclear fuel man.	Semi	34%	24.8	13%	3%
14:other mining, quarrying	Low	47%	13.2	11%	5%
60:transport by land, pipeline	Low	82%	12.3	30%	15%
67:other financial (not insurance, pensions)	High	30%	20.6	14%	13%

Source: Frontier analysis of LFS data. Industry sectors defined as '2-digit' industry division level. Low-skill occupations are 4-digit occupations beginning with '4,6,7,8,9' corresponding to skill levels 1 and 2 in the SOC 2000.

Table 31. Characteristics of sectors with low migrant shares in 2012

	Skill (education)	% low-skill occupations	Mean Pay	Part- time	Self- employment
40:elec,gas,steam etc. supply	Semi	34%	16.9	3%	9%
20: wood, straw, cork, wood prods(not furn.)	Low	28%	9.6	22%	10%
66:insurance,pensions (not social sec)	High	40%	17.1	2%	14%
61:water transport	Low	55%	11.6	3%	8%
90:sanitation,sewage,refuse disposal etc.	Low	77%	11.1	8%	9%
32: radio, TV, communication equipment man.	Semi	52%	15.0	0%	16%
41:water collection,purif.,supply etc.	Semi	40%	12.6	5%	12%
05:fishing,fish farms ,hatcheries etc.	Low	33%	14.0	33%	0%
02:forestry,logging etc.	Low	48%	8.4	48%	24%
10:coal,lignite mining, peat extraction	Low	67%	16.6	0%	11%

Source: Frontier analysis of LFS data. Industry sectors defined as '2-digit' industry division level. Low-skill occupations are 4-digit occupations beginning with '4,6,7,8,9' corresponding to skill levels 1 and 2 in the SOC 2000.

Table 32. Characteristics of sectors with low growth in migrant shares between 1994 and 2012

	Skill (education)	% low-skill occupations	Mean Pay	Part- time	Self- employment
41:water collection, purification ,supply etc.	Semi	40%	12.6	5%	12%
28:fabric-metal prod (not mach., equipment) man.	Low	30%	13.6	8%	10%
90:sanitation,sewage,refuse disposal etc.	Low	77%	11.1	8%	9%
66:insurance,pensions (not social sec)	High	40%	17.1	2%	14%
05:fishing,fish farms, hatcheries etc.	Low	33%	14.0	33%	0%
19:leather,leather goods manufacture	Low	25%	12.8	8%	33%
61:water transport	Low	55%	11.6	3%	8%
02:forestry,logging etc.	Low	48%	8.4	48%	24%
10:coal,lignite mining, peat extraction	Low	67%	16.6	0%	11%
32:radio,tv,communication equipment man.	Semi	52%	15.0	0%	16%

Source: Frontier analysis of LFS data. Industry sectors defined as '2-digit' industry division level. Low-skill occupations are 4-digit occupations beginning with '4,6,7,8,9' corresponding to skill levels 1 and 2 in the SOC 2000.

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