

Migrant Workers in the East Midlands Labour Market

A report for emda

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January 2007

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MIGRANT WORKERS IN THE EAST MIDLANDS LABOUR MARKET

(TRN9)

**Final report submitted to the
East Midlands Development Agency**

January 2007

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Executive Summary

Introduction and Context

- This report provides a profile of international migrants in the East Midlands and their role in the regional labour market.
- There are a number of *different definitions* of 'migrant' / 'labour migrant' in common use – this is important because with different 'definitions' there are different 'stories' about migration (at least in detail).
- The UK migration *policy context* plays an important role in shaping the volume and nature of migrant flows.
- A range of *data sources* provide information on migration. Each data source has strengths and weaknesses and provides a 'partial' view – hence it is necessary to examine several different data sources and to 'triangulate' using information from these different sources to build up as complete a picture as possible of labour migration.

Profile of labour migrants in the East Midlands

Numbers of migrants

- There has been an increase in the number of migrants in recent years, but there remains uncertainty regarding whether migrants are transitory or permanent.
- The East Midlands has a population of 4.3 million. According to the 2001 Census 6 per cent of the region's population (and 7 per cent of the working age population) was born outside the UK. According to the 2005 Annual Population Survey nearly 8 per cent of the working age population (approximately 195 thousand people) in the East Midlands was born outside the UK.
- The number of overseas nationals registering for National Insurance numbers in the East Midlands exceeded 38 thousand in 2005/6, up from 13 thousand in 2002/3. This represents a rate of increase twice as fast for the region (187 per cent) than for the UK (90 per cent).
- In the East Midlands there were around 5 thousand work permit approvals in both 2004 and 2005.
- Between May 2004 and June 2006 there were over 37 thousand Worker Registration Scheme approvals (for migrants from the Accession ('A8') countries of central and eastern Europe) in the East Midlands. However, an unknown number of these people will have returned to their countries of origin.

Geographical distribution of migrants

- Geographically, migrants are concentrated in major urban areas (e.g. Leicester) – i.e. this is where the greatest *volumes* of migrants are.
- There is evidence from a number of different data sources for a trend towards greater spatial dispersion of migrants – leading to particularly high *rates of growth* in numbers of migrants in rural areas.
- In examining spatial patterns of labour migrants it is important to distinguish between 'volume' and 'growth'.

The changing profile of migrants

- The profile of migrants varies between migration routes and over time.

- The national origins of migrants have changed over time. Most recently there has been an increase in migrants from central and eastern Europe. However, the New Commonwealth (including India, Pakistan and some African countries) remains an important source of migrants.
- Migrants are predominantly young and in recent years have been increasingly so.
- Students play a very important role in international migration flows.
- Migrants are concentrated in particular industries – e.g. health, certain parts of manufacturing, etc; including sectors experiencing overall employment decline, but with replacement demand requirements.
- Migrants are concentrated in particular occupations - with particular migration ‘routes’ feeding particular occupations (e.g. Work Permits for professionals; the Worker Registration Scheme for operatives and elementary occupations, etc).
- With analysis of Labour Force Survey data revealing that post-2001 migrants more likely to be working in low skilled occupations than pre 1991 or 1992-2001 migrants and Worker Registration Scheme information on A8 migrants showing a strong skew towards low skill occupations, there is evidence for a trend away from ‘bi-polar’ occupational distribution of migrants towards a greater share in less skilled occupations.

Impact of migrants on the East Midlands labour market

- In theory, migration could have both beneficial and harmful effects on the East Midlands economy and labour market.

Impacts on wages

- There is a sizeable wage gap between migrant and UK-born workers, with the latter earning more than the former, and with post 2001 migrants earning lower wages than migrants entering the UK in earlier years.
- Migrants tend to be concentrated in industries where wages are significantly lower than average. In the East Midlands and the UK as a whole pay has grown fastest in recent years in low paid sectors.
- Despite the trend identified above, migrant employment by occupation still tends to show a bi-polar distribution. Migrants tend to be concentrated in occupations where wages are significantly higher than average (e.g. ICT professionals, Health professionals) or in occupations where wages are significantly lower than average (e.g. operative and elementary occupations).
- In the East Midlands median wage growth is variable across migrant dense occupations. However, overall wage growth in migrant dense occupations is not significantly different from that in other occupations.
- For the region as a whole, there is no statistically significant evidence that migrants dampen wage growth.

Employment impacts

- Migrants display concentrations in a number of sectors experiencing overall (and long-term) employment decline. The shrinking levels of employment of UK-born workers in such industries where migrant employment is most dense could well have occurred without the growth of employment of migrants.
- This is also the case in low paid occupations which are migrant dense (such as operative and elementary occupations) but less so in higher skilled areas of work.
- It is unclear whether this employment displacement is voluntary or involuntary.

Unemployment impacts

- If migrant labour causes involuntary displacement of UK-born workers we might expect to see increased rates of unemployment for the UK-born, increased transitions of UK-born workers from migrant dense industries and occupations into unemployment and/or extended durations of unemployment for the UK-born (particularly amongst those previously employed in migrant dense industries and occupations).
- Overall unemployment rates for UK-born residents have remained very stable since 2001, despite the increase in migrant workers. However, there has been a statistically significant upward trend in unemployment in the East Midlands amongst UK-born residents with no qualifications recently.
- There is evidence from analysis of LFS data of a disproportionately large number of unemployed workers coming from migrant dense industries and occupations, but this may be a result of greater 'churning' between employment and unemployment in these sectors and occupations as opposed to a systematic effect arising from migrant density *per se*. The fact that there has been no discernable change in the probability of the UK-born unemployed in the East Midlands as a whole coming from migrant dense industries and occupations over the period between 2001 and 2006 when the number of migrants has increased supports the notion that industries/ occupations of migrant dense employment are associated with greater 'churning' compared to other industries/ occupations.
- Examination of longitudinal LFS data indicates that patterns of exits of UK-born workers from migrant dense sectors are relatively stable over time and are mainly to other employment, so suggesting that moves are likely to be voluntary rather than involuntary. However, transitions of UK-born workers out of migrant dense occupations via unemployment have increased notably in the last two years (at a time of increasing numbers of A8 migrants and an upward trend in migration more generally), especially when compared to other non-migrant dense occupations.
- Analysis of claimant count proportions reveals a rate of increase of claimant unemployment significantly in excess of the regional average in local areas characterised by the largest aggregate numbers of WRS registrations and high levels of overseas NINO registrations over the period from 2004 to the end of June 2006. However, it should be noted that causation between increases in the claimant count and migration has not been established as there are a range of other factors that have to be taken into account. For example, a number of these local areas are likely to be more vulnerable than average to general downturns in the labour market.

Migrant contribution to regional economic output

- It is difficult to estimate with certainty the contribution of migrants to regional Gross Value Added (GVA).
- It is estimated that in 2005 people born outside the UK contributed 9.6 per cent to the value of output in the East Midlands. Those entering the UK prior to 1991 are estimated to contribute almost 6 per cent to the value of regional output, whilst those entering the UK since 1992 contribute around 4 per cent to the value of regional output (with post 2001 migrants accounting for over 2 per cent of this contribution).
- The migrant contribution to GVA is higher than average in a number of sectors, including Hotels & Restaurants, Health & Social Work and Manufacturing (which includes food processing, engineering, textiles & clothing, etc).
- At local level the migrant contribution to GVA could be higher/ lower than the regional estimate.

Conclusions and policy implications

- The East Midlands labour market has been opened to a greater extent to migrants from the EU and the rest of the world in the last few years. The expansion of the EU into low-wage countries has resulted in a sudden influx of migrants seeking work to most parts of the region since 2004. This may be thought of as a positive supply side 'shock' to the labour market in the context of a more general trend of increasing inflows of labour migrants.
- There is an urgent need to improve the information base on international migration to support economic and social policy and planning. Most recent migrants have been young adults, very few of whom claim benefits. They have diverse origins: the number of migrants from 'traditional' sources has increased, in addition to new sources of migration.
- Migrants are making an important and growing contribution to GVA.
- The impact of migration is extremely difficult to measure because of the weakness of the information base and the difficulty of inferring causality from associations between variables of interest.
- However, it is clear that those most likely to feel a negative impact are those who are most vulnerable to a range of factors in any case.

Part 1: Introduction and Context

1.1 Introduction

Key points

- The aim of this report is to provide a profile of international migrants in the East Midlands and their role in the regional labour market.

This report provides information and data analysis on the magnitude, characteristics and geographical distribution of people from outside the UK working and seeking work in the East Midlands. It also assesses associated impacts upon the East Midlands labour market and the non-migrant population.

The study is inspired by the recognition that international migration to the region (and the UK as a whole) has increased substantially recently and has important implications for the economy (and society). It is hoped that the information provided will be of benefit to the East Midlands Development Agency (*emda*) and partner organisations concerned with regional policy development, especially with regard to employment, learning and skills and business support.

1.2 Definitional issues

Key points

- There are many different definitions of '(international) migrant'/ 'labour migrant' in common use. This is important because with different 'definitions' there are different 'stories' about migration (at least in detail).
- Definitions vary according to data source; so leading to problems of comparability across data sources.
- An international migrant is defined here as a person born outside the UK. (The term 'migrant' is used here to refer to an international migrant.) Where possible migrants are further disaggregated by year of entry to the UK.

There are no universally agreed definitions of international 'migration' and 'migrant'; rather the terms are used in different ways in the literature and analyses of migration. In practice *the definition of international migrants varies according to data set used*. In this report three major data sources are used for examining migration here (see 1.4 for further details): (i) the Census of Population, (ii) the Labour Force Survey (LFS)/ Annual Population Survey (APS); and (iii) administrative sources.¹

The Census of Population collects information on country of birth and location one year before the Census. Within the latter, it is possible to identify residents who were outside the UK one year before the Census. The LFS/ APS collect the country of birth and nationality of respondents and also asks when (i.e. the year) a person entered the UK. Administrative data sources (relating to Work Permits, the Workers Registration Scheme (WRS) and National

¹ The Office for National Statistics publishes figures for the number of international migrants derived from the International Passenger Survey (IPS). This (2%) sample survey (with the majority of interviews focused on Heathrow, Gatwick and Manchester airports) defines an international migrant as someone who plans to stay in the UK for at least 12 months. No such condition is applied by any of the data sets analysed in this report. The IPS was not used in analysis here because it has too small a sample to yield useful data at the regional scale.

Insurance number (NINo) registrations hold information on the nationality of individuals and their date of registration, but not date of entry to the UK.

It was decided that (ideally) country of birth should be used alongside year of arrival in the initial profiling phase of the project. Thus, international migrants are defined as *people born outside the UK*. Since there is a particular interest in recent migration, migrants are further disaggregated (where possible) into those arriving in the UK since 1991, and those arriving in the UK since 2001.

1.3 Context

Key points

- Migration is an important component of demographic change at national, regional and local scales.
- The labour market context for migration in the East Midlands is one of high employment rates coupled with a 'low pay low skill equilibrium'.
- In recent years immigration has been running at historically high levels and the UK has gained population at an increasing rate due to net immigration.
- The UK government publicly espouses the principle of 'managed migration' to meet economic needs (although no actual workforce planning occurs).
- There are a number of different migration routes to the UK and the volume and nature of managed migration is shaped by the legislative framework at UK level.

1.3.1 *The East Midlands and UK demographic and labour market context*

Over the last decade the East Midlands population has grown at a faster rate than the national average and currently totals 4.3 million. As nationally, the regional population is ageing and migration (from other parts of the UK and beyond) is the dominant driver of population growth.²

Over the last decade or so the UK labour market has tightened and employment rates have risen to historically high levels, although recently there has been an upturn in unemployment. Employment rates in the region exceed the national average, although there are substantial variations between sub-regions and sub-groups of the population. The East Midlands has been described as being in a 'low pay low skill equilibrium', with a lower than average proportion of the workforce possessing higher level qualifications and an above average proportion with no qualifications. This enables some businesses to maintain a competitive strategy based on low cost (*emda*, 2006).

1.3.2 *Immigration trends*

There have been several 'eras' of immigration to the UK since the end of World War II. In the immediate aftermath of World War II migrants were recruited from western and eastern Europe to assist with reconstruction. Many employers recruited cheap and flexible labour from Ireland and the New Commonwealth during the 1950s and early 1960s. New Commonwealth migrants were recruited in manufacturing in Nottingham, Derby and smaller towns and cities of the East Midlands and to work in public transport. Caribbean immigration reached a peak in the early 1960s but migration from the Indian sub-continent for work and family reunification continued at a rapid rate until the early 1970s, and Indian and Pakistani people settled in the Spinney Hill and Belgrave areas of Leicester. From then until the 1990s

² This is the subject of a parallel research project commissioned by *emda*, and hence is not covered in this report.

New Commonwealth immigration continued at a slower pace, dominated by Bangladeshi and Hong Kong Chinese people, and later by African people. The main exception was the arrival of East African Asians as refugees following their expulsion from Uganda and neighbouring countries in the early 1970s. Leicester received over 20 thousand refugees (more than any other UK city), whose experience as entrepreneurs enabled them to establish a range of new industries, as well as working in textiles and clothing.

Until the early 1980s, the number of British emigrants exceeded the number of international in-migrants, but since then the UK has gained population due to international immigration in most years. Migration steadily increased during the 1990s, with a much more diverse range of national origins. From the mid 1990s asylum flows became a major component of immigration, peaking in the early years of the 21st century.³ The East Midlands received refugees from the conflicts in the Balkans and later the major cities became 'cluster areas' for the dispersal of asylum seekers (including Iraqi, Afghan and Somali people) from London and the South East.⁴ Since the late 1990s immigration to the UK has run at a historically high level and in 2004 international migration added 408 thousand people to the UK population (Office for National Statistics, 2006); (this was more than double the immigration peak of the early 1960s). Office for National Statistics (ONS) figures suggest that the region gained 21.3 thousand people through net international migration between 1995 and 2004.⁵

An increasingly powerful force behind migration to the UK has been economic integration in the EU and the steady reduction in barriers to the free movement of labour and capital. The expansion of the EU in 2004, and the fact that the UK was one of only three member states (alongside Sweden and Ireland) that chose not to impose restrictions on 'A8' migrants from the new central and eastern European Accession countries, may be regarded as an additional 'shock' (Riley and Weale, 2006) and Poles have been identified as the largest ever single national group of entrants that the British Isles has ever experienced (Salt and Miller, 2006).

1.3.3 *Migration policy context*

The volume and nature of migration is shaped by the legislative framework at UK level. The UK government espouses the principle of 'managed migration', with migration being viewed as a solution for replacing workers who are retiring and who are not being replaced at the younger end of the workforce due to falling birth rates. Migration policy is subject to review and in 2007 a points-based management strategy for managing labour migration is due to come into full operation.

It is important to note that migrants enter the UK by a number of different routes. Some come on work permits, others on special schemes for particular sectors, some come as asylum seekers and if granted refugee status are eligible to work in the UK and others enter the UK illegally. Citizens of the European Union 15 (EU15) do not need permission to work in the UK, although migrants from eight of the ten Accession countries ('A8' countries) joining the EU in May 2004 were treated rather differently (see Salt and Miller, 2006), since the Worker Registration Scheme (WRS) was put in place in May 2004 to regulate their access to the UK labour market. The profile of migrants varies between migration routes and over time.

³ Asylum seekers do not have the right to work. Refugees are entitled to work, but are not identifiable as such in any of the data sources analysed. They may appear in the statistics for non UK born people.

⁴ In September 2006 the National Asylum Support Service was supporting 2.1 thousand asylum seekers in the East Midlands.

⁵ Office for National Statistics (2005) International Migration 2004, Series MN no 31.

1.4 Data sources

Key points

- There is a lack of up-to-date information on the numbers and characteristics of migrant workers at regional and local levels. No single data source provides a comprehensive picture.
- Data constraints mean that only broad estimates of migration are possible at regional and sub-regional levels.
- Different data sources adopt different definitions, and relate to different time periods and geographical areas.
- Each data source provides a ‘partial’ view – hence it is necessary to examine several different data sources and to ‘triangulate’ to build up as complete a picture as possible of labour migration.
- Key data sources used in the analyses presented here are the Census of Population, the Labour Force Survey/ Annual Population Survey and administrative records relating to National Insurance Number registrations, Work Permits and the Worker Registration Scheme.
- There is a lack of information on emigration.

“At all geographical levels, conceptual and definitional issues between datasets and the sheer complexity of the migration process hamper the derivation of statistics to measure the impact of new migrants” (Rees and Boden, 2006: 1)

There is a lack of up-to-date information on the numbers and characteristics of migrant workers at regional and local levels, with no single data source providing a comprehensive picture. Rather, only broad estimates are possible. Different data sources adopt different definitions, and relate to different time periods and geographical areas. Of particular relevance for the regional and sub-regional focus here, is the fact that small sample sizes may mean that less detailed information may be generated at regional than at national level in order to overcome statistical robustness/ confidentiality constraints. Moreover, different data sources have different detail in terms of disaggregations (e.g. by industry, occupation, etc) and have different strengths and limitations (see Annex 1 for key features and access details of migration data sources of relevance for this research). Note that none of the ‘official’ data sources include illegal migrants or migrants working illegally.

Official statistics identify migrants in two ways: through surveys of residents (i.e. stocks) or through direct surveys of people as they move (i.e. flows). The two most important surveys of residents in the UK are the decennial Census of Population and the Labour Force Survey (LFS)/ Annual Population Survey (APS), which measure migration in two ways:

- long-term migration (using the country in which a person was born) – this is the definition of ‘migrant’ that is used in this study;
- short-term migration (from change of address within the year before the survey).

‘Country of birth’ has been used in previous studies analysing the distribution and profile of migrants in the UK (see Kyambi, 2005); (note, however, that some UK nationals are born abroad, while some people born in the UK are foreign nationals). Country of birth tables from various 2001 Census data sets provide information on long-term migrants, with the amount of country detail varying according to the individual characteristics summarised. The LFS/ APS asks respondents about their country of birth, but also ethnic group and year of entry to the UK. This source therefore makes it possible to contrast the composition of international migrants in different time periods. However, it should be borne in mind that surveys tend to be poorer at capturing mobile than non-mobile populations, and hence short-term migration may be under-estimated (see Annex 2 for an example from the Census of Population).

There are two main surveys/data sources on *flows* of migrants; the International Passenger Survey (IPS) and National Health Service Central Register (NHSCR). The former surveys a small sample of people entering and leaving the UK, while the latter estimates inter-regional migration from re-registrations with GPs. The IPS data includes around 4 thousand migrants per year, and asks about country of origin, region of destination and occupation (most of the questions are focused on tourism). This source is unique in measuring out-migration from the UK as well as in-migration. However, because of its small sample size at a sub-national level, it is not used here. The NHSCR data is mainly useful in providing contextual information on the dynamics of the population as a whole (it is not used here).

Analysis of *administrative data sources* has been the prime method through which very recent migration has been measured. The administrative records of greatest relevance here are:

- registrations for *National Insurance Numbers* (NINos) – these apply to *all* workers;
- registrations on the *Workers Registration Scheme* (WRS) – these apply to A8 nationals only;⁶
- applications for *Work Permits* – applications are made by employers for non-EEA nationals, and data on nationality and gender and limited information on occupation and industry sector is available.

These administrative data sources can provide information on trends over time on the number of migrants in local areas (broken down by industry and occupation). However, they should be interpreted with caution: for example, the number of applicants to the WRS does not represent a measurement of net migration to the UK (i.e. inflows minus outflows); rather the numbers reported are gross figures relating to the number of workers applying to the WRS. Deregistration is not required on leaving the UK. This is a salient issue given the temporary nature of much migration from A8 countries. Hence, the main drawback of administrative/ registration sources is that migrant workers are not monitored leaving the UK. Using these data sources can therefore lead to a great overestimate of the number of migrant workers in the country/ region. Survey data sources (which have drawbacks of being less timely and of having small sample sizes) provide an alternative measure of the migrant worker population, because those migrants captured at a particular point in time should represent the net gain of the population due to migration, since those who have left the country again are not included. However, as noted above, mobile populations are likely to be under-represented in surveys.

Since there is no single source of data on migrant workers, in order to obtain as complete a picture as possible it is necessary to make reference to a number of different sources. However, there are severe problems in bringing these data sets together to produce a composite picture of migration. The same individuals may appear in different data sets, and (crucially) there is *no information on individuals leaving the UK*. It is therefore difficult to know whether additional registrations represent additions to the stock of migrants, new entrants replacing migrants who have left the UK or seasonal migrants who enter and leave the country repeatedly. Nevertheless, it is considered appropriate to examine a number of different data sources in order to uncover as comprehensive a picture as possible.

⁶ Published Management Information is available at national level and for 'regions' - although the East Midlands is not separately distinguished, and by 'occupation group', occupation, nationality and various other categories (see Home Office, Department for Work and Pensions, HM Revenue and Customs and Department for Communities and Local Government [2006] *Accession Monitoring Report May 2004 – March 2006*).

Part 2: Profile of labour migrants in the East Midlands

2.1 The changing volume and spatial distribution of migrants

Key points

- Migration has increased over time, but uncertainty remains about the number of migrants at national, regional and local levels and whether migrants are transitory or permanent.
- It is difficult to estimate how many migrants are in the East Midlands currently.
- The largest *volumes* of immigrants are in the major urban areas – notably Leicester.
- Over time there has been a trend towards a greater spatial dispersion of migrants, leading to particularly high *rates* of growth in rural areas.

2.1.1 Introduction

This section of the report uses a number of different data sources to provide information on the number of migrants in the East Midlands and on their spatial distribution. Here the emphasis is on the aggregate picture; details of the characteristics of migrants by age, national origin, industry, occupation, etc, are provided in 2.2.

2.1.2 Volume of migrants

The 2001 Census recorded that 6 per cent of the total population and just over 7 per cent of the working age population of the East Midlands was born outside the UK. In the year prior to the 2001 Census the East Midlands gained 16 thousand people from elsewhere in the UK and 18.7 thousand from elsewhere in the world (so emphasising the importance of international migration in population change).⁷ It should be noted that this ‘snapshot’ pre-dates recent increases in international migrants; most notably labour migrants from EU Accession countries post 2004.

A more up-to-date ‘snapshot’ of international migration to the East Midlands from the 2005 APS reveals that nearly 8 per cent (around 195 thousand) of working age people in the East Midlands were born outside the UK and Ireland compared with 11 per cent nationally. Of those born outside the UK and Ireland just over half arrived in the UK up to the end of 1991, a quarter arrived between 1992 and 2001 and just under a quarter arrived in the period from 2002 onwards. However, these figures should be interpreted with some caution because the LFS/ APS (like other surveys) is likely to face greater difficulty in capturing migrants (especially those in the UK for relatively short durations) than most other population sub-groups.

NINO registrations for overseas nationals probably present a fuller picture of the overall increment to the UK workforce by foreign nationals than any other single data source (because every overseas national who is legally employed/ self-employed in the UK requires a NINO). NINO registration data cover all labour migrants (i.e. EU citizens – including those from Accession countries who are covered by the WRS, those on Work Permits and others). There has been a marked increase in NINO registrations by overseas nationals in the last two years. In 2005/6 there were over 660 thousand NINO registrations by overseas nationals in the UK (up from around 350 thousand in 2002/3) and in the East Midlands registrations exceeded 38 thousand (up from around 13 thousand in 2002/3). Hence, the recent rate of increase in NINO registrations by overseas nationals has been twice as fast (187 per cent) in the East Midlands than nationally (90 per cent).

⁷ It should be noted that some of the international in-migrants will be UK-born people returning to the UK, while some of the intra-UK migrants will have been born overseas.

This upward trend in migration is reflected in Work Permit and WRS data. In the East Midlands the number of work permits approved rose from just over 700 in 1995 to over 5.3 thousand in 2004, prior to declining to around 4.6 thousand in 2005. There have been substantial numbers of WRS approvals in the East Midlands each quarter over the period from May 2004 to June 2006: the cumulative total is over 37 thousand.⁸

2.1.3 Spatial distribution of migrants

The 2001 Census reveals that residents born outside the UK were concentrated in the largest urban areas. In Leicester 23 per cent of the total population and nearly 29 per cent of the working age population were born outside the UK. In the adjacent district of Oadby & Wigston the respective proportions were nearly 11 per cent and nearly 14 per cent. Nottingham recorded the next highest proportion of the total population (nearly 10 per cent) and the working age population (over 11 per cent) born outside the UK. Other local authority areas with greater shares of non-UK born residents than the East Midlands average were Northampton, Derby, Charnwood (including Loughborough) and Wellingborough. By contrast, in Bolsover, Ashfield and North East Derbyshire less than 2 per cent of residents were born outside the UK.

Examination of migration data from the 2001 Census reveals that relative population gain due to international migration in 2000/01 was highest in Rutland, Nottingham, Leicester, Broxtowe and Charnwood. International migrants are attracted to cities (the pattern of student migration is clearly influential here), but also to rural areas. There are few international migrants to the old coalfield districts (see Annex 3).

Sample size issues mean that scope for sub-regional disaggregation of migrants using LFS/APS data is limited. However, some insight into more detailed spatial distribution of migrants is possible from administrative sources.

Analysis of NINO registrations reveals that London remains the dominant destination for labour migrants, but its share of NINO registrations by overseas nationals fell from 42 per cent of the UK total in 2002/3 to under 36 per cent in 2005/6. Over the same period the share of the UK total accounted for by the East Midlands increased from 3.8 per cent to 5.8 per cent. Leicester accounted for the largest absolute number of NINO registrations by overseas nationals in the East Midlands over the period from 2002/3 to 2005/6 (see *Figure 1*), with Nottingham, Northampton and Derby accounting for the next highest numbers, followed by Boston and South Holland.

In *Figure 2* the number of NINO registrations are compared with the number of working age people who were employed in 2001.⁹ Across the East Midlands the number of NINO registrations over the four years expressed as a percentage of the existing workforce is 5 per cent. At local authority district level, the areas with the largest ratios of NINO registrations to employed residents were Leicester (just over 20 per cent) and Boston (nearly 19 per cent). It is important to keep in mind that a high proportion of these registrations may have moved (either out of the UK or to a different region), but the figures give an indication of which local areas have had their workforce significantly altered by incoming migrants.

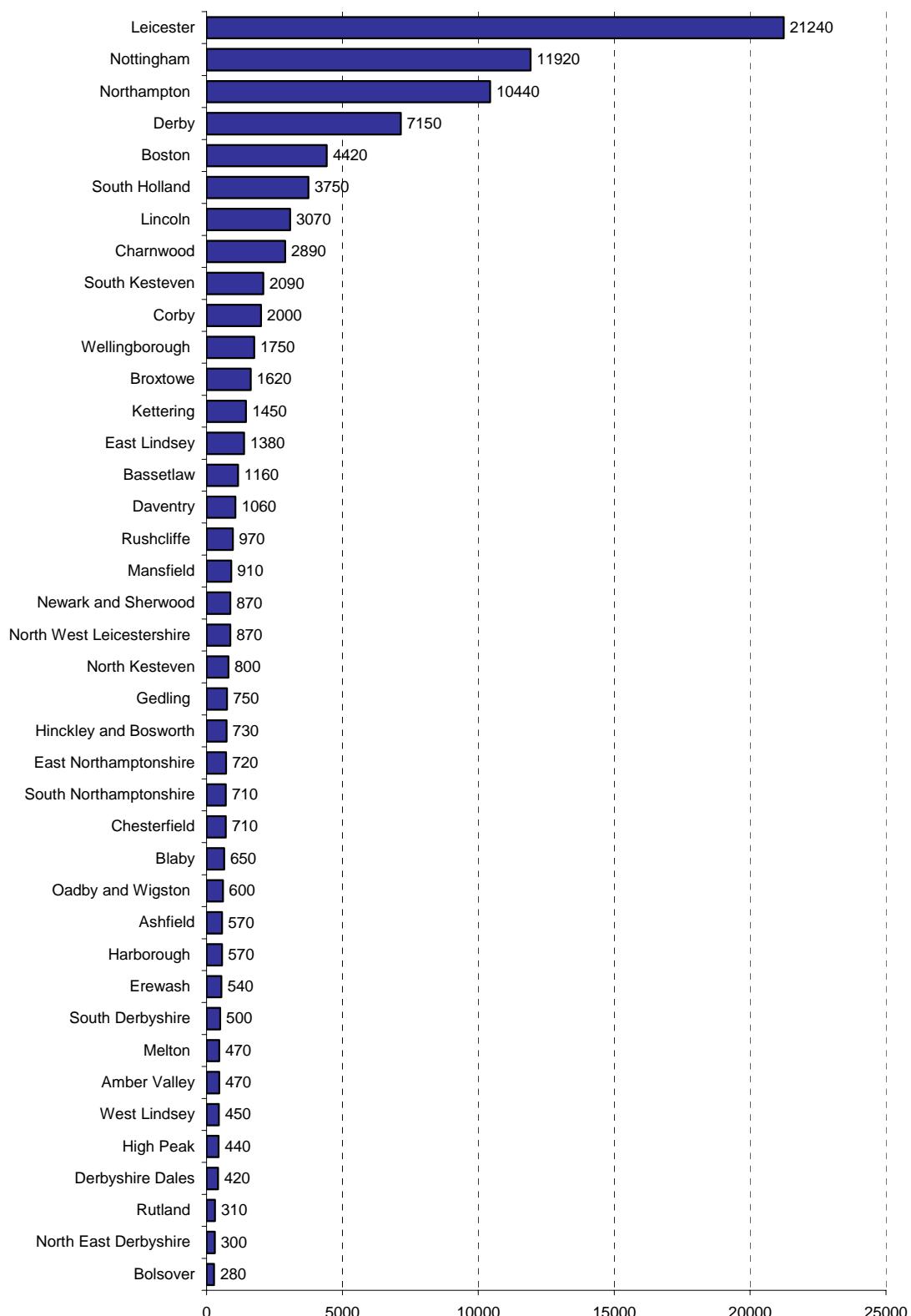
Overall, the urban concentration of NINO registrations by overseas nationals decreased between 2002/3 and 2005/6 from three-quarters to less than two-thirds of total registrations in the East Midlands. There was a particularly marked increase in NINO registrations by foreign nationals in the most rural districts. *Figure 3* summarises this pattern using the

⁸ It should be noted that this is not a measurement of net migration to the UK

⁹ This uses data from the 2001 Census of Population and replicates analyses by Piggott (2006) for London boroughs.

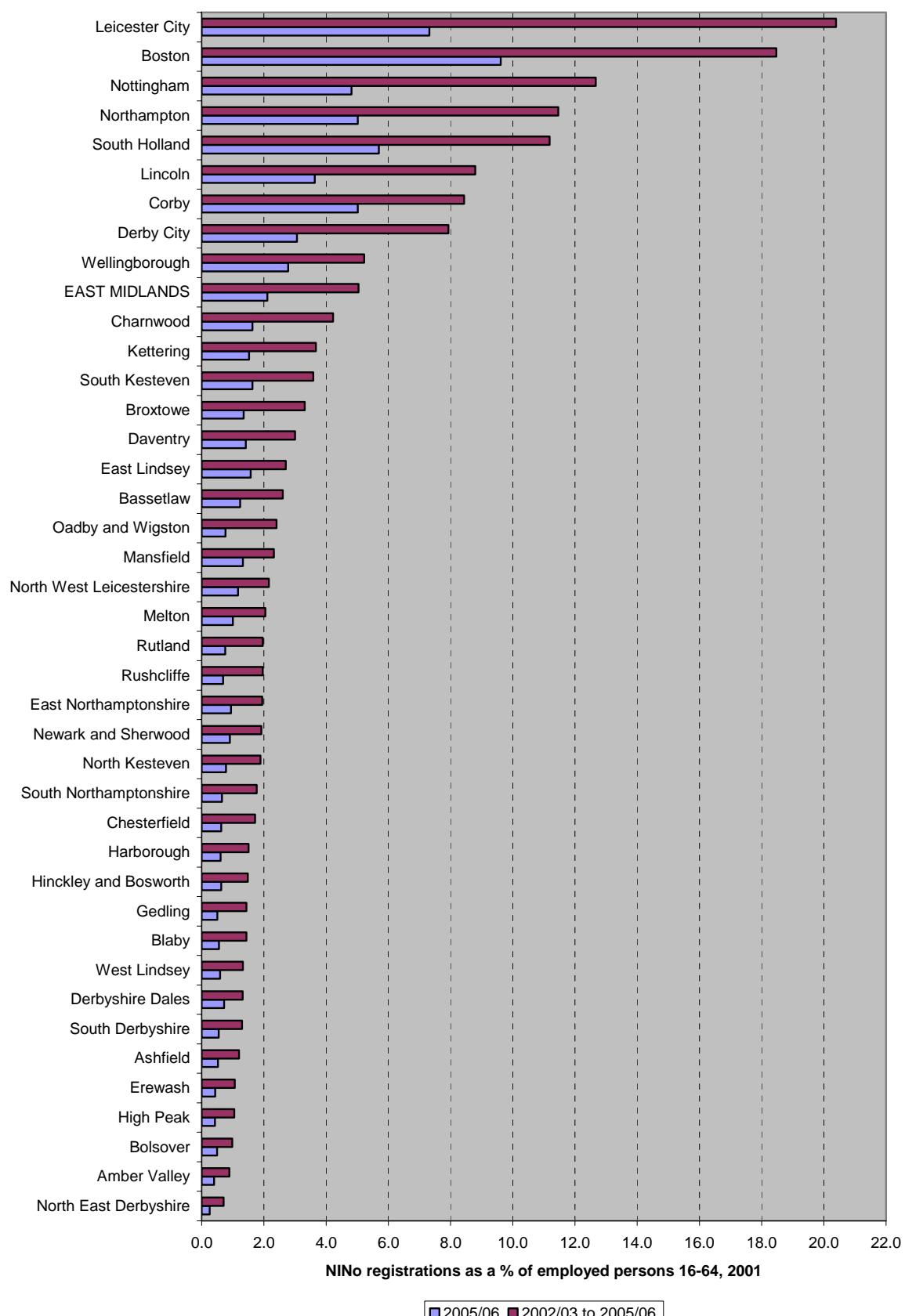
DEFRA urban/rural classification, highlighting the intra-regional shift from larger cities and urban areas in general towards rural areas. The rate of increase in the number of foreign NINO registrations between 2002/3 and 2005/6 increased the more rural the district.

Figure 1: Total NINO registrations by overseas nationals for four years 2002/03 to 2005/06 by local authority areas in the East Midlands



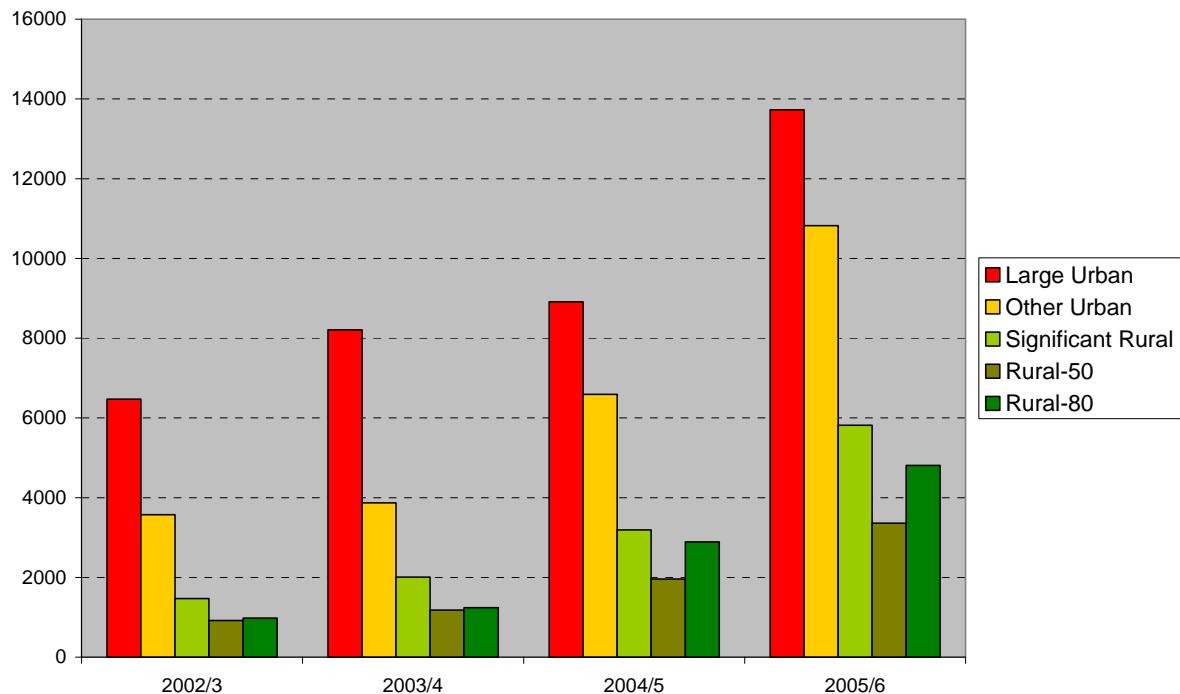
Source: Total NINO registrations.

Figure 2: Overseas nationals NINo registrations by East Midlands local authority as a percentage of employed persons, 2001



Source: Total NINo registrations; 2001 Census Theme Table Theme Table 7

Figure 3: Overseas nationals' NINO registrations by urban/rural category, East Midlands, 2002-2006



Source: NINO registrations data

Analysis of data on work permit approvals reveals that the major cities in the western part of the East Midlands (notably Nottingham and Leicester), but also Derby, Northampton and Charnwood (Loughborough) accounted for the largest absolute numbers of work permit approvals in the East Midlands. However, there is some evidence from this source that the concentration of work permit approvals in urban areas decreased between 2000 and 2005.

WRS approvals (covering A8 migrants) are skewed towards rural areas to a greater extent (see also Stenning *et al.*, 2006), with rural areas accounting for 48 per cent of total approvals between May 2004 and June 2006. The local authority districts accounting for the greatest number of WRS approvals over this period were Northampton (with a fifth of the regional total), Boston (12 per cent of the regional total) and South Holland (9 per cent of the regional total). Nottingham and Leicester record the next largest shares (see Annex 4).

2.2 Changing profile of migrants

Key points

- The profile of migrants by national origin has changed over time. Despite recent increases in migration from central and eastern Europe, the New Commonwealth continues to be an important source of migrants.
- Migrants are predominantly from the young adult age groups, and this tendency has accentuated recently.
- Students play an important role in international migration flows.
- Migrants are concentrated in particular industries – e.g. health, certain parts of manufacturing, etc – often in sectors experiencing overall employment decline, but with replacement demand requirements.
- Migrants are concentrated in particular occupations - with particular migration 'routes' feeding particular occupations (e.g. Work Permits for professionals; WRS for operatives, etc).
- With analysis of Labour Force Survey data revealing that post-2001 migrants are more likely to be working in low skilled occupations than pre 1991 or 1992-2001 migrants and Worker Registration Scheme information on A8 migrants showing a strong skew towards low skill occupations, there is evidence for a trend away from 'bi-polar' occupational distribution of migrants towards a greater share in less skilled occupations.

2.2.1 *Introduction*

In this section of the report a number of different data sources are used to provide information on the characteristics of migrants by national origin (2.2.2), age (2.2.3), economic position (2.2.4), occupation and industry (2.2.5), industry (2.2.6) and occupation (2.2.7).¹⁰

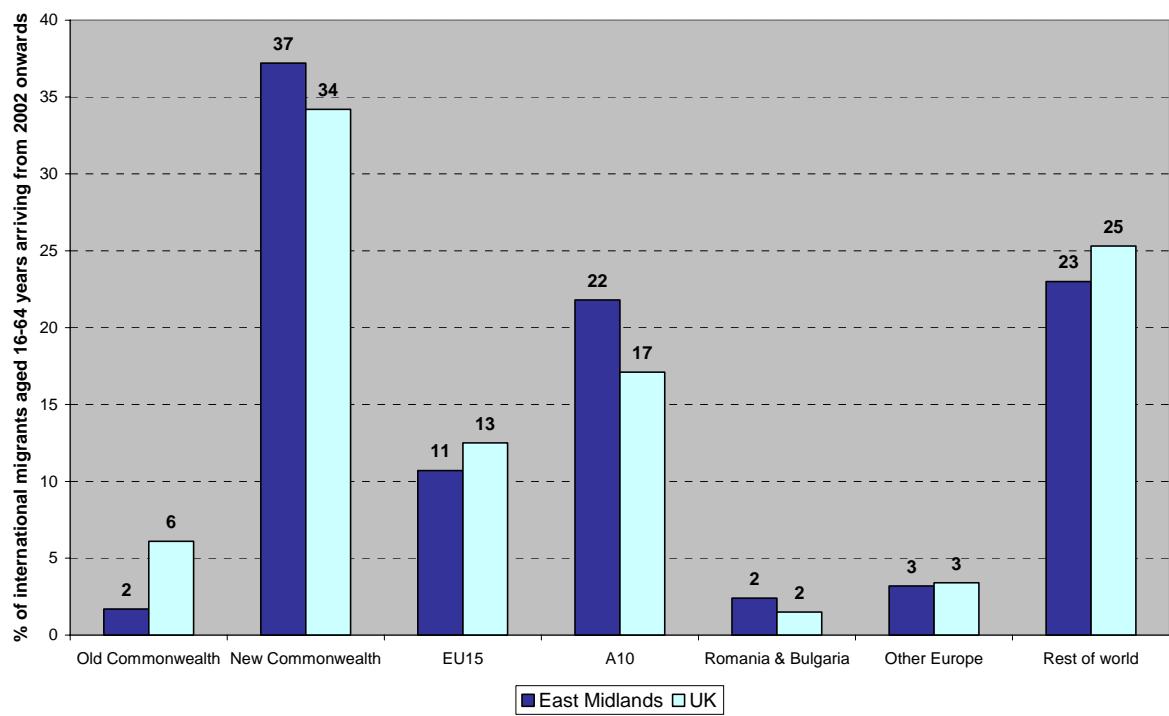
2.2.2 *Country of origin/ nationality*

The Census of Population provides a reasonably detailed picture of country of birth of residents at national, regional and local levels, but given the volume and nature of migration change since 2001 the 'snapshot' that it provides is now rather dated.

More up-to-date regional information is available from the APS for 2005, but because of sample size constraints it is possible to identify only a limited number of broad national origins of migrants. APS data for 2005 shows that the New Commonwealth is the largest source of overseas-born population in the East Midlands and the UK, accounting for 4 per cent and 5 per cent of people aged 16-64, respectively. Focusing on recent migrants, *Figure 4* compares the broad national origins of migrants of working age in the East Midlands and the UK. Both regionally and nationally the largest share of migrants was born in the New Commonwealth (i.e. countries such as India, Pakistan, Bangladesh, the West Indies and parts of Africa), but this share was higher in the East Midlands, where migrants from A10 countries also accounted for a larger share of the total. Migrants from the Old Commonwealth (i.e. countries such as Australia, New Zealand and Canada), the rest of the EU15 and the rest of the world account for a smaller share of migrants in the East Midlands than in the UK as a whole.

¹⁰ Note that only some dimensions have been selected for presentation here. Some data sources also enable disaggregation along other dimensions (e.g. gender, ethnicity).

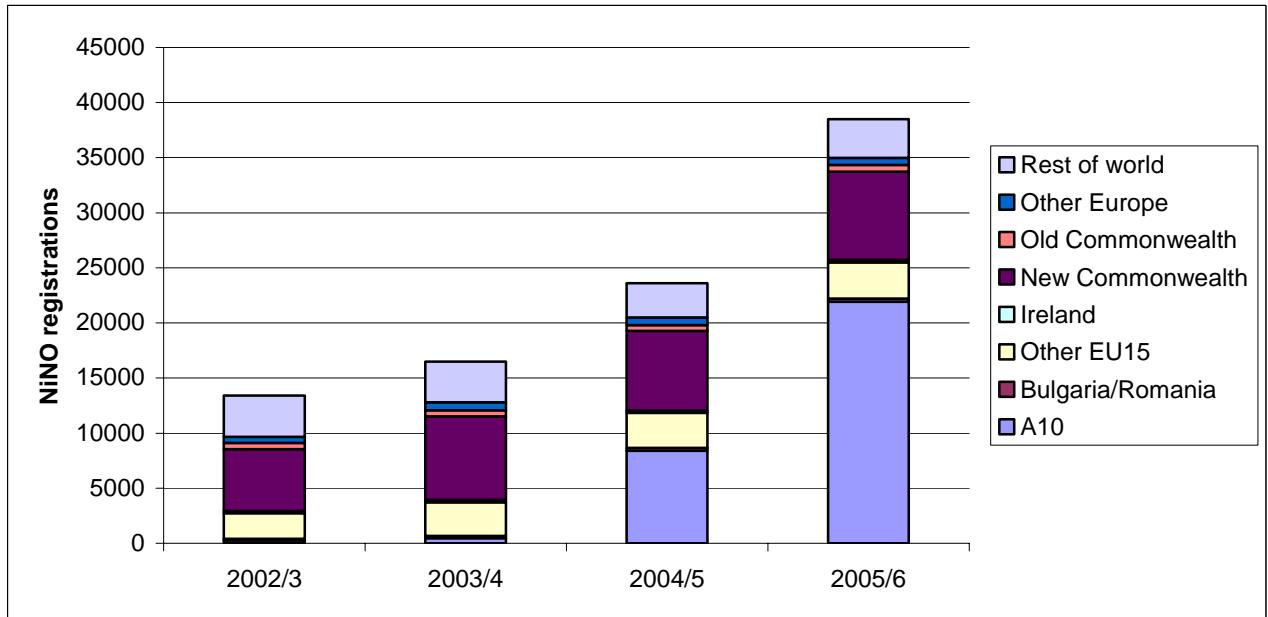
Figure 4: Broad national origins of international migrants arriving from 2002 onwards, East Midlands and UK, 2005



Source: Annual Population Survey 2005.

Analysis of national origins of NINO registrants provides an insight into the changing origins of migrants, highlighting marked change over the last four years and the impact of migration from A8 countries on the East Midlands labour market (see *Figure 5*).

Figure 5: NINO registrations 2002/3 to 2005/6 by region of the world, East Midlands



Source: NINO registrations data

In relative terms the increase in registrants from A8 countries has been more marked in the East Midlands than nationally: in 2005/6 Accession country nationals accounted for a larger share (57 per cent) of total NINO registrations by overseas nationals in the East Midlands

than in any other UK region/ nation. India was the largest origin of NINo registrants in 2002/3 and 2003/4 and was second largest in the next two years. In 2004/5 and 2005/6, Poland dominated, with nearly twice as many registrants as India in 2004/5 and three times as many in 2005/6. The number of registrations originating in both countries increased over these two years. Overall, the picture is of increasing numbers of registrations from most countries, but with a major regional shift from the Old and New Commonwealth and the EU15 to A8 countries.

Analysis of Work Permit data (covering skill-shortage jobs in the health sector [doctors and nurses], IT, university research, etc, and also international transfers in multinational organisations [see Clarke and Salt, 2003]) underlines the diversity of national origins of migrants.¹¹ Over the period from 1995 to 2005 the USA, Japan, India and China displayed amongst the largest numbers of approvals. Over the period in question the number of approvals for people from India increased markedly, to account for over 30 per cent of all approvals in the East Midlands by 2005. Overall, however, the number of Work Permits is relatively small in the most recent period compared to other migration streams discussed. *Figure 6* shows the geographical distribution of approvals by local authority area in 2005.¹² As highlighted in 2.1.3, the map confirms the urban concentration of work permit approvals, and reveals how the national origin profile of migrants with work permit approvals differs between local areas.

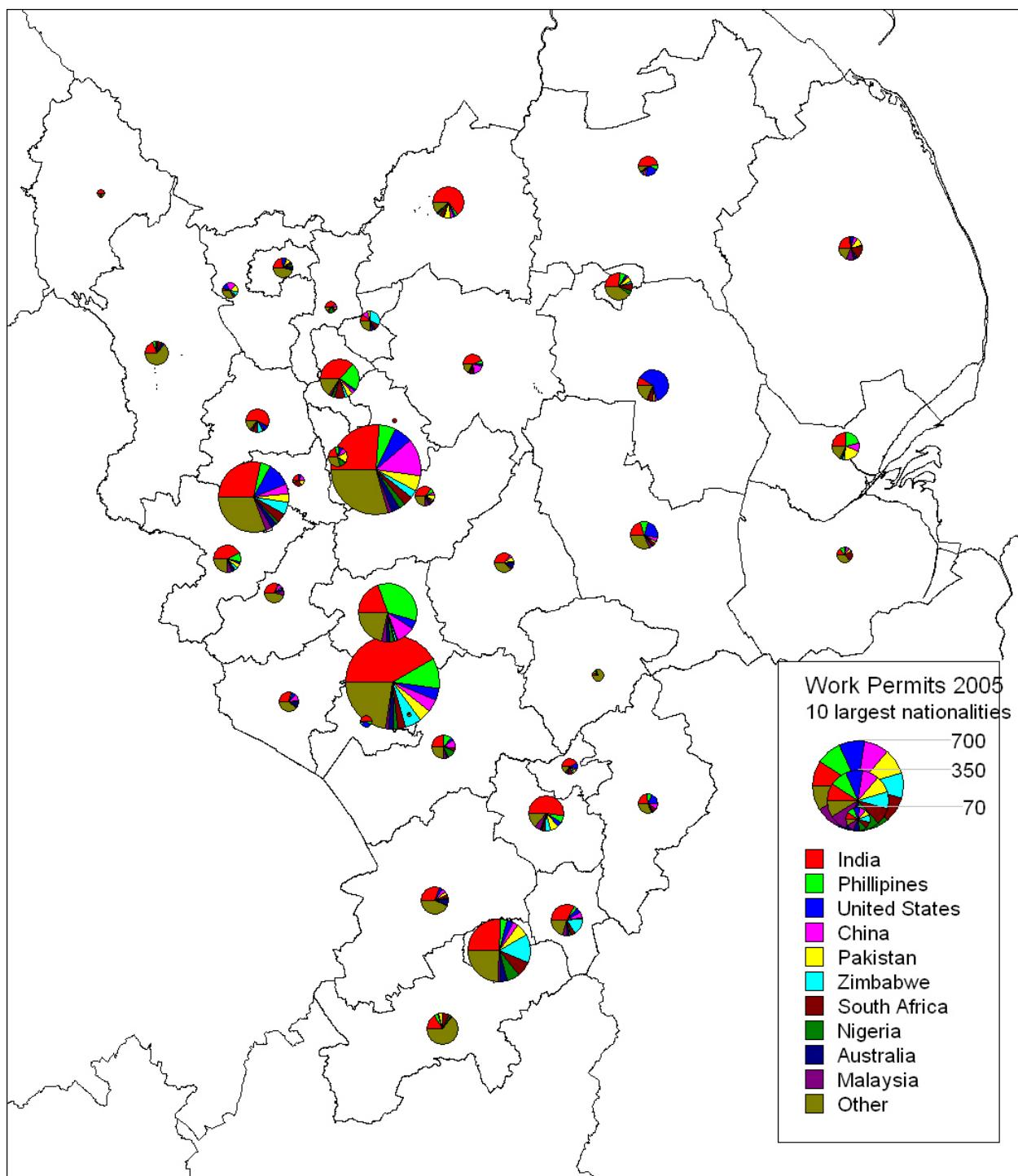
While Indians comprise the largest group amongst Work Permit approvals, Poles comprise the largest single group of approved A8 applicants, accounting for 61 per cent of regional WRS approvals over the period from May 2004 to June 2006, compared with 62 per cent of the UK cumulative total across the same period. Lithuanians form the next largest single national group, accounting for 13 per cent of the regional cumulative total (compared with 12 per cent for the UK). The third and fourth largest groups are from Latvia and Lithuania, respectively, 3.5 thousand and 3.4 thousand WRS approvals, respectively; each account for 9 per cent of the East Midlands total. Latvians account for a larger share of cumulative WRS approvals in the East Midlands than in the UK (9 per cent compared with 6 per cent), but overall the profile of WRS approvals in the East Midlands is very similar to that in the UK. The East Midlands accounts for 9 per cent of total UK WRS approvals, but for 13 per cent of all UK approvals of Latvians and 10 per cent of UK approvals of Lithuanians and Estonians.

Figure 7 shows the location of A8 migrants by nationality. As regionally, so at the local level Poles comprise the largest component of A8 migrants in most districts, although Derby is distinctive in that less than 44 per cent of approved WRS applications are for people from Poland. Northampton contains some of the largest concentrations of individuals with A8 nationalities in the East Midlands, with 31 per cent of the regional total of people from the Czech Republic, 29 per cent from Slovakia and 25 per cent from Slovenia. Boston and South Holland display the largest shares of Lithuanians in the East Midlands region (together accounting for around 47 per cent of the regional total) and also have relatively large concentrations of Latvians. Corby and North Kesteven together account for nearly half of all registrations by Estonians. This demonstrates that the different national groups do not display the same spatial distributions at intra-regional scale. Some might reflect the distinctive recruitment strategies of particular employers or agencies.

¹¹ Note that EEA citizens do not require Work Permits.

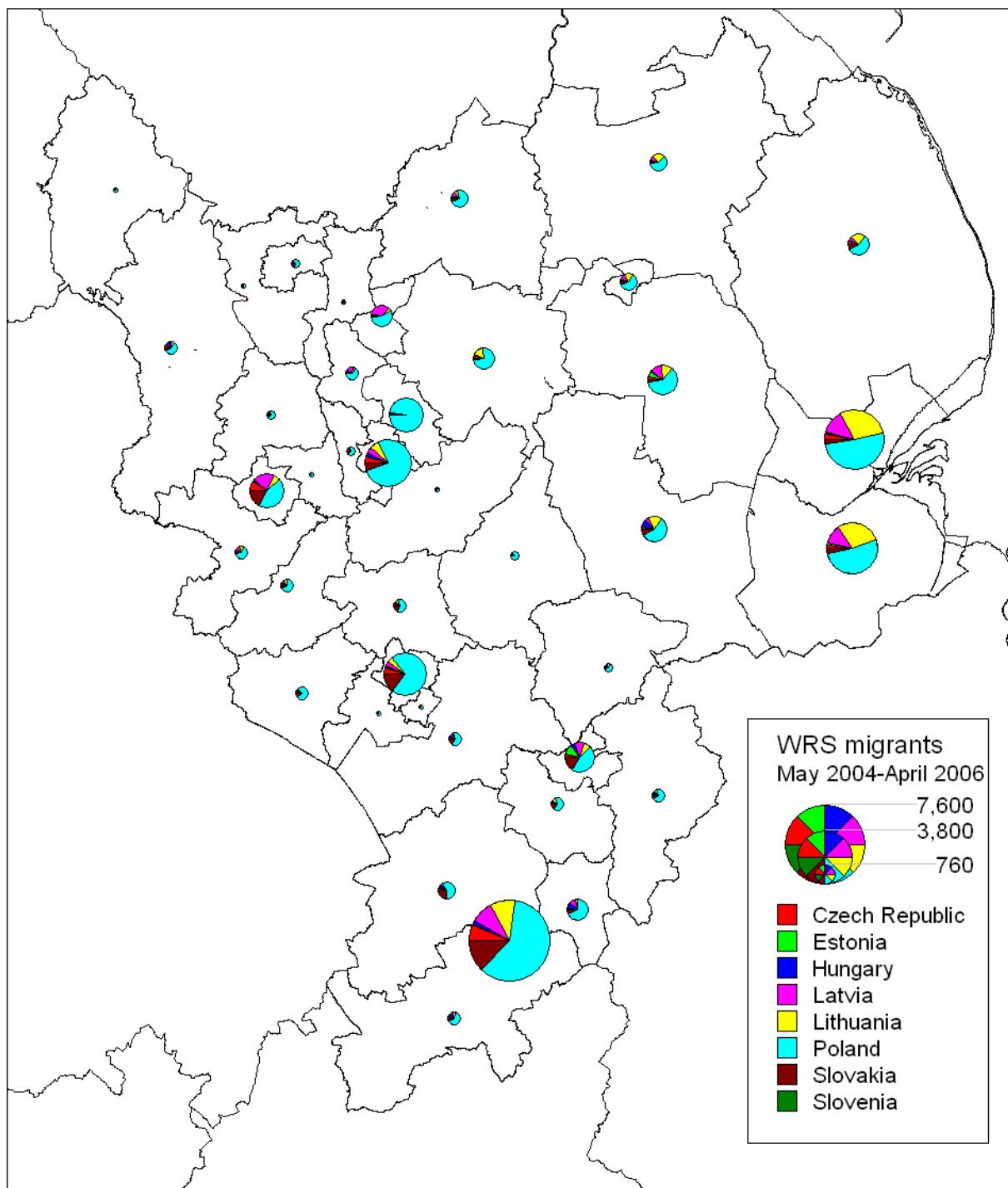
¹² Note that location relates to employer workplace. The local authority data was generated by allocating data for postcode districts to local authority areas on a 'best-fit' basis.

Figure 6: Location of 10 largest nationalities for work permits approvals, 2005



Source: Work permits, Fol request.

Figure 7: Workers Registration Scheme approvals in the East Midlands by local authority district and nationality, May 2004 - June 2006

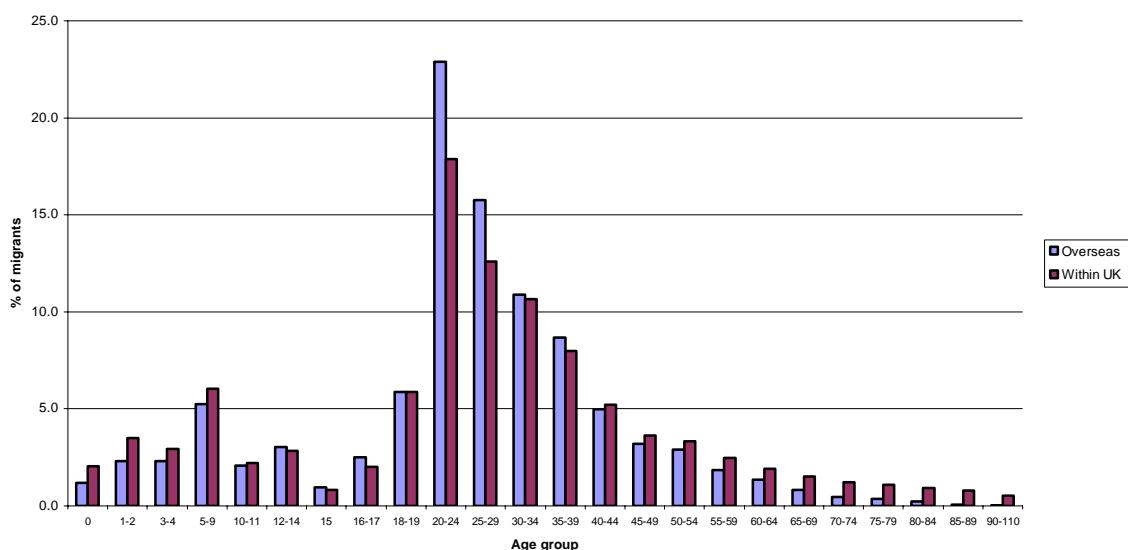


Source: WRS applications, FOI request.

2.2.3 Age

The 2001 Census provides the most detailed information on the age profile of the migrant population. *Figure 8* highlights the concentration of migrants in the younger adult age groups;¹³ (see Annex 6 for more detailed information at regional and sub-regional levels).

Figure 8: Age breakdown of migrants (international and domestic) to the East Midlands, 2000/01



Source: Census of Population 2001 (Special Migration Statistics Table SMS101).

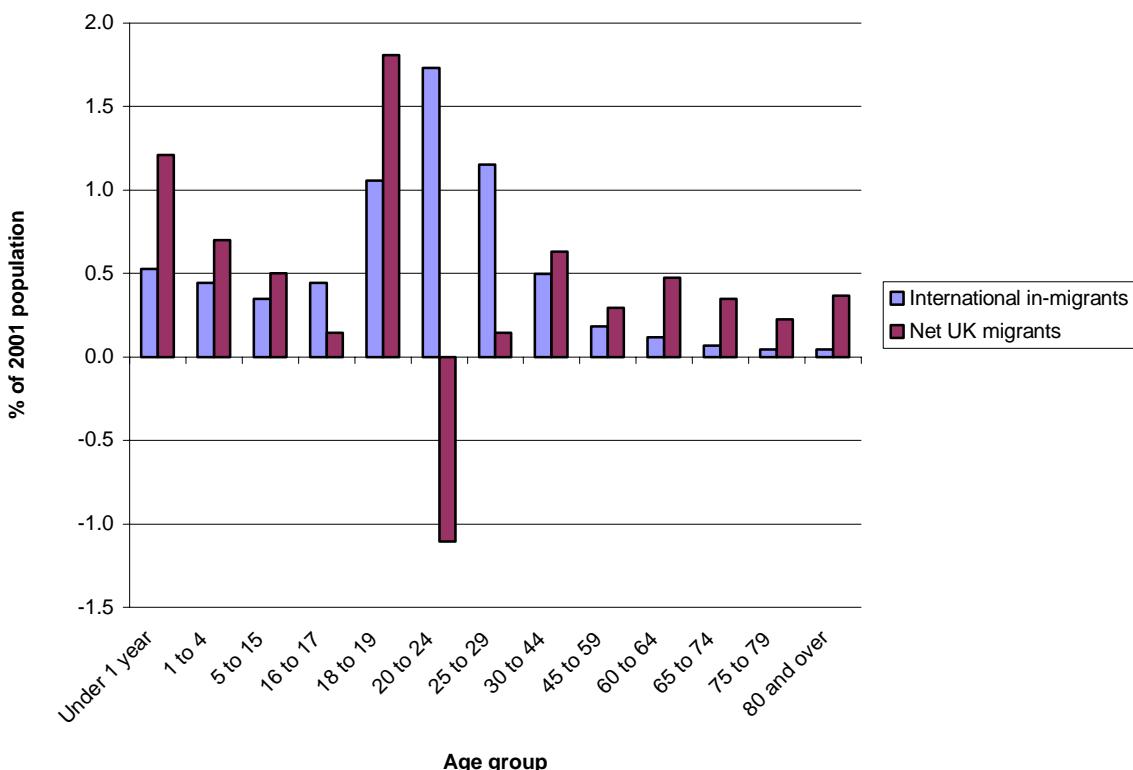
Figure 9 presents the age profile of net migration from/to the rest of the UK and from overseas (as a percentage of the resident population in the East Midlands in 2001). The region gained population in nearly all age groups, but the largest gains were of 18-19 year olds and those aged under a year. The region lost people aged 20-24 years and had a very small net gain of 25-29 year olds. International migrants were most likely to be aged 20-24, and there were also marked gains in the 18-19 and 25-29 year old age groups. This chart highlights the importance of international migrants in boosting the numbers of younger adults in the region.

More recent migration flows from the A8 countries (occurring on a large scale from 2004 onwards and so not captured in the 2001 Census) are predominantly of young people (see *Figure 10*). 42 per cent of WRS approvals (over 15,600) in the East Midlands over the period from May 2004 to June 2006 were for people aged 18-24 years and a further 37 per cent (just over 13,600) were for people aged 25-34 years (compared with 39 per cent for the UK).¹⁴

¹³ This feature is also evident from administrative and other survey sources, although sample sizes at regional and local level limit the degree of disaggregation by age that is possible.

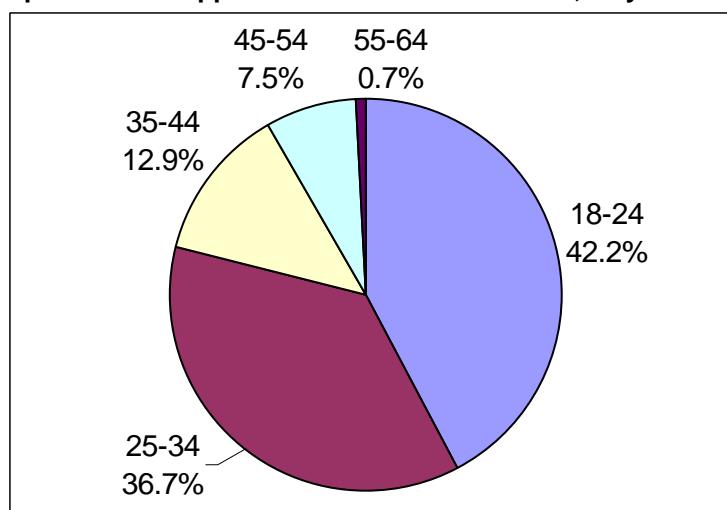
¹⁴ Overall, the age profile of WRS approvals in the East Midlands is similar to that in the UK.

Figure 9: Age profile of net and international migration to the East Midlands, 2000/01



Source: Census of Population 2001 (Theme Table 33).

Figure 10: Age profile WRS approvals in the East Midlands, May 2004 – June 2006

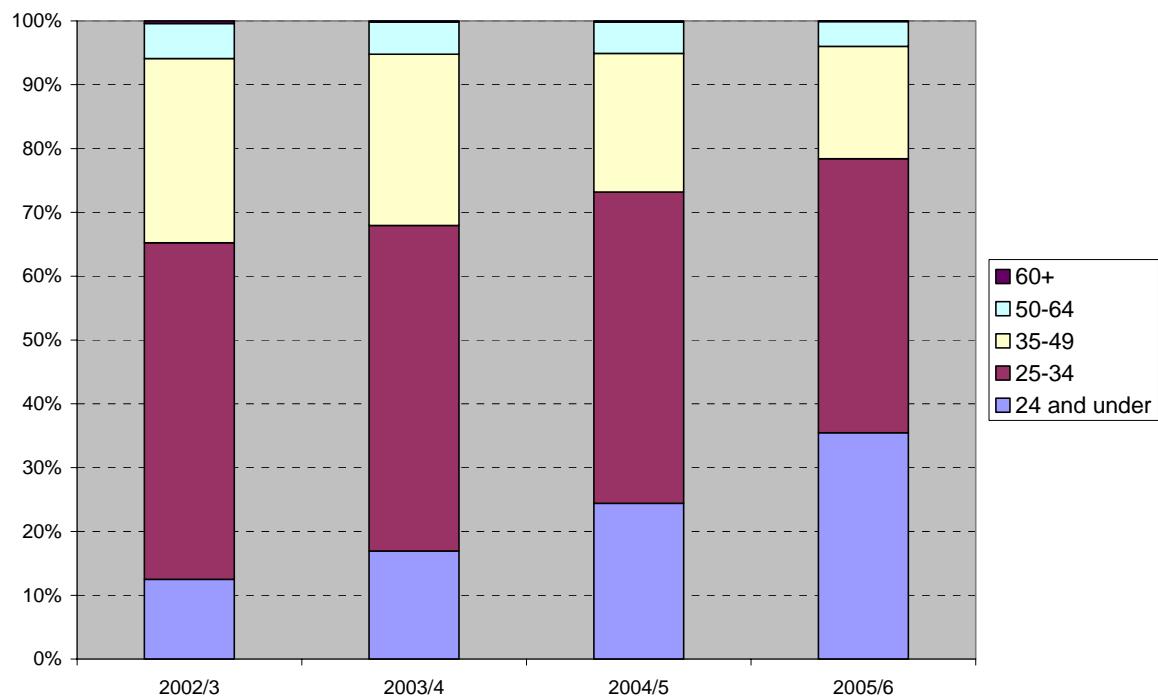


Source: WRS applications, Fol request.

Analysis of data from the 2005 APS reveals that the age profile of Accession country migrants is even more skewed towards the younger adult age groups than those of migrants from other national origins, so underlining the contribution of recent migrants in increasing the number of people in younger age groups in the context of population ageing. The changing age profile of overseas NINO registrations also emphasises the increasingly youthful age profile of recent migrants (see *Figure 11*). There has been a clear shift in age

composition towards the younger age groups over the period 2002/3 to 2005/6.¹⁵ At the start of this period, over half were aged between 25 and 34, and 29 per cent were aged 35 to 49 and only one-eighth were aged under 25. In 2005/6, 43 per cent were aged 25 to 34 years, but over a third (nearly 36 per cent) were aged under 25.

Figure 11: Age profile (percentage of total) of overseas NI No registrations, East Midlands, 2002/3 – 2005/6



Source: NI No registrations data

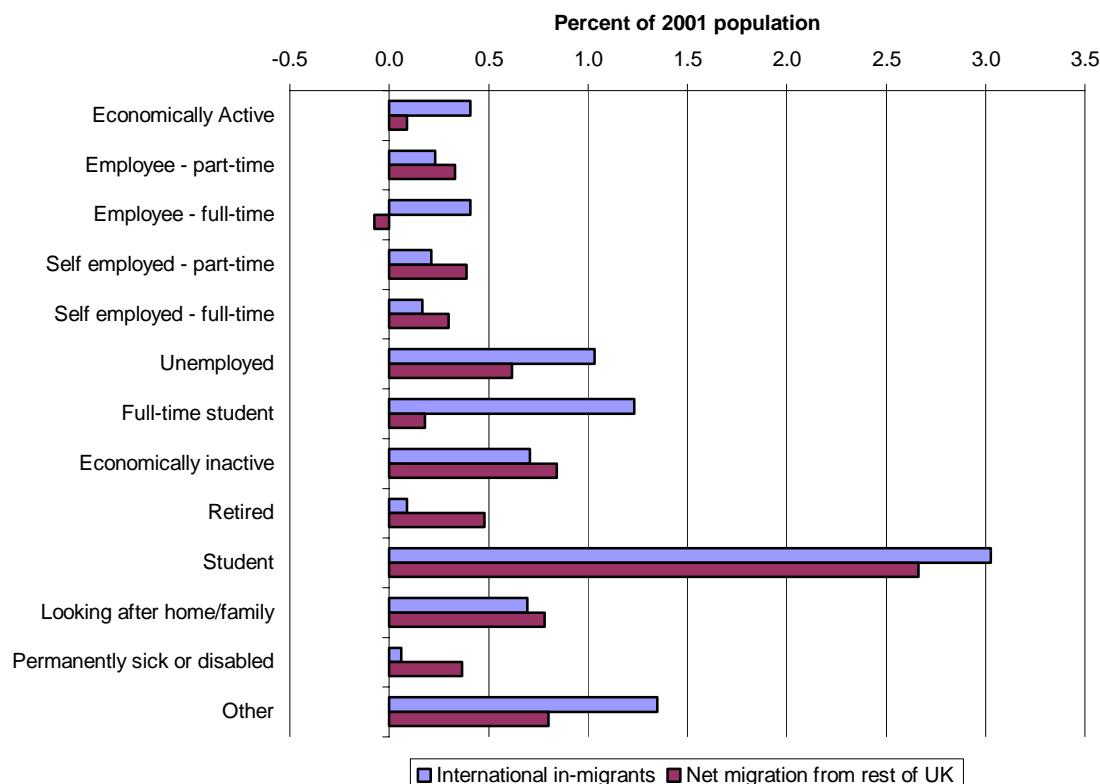
2.2.4 Economic position

The 2001 Census provides detailed information on the economic position of migrants.¹⁶ Figure 12 demonstrates the importance of student flows in migration in 2000-2001. Net migration of (economically inactive) students from the rest of the UK increased the student population by 2.7 per cent, while international migration increased it by 3 per cent. International migrants increased the number of economically active students by 1.2 per cent. Net UK migration and international migration each accounted for a small increase in the working population, but increased the unemployed total by 0.6 per cent and 1 per cent respectively. UK migrants were more likely than international migrants to come to the region to retire, but international migrants were more likely to be economically inactive (other).

¹⁵ This is consistent with the youthful age profile of A8 migrants.

¹⁶ Sample size constraints limit the availability and robustness of data on smaller economic position categories at regional and local level from other survey sources, while administrative information sources relate (mainly) to those in employment.

Figure 12: Economic status of net and international migration to the East Midlands, 2000/01



Source: Census of Population 2001 (Theme Table 33).

2.2.5 Occupation and industry

Ideally, in order to gain an insight into whether migrants occupy particular employment niches, it is desirable to examine the distribution of migrants and non-migrants by occupation and industry. Sample size constraints obviate the ability to generate robust industry by occupation data for migrants in most surveys. However, some analysis is possible using data from the 3% individual Sample of Anonymised Records (SAR) from the 2001 Census.¹⁷ Using two definitions of migrant workers:

- people aged 16-59/64 born outside the UK
- people aged 16-59/64 born outside the UK, who arrived in the UK in the year before the Census was taken (i.e. 2000-1)

a chi-square value was used to identify significantly large concentrations of migrant workers in the occupation by industry tables;¹⁸ (for details of statistically significant concentrations of migrants in the East Midlands in 2001 see Annex 7). The analysis highlights:

- the skilled nature of international migrants in a number of sectors,
- the migrant-specific nature of some employing sectors (e.g. domestic service and international organisations);
- the importance of migrants in the health and social care sector – as health professionals, health & social welfare associate professionals and caring personal service occupations;
- the importance of migrants in hospitality and catering – as managers & proprietors, in other skilled trades and in elementary occupations; and

¹⁷ This is an anonymised 3 per cent sample of individual returns, covering the whole of the UK and containing around 1.8 million people.

¹⁸ The expected distribution was that of all workers, and the chi-square value is calculated as $([\text{observed}-\text{expected}]/\text{expected})^2$ in each cell.

- the concentration of the non-UK born people in process, plant & machine operative posts in manufacturing.

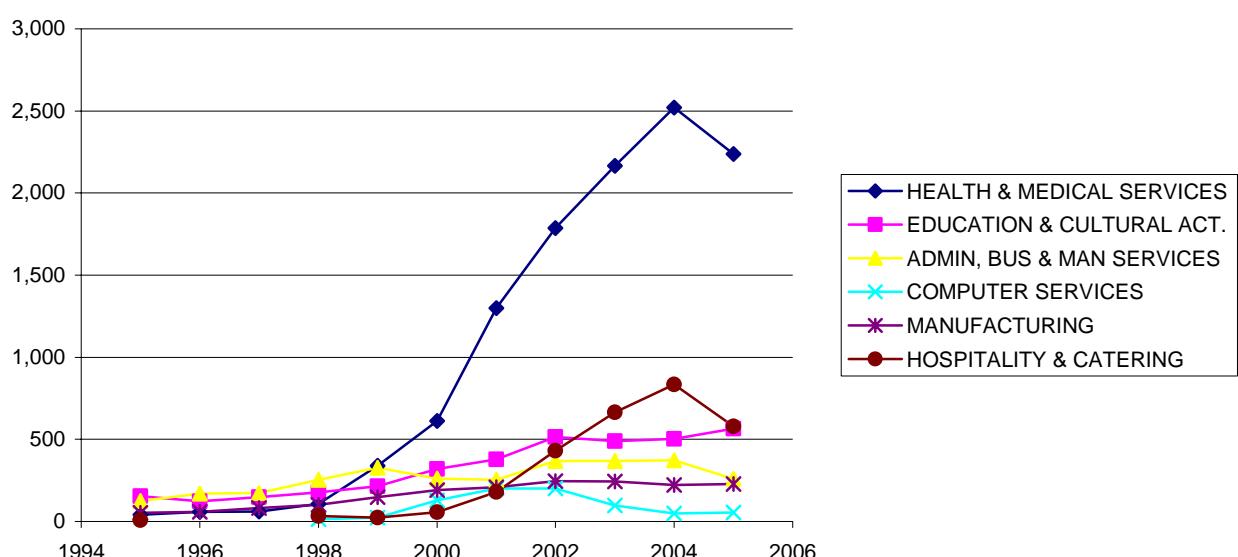
Since other data sources are insufficiently large to enable replication of such occupation by industry analysis at the regional level or do not support the necessary crosstabulation of industry by occupation, it is necessary to resort to profiling of migrants by industry and occupation in turn. A detailed discussion of 'migrant density of employment' (using LFS data) as a precursor to measurement of the impacts of migrants on the East Midlands labour market is provided in 3.2.1. In 2.2.6 and 2.2.7 a brief overview of the industrial and occupational profile of migrant employment from the 2005 APS is presented, along with data on the industrial and occupational breakdown of work permit approvals and approved WRS applications.

2.2.6 Industry

Analysis of 2005 APS data for the East Midlands reveals that migrants are concentrated in Hotels & restaurants; Transport, storage & communication; Real estate, renting & business activities; Health & social work and Manufacturing to a greater extent than UK-born workers. Together these five industries account for around three-fifths of migrant employment compared with half of employment for UK-born workers.

Using administrative data sources it is possible to obtain insights into the way in which particular migration routes are directed towards particular industries. In data on Work Permit approvals information is provided on the '20 largest industries' only. In 1995, Education & cultural activities and Administration, Business & management services were the most important recruiters of labour from outside the EEA, followed by Manufacturing and then the Health sector. By 2000, the pattern was rather different, with the Health sector accounting for nearly half of work permit approvals, with Education & cultural activities accounting for the next largest share, well behind the health sector. In 2005, Health & medical services still recruited nearly half of all workers arriving via this route, but recruitment to Hospitality & catering exceeded that for Education & cultural activities. *Figure 13* outlines the trends in work permit approvals for selected industries.

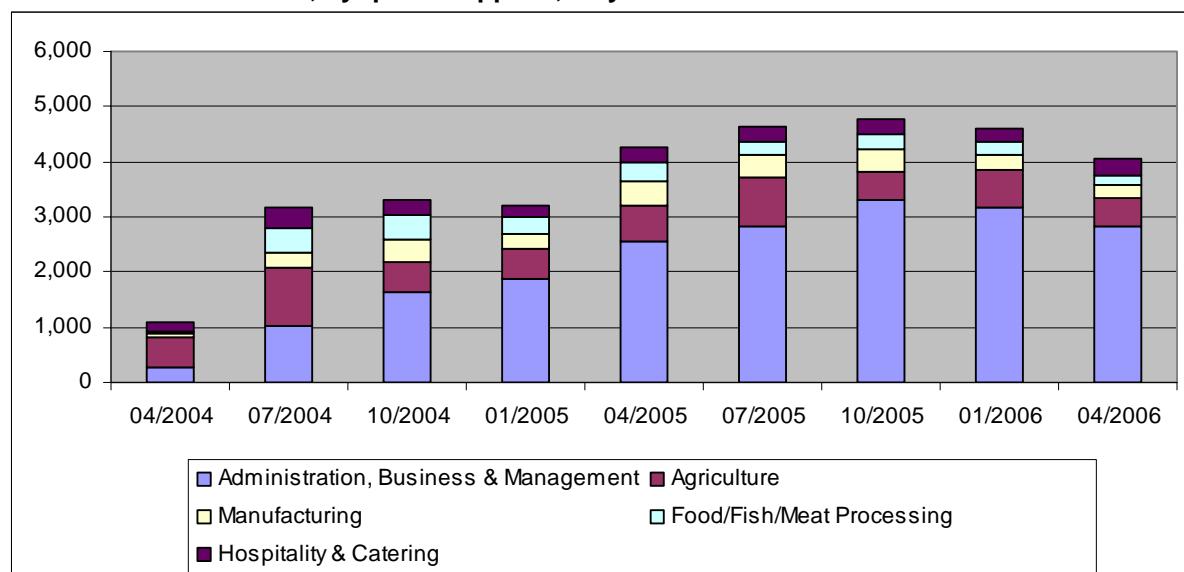
Figure 13 Work permit approvals in the East Midlands for selected industries, 1995-2005



Source: Work permits, Fol request.

The industrial profile of A8 migrants recorded by the WRS is rather different. Only a limited number of 'industries' are identified in the WRS data, and one of these (Administration, Business & Management) accounts for more than half of all registrations in the East Midlands and a third of all registrations in the UK,¹⁹ so limiting the usefulness of the industrial data.²⁰ Agriculture accounts for a further 16 per cent of registered workers in the region, compared with less than 12 per cent across the UK. By contrast, in the East Midlands only just over 6 per cent of registered workers are engaged in Hospitality & Catering, compared with over a fifth of registered workers across the UK as a whole. *Figure 14* shows the quarterly changes in applications by registered workers in the 'top 5' industries for migrants in the East Midlands over the period from May 2004 to June 2006. Some seasonal increase in applications in Agriculture is evident over the summer period. A trend is also apparent for Administration, Business & Management to account for an increasing share of registrations over the period.

Figure 14: Top 5 industries in which registered workers are employed in the East Midlands, by quarter applied, May 2004 – June 2006



Source: WRS applications, Fol request.

In most local areas, as regionally, the largest single concentration of migrants is in Administration, Business and Management. This is particularly the case in the large cities (Northampton, Derby, Nottingham and Leicester) and adjacent districts, where over two-thirds of all local approvals are in this category. Agriculture accounts for at least a third and up to three fifths of local approvals in Lincolnshire districts (excluding South Kesteven and Lincoln). About 70 per cent of all WRS approvals for Agriculture in the East Midlands over the period from May 2004 to June 2006 were in Boston, South Holland and North Kesteven.

2.2.7 Occupation

Analysis of 2005 APS data for the East Midlands reveals that relative to UK-born workers, migrants are especially concentrated in the following occupations (at Standard Occupation Classification [SOC] minor group level): Health Professionals, Elementary Process Plant Occupations and Process Operatives. Occupations with the next largest concentrations of

¹⁹ It is likely that this is used as a 'catch all' category and also that it covers employment/ labour agencies recruiting migrants. The industrial coding should be interpreted with caution.

²⁰ In the Accession Monitoring Reports issued by government departments the term 'occupation group' is used instead of 'industry', (since the Standard Industrial Classification [SIC] is not used). To avoid confusion with conventional use of 'occupation', the term 'industry' is used here.

migrants include Research Professionals, Health Associate Professionals and Assemblers & Routine Operatives. It is salient to note that this list includes occupations from both ends of the occupational spectrum – i.e. it includes occupations requiring higher level skills and those with much more limited skills requirements.

In data on Work Permit approvals information is provided on the '20 largest' job titles only; (note that it is necessary to exercise caution in interpreting the data, since 'other occupations', 'manager unspecified' are among the job titles). In 2000, health, IT and educational occupations dominated the top of the rankings, with nurses accounting for a fifth of all approvals in the East Midlands. By 2005, nurses accounted for 30 per cent of total approvals, and other health and medical occupations a further 10 per cent – illustrating the importance of NHS recruitment at this time. The 'occupations' featuring in the work permit data illustrate the global nature of regional recruitment not only in the health sector, but also in the education and hospitality sectors.

Likewise, WRS occupational data relates to job titles and SOC codes are not provided.²¹ However, coding of job titles to the SOC reveals that WRS approvals in the East Midlands (as nationally [see Salt and Miller, 2006]) are skewed towards less skilled occupations. It is estimated that Process, Plant and Machine Operatives (SOC Major Group 8) accounts for just over half of the cumulative total of registered workers in the East Midlands over the period to June 2006, with Elementary Occupations (SOC Major Group 9) accounting for a further 37 per cent. Hence, it is clear that the vast majority of registered workers are filling low skilled jobs. More detailed disaggregations at SOC Sub-Major Group level reveal that registered workers are overwhelmingly concentrated in two Sub-Major Groups: Process, Plant and Machine Operatives (SOC Sub-Major Group 81) with 48 per cent of registered workers, and Elementary Trades, Plant and Storage Related Occupations (SOC Sub-Major Group 92) with 30 per cent of registered workers. Within these SOC Sub-Major Groups the single largest concentration of registered workers is Food, drink and tobacco process operatives with over 17,600 registrations (47 per cent of the cumulative total). The next largest occupations are Elementary Goods Storage Occupations, Elementary Agricultural Occupations and Elementary Process Plant Occupations, each accounting for 3,200-3,800 registrations over the period to June 2006.

It is clear from a comparison of the Work Permit and WRS data that the different migration 'routes' feed different occupations, with the professionals and associate professionals accounting for a substantial share of work permit approvals and those from A8 countries captured by the WRS are predominantly in operative and elementary occupations. Given the changing importance of different migration 'routes' there is some evidence away from a 'bi-polar' occupational distribution of migrants towards a greater share in less skilled occupations.

²¹ In the Accession Monitoring Reports information is presented on the 'top 20' occupations in which registered workers are employed. A response to a FOI request for WRS occupational data for the East Midlands yielded output for around 260 occupational titles, which were coded to the 2000 SOC using CASCOT (Computer-Assisted Structured Coding Tool) developed at IER.

Part 3: Impact of migrants on the East Midlands labour market

3.1 Introduction to possible impacts

Key points

- Migration may be beneficial to the East Midlands economy if it addresses labour shortages and skills deficiencies and has a positive effect on output.
- It is possible that an increase in the number of migrants could reduce pressure on wages.
- There are concerns that migration may have a detrimental effect on some sub-groups in the labour market, especially via reducing employment rates and increasing unemployment rates.

Immigration is a key topic of popular and policy debate in the UK. Key foci of attention include the costs and benefits of migration and the impact of migrants on the labour market – at national, regional and local levels.

Employers may recruit migrant labour for a number of reasons, including to perform jobs requiring specialist skills not available in the UK; to fill vacancies for which there are not enough UK applicants; to fill temporary or seasonal vacancies; and in accordance with organisational policies on international transfers, secondments, etc. From an employer perspective there may be possible economic benefits (especially in the short-term) of recruiting migrants, including:

- addressing labour shortages and skills deficiencies;
- saving on costs of training by recruiting staff with the necessary skills;
- reduced pressure on wages - workers from countries with lower wage levels may be willing to accept lower wages than UK-born workers and stronger competition for jobs may mean less upward pressure on wages;
- migrants are younger on average than indigenous workers and tend to have better educational qualifications – this may lead them to be more productive.

Research with employers (Dench *et al.*, 2006; Anderson *et al.*, 2006) has revealed that some employers prefer migrants (especially eastern European) to British workers, because they are perceived to be better employees and have a better attitude to work.

There may also be *possible costs* associated with recruitment of labour migrants from outside the UK, including:

- a reduction in employment rates amongst other groups in the labour market as employers use migrants to replace UK-born workers (i.e. a displacement effect);
- an increase in the unemployment rate and a rise in redundancies;
- a lower probability of some groups – especially the most vulnerable (i.e. those with poor skills/ in low wage segments of the labour market) - finding sustainable employment (in the face of increased competition from migrants);
- reductions in vacancies notified to Jobcentre Plus – as employers use alternative recruitment channels to employ migrants;
- employers may address skill shortages or skill gaps more easily by importing labour (whether skilled or unskilled) than by training their own staff²² or by capital investment, so undermining the longer-term viability of their businesses.

²² Analysis of the National Employer Skills Survey shows that employers in the East Midlands display a greater propensity than the national average to look externally to address skill gaps, rather than investing in training existing staff.

To date, empirical analysis of Labour Force Survey for the UK by Dustmann *et al.* (2005) found no evidence that immigration has effects on employment, participation, unemployment or wages at aggregate level. Analyses by the Department for Work and Pensions (Portes and French, 2005; Gilpin *et al.*, 2006) have found no discernible statistical evidence to suggest that migration from A8 countries has been a contributor to the rise in claimant unemployment in the UK. The overall conclusions of previous analyses are that overall the impact of migration from A8 countries has been modest, but broadly positive. However, it is possible that the impact of migration on the labour market may vary:

- *over time* - i.e. the impact of migration may be more positive/ negative than revealed in previous studies;
- *across space* – i.e. there may be differential impacts at national/ regional/ local scales.

The broader social impact of migration in the UK (as well as in countries of origin) has also been the subject of debate. Key issues here include duration of stay of migrants, whether families will follow, entitlement to benefits, implications for service provision and community cohesion, etc. It is recognised that these wider issues are important, but they are not considered here. Instead analysis focuses on impacts on wages (3.2.2), employment (3.2.3) and unemployment (3.2.4) and on the migrant contribution to output (3.3).

3.2 Impacts on wages, employment and unemployment

3.2.1 Defining ‘migrant dense’ sectors and occupations for economic analysis

Introduction

In order to set the foundation for econometric work on the impact of migrants on wages, employment and unemployment, analysis was conducted using LFS data to identify the distribution of migrants by industry and occupation. Values on the percentage employment of migrants (termed ‘density of employment’) by sector and occupation of employment are compared to those of UK-born counterparts to arrive at a list of ‘migrant dense’ sectors and occupations of employment. The analysis of migrant density of employment is based on migrant workers (defined on the basis of country of origin and year of arrival to the UK) who appear in the LFS from 2001 onwards. In order to maximise sample size, and thereby capture as many migrant workers as possible in the East Midlands region, successive waves of the LFS are merged between 2001 and 2006²³ (see Annex 9 for further details). The analysis of density of employment should therefore be treated as a quasi-snapshot based on average employment during this period.

Methodology

Here we define ‘density of employment’ as measuring the percentage of all workers from a particular sub-group (in this case migrant or UK-born workers) working within a sector or occupation - i.e. for sector or occupation *i*, density of employment ($e_i^{\text{non-UK}}$) is defined as:

$$e_i^{\text{non-UK}} = \% \text{ of (sub-group) workforce employed in sector / occupation } i$$

This is calculated separately for UK-born and migrant workers, based on post-1991 and post-2001 definitions of migrants. When using the LFS data percentages are calculated based on the weighted rather than raw sample numbers. Density of employment was defined with respect to the following industries and occupations:

- Industry Sector (17-fold classification of industry)

²³ The authors recognise that in some ways this is not ideal since the situation with migrant workers has changed even during this interim period. However, the trade off and benefit of merging datasets is based on considerations relating to sample size.

- Industry Division (59-fold classification of industry)
- SOC2000 2 digit (25-fold classification of occupation)
- SOC2000 3 digit (81-fold classification of occupation)

Density of employment (per sector and occupation) was calculated separately for UK-born and migrant workers, so giving separate measures of density of employment for each group per sector or occupation of employment (for details of the density calculations see Annex 9). The densities of employment can be denoted as:

- $e(i, \text{UK-born})$; and
- $e(i, \text{migrant})$,

where the analysis can be repeated for alternative definition of migrants (i.e. based on post-1991 and post-2001 definitions). Using these figures a *migrant dense area of work* is defined as a sector or occupation in which the density of employment amongst migrant workers, $e(i, \text{migrant})$, is greater than the density of employment amongst UK-born workers, $e(i, \text{UK-born})$ – i.e. a migrant dense area of work is one in which:

$$e(i, \text{migrant}) > e(i, \text{UK-born})$$

As well as a discrete definition of migrant dense sectors (as defined above) the degree of relative *migrant density*²⁴ was calculated, based on the ratio of the measures of density of employment for the two groups (migrants and UK-born workers). i.e.

$$\frac{e(i, \text{migrant})}{e(i, \text{UK-born})}$$

Migrant dense industries

The left-hand panel of *Box 1* lists migrant dense industries for the East Midlands region – defined as those which are migrant dense for *both* post-1991 and post-2001 migrants; (for details of the measures of employment densities for post-1991 and post-2001 migrants compared to UK-born workers, as well as relative employment of migrants which is the ratio of migrant to UK-born employment using the post 1991 definition, see Annex 10). Migrant dense industry sectors account for 66 per cent of employment of post 1991 migrants and 72 per cent of post 2001 migrants, compared with 50 per cent of the UK-born in employment. At the more detailed industry division level, migrant dense industries account for 61 per cent of employment of post 1991 migrants and 74 per cent of post 2001 migrants, compared with 37 per cent of the UK-born in employment. A comparison of the regional pattern of industrial employment of migrants with the UK pattern demonstrates similar patterns of migrant employment by industry.

The right-hand panel of *Box 2* lists migrant dense occupations for the East Midlands region – defining a migrant dense occupation as one which is migrant dense for *both* post-1991 and post-2001 migrants (again, for details of the measures of employment densities for post-1991 and post-2001 migrants compared to UK-born workers, as well as relative employment of migrants which is the ratio of migrant to UK-born employment using the post 1991 definition, see Annex 10). At the 2-digit level of the SOC post 1991 migrant dense occupations account for 62 per cent of occupational employment of post 1991 migrants and 76 per cent of employment of post 2001 migrants, compared with just under 38 per cent of occupational employment of UK-born workers. At the more detailed 3-digit level of the SOC the proportions are similar, with migrant dense occupations accounting for 59 per cent of occupational employment of post 1991 migrants, 71 per cent of employment of post 2001 migrants and 27 per cent of employment of UK-born workers. These percentages indicate that post 2001 migrants are particularly concentrated in migrant dense occupations, and

²⁴ This measure is migrant-focused: it describes where migrants concentrate.

especially in elementary occupations (see Annex 10). The positive correlation between the East Midlands and the UK patterns of occupational concentration of migrants suggests some similarity in patterns of migrant employment, although there may be greater occupational concentration of post-2001 migrants in the East Midlands.

Box 1: Migrant dense industries and occupations in the East Midlands

SIC industry sector		SOC 2 digit	
H *	Hotels & Restaurant	22 *	Health Professionals
K *	Real Estate, Renting	72	Customer Service Occupations
N *	Health & Social Work	91 *	Elementary Trades, Plant and Storage Related
D	Manufacturing	81	Process, Plant and Machine Operatives
I	Transport, Storage	92 *	Elementary Administration and Service
		23	Teaching and Research Professionals
		24 *	Business and Public Service Professionals
		82	Transport & Mobile Machine Drivers and Operatives
		61 *	Caring Personal Service Occupations
SIC industry division		SOC 3 digit	
18	Manufacture of Clothing	232 *	Research Professionals
15 *	Manufacture of Food Products and Beverages	913 *	Elementary Process Plant Occupations
32 *	Manufacture of Radio, Television Equipment	244 *	Public Service Professionals
55 *	Hotels and Restaurants	811 *	Process Operatives
91	Activities of Membership Organisations NEC	221 *	Health Professionals
51	Wholesale Trade (excl. Motor Vehicles)	213 *	Information And Communication Technology Professionals
74	Other Business Activities	922 *	Elementary Personal Services Occupations
26 *	Manufacture of Other Mineral Products	721	Customer Service Occupations
17	Manufacture of Textiles	924	Elementary Security Occupations
25	Manufacture of Rubber and Plastic Products	813	Assemblers And Routine Operatives
85 *	Health and Social Work	611 *	Healthcare And Related Personal Services
35	Manufacture of Other Transport Equipment	321 *	Health Associate Professionals
60	Land Transport; Transport Via Pipelines	923 *	Elementary Cleaning Occupations
63 *	Auxiliary Transport Activities	521	Metal Forming, Welding And Related Trades
		822	Mobile Machine Drivers And Operatives
		243	Architects, Town Planners, Surveyors
		821	Transport Drivers And Operatives

Source: LFS (2001-2006)

Note: (1) Industries and occupations are ranked by relative employment of migrants using the post 1991 definition.

(2) * Indicates an industry or occupation which is also found to be migrant dense for the UK as a whole.

(3) Industries or occupations where LFS regressed estimates of total employment in the East Midlands is less than 3,000 are treated as being non-reportable and are therefore excluded from the analysis

3.2.2 Migrants and wages

Key points

- Sizeable wage gaps exist between migrant and UK-born workers, with the latter earning more than the former.
- Post 2001 migrants display lower wages than post 1991 migrants. For the most part this reflects the greater concentration of recent migrants in lower skilled process and elementary occupations.
- Migrants tend to be concentrated in industries where wages are significantly lower than average.
- In the East Midlands and the UK pay has grown fastest in recent years in low paid sectors.
- In the East Midlands wage growth in migrant dense sectors is not significantly different from that in other sectors.
- Migrant employment by occupation tends to show a bi-polar distribution. Migrants tend to be concentrated in occupations where wages are significantly higher than average (e.g. ICT professionals, Health professionals) or in occupations where wages are significantly lower than average (e.g. in operative and elementary occupations).
- In the East Midlands median wage growth is variable across migrant dense occupations. However, overall wage growth in migrant dense occupations is not significantly different from that in other occupations.
- For the region as a whole there is no statistically significant evidence that migrants dampen wage growth: being employed in a migrant dense sector has not had a detrimental impact on wage growth.

Introduction

The aim of this section is to consider aspects of pay in relation to migrant workers. The analysis looks at wage patterns, in terms of wage gaps between UK-born and migrant workers (as measured in differences in median earnings), and examines the distribution of pay in migrant dense industries and occupations.

The impact of migrant workers on earnings at a sectoral and occupational level is examined. The basic hypothesis under consideration is that in sectors/ occupations where migrant workers are most likely to be found (i.e. in migrant dense sectors and occupations) wage growth may be suppressed due to a relative abundance of cheap labour. Where evident, this kind of 'wage suppression' may be seen as having a negative impact for UK-born workers, but may be positive for businesses in the East Midlands region. On the other hand a counter hypothesis exists, based on the notion that migrant worker supply responds to labour and/ or skill shortages (i.e. migrant workers are most likely to be attracted to sectors/ occupations where supply of indigenous labour/ skills are in short supply or sector demand is expanding beyond the ability of the indigenous workforce to meet the requirements of employers). In these instances it is reasonable (on the basis of standard economic theory) to suppose that excess demand for labour will manifest itself in relatively high wage growth, leading to a positive association between wage growth and migrant density.

In order to analyse these hypotheses wage growth in migrant dense sectors and occupations of employment is compared with wage growth in the economy as a whole, in order to see whether statistically significant differential wage growth between migrant dense and non migrant dense sectors and occupations is apparent. Earnings levels and growth are analysed using data from the LFS (see Annex 11).

Wage gaps between UK-born and migrant workers

There are sizeable wage gaps between UK-born and migrant workers in the East Midlands: UK-born workers typically earn £8.51 per hour (at spring 2006 levels) compared to £7.31 for post-1991 migrants and £6.21 for post-2001 migrants. The size of the wage gap for the latter group is notable in particular. A similar pattern of differentials is evident at UK level, although in the East Midlands median wages are lower than nationally. It is likely that this significant 'wage gap' between UK-born and migrants arises from compositional effects of employment (i.e. the concentration of migrant workers – especially recent migrants - in low paid industries and occupations and differences in individual characteristics between migrants and UK-born workers). Further details on wage gaps can be found in Annex 11.

Analysis of wages by industry

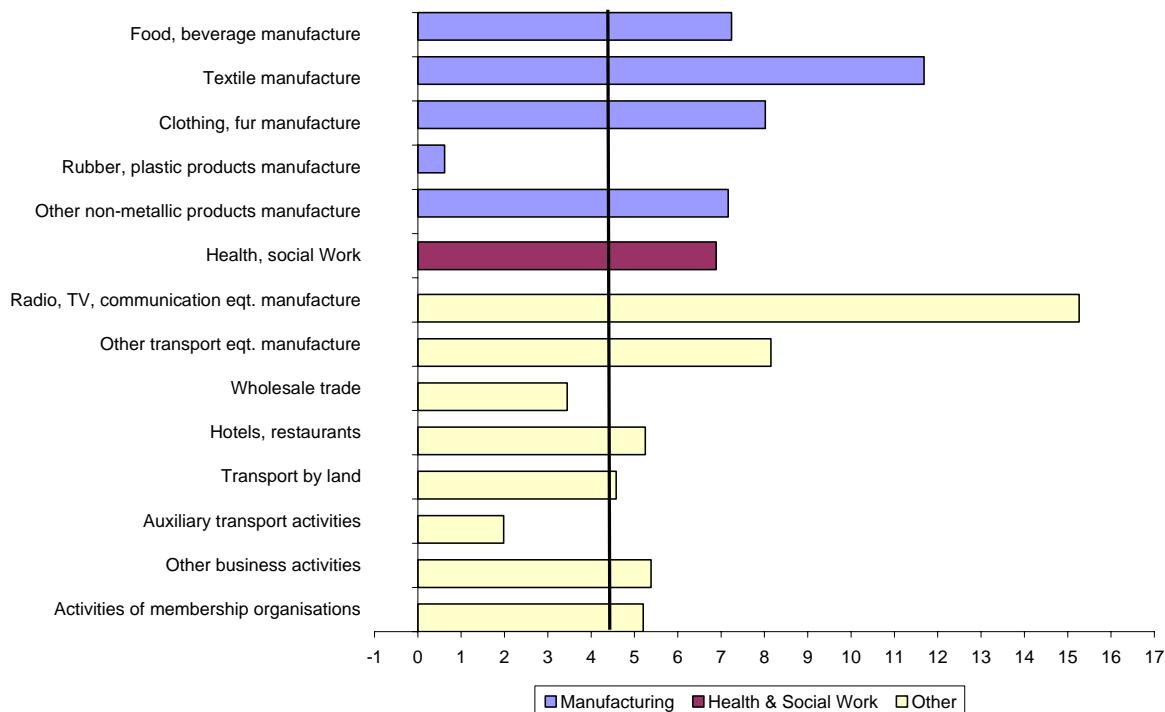
Since migrants are concentrated in particular industries, if migrants have a dampening effect on wages this might be expected to occur in migrant dense industries. Hence analysis was conducted of wage levels and wage growth by industry, placing particular emphasis on contrasting wages (and particularly growth in wages) in migrant dense industries of employment compared to all sectors of the economy.

A series of models of the effects of migrant dense sectors on wages were constructed (see Annex 11 for details of the modelling analysis). The first model based on earnings data for the whole of the UK but including an East Midlands specific effect on wage level and wage growth, showed evidence of statistically significant negative effects of being employed in many of the migrant dense sectors in terms of median level of pay – i.e. the following migrant dense sectors, most of which are characterised by low-skilled, low pay employment in any case, all have a negative 'penalty of pay' compared to industries which are not classified here as migrant dense: Food, beverage manufacture; Textile manufacture; Clothing, fur manufacture; Rubber, plastic products manufacture; Wholesale trade; Other business activities; Activities of membership organisations.

With respect to differential effects on wage growth, however, results are less strong. Wage growth over the period 2001-06 for industries which were not migrant dense averaged 3.95 percent per annum. However, most sectors which were classified as being migrant dense showed no statistically significant difference in growth rate with this figure. A second model relating exclusively to the East Midlands region (see Annex 11) showed similar results, with migrant dense sectors showing negative wage differentials but insignificant wage differences in wage growth. For the East Midlands, only two migrant dense sectors show significantly different wage growth to that for non-migrant dense sectors: the textile sector and 'other business activities' sectors show significantly faster wage growth than one would expect based on non-migrant dense sectors.

Analysis of wage growth by migrant dense industry in the East Midlands (see Annex 11 for details) shows that median wage growth in many of the migrant dense industries is greater than the all sector figure (shown by the black line at 4.5 per cent in *Figure 15*). This contradicts the notion that high migrant density will be associated with low pay growth. It should be noted, however, that these are predominantly low paid sectors and there is evidence for both the East Midlands and UK that pay has grown fastest over recent years in low paid sectors. Higher wage growth in migrant dense sectors reflects this pattern. Further analysis of average wage growth in the East Midlands over the period 2001-06 by industry division against relative migrant density, for migrant dense sectors revealed a positive (but weak) correlation whereby sectors which are relatively most dense in migrants experience greatest wage growth. Again, this contradicts the notion that high migrant density will be associated with low pay growth.

Figure 15 Median wage growth in migrant dense sectors (East Midlands)



Source: LFS merged datasets 2001-06.

Analysis of wages by occupation

Analyses conducted by industry were replicated by occupation in order to explore whether migrants have a dampening effect on wages in migrant dense occupations (for details of the models see Annex 11). Model results revealed evidence of a strong and statistically significant impact on pay of being employed in all of the migrant dense occupations in terms of median level of pay, with significantly higher wages for ICT Professionals; Health Professionals; Research Professionals; Architects, Town Planners, Surveyors; Public Service Professionals; and Health Associate Professionals, but with significantly lower wages for all other migrant dense occupations. Results for median wage growth were less strong with most occupations (at SOC 3-digit level) which were classified as being migrant dense showing no statistically significant difference in growth rate with the figure for non-migrant dense occupations. The exceptions to this were Healthcare and Related Personal Services and Transport Drivers and Operatives which experienced significantly faster median wage growth and Process operatives which experienced significantly slower median wage growth.

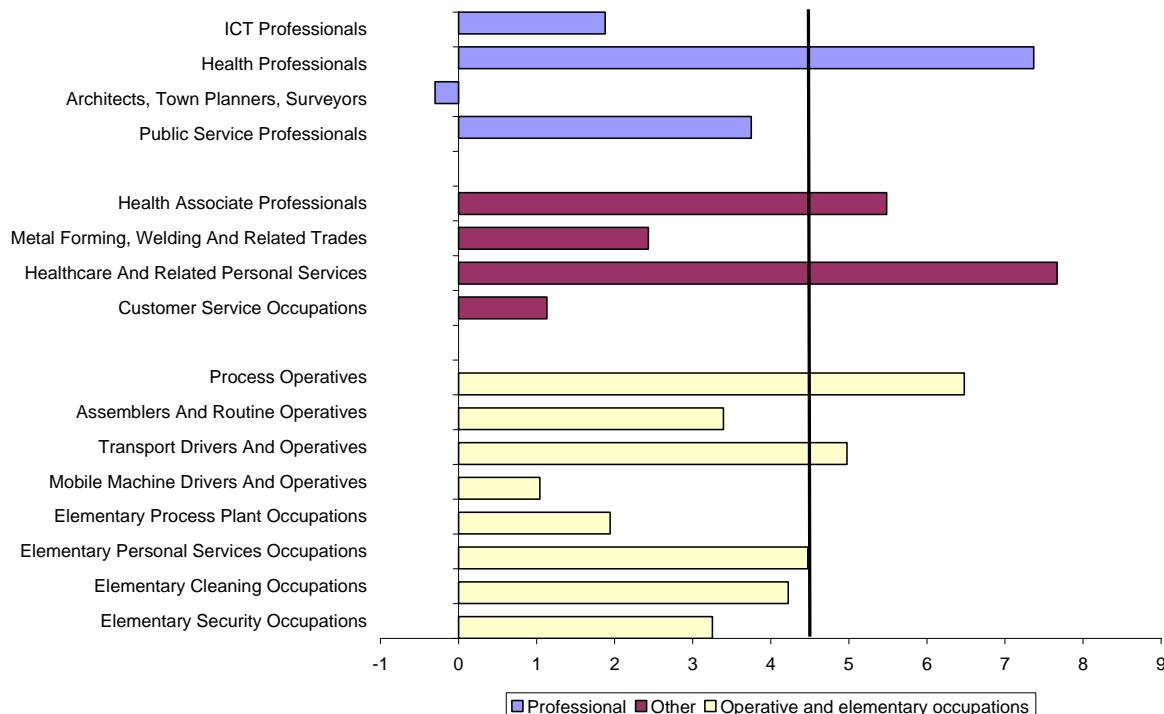
The dichotomy of migrant dense occupations in terms of wage levels is very interesting. Amongst migrant dense occupations two main clusters of occupations clearly stand out – reflecting a bi-polar distribution with migrants contributing both higher-level and low level skills:

- Professional occupations (SOC major group 2)
- Operative and elementary occupations (SOC major groups 8 and 9)

In a model using a 3-fold occupational categorisation, with (1) migrant dense professional occupations, (2) migrant dense operative and elementary occupations and (3) other migrant dense occupations, the pattern of significantly higher wage levels in migrant dense professional occupations and significantly lower wage levels in migrant dense elementary and operative occupations is confirmed. Using a detailed occupational disaggregation (SOC 3-digit) of migrant dense sectors, migrant dense occupations in the East Midlands show insignificant differences in wage growth compared to non-migrant dense occupations.

Analysis of wage growth by migrant dense occupation in the East Midlands (see Annex 11 for details) shows that median wage growth is variable across migrant dense occupations (*Figure 16*), with no strong evidence of a systematic effect of migrant dense occupations *per se*. Further analysis of average wage growth in the East Midlands over the period 2001-06 by occupation (3-digit SOC) against relative migrant density, for migrant dense sectors revealed a positive (but weak) correlation whereby sectors which are relatively most dense in migrants experience greatest wage growth. This contradicts the notion that high migrant density will be associated with low pay growth.

Figure 16 Median wage growth in migrant dense sectors (3 digit SOC)



Source: LFS merged datasets 2001-06.

3.2.3 Employment impacts of migrants

Key points

- Migrant employment is growing more rapidly than that of UK-born workers in the East Midlands, although there is some tendency for migrants to cluster in declining occupations.
- Migrants display concentrations in a number of sectors experiencing overall (and long-term) employment decline. The shrinking levels of employment of UK-born workers in such industries where migrant employment is most dense could well have occurred without the growth of employment of migrants. In this case, migration could have a positive impact and could contribute to meeting replacement demand.
- This tendency is particularly the case in low paid occupations which are migrant dense (SOC Major Groups 8 and 9) but less so in higher skilled areas of work.
- It is unclear whether this displacement is voluntary or involuntary.

Introduction

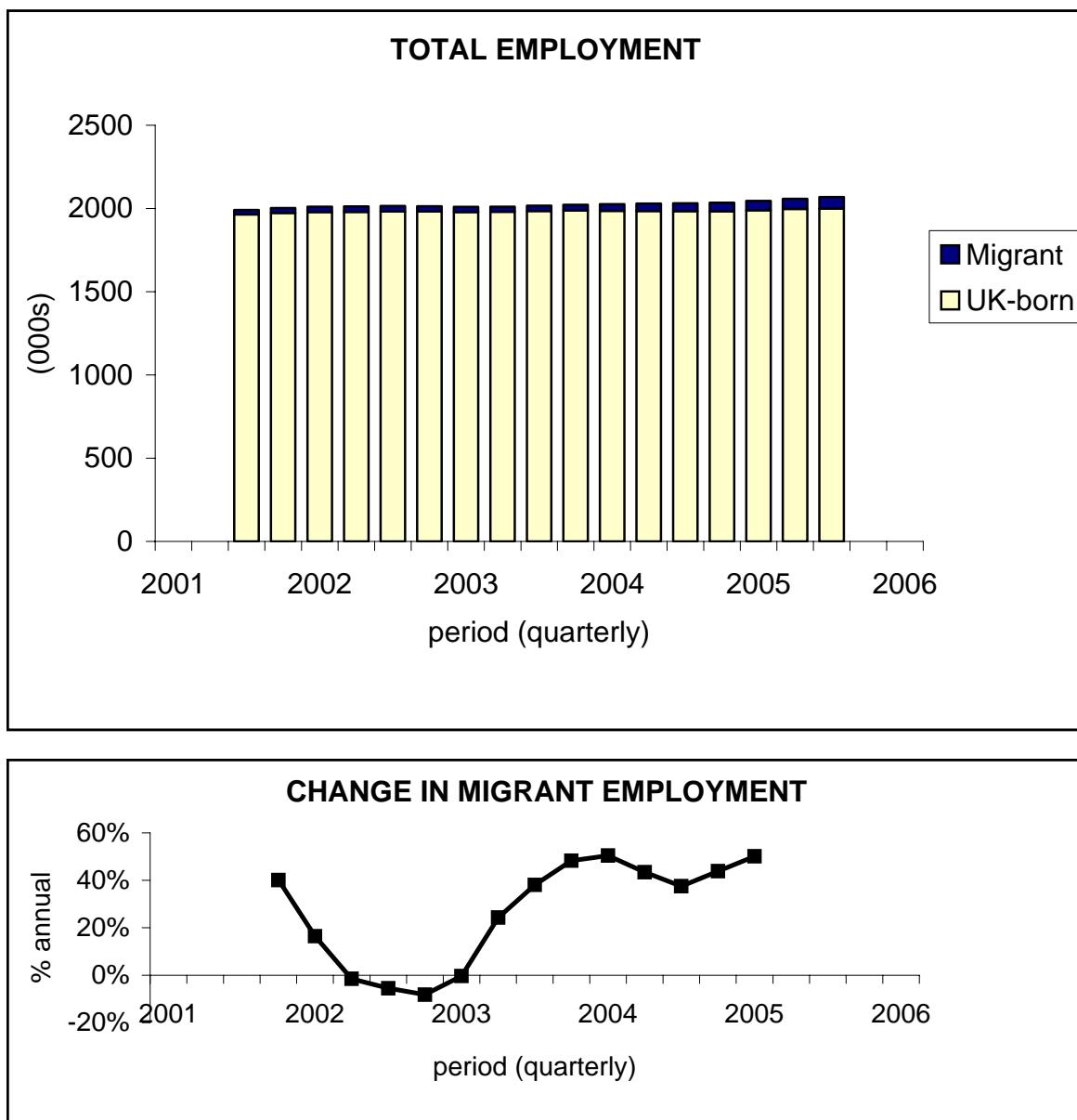
The aim of this section is to examine the extent to which employment of migrants in certain sectors of the economy and occupations has been associated with lower probability of employment for UK-born workers. Changes in employment of migrant versus UK-born workers in so called migrant dense sectors and occupations compared to employment in the East Midlands (and UK) as a whole are analysed for statistically robust evidence that displacement of UK-born workers has taken place. It is important to emphasise that where displacement of UK-born workers is apparent (i.e. within sector or occupation) this may have occurred either voluntarily or involuntarily (i.e. employment of migrant workers may have resulted in an involuntary 'crowding out' of the job market for UK workers, who consequently find it more difficult to obtain employment, particularly within the same sector or occupation). Alternatively, however, migrant workers may be playing an important labour market function of filling 'gaps' in labour demand in sectors and occupations where employers would find it otherwise difficult to fill jobs. However, an analysis of the 2005 National Employer Skills Survey (NESS) for the East Midlands region does not reveal any significant correlation between density of migrant employment and the occurrence of hard to fill or skill shortage vacancies (see Annex 12). It may be the case, for example, that the indigenous born population are shunning particular types of work.

Data from the LFS is used for analysis of employment impacts. Changing patterns of employment by sector and occupation and relative employment growth/ decline is modelled using data from successive quarters of the LFS for the period March-May 2001 – April-June 2006. Estimates of employment for each successive quarter are used to estimate rates of employment growth by industry and occupation (see Annex 13).

Changing patterns of employment

Figure 17 presents the change in overall employment in the East Midlands based on estimates of total employment from the LFS, distinguishing workers by migrant status. Whereas employment of UK-born workers has increased only very slowly (from approximately 1.97 to 2.0 million), the employment of migrant workers (using the post-1991 definition) has more than trebled from 20 to 70 thousand migrant workers employed.

Figure 17 East Midlands employment by migrant status, 2001-2006



Source: LFS 2001-06.

Note: The annual change is based on a four quarter moving average of employment

Disaggregation of employment trends by industry and occupation reveals that only 3 of the 20 fastest growing industries and occupations are classified as being migrant dense, while 7 of the 20 fastest declining industries and occupations (see Annex 13) in the table are classified as being migrant dense. Considering that only approximately one in five industries and occupations are classified as migrant dense in the East Midlands, the evidence on changing patterns of employment tends to indicate that migrants have a greater propensity than expected to concentrate in industries/ occupations that have been experiencing long-term employment decline in the East Midlands.

Employment growth (and decline) in migrant dense sectors

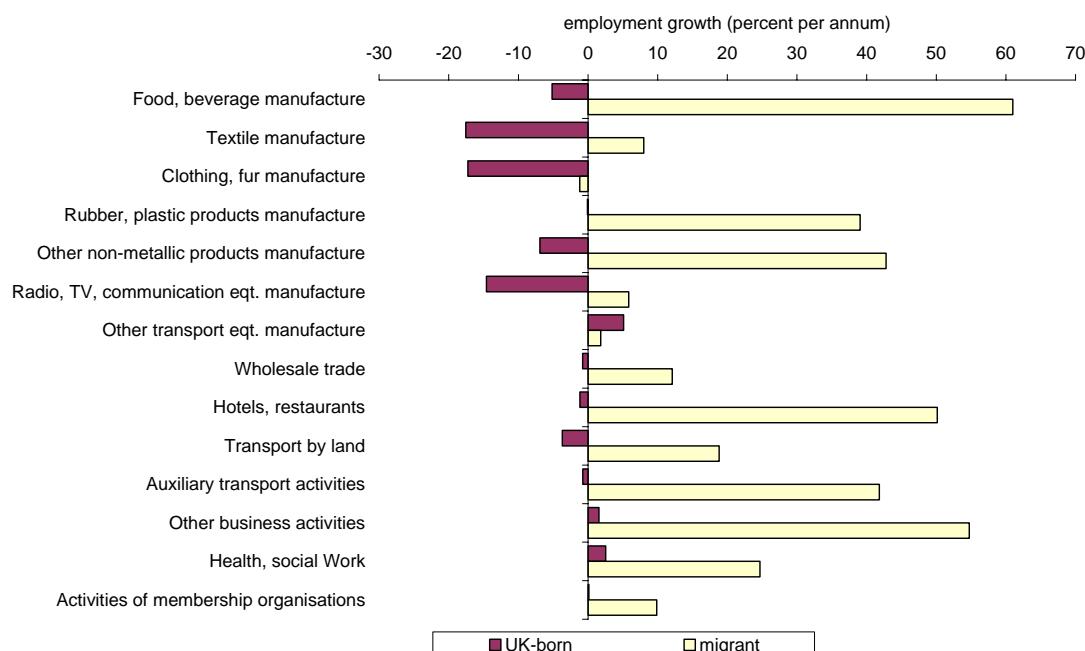
This section examines evidence regarding the displacement of UK-born workers in migrant dense sectors. This is investigated by analysing rates of growth of employment for UK-born and migrant workers in 'migrant dense' industries and occupations.

The results of analyses of employment growth in migrant dense industries in the East Midlands for UK-born and migrant workers²⁵ shows declining employment for UK-born workers in most cases contrasted against rapidly expanding employment of migrant workers in these sectors since 2001 (see Figure 18). The results are particularly striking for the manufacturing sector where employment of UK-born workers is declining at a rate of between 15 and 20 per cent per annum in some cases. In contrast rates of employment growth for migrant workers are as much as 50 per cent per annum in some sectors. It is noted for means of comparison that the rates of growth in all sectors are:

- UK-born workers: 2.0 per cent growth in employment per annum
- Migrant workers: 11.7 per cent growth in employment per annum
- All workers: 2.4 per cent growth in employment per annum

Analysis of rates of employment growth/ decline in these migrant dense sectors in the UK confirms that this is not purely an East Midlands phenomenon.

Figure 18 Employment growth in migrant dense sectors in the East Midlands



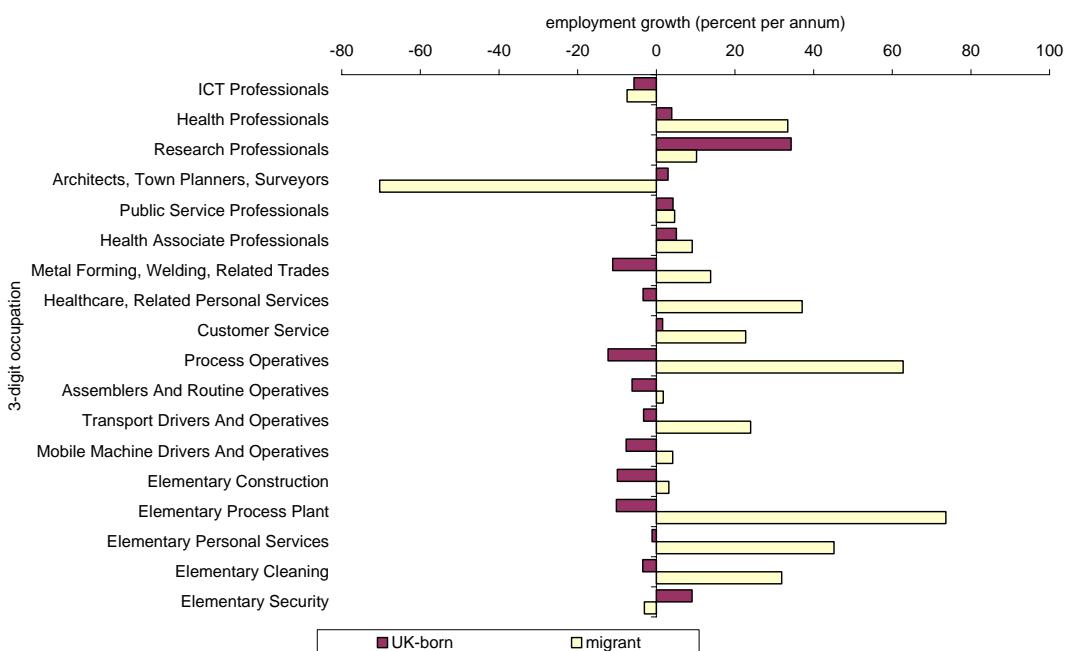
Source: LFS 2001-06.

A similar analysis of growth of employment by occupation (see Figure 19) reveals a more mixed picture with employment growth for UK-born (and migrant) workers amongst the professional occupations but declining numbers in employment for most other occupations, notably those in operative and elementary occupations (SOC Major Groups 8 and 9). Amongst these occupations employment amongst UK-born workers is declining at a rate in most cases of up to 10 per cent per annum, whereas employment of migrants is expanding at rates of up to 50 per cent per annum. This again points to strong evidence of employment displacement in low paid occupations. Analysis at UK level confirms broadly similar patterns of employment expansion /decline for UK-born workers in the East Midlands and the UK as

²⁵ Using the post-1991 definition of migrants in order to maximise sample sizes.

a whole. In particular the decline of employment of UK-born workers in predominantly manual/ less skilled migrant dense occupations is also the case in other regions of the UK.

Figure 19 Employment growth in migrant dense occupations in the East Midlands



Source: LFS 2001-06.

The displacement hypothesis (i.e. the employment of migrant workers ‘crowds out’ the employment of UK born workers) was analysed using a statistical model (see Annex 13 for details) which estimated the differential effect on employment growth for UK-born workers of a sector or occupation being classified as migrant dense.

At the UK level (but taking account of East Midlands regional effects) the results of analyses show a strong and significant effect on employment growth for UK born workers in migrant dense sectors and occupations, with annual rates of employment growth (which is otherwise near static for the UK as a whole) *reduced* by 1.1 and 2.8 per cent per annum for migrant dense industries and occupations respectively. Negative effects are stronger still restricting the model to the East Midlands region only: annual rates of employment growth (which is otherwise near static for the UK as a whole) *reduced* by 1.4 and 4.2 per cent per annum for migrant dense industries and occupations respectively.

Hence, the analysis suggests that displacement effects are particularly pronounced in migrant dense occupations – notably in the less skilled operative and elementary occupations (SOC Major Groups 8 and 9).

3.2.4 Unemployment of UK-born workers

Key points

- If migrant labour causes involuntary displacement of UK-born workers by migrants we might expect to see increased rates of unemployment for the UK-born, increased transitions of UK-born workers from migrant dense industries and occupations into unemployment and/ or extended durations of unemployment for the UK-born (particularly amongst those previously employed in migrant dense industries and occupations).
- Analysis based on LFS data covering the period from 2001 to 2006 shows that there has been a statistically significant upward trend in unemployment in the East Midlands amongst UK-born workers with no qualifications in recent years.
- There has been no discernable change in the probability of the UK-born unemployed in the East Midlands coming from migrant dense industries and occupations over the period between 2001 and 2006 when the number of migrants has increased.
- However, there is evidence from analysis of the LFS for a disproportionately large number of unemployed workers to come from migrant dense industries and occupations, but this association may be a result of greater 'churning' between employment and unemployment in these sectors and occupations as opposed to a systematic effect arising from migrant density *per se*.
- This supports the notion that industries/ occupations of migrant dense employment are associated with greater 'churning' compared to other industries/ occupations.
- Examination of longitudinal LFS data indicates that patterns of exits of UK-born workers from migrant dense sectors are relatively stable over time and are mainly to other employment, so suggesting that moves are likely to be voluntary rather than involuntary. However, transitions of UK-born workers out of migrant dense occupations via unemployment have increased notably in the last two years (at a time of increasing numbers of A8 migrants recorded by the WRS and increasing NINo registrations by overseas nationals), especially when compared to other non-migrant dense occupations. However, it should be noted that workers in less skilled occupations (where recent migrants have concentrated) are in any case most vulnerable to unemployment.
- Analysis of claimant count proportions reveals a rate of increase of claimant unemployment significantly in excess of that of the region in local authority areas characterised by the largest aggregate numbers of WRS registrations and overseas NINo registrations over the period from 2004 to the end of June 2006. The local areas referred to above are more likely to experience downturns in labour market conditions than elsewhere, since they are characterised by higher unemployment/ lower activity rates and/ or have an industrial structure more dependent on 'vulnerable' sectors.

Introduction

The analysis in 3.2.3 has suggested the possibility of significant displacement of UK-born workers in sectors and occupations of employment which are attractive to migrant workers. As noted above, this displacement of UK-born workers in certain industries/ occupations may have occurred either voluntarily or involuntarily. This is an important distinction. Voluntary displacement would imply that UK-born workers are moving away from particular industries/ occupations based on preference and individual occupational choice. In this case migrant workers will fill employment gaps in industries/ occupations where UK-born workers would otherwise be reluctant to work. Involuntary displacement of UK workers, on the other hand, will be the result of migrant workers 'crowding out' UK workers in the job market. If the displacement of UK-born workers is involuntary (rather than voluntary), we might expect to see some of the following consequences in terms of displacement to unemployment:

- increased rates of unemployment for the UK-born

- increased transitions of UK-born workers from migrant dense industries/ occupations into unemployment²⁶
- extended durations of unemployment for the UK-born (particularly amongst those previously employed in migrant dense industries/ occupations)

On the other hand, if the displacement of UK-born workers from migrant dense industries/ occupations is voluntary we would expect to see little or no impact in terms of unemployment in the East Midlands region (despite the high level of recent international labour migration to the region). Moreover, we would also expect to see the transition of UK born workers out of migrant dense industries/ occupations dominated by job to job transitions (and increasingly to non- migrant dense industries/ occupations) rather than transitions to unemployment.

Data from the LFS is used to investigate trends in unemployment and transitions out of migrant dense industries/ occupations in order to explore some of these issues (see Annex 14 for details).

Unemployment of the UK-born

Analysis of quarterly LFS data for UK-born people of working age resident in the East Midlands region reveals that rates of employment, unemployment and inactivity have remained remarkably consistent over the period. Approximately 3.5 per cent of these residents in the East Midlands are unemployed and statistical tests reveal that the unemployment series is not significantly trended.²⁷ Although this figure is quite stable over time there is considerable variation in rates of employment and unemployment between sections of the labour force, for example by age group (with younger people experiencing the highest unemployment rates) gender and qualification level.

Figure 20 shows rates of unemployment by level of highest qualification (based on NVQ-equivalent level categories), in order to proxy for different groups in the labour force based (approximately) on level of skills. As expected, the chart reveals higher levels of unemployment amongst less qualified individuals. More notable, however, is the statistically significant upwards trend in unemployment in the East Midlands amongst the least skilled group - i.e. those with no qualifications.

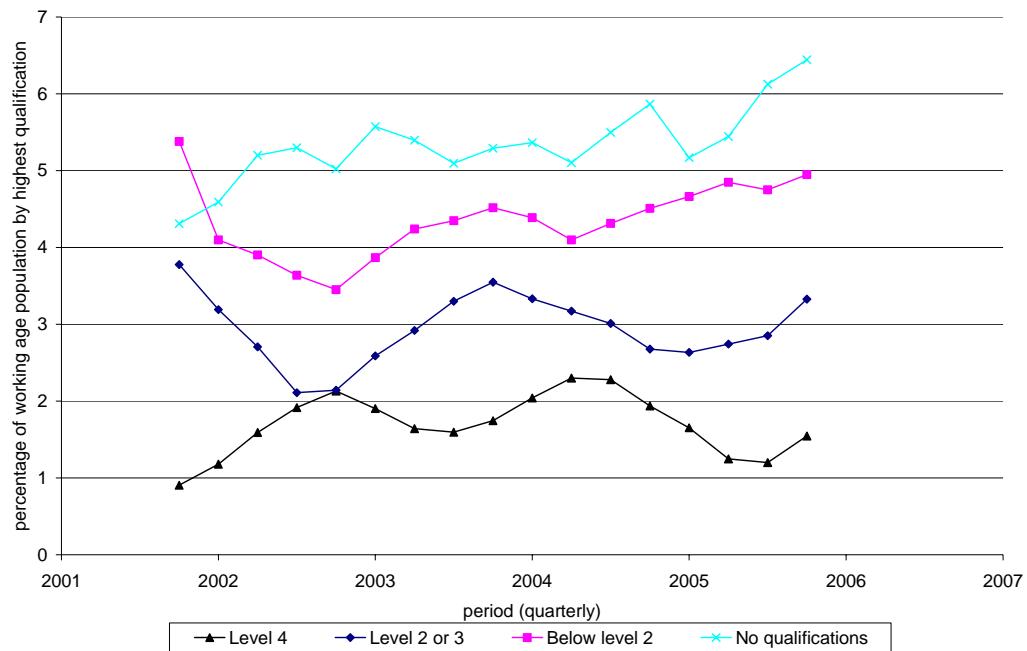
Figure 21 examines trends in unemployment duration, with percentages of all UK-born unemployed workers who were employed in migrant dense industries/ occupations (either industry or occupation) in their last jobs before becoming unemployed. Duration of unemployment is broken down into three broad categories (i.e. less than 3 months, 3 to less than 12 months, and over 12 months duration). The results show an upward trend in much shorter term unemployment (less than 3 months) since 2003.²⁸ This said, the series have behaved in a somewhat erratic manner over the past few years. The trend towards shorter average periods of unemployment may reflect a number of composite factors, including increased flows into (short-term) unemployment, as well as people moving from long-term unemployment to periods of active job seeking and employment.

²⁶ Note that reduced flows in the opposite direction (i.e. fewer UK-born workers moving from unemployment into migrant dense industries/ occupations) might be voluntary or involuntary.

²⁷ It is noted at the outset that the LFS uses ILO based measures of unemployment rather than those based on claimant count, which are increasing at the time of writing.

²⁸ This timing could be important given the entry of A8 migrants from 2004 and the increase in overseas NINO registrations.

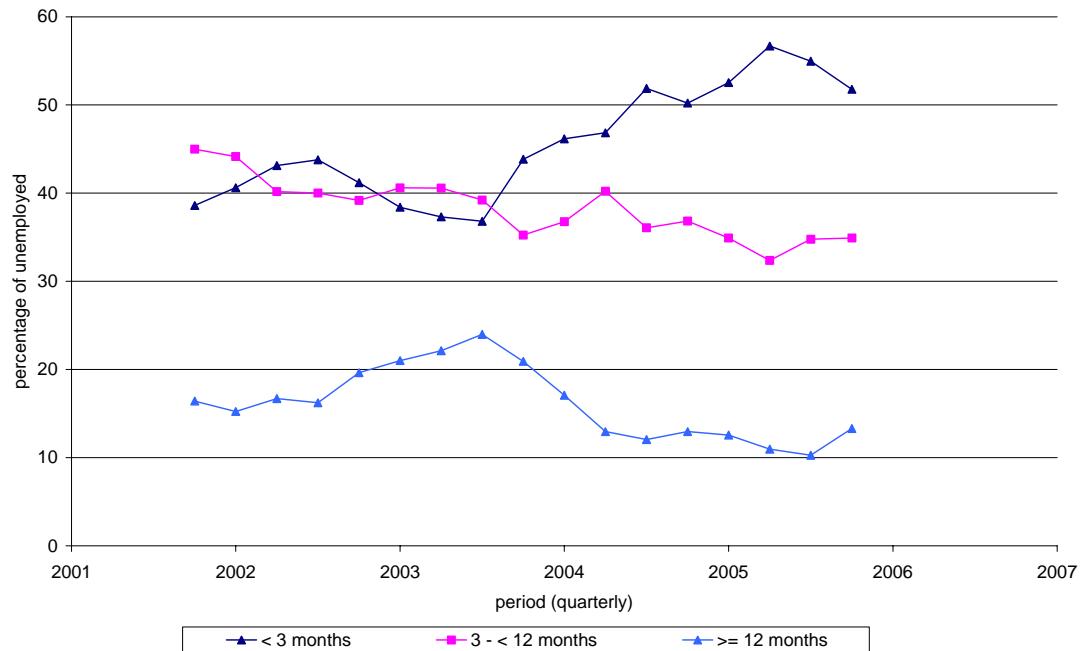
Figure 20 Rates of unemployment by level of highest qualification for UK-born workers, East Midlands



Source: LFS

Notes: (1) Analysis based on UK-born workers in the East Midlands region;
(2) The time series are smoothed using a 4 quarter moving average

Figure 21 Trends in unemployment duration for UK-born workers last employed in migrant dense industries or occupations, East Midlands



Source: LFS

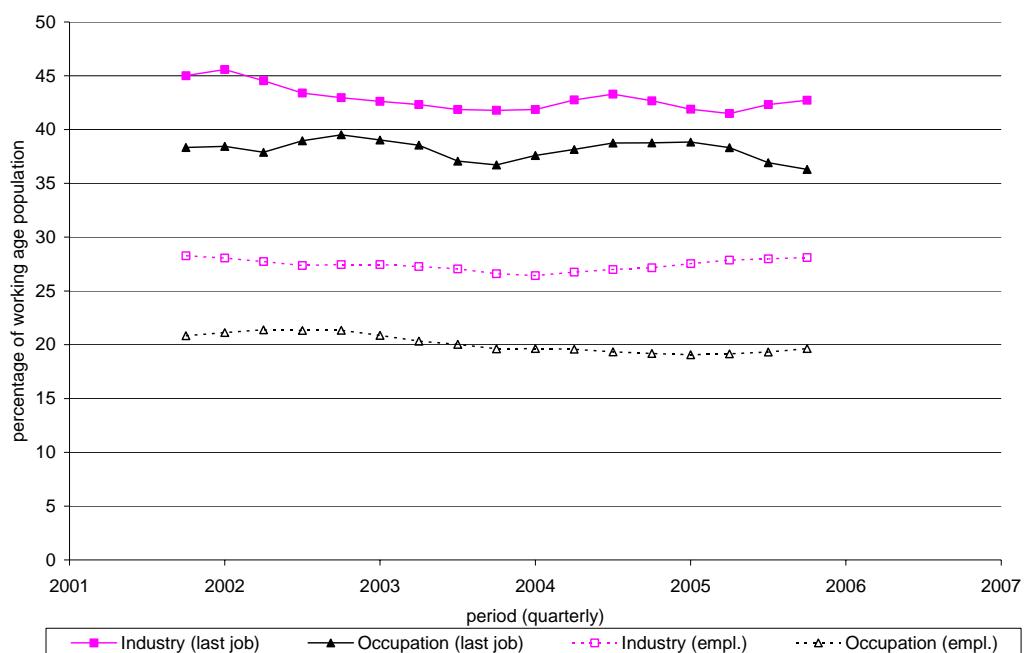
Notes: (1) Analysis based on UK-born workers in the East Midlands region;
(2) The time series are smoothed using a 4 quarter moving average.

Last industry and occupation of employment

The information from the LFS on 'industry of last job' and 'occupation of last job' was analysed to explore the propensity of unemployed workers to come from migrant dense industries/ occupations and examine how the likelihood of this happening has changed over recent years for the East Midlands. Analysis of the merged LFS dataset for the whole period from 2001-2006 reveals that nearly 43 per cent of the UK-born unemployed in the East Midlands last worked in a migrant dense industry sector, compared with a total nearly 37 per cent of workers employed in migrant dense industries. Last occupation analyses reveal that 38 per cent of the UK-born unemployed in the East Midlands last worked in a migrant dense occupation (at SOC 3 digit level) compared with less than less than 27 per cent of all workers. This indicates that unemployed UK-born workers have a higher propensity than expected to have last worked in one of these occupations, and this is especially so for the lower skilled occupations in SOC major groups 8 and 9 (see Annex 14 for details).

At statistical face value these figures appear to indicate evidence of a disproportionately large number of unemployed coming from migrant dense industries/ occupations. However, these results might have arisen as the result of higher rates of employment turnover in these sectors and occupations (i.e. greater churning through unemployment) as opposed to a systematic effect arising from migrant density *per se*. Hence further analysis was undertaken of whether the probability of an unemployed person's last job being in a migrant dense industry or occupation has changed over time for the East Midlands during a period of rapid expansion of migrant numbers. *Figure 22* plots these series over the period 2001–2006, based on the quarterly LFS data.

Figure 22 Origin of unemployed workers by migrant dense industries/ occupations



Source: LFS

Note: (1) Analysis based on UK-born workers in the East Midlands region; (2) The time series are smoothed using a 4 quarter moving average; (3) the solid line relates to the percentage of the unemployed coming from migrant dense sectors or occupations, while the dashed lines relate to the percentage employed in these jobs.

The figures reveal no discernable change in the probability of UK-born unemployed workers in the East Midlands region coming from migrant dense industries/ occupations. This dispels the notion of a migrant effect specifically on probabilities of unemployment and supports the notion that these industries/ occupations (of migrant dense employment) are associated with

excess employment turnover (this might be indicative of unattractive jobs that employers find difficult to fill), compared to other industries/ occupations.

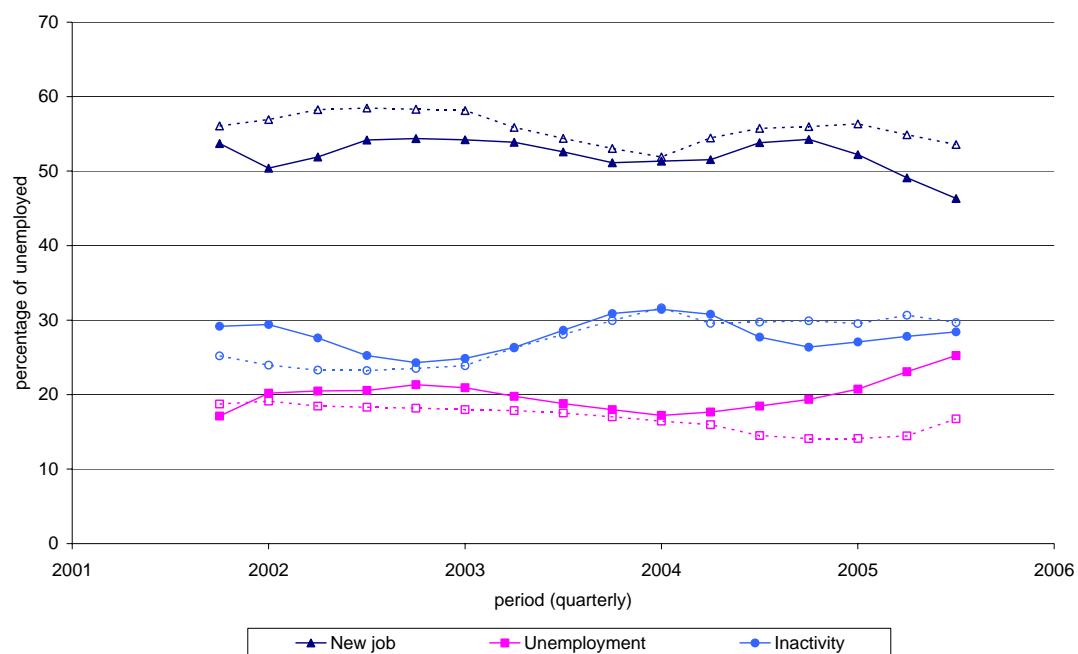
Transitions out of migrant dense industries/ occupations

Again restricting the analysis to UK-born workers in the East Midlands, analysis was undertaken on job transitions based on the longitudinal LFS data, in particular focusing on individuals employed in migrant dense industries or occupations in the first quarter and examining these individuals in the next quarter to observe their economic activity. Over the period 2001–2006 as a whole most people (over 90 per cent) employed in these industries/ occupations still have the same job next quarter.

However, it is interesting to analyse the destination (new job, unemployment or inactivity) of those who were observed to have moved out of their current job in the second period. The pattern of transitions out of migrant dense sectors are for the most part direct to other jobs with 50–60 per cent of UK-born workers in migrant dense sectors moving out of employment in these sectors leaving their jobs for other employment. Moreover, patterns of exits from employment in migrant dense sectors are very similar to those in other sectors, where rates of transition have stayed relatively stable over time.

It is important to emphasise that percentages of UK-born workers transiting via unemployment are relatively low and apply in only approximately 20 per cent of all cases. This all points toward the fact that displacement of UK workers, where it is occurring, is likely to be voluntary rather than involuntary.

Figure 23 Destinations of movers by occupation of employment



Source: LFS longitudinal data.

Notes: (1) Analysis based on UK-born workers in the East Midlands region; (2) The time series are smoothed using a 4 quarter moving average; (3) Destinations of movers from migrant dense occupations are shown by an unbroken line, while other occupations are shown by a dashed line.

However, occupational analysis reveals that transitions of workers out of migrant dense occupations via unemployment have increased notably in the past 2 years, especially when compared to other non-migrant dense occupations (Figure 23). The reason for this is not

clear but might suggest an ‘unemployment effect’ for migrant dense occupations, but not for migrant dense industries.

Analyses of claimant count data at local level

In the light of (anecdotal) reports of increases in numbers of JSA claimants in some local areas with recent increases in migrant workers, and in order to supplement the regional level analysis of unemployment using LFS data, an analysis was undertaken of monthly trends between January 2001 and October 2006 in claimant resident-based proportions (i.e. the number of claimants resident in an area as a percentage of the working age population resident in that area) for 40 local authority areas in the East Midlands region was undertaken.

Time series analysis of unemployment rates²⁹ at the local (and regional) level revealed that the underlying trend in unemployment rates³⁰ was downward between 2001 and 2004 and upwards thereafter. Further analysis was undertaken of unemployment trends between May 2004 and October 2006; (this period is relevant in policy terms since A8 migrants were free to move to the UK after May 2004).³¹ Analysis for this later period revealed that for the region as a whole the unemployment rate was increasing at a rate of approximately 0.2 per cent per month (which was statistically significant at the 5 per cent level). Nine local authority areas displayed a rate of increase in unemployment significantly in excess of that of the region as a whole: Boston (with easily the largest rate of increase per month [see Annex 15]), Nottingham, Lincoln, South Holland, Northampton, Erewash, Derby City and Mansfield. Note that these are areas are more likely to be vulnerable to downturns in labour market conditions than elsewhere, since they are characterised by higher unemployment/ lower activity rates (the urban areas) and/ or have a reliance on industries characterised by relatively high ‘churning’ (e.g. horticulture and food processing in the rural areas).

At the local authority area level in the East Midlands *Figure 24* reveals that there is a statistically significant positive association between the rate of increase in claimant unemployment over the period from 2004 to October 2006 and overseas NI No registrations as a percentage of aggregate employment (as a proxy of the impact of migrant workers on employment at local area level).³²

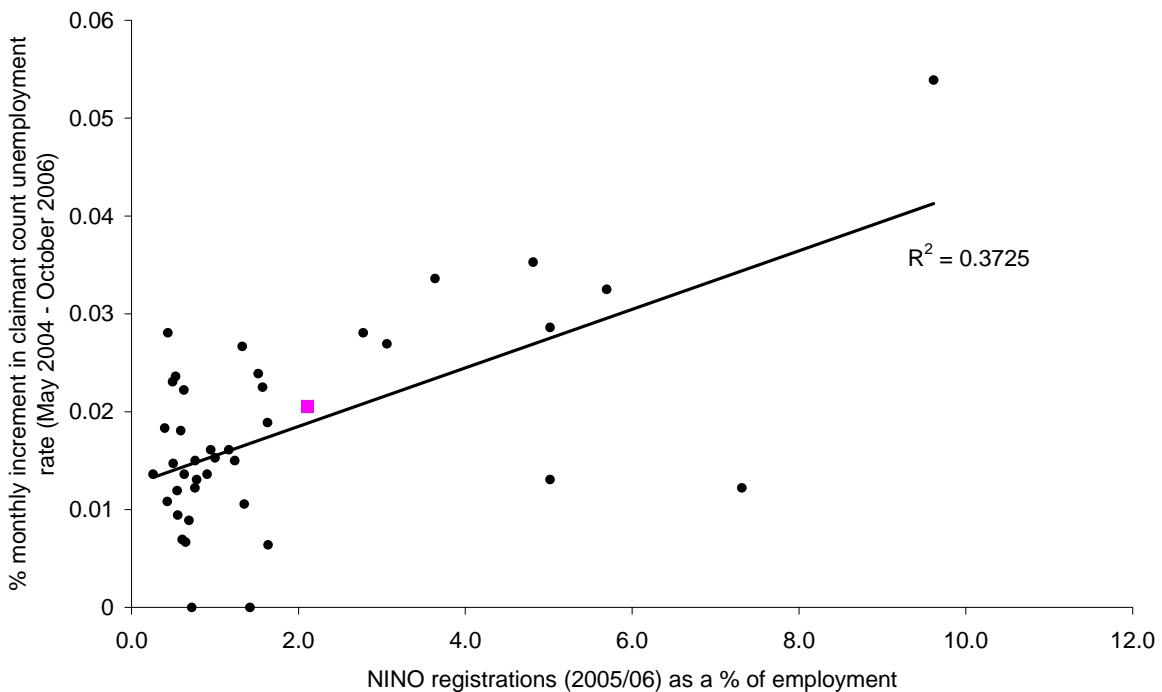
²⁹ ‘Unemployment rate’ is used here to refer to the claimant count proportions.

³⁰ Adjusting for seasonal factors.

³¹ However, the fact that an upward trend in unemployment rates has been observed since around the time of the entry of A8 labour migrants to the UK need not necessarily imply causality between an increase in migrants from Accession countries and an increase in unemployment rates; rather, there may be many reasons for an increase in unemployment rates. (Note that under-estimation of migrants in local area population estimates may serve to inflate unemployment rates on an arithmetic basis.)

³² Further analysis replacing aggregate employment data from the 2001 Census with data from the 2005 LFS also yielded a statistically significant positive association.

Figure 24: The association between migrant density and unemployment rate increase at local authority area level in the East Midlands



Sources: Claimant count proportions (via Nomis), Overseas NINO registrations, Employment from 2001 Census.
Note: R^2 is statistically significant at the 5% level. The pink square shows the East Midlands.

3.3 Migrant contribution to GVA

Key points

- It is estimated that in 2005 people born outside the UK contributed 9.6 per cent to the value of output in the East Midlands. Those entering the UK since 1992 are estimated to contribute around 4 per cent to the value of regional output, with post 2001 migrants contributing over 2 per cent to the value of regional output.
- Migrant contribution to GVA is highest in Hotels & Restaurants, Manufacturing (which includes food processing, engineering, etc) and Health & Social Work sectors.
- At local level the migrant contribution to GVA could be higher/ lower than the regional estimate.

Introduction

Gross Value Added (GVA) measures the total value of output of the economy using production based measures of Gross Domestic Product (GDP). It is calculated by summing the contribution to the economy of each individual producer (and in total each industry) to the value of total output by estimating the value of an output (goods or services) less the value of inputs used in that output's production process. This section presents estimates of the contribution of the migrant population to GVA in the East Midlands region over the period 2001–2005. This is calculated in terms of monetary value of migrant output, annually, and also expressed as a percentage of the overall regional figure.

Deriving estimates of migrant contribution to GVA

Estimates of the contribution of migrant workers to GVA were calculated using data on GVA by industry for the East Midlands in combination with estimates of migrant employment by industry in the East Midlands (for more details of the data sources and methodology used see Annex 16). Migrant contribution to GVA is calculated, in its simplest form, by multiplying the percentage of employment of migrants in each industry by the GVA produced by that industry, and then summing across all industries in the East Midlands to produce a monetary value of migrant contribution. The migrant contribution to GVA is then expressed as a percentage of the total value of GVA at the regional level.

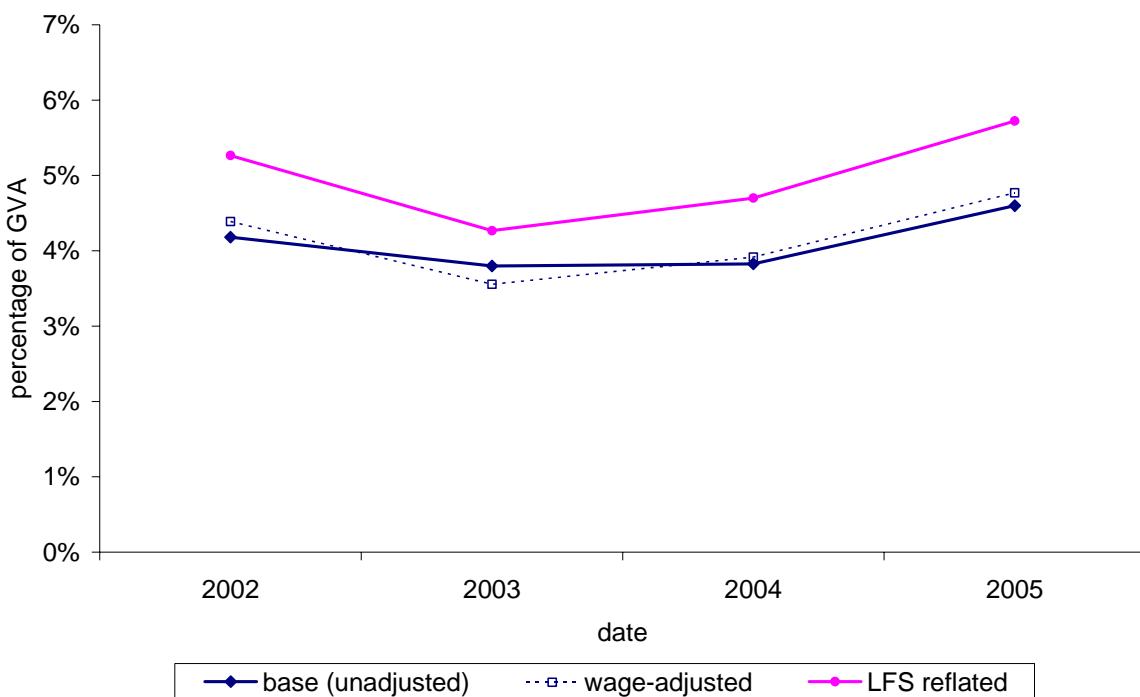
Three sets of estimates of migrant contribution to GVA were calculated:

1. A series of *base estimates*
2. *Wage-adjusted estimates* – to take account of differences in occupational distribution between migrants and non-migrants
3. *Reflated estimates* – to take account of a likely under-count of migrants in the LFS

Results

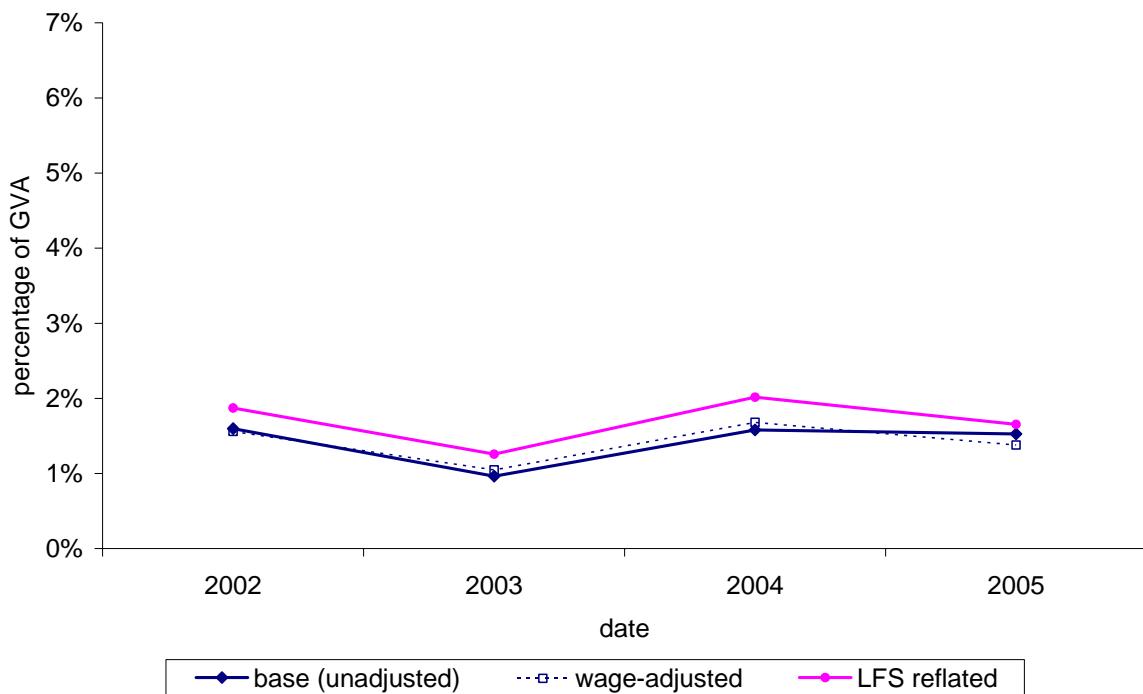
The results for migrant contribution to GVA were calculated using the three types of estimates outlined above for each of the migrant groups (by year of entry), based on year of arrival into the UK (see *Figure 25* for pre 1992 migrants, *Figure 26* for 1992-2001 migrants and *Figure 27* for post 2001 migrants).

Figure 25 Contribution to East Midlands GVA: Pre-1992 Migrants



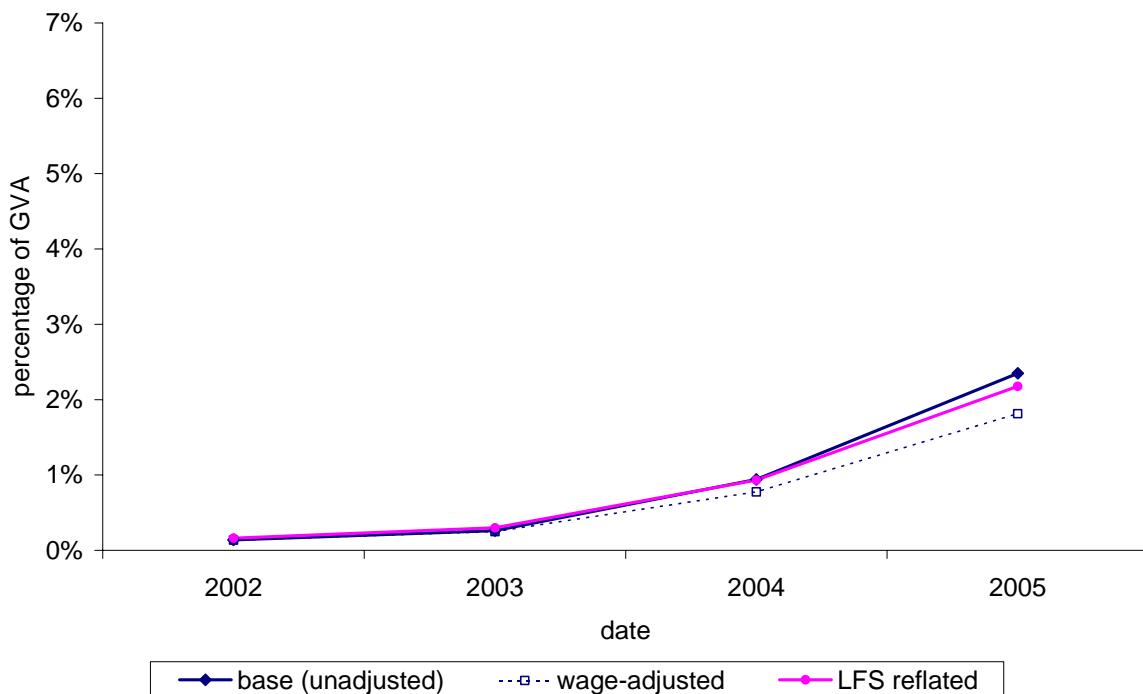
Source: LFS, Cambridge Econometrics/IER.

Figure 26 Contribution to East Midlands GVA: 1992-2001 Migrants



Source: LFS, Cambridge Econometrics/IER.

Figure 27 Contribution to East Midlands GVA: Post 2001 Migrants



Source: LFS, Cambridge Econometrics/IER.

The analysis shows that the wage adjustment has little effect on the estimates for pre-2002 migrants. This suggests that these migrant workers are similar to UK-born workers in terms of earnings within sector (and therefore productivity). This is not the case for post 2001 migrants. Their contribution to GVA is reduced notably by wage adjustment, suggestive of the fact that they are in lower paid (and thus lower GVA) occupations (as highlighted in analyses of WRS data on A8 migration).³³ Furthermore it is apparent that figures for pre-2002 migrants are not particularly trended, whereas the contribution of post 2001 migrants to GVA has moved sharply upwards since 2002. The sharp increase in contribution to GVA amongst this group has been driven primarily by their rapidly growing numbers in the workforce.

The figures were also analysed in cross section by industry for each of the respective migrant groups (see Annex 16 for details). The LFS reflated estimates of migrant contribution, based on average figures for the period 2002–2005, show that migrant contribution to GVA is highest in Hotels & Restaurants, Health & Social Work, Transport, Storage and Communication, Real Estate, Renting & Business Activities, Financial Intermediation, Education and Manufacturing, although figures vary between migrant groups. (Note that migrant contribution to GVA will also vary in aspects beyond the scope of the data analysed here.³⁴ These include:

- Geographical differences - with variations in migrant contribution to GVA by local area/ sub-region within the East Midlands
- Occupational differences - with variations in migrant contribution to GVA particularly with respect to skill levels within occupation.)

The calculations of migrant contribution based on output measures of GVA and migrant employment estimates by industrial sector demonstrate a sizeable and growing contribution of migrants to the overall output of the East Midlands economy. The estimated overall contribution of migrants to the economy is 9.6 per cent of the value of output,³⁵ using 2005 figures based on all individuals born outside the UK. Those entering the UK from 1992 onwards account for 3.9 per cent of the value of output and those entering the UK from 2002 onwards account for 2.2 per cent of the value of output (see *Figure 28*). These are regional figures and in some local areas contribution to local output is likely to be higher/ lower. It should be noted, however, that these figures may well be an underestimate of the migrant contribution (especially in some sectors of the economy) due to the likelihood that many of the recent migrants into the region are not captured by the LFS. It is also possible that this will increase over the coming years, with increasing numbers of recent migrants entering the workforce.³⁶

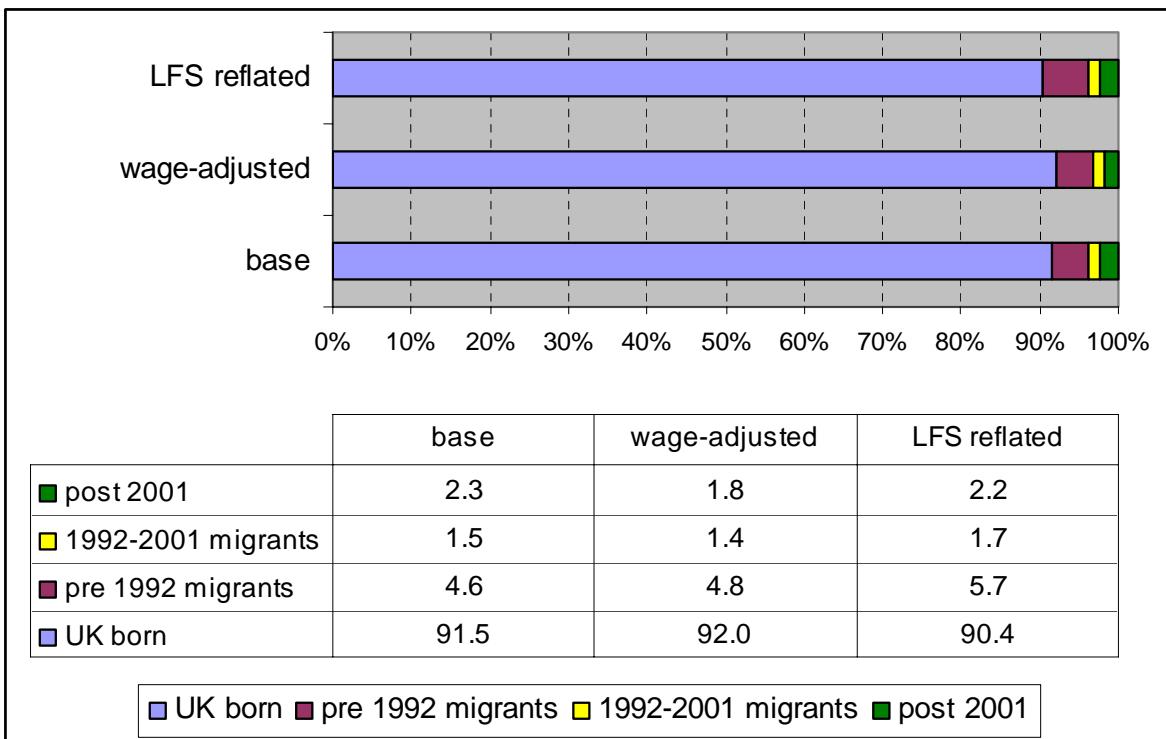
³³ Equally it is possible that the recent increase in A8 migration could have depressed wages, thus dampening the contribution of post-2001 migrants to GVA.

³⁴ In addition to these considerations it should be borne in mind that the different migrant cohorts are likely to have very different age profiles. This may distort comparison of GVA contribution, based on overall figures, since older workers may have acquired greater human capital and work in higher skilled jobs, reflected in wage effects.

³⁵ This figure is based on the LFS reflated estimate for all non-UK born workers.

³⁶ Such entry into the workforce may lead to displacement of non-migrants.

Figure 28: Percentage contribution of migrants to East Midlands GVA (2005 figures)



Source: LFS 2005, Cambridge Econometrics/IER.

Finally, whilst this headline figure is useful in terms of quantifying migrant contribution to the economy, it should be borne in mind that migrants' contribution to the East Midlands economy is perhaps wider. Previous analysis of employment has demonstrated that migrant workers are increasingly providing a pool of labour supply in certain sectors of the economy, filling labour shortages and enabling employment in the region in these sectors to be retained. On the other hand, however, in filling such shortages with migrants, employers may, at least in some instances, be delaying technological/ other changes. In addition, on a macro economic level, migrants are also helping to provide competition for jobs which is helping to keep down wage inflation, which is both beneficial to employers and to the national (and regional) economy as a whole.

Part 4: Conclusions and policy implications

Key points

- The East Midlands labour market has been opened to a greater extent to migrants from the EU and the rest of the world in the last few years. The expansion of the EU into low-wage countries has resulted in a sudden influx of migrants seeking work to most parts of the region since 2004. This may be thought of as a positive supply side 'shock' to the labour market in the context of a more general trend of increasing inflows of labour migrants.
- There is an urgent need to improve the information base on international migration to support economic and social policy and planning. The lack of information on emigration poses particular problems.
- Most recent migrants have been young adults, very few of whom claim benefits. They have diverse origins: the number of migrants from 'traditional' sources has increased, in addition to new sources of migration.
- Migrants are making an important and growing contribution to GVA.
- The impact of migration is extremely difficult to measure because of the weakness of the information base and the difficulty of inferring causality from associations between variables of interest.
- However, it is clear that those most likely to feel an impact are those who are most vulnerable to a range of factors in any case.

The East Midlands labour market has been opened to a greater extent than previously to migrants from the EU and the rest of the world in the last few years. The expansion of the EU into low-wage countries has resulted in a sudden influx of migrants seeking work to all parts of the region since 2004. This may be thought of as a positive supply side 'shock' to the labour market in the context of a more general trend of increasing inflows of labour migrants.

The impact of migration is extremely difficult to measure because of the weakness of the information base and the difficulty of inferring causality from associations between variables of interest. We do not know with any certainty how many migrants there are in the East Midlands. Indeed, the Governor of the Bank of England has bemoaned the lack of information on the number of migrants in the UK as a whole and the difficulty this presents in formulating monetary policy.³⁷ At regional and local level the challenges posed for policy formulation and analysis are, if anything, even starker. There is an urgent need for improvement in the information base on international labour migrants to support economic and social policy and planning.

It is necessary to resort to examination of a number of different data sources to derive information on the volume of migration. At local level the Census of Population provides the most detailed information, but the information it yields is now dated. We know from other data sources that migration has increased markedly since 2001. Surveys such as the Labour Force Survey/ Annual Population Survey provide more recent estimates, but survey sources such as these are likely to underestimate the number of migrants. We can turn to administrative sources to gain insights into recent increments of migrants to the labour force. However, since migration may be temporary, rather than permanent, reliance on such sources may lead to over-estimation of the numbers of migrants. A key problem here is the *lack of information on emigration*, although analysis of Labour Force Survey data (relating to

³⁷ "What we're in the business of doing is in trying to understand the economic consequences of the movements that we see. And I keep stressing that our biggest concern is we simply don't know how large the migration is" – Mervyn King, Governor of the Bank of England, November 2006.

periods prior to the most recent increase in immigration) suggests that return migration is particularly pronounced for immigrants from the EU, the Americas and Australia/ New Zealand than from the Indian sub-continent and Africa (Dustmann and Weiss, 2006). If the most recent migrants from central and eastern Europe behave in a similar fashion we might expect many of their moves to the UK to be temporary. However, we do not know whether current trends will continue, or whether much of this migration is the response to 'unique' circumstances.³⁸ Again this is a topic with important implications for policy where information is lacking. Longer-term and permanent migrants are likely to bring families with them, increasing demand for housing, education and health services in local areas of settlement.

The legislative and broader policy context plays an important role in shaping the size and character of migrant flows to the UK. The current government espouses a 'managed migration policy', designed to meet the needs of the labour market, and the UK is moving towards the implementation of a points-based migration system to achieve this goal. This is likely to have an impact on the volume and nature of future migration flows.

From analysis of a number of different data sources we know that:

- The number of migrants has increased markedly since 2001 and especially since 2004 with the accession of a number of central and eastern European countries to the EU.
- Despite the focus of popular policy on central and eastern European migrants, the number of migrants from 'traditional sources' (such as the New Commonwealth – notably the Indian sub-continent) has increased also.
- Young people have always displayed a greater propensity to migrate than older adults, but in recent years the age profile of migrants has become increasingly skewed towards young adults.
- Students play a particularly important role in international migration.
- There is a clustering of migrant workers by industry and occupation.
- Migrants play an important role in several sectors of the regional economy, notably the Hotels and catering and the Health sector.
- Migrants make an important contribution to GVA in these sectors and in the wider economy. With growth in the numbers of migrants their contribution to regional GVA is increasing. Looking at the higher wages of migrants entering the UK prior to 2001 compared to post-2001 migrants, it is also possible to suggest that the wages of migrants may improve over time. If wages are seen as a reasonable proxy for productivity, this may suggest that migrants could become more productive the longer they remain in the UK.
- There has been a growth in the number of migrant workers in Manufacturing (e.g. food processing, engineering, textiles & clothing, etc), while the number of UK-born in this sector has decreased.
- While there is evidence for a 'bi-polar' distribution of migrant workers – with particular concentrations of migrants in professional occupations and low skill occupations – there is a clear trend towards a greater share of migrants in less skilled operative and elementary occupations (SOC Major Groups 8 and 9).
- These lower skilled and lower paid areas of employment where migrant workers are concentrated are areas of higher employment turnover, with 'churning' of UK-born workers between jobs and states of unemployment and inactivity.

While there is no statistically significant evidence that migrants dampen wage growth, there is some evidence of employment displacement of UK-born workers in industries where migrants are concentrated – especially in lower skilled occupations. Moreover, at regional

³⁸ The UK was one of only three EU-15 countries (along with the Republic of Ireland and Sweden) to open its borders to A8 labour migrants in 2004.

level there has been a statistically significant upward trend in unemployment amongst UK-born workers with no qualifications in recent years. Locally, there is a positive association between the rate of increase in claimant unemployment and overseas NINO registrations as a percentage of aggregate employment. Hence, it is clear that it is those UK-born workers lacking qualifications and working in less skilled occupations, who are most vulnerable to a range of factors relating to labour market change in any case, who are most likely to feel the negative impacts of migration. Since migration is inherently spatial, it is at the local level that effects are most likely to be felt. However, the economic and social impacts of migration are likely to be variable between local areas. Here the distinction between the absolute *volume* of migrants and the *growth* rate in numbers of migrants is important. Urban areas have seen the largest volumes of migrants, but this is historically a well-established pattern – cities like Leicester and Nottingham have a long background of large and diverse non-UK born communities. Arguably, they have more ‘absorptive capacity’ in accommodating further waves of migration. Rural areas have historically been characterised by much less diverse populations and a less well developed infrastructure for migrant integration. In such areas a relatively large influx of migrants from a low base may be perceived as more prominent.

Benefits of employing migrants include the possibility that they may provide specialist skills not otherwise available to the regional/ local economy and they may fill vacancies where there are insufficient applicants. Given that migrants tend to be relatively young and often relatively highly skilled, they may be more productive than UK-born workers, and in turn provide a stimulus for UK-born workers to enhance their productivity. Potentially, migrants are in a position to provide important global links for the East Midlands economy, possibly aiding the internationalisation of businesses. On the other hand, there is a danger that some employers may take a short-term view in employing migrants in low skill occupations in response to labour shortages, rather than investing in capital or in training their existing workforce, and in so doing, perhaps undermine the long-term viability of their businesses. This is a particular challenge for the East Midlands given that it is characterised by a ‘low pay, low skill equilibrium’: it is possible that resorting to use of migrants as a short-term ‘fix’ may reinforce this equilibrium. It is important that utilisation of migrant workers is not to the detriment of investing in the region’s indigenous skills base and the ability to respond to future economic change through innovation. After all, given economic, demographic and political trends in the UK, in other potential migrant destination countries and in origin countries, it is questionable whether the attraction of migrants to the East Midlands and the UK is sustainable.

On the basis of the analyses presented, amongst the important *issues and questions for further research* are:

- *To what extent is migrant employment demand-driven?* – The evidence presented in this report suggests that migrants are not responding purely to problems of labour/ skills shortage. Analysis of total, hard-to-fill and skill-shortage vacancies from the 2005 NESS for migrant dense industries reveals no significant differences with the rest of the economy. Hence, it would be useful to seek an employer perspective (from migrant dense sectors and occupations) on the demand and supply conditions that they face. Insights might also be gained into where, when and whether employment of migrants reinforces a ‘low pay, low skill equilibrium’.
- *What are the key mechanisms at play in increased migrant employment?* – It is possible that migrants are using high employment turnover as a vehicle and point of access to the UK labour market. Previous research has confirmed that many migrants are working in jobs below their skill level and so for the regional economy there is scope to utilise these skills to increase value-added. There is scope for longitudinal research – on geographical mobility, employment transitions, wage transitions, etc - to examine whether and which migrants move on to bigger and better things.

- *Is displacement of UK-born workers voluntary or involuntary?* – The evidence shows that UK-born workers are leaving migrant dense sectors are being replaced by migrants, but we do not know for sure whether this movement is voluntary or involuntary. There is some evidence that UK-born workers are being affected in terms of increased unemployment during the last two years.³⁹ From a policy perspective this evidence is important, but it demonstrates an association rather than cause and effect. There is scope for further statistical modelling work to separate out and control for changes in local labour market conditions (such as vacancy levels, industrial structure, etc), the national business cycle and the arrival rate of new migrants.
- *What is the current (and future) picture? how many? who? when? where?* – The analyses presented here have revealed important changes in the volume and profile of migrants over time. This highlights the continuing importance of monitoring the numbers, profile and impacts of migrants at national, regional and local levels in order to inform policy and planning.

³⁹ As shown by: (1) increasing likelihood of transitions through unemployment (rather than job to job) for people leaving migrant dense sectors; (2) increasing rates of unemployment amongst unskilled workers; (3) a positive and statistically significant correlation between the arrival rate of new migrants (measured by NINo registrations by overseas nationals as a percentage of aggregate employment) and claimant count unemployment proportions.

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Annex 1: Overview of data sources

Data Source	Characteristics	Access	Drawbacks
Census of Population Standard Tables (2001)	<ul style="list-style-type: none"> This data set contains information on the demographic and socio-economic background of migrants as a whole. Some information is disaggregated by ethnic group. Information on the characteristics of people born outside the UK. Near 100% coverage of the population. 	<ul style="list-style-type: none"> Free, via ONS website, NOMIS, Neighbourhood Statistics, SASPAC and CASWEB (academic) 	<ul style="list-style-type: none"> Census is carried out only once every 10 years – and so is unable to reflect short-term fluctuations in the migrant population. Records moves in one-year only (2000/1). Does not capture out-migration from the UK. Limited detail on countries of birth.
Census of Population Special Migration Statistics	<ul style="list-style-type: none"> This data set provides considerable geographical detail on migration flows. There is information on migration by ethnic group, but not country of birth. All migration from overseas during the year before the Census is one of the geographical categories. 	<ul style="list-style-type: none"> Free, via ONS and SASPAC. 	<ul style="list-style-type: none"> Only represents one-year migration (2000/1). Does not capture out-migration; this falls within an 'unknown' category. No information on countries of birth.
Census of Population Sample of Anonymised Records	<ul style="list-style-type: none"> A 3% sample of individual data from the Census. Bespoke tables can be created for people born overseas. Most detailed version can yield information on district and country of birth of migrants. 	<ul style="list-style-type: none"> Free academic access to less detailed data set (Individual Licensed SAR). Full data set (Controlled Access Microdata Sample) is only available on a computer physically located in ONS, charges for this are payable (c. £52+vat per day) and ONS checks tables generated for confidentiality. 	<ul style="list-style-type: none"> Small sample size means that the regional information generated is limited by confidentiality concerns. Vetting by ONS introduces delay in use of CAMS. Less detailed version (ILS) has no district data and less detail on country of birth.

Data Source	Characteristics	Access	Drawbacks
Census of Population Commissioned Tables	<ul style="list-style-type: none"> Some Census users have requested that more detailed tables are produced. Example: ES35, Employed persons aged 16 to 74 by Sex, Major branch of economic activity, Country of birth and Status of employment 	<ul style="list-style-type: none"> Free, by request from ONS and some via SASPAC. 	<ul style="list-style-type: none"> Information still limited by need to protect confidentiality
Labour Force Survey (LFS)	<ul style="list-style-type: none"> Questions on country of birth (and citizenship) and location 1 year and 3 months ago. Large number of demographic and labour market variables for individuals (including economic position, industry, occupation, earnings, age, gender) - for migrants and non-migrants. Quarterly or annual time-series data can be generated. 	<ul style="list-style-type: none"> ONS website (commercial subscription for tabular data which can be used without restriction) Individual data from ESDS Government data archive Standard tables from NOMIS 	<ul style="list-style-type: none"> Small sample size at the regional scale limits the detail that can be provided. Nomis tables provide limited detail.
Annual Population Survey (APS)	<ul style="list-style-type: none"> Boosted LFS to provide sufficient observations (500) for analysis in each local authority. Available from Spring 2004. Quarterly/annual time-series data can be generated 	<ul style="list-style-type: none"> Standard tables via Nomis Individual data via ESDS data archive. Charges do not apply to the public sector, but media is charged for. More detailed 'Special Licence' version available, providing data for LADs. 	<ul style="list-style-type: none"> Limited information in Nomis tables. Short time series. Small sample size for region for LAD restricts detail of analyses possible. Publication of tables from special licence survey has to be approved by ONS.

Data Source	Characteristics	Access	Drawbacks
International Passenger Survey (IPS)	<ul style="list-style-type: none"> The main source of information on in- and out-migration to the UK. Estimates of total migration based on this source published by ONS. It is a 2% sample of in- and out-movements. Individual-level data available. Most of the information is on tourist/business visits; only c.4000 records per annum. Quarterly time-series possible. 	<ul style="list-style-type: none"> Published data in ONS migration reports (not regional) Individual data via ESDS data archive; (charges apply for consultancy projects). 	<ul style="list-style-type: none"> Small sample size means that there is very limited information
Workers Registration Scheme (WRS) (from Home Office)	<ul style="list-style-type: none"> Data on registrations (note – there is no data on deregistrations) by industry, occupation, geography (i.e. postcode district) and time period of registration for A8 migrants (excluding self-employed). 	<ul style="list-style-type: none"> Available via “Freedom of information” request 	<ul style="list-style-type: none"> Limited detail. Problems with accuracy of variable coding. Uncertain coverage.⁴⁰
Work Permits (from Home Office)	<ul style="list-style-type: none"> Data is available on work permits (for non EEA migrants) by employer’s postcode for nationality, occupation, industry and gender from 1995. 	<ul style="list-style-type: none"> Available via “Freedom of information” request 	<ul style="list-style-type: none"> No cross-tabulations available.
National Insurance registrations	<ul style="list-style-type: none"> Provide data on number of NI registrations by country of birth, geography, industry, time period. 	<ul style="list-style-type: none"> Available via “Freedom of information” request. 	<ul style="list-style-type: none"> Detail limited by need to preserve confidentiality. Problems with accuracy of variable coding.

⁴⁰ The National Farmers Union and Association of Labour Providers have suggested that there is a high degree of under-registration for WRS – partly because the high application fee discourages registration. However, some applicants stay for short periods only and this inflates estimates of stocks.

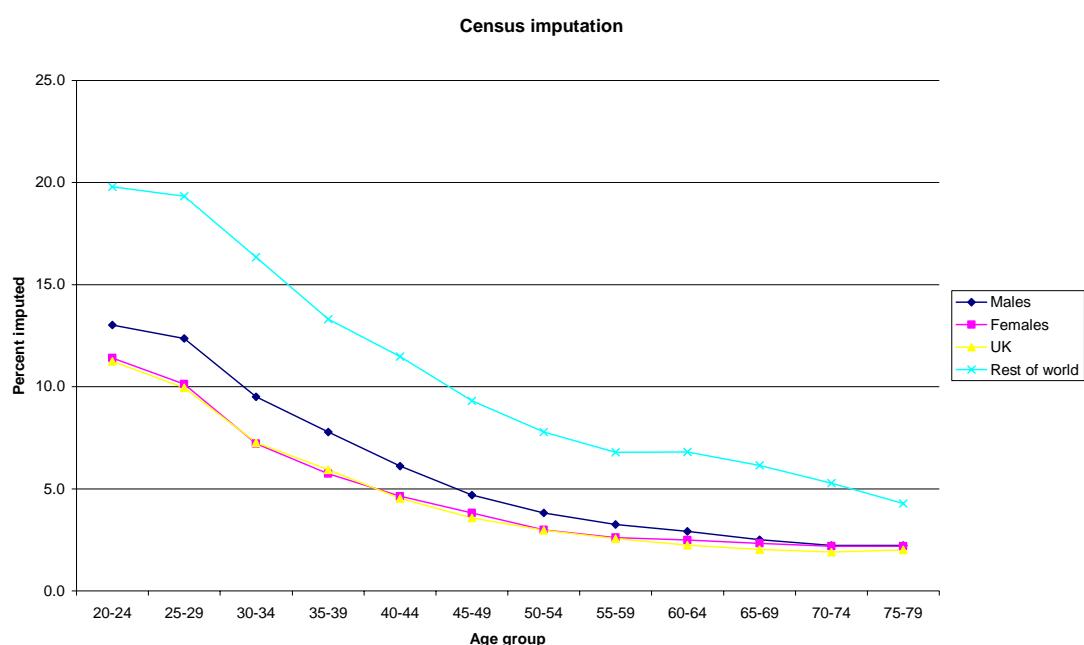
Annex 2: The undercount of international migrants in the Census

The Census and (other surveys) have difficulty in ensuring 100% coverage of the more mobile sections of the population. The reasons are numerous: address registers are not updated frequently enough to identify change of resident, or mobile people may not bother to register change of address; migrants may move outside the cycle of collection of surveys; migrants may live in the type of housing which surveys have difficulty in covering (e.g. communal housing which may be temporary or in converted buildings, or living with friends) and many migrants may not realise that the national Census applies to them. Therefore, it is likely that survey data sources will underestimate the migrant population.

Comparison of the 1991 Census results with those for 1981 “aged-on” by ten years revealed a serious problem of undercount for some population groups. Because of this, the 2001 Census was the first “One Number Census”, in which adjustment was made for the under-enumeration of sections of the population before the data was published, achieved by estimating the characteristics of the missing population on the basis of responses to the Census Coverage Survey, conducted 3 months after Census date. In 1991, young children, very old women, young men, ethnic minorities and people living in “houses in multiple occupation” were all undercounted by the Census. With the exception of the very young and old, many of these characteristics are also shared by international migrants, who might thus be expected to be undercounted by the Census (and other surveys). Their mobility would also mean that surveys would be likely to miss them.

The Office for National Statistics (ONS) has released some information on imputation via the One Number Census process. The undercount of young men intensified and underestimation of young women increased between 1991 and 2001. Census Commissioned Table c0683 contains information on imputation by country of birth, age and gender. The percentage of men, women, people born in the UK and people born outside the UK for whom their characteristics were imputed is presented in *Figure 1*.

Figure 1: Percentage of people born in selected countries for which the Census imputed their characteristics



Source: Census of Population 2001 Commissioned Table c0683

Clearly, males were less likely than females to be covered by the Census and the undercount of young people is also apparent. As well as the age-related trend, people born outside the UK were much more likely to have their details imputed by the Census than UK-born people⁴¹. Though not a direct measure of the undercount, this indicator strongly suggests that international migrants will have been more likely to be undercounted by the Census and other surveys than UK-born people of the same age.

⁴¹ It was estimated that for the population as a whole, the One Number Census underestimated the population aged 20-24 by about 15% for men and 13% for women (Diamond, I., Abbot, O. and Jackson, N. (2003) 'Key Issues in the Quality Assurance of the One Number Census', *Population Trends* 113, 11-19).

Annex 3: Rates of in-, out-, net and international migration by local authority district, 2000-2001 (migrants as a percentage of the resident population, 2001; table ranked in descending order of percentage of international migrants)⁴²

District	In	Out	Net	International
Rutland	8.6	7.6	1.3	2.0
Nottingham	6.9	6.4	0.7	1.2
Leicester	4.6	4.6	0.1	1.0
Broxtowe	5.1	5.6	-0.5	0.8
Charnwood	5.5	4.9	0.7	0.7
North Kesteven	7.6	6.0	1.7	0.6
South Northamptonshire	6.2	5.6	0.7	0.5
Rushcliffe	6.0	5.5	0.5	0.5
Northampton	4.3	4.5	-0.1	0.5
<i>East Midlands</i>	<i>4.7</i>	<i>4.4</i>	<i>0.4</i>	<i>0.4</i>
Lincoln	6.6	6.0	0.8	0.4
Derby	3.6	3.5	0.1	0.4
Daventry	6.4	5.5	1.0	0.4
Oadby and Wigston	6.1	6.7	-0.6	0.4
East Northamptonshire	6.0	4.4	1.7	0.4
Kettering	4.4	3.5	0.9	0.4
South Kesteven	4.5	4.1	0.4	0.4
Hinckley and Bosworth	3.6	3.8	-0.2	0.3
West Lindsey	5.3	5.1	0.2	0.3
East Lindsey	5.0	4.2	1.0	0.3
Boston	4.4	3.5	1.0	0.3
Derbyshire Dales	4.2	4.3	-0.1	0.3
South Derbyshire	5.1	4.5	0.6	0.3
South Holland	4.4	3.2	1.3	0.3
Melton	4.1	4.1	0.1	0.3
Wellingborough	4.5	4.4	0.1	0.3
Harborough	5.7	4.5	1.3	0.3
High Peak	3.4	3.4	0.0	0.3
Newark and Sherwood	4.4	3.9	0.6	0.3
North West Leicestershire	4.1	3.6	0.5	0.2
Bassetlaw	3.9	3.4	0.6	0.2
Gedling	4.2	4.7	-0.4	0.2
Blaby	4.8	4.7	0.1	0.2
Corby	2.6	2.8	-0.2	0.2
Erewash	3.4	3.5	0.0	0.2
North East Derbyshire	3.6	3.9	-0.3	0.2
Chesterfield	3.0	2.8	0.2	0.2
Mansfield	3.0	3.6	-0.6	0.1
Amber Valley	3.5	3.3	0.2	0.1
Ashfield	3.9	3.2	0.8	0.1
Bolsover	4.3	3.8	0.5	0.1

Source: Census of Population 2001 (Theme Table 33).

⁴² These rates are calculated as the number of in- and out- migrants from other parts of the UK, the difference between these quantities (net in-migration) and in-migrants from outside the UK during the year 2000-2001 as a percentage of the resident population in 2001.

Annex 4: Overseas nationals NI No registrations by local authority as a percentage of people in employment aged 16-64

	NI No registrations				Employed persons aged 16/64 in 2001	2005/06 registrations as a % of employed persons 16-64	Total registrations (2002/03 to 2005/06) as a % of employed persons 16-64
	2002/03	2003/04	2004/05	2005/06			
<i>EAST MIDLANDS</i>	13410	16510	23540	38540	62080	2.1	5.0
Derby City	1400	1410	1580	2760	4340	3.1	7.9
Leicester City	3820	4880	4920	7620	12540	7.3	20.4
Rutland	50	70	70	120	190	0.8	2.0
Nottingham	1920	2480	2990	4530	7520	4.8	12.7
Amber Valley	70	100	90	210	300	0.4	0.9
Bolsover	40	30	70	140	210	0.5	1.0
Chesterfield	130	150	170	260	430	0.6	1.7
Derbyshire Dales	40	60	90	230	320	0.7	1.3
Erewash	90	110	120	220	340	0.4	1.1
High Peak	60	80	120	180	300	0.4	1.0
North East Derbyshire	50	70	70	110	180	0.3	0.7
South Derbyshire	80	110	100	210	310	0.5	1.3
Blaby	120	140	140	250	390	0.6	1.4
Charnwood	430	660	680	1120	1800	1.6	4.2
Harborough	90	100	150	230	380	0.6	1.5
Hinckley and Bosworth	120	130	170	310	480	0.6	1.5
Melton	40	50	150	230	380	1.0	2.0
NW Leicestershire	80	100	220	470	690	1.2	2.2
Oadby and Wigston	130	130	150	190	340	0.8	2.4
Boston	280	460	1380	2300	3680	9.6	18.5
East Lindsey	110	120	350	800	1150	1.6	2.7
Lincoln	340	440	1020	1270	2290	3.6	8.8
North Kesteven	70	120	280	330	610	0.8	1.9
South Holland	210	380	1250	1910	3160	5.7	11.2
South Kesteven	250	330	560	950	1510	1.6	3.6
West Lindsey	60	80	110	200	310	0.6	1.3
Corby	120	140	550	1190	1740	5.0	8.4
Daventry	170	130	260	500	760	1.4	3.0
East Northamptonshire	110	110	150	350	500	0.9	1.9
Kettering	240	290	320	600	920	1.5	3.7
Northampton	1430	1500	2940	4570	7510	5.0	11.5
South Northamptonshire	140	130	180	260	440	0.6	1.8
Wellingborough	210	230	380	930	1310	2.8	5.2
Ashfield	60	120	140	250	390	0.5	1.2
Bassetlaw	100	130	380	550	930	1.2	2.6
Broxtowe	260	300	400	660	1060	1.3	3.3
Gedling	130	170	190	260	450	0.5	1.4
Mansfield	90	110	190	520	710	1.3	2.3
Newark and Sherwood	100	120	240	410	650	0.9	1.9
Rushcliffe	170	240	220	340	560	0.7	2.0

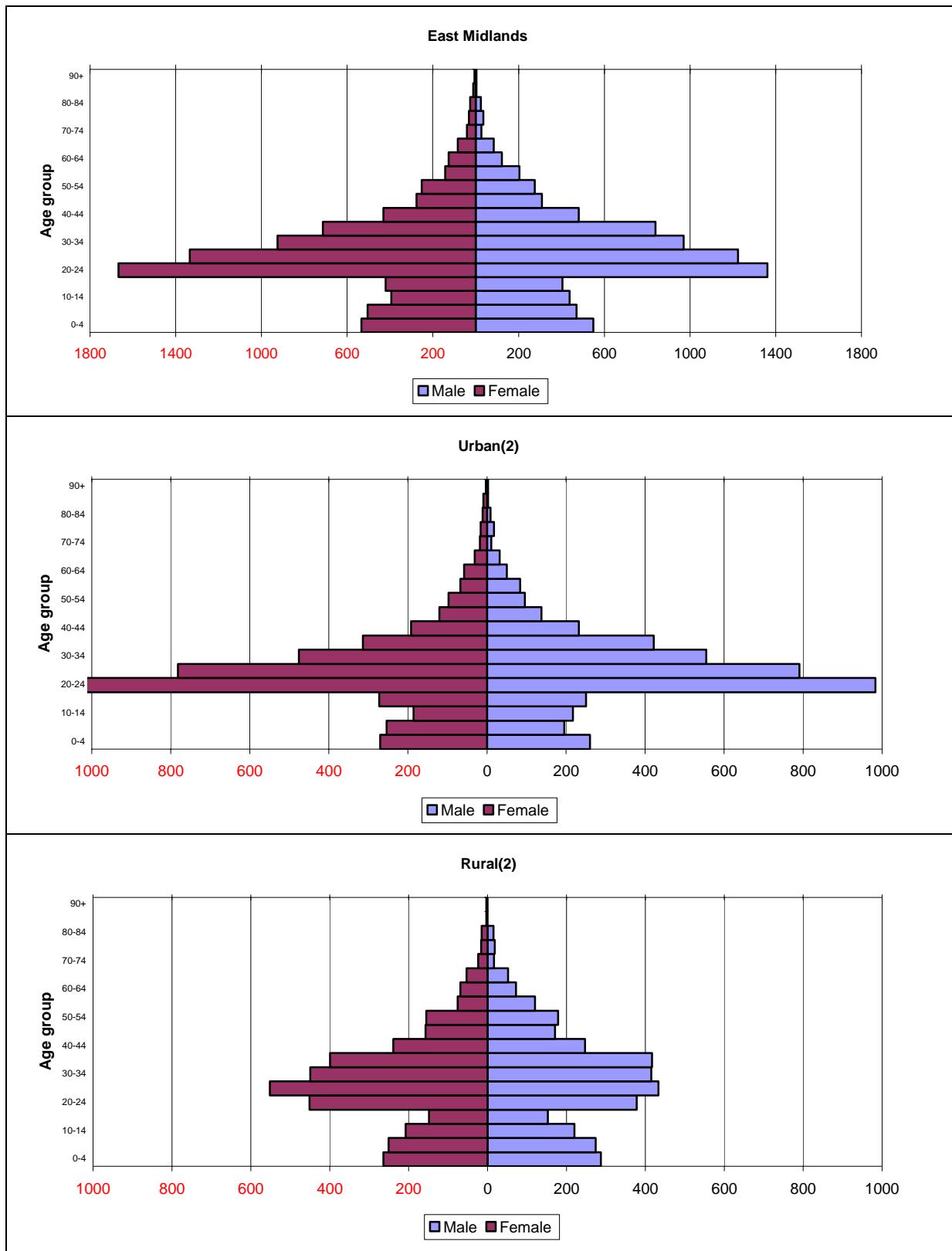
Source: NI No registrations; 2001 Census Theme Table 7.

Annex 5: WRS approvals by East Midlands local authority area, May 2004 – June 2006

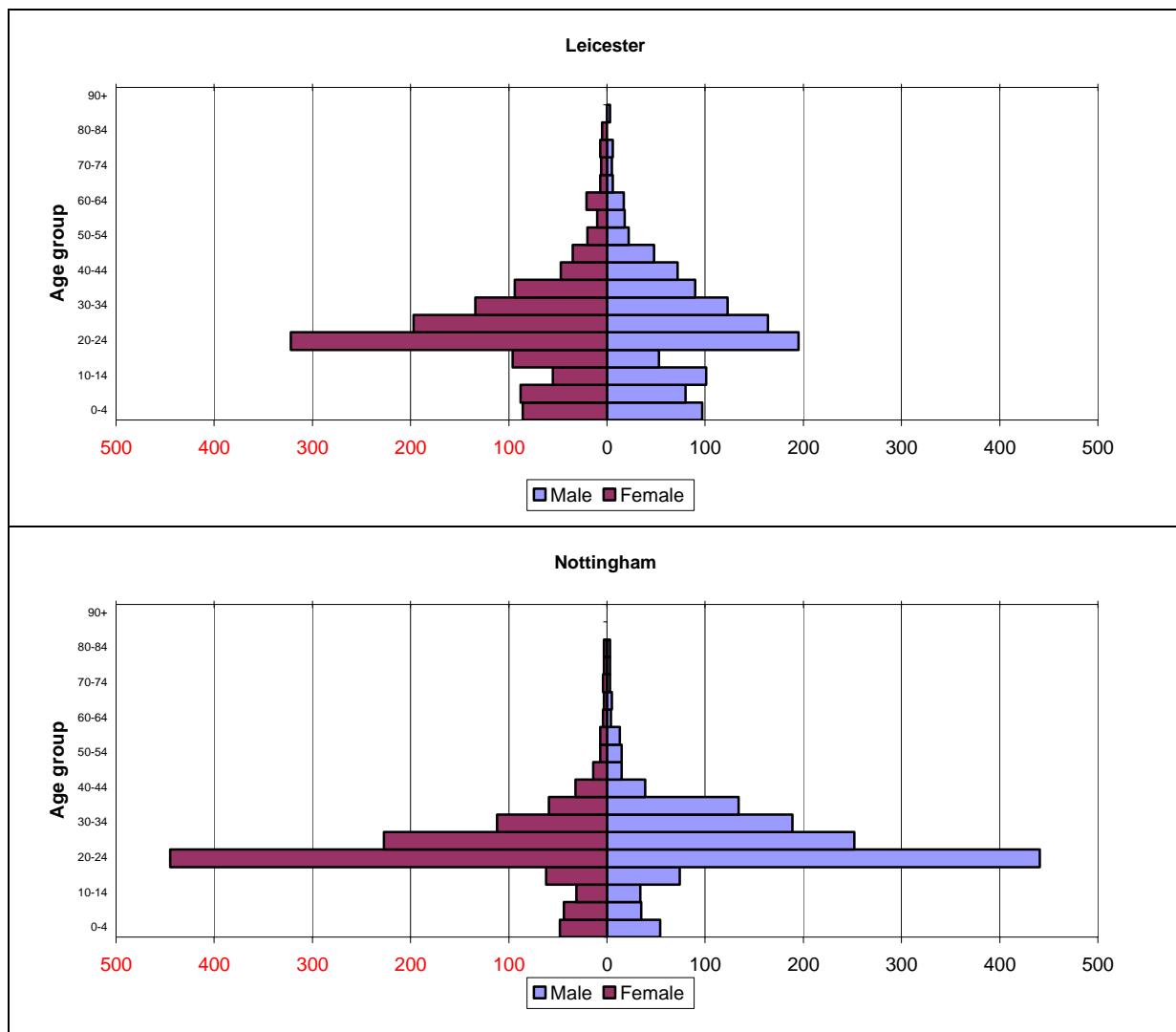
Local authority area	WRS approvals, May 2004 to June 2006	% of regional total of WRS approvals, May 2004 to June 2006
Northampton	7519	20.3
Boston	4527	12.2
South Holland	3328	9.0
Nottingham	2867	7.7
Leicester	2687	7.2
Gedling	1585	4.3
Derby	1530	4.1
North Kesteven	1473	4.0
Corby	1377	3.7
South Kesteven	1013	2.7
East Lindsey	813	2.2
Newark&Sherwood	773	2.1
Wellingborough	715	1.9
Mansfield	707	1.9
Daventry	530	1.4
Lincoln	517	1.4
Bassetlaw	498	1.3
West Lindsey	445	1.2
Harborough	369	1.0
S. Derbyshire	367	1.0
Derbyshire Dales	355	1.0
Kettering	314	0.8
E Northamptonshire	302	0.8
Ashfield	299	0.8
S Northamptonshire	298	0.8
NW Leicestershire	289	0.8
Charnwood	285	0.8
Hinckley&Bosworth	278	0.7
Melton	163	0.4
Amber Valley	162	0.4
Broxtowe	113	0.3
Chesterfield	110	0.3
Rutland	109	0.3
High Peak	89	0.2
NE Derbyshire	84	0.2
Rushcliffe	68	0.2
Erewash	49	0.1
Oadby and Wigston	35	0.1
Blaby	34	0.1
Bolsover	27	0.1
East Midlands	37103	100.0

Source: WRS applications, FoI request.

Annex 6: Age structure of international migrants by gender for selected areas in the East Midlands, 2000/2001



Source: Census of Population 2001 (Standard Table 8).



Source: Census of Population 2001 (Standard Table 8).

Annex 7: Concentrations of migrants by occupation and industry

a) East Midlands: Chi-square values (those shaded are significant) for people born outside the UK working in each industry and occupation, 2001

SOC Sub-major group (code)	Agriculture, Hunting and Forestry	Fishing	Mining and Quarrying	Manufacturing	Electricity, Gas and Water Supply	Construction	Wholesale and Retail Trade; Repair of Motor Vehicles, Hotels and Restaurants	Transport, Storage and Communication	Financial Intermediation	Real Estate, Renting and Business Activities	Public Administration and Defence; Compulsory Social Education	Health and Social Work	Other Community, Social and Personal Service Activities	Private Households Employing Domestic Staffand	Extra - Territorial Organisations and Bodies	All industries		
11	1.00	1.00	0.14	0.00	0.13	0.08	0.23	0.79	0.00	0.46	0.02	0.01	0.76	0.13	0.27	1.00	56.72	0.02
12	0.13	1.00	1.00	0.45	1.00	0.78	4.67	115.18	0.13	1.00	0.02	1.00	0.80	0.48	0.55	1.00	1.00	0.20
21	1.00	1.00	14.28	0.53	15.17	0.80	0.47	1.00	0.16	0.04	5.62	0.40	0.26	0.68	0.30	1.00	1.00	0.01
22	1.00	1.00	1.00	0.41	1.00	0.25	0.30	1.00	1.00	1.00	1.00	1.00	0.14	1255.34	0.03	1.00	1.00	11.57
23	1.00	1.00	1.00	0.70	1.00	0.82	0.86	1.00	0.81	1.00	0.26	0.14	112.01	0.33	0.48	1.00	437.30	0.01
24	1.00	1.00	1.00	0.19	1.00	0.64	0.72	0.48	1.00	0.01	11.54	0.04	0.41	0.48	1.72	1.00	1.00	0.00
31	1.00	1.00	1.00	0.00	1.00	0.38	0.40	1.00	0.02	0.09	1.16	0.00	0.86	0.76	0.13	1.00	1.00	0.03
32	1.00	1.00	1.00	0.83	1.00	1.00	0.82	1.00	1.00	1.00	0.34	0.47	0.05	53.15	0.03	1.00	1.00	0.02
33	1.00	1.00	1.00	0.77	1.00	1.00	1.00	1.00	1.00	1.00	107.74	1.00	0.60	1.00	1.00	109267	0.07	
34	1.00	1.00	1.00	0.00	1.00	1.00	0.14	0.34	1.00	0.15	1.90	0.40	1.00	0.01	33.60	1.00	1.00	0.00
35	1.00	1.00	0.30	0.01	0.04	0.54	0.04	0.75	0.00	9.75	0.23	0.10	0.58	0.51	0.01	1.00	1.00	0.02
41	1.00	1.00	1.00	0.16	1.95	0.36	0.13	0.75	0.03	6.02	0.18	3.38	0.27	0.26	0.40	1.00	404.35	0.02
42	1.00	1.00	1.00	0.16	0.03	0.13	0.21	0.37	0.74	0.51	0.00	0.09	0.03	0.02	0.32	1.00	1.00	0.13
51	9.38	1.00	1.00	0.77	1.00	0.43	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.18	1.00	1.00	0.69
52	1.00	1.00	1.00	0.56	0.09	0.20	0.01	1.00	0.00	1.00	0.40	1.00	1.00	1.00	0.55	1.00	312.77	0.09
53	0.33	1.00	1.00	0.59	0.00	18.11	0.84	0.69	1.00	1.00	0.86	1.00	1.00	0.73	0.67	1.00	1.00	0.27
54	1.00	1.00	1.00	2.27	1.00	0.46	0.29	340.24	0.42	1.00	0.32	1.00	0.50	0.33	0.01	1.00	1.00	0.75
61	0.47	1.00	1.00	1.00	1.00	0.85	1.00	0.77	1.00	1.00	0.21	0.12	0.45	14.69	0.75	621.29	1.00	0.06
62	1.00	1.00	1.00	1.00	1.00	1.00	0.84	0.09	0.41	1.00	0.02	0.50	0.18	0.03	18.58	1.00	1.00	0.13
71	1.00	1.00	1.00	0.67	0.02	0.76	6.33	0.30	0.87	0.09	0.69	0.68	0.89	1.00	0.62	1.00	1.00	0.03
72	1.00	1.00	1.00	0.29	114.82	0.46	0.14	1.00	0.19	1.37	0.12	1.00	1.00	1.00	0.21	1.00	1.00	0.09
81	1.00	1.00	3.92	37.15	0.24	0.14	0.01	0.55	0.77	1.00	0.16	0.38	1.00	0.86	0.39	1.00	1.00	0.56
82	1.00	1.00	0.49	0.06	0.02	0.02	0.31	0.50	38.82	1.00	0.23	0.75	0.54	0.76	0.46	1.00	1.00	0.01
91	1.96	1.00	1.00	2.97	0.15	0.15	0.10	0.34	1.09	0.29	0.04	0.52	1.00	1.00	0.60	1.00	1.00	0.03
92	1.00	1.00	1.00	0.46	1.00	1.00	0.06	35.20	0.08	0.44	0.02	0.63	0.00	0.25	0.71	1.00	1.00	0.01
All	0.55	1.00	0.20	0.05	0.01	0.16	0.00	0.44	0.01	0.01	0.00	0.04	0.01	0.01	0.04	0.08	55.96	0.00

b) East Midlands: Chi-square values (those shaded are significant) for people born outside the UK and who arrived in the UK during 2000/01 working in each industry and occupation, 2001

SOC Sub-major group (code)	Agriculture, Hunting and Forestry	Fishing	Mining and Quarrying	Manufacturing	Electricity, Gas and Water Supply	Construction	Wholesale and Retail Trade; Repair of Motor Vehicles, Hotels and Restaurants	Transport, Storage and Communication	Financial Intermediation	Real Estate, Renting and Business Activities	Public Administration and Defence; Compulsory Social Education	Health and Social Work	Other Community, Social and Personal Service Activities	Private Households Employing Domestic Staffand	Extra - Territorial Organisations and Bodies	All industries
11	1.00	1.00	1.00	0.70	213.25	0.18	0.01	0.58	0.13	0.08	0.03	8.59	1.00	1.00	1.00	0.03
12	1.00	1.00	1.00	0.11	1.00	1.00	1.33	3.47	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.12
21	1.00	1.00	1.00	1.75	349.94	11.30	0.03	1.00	1.98	1.00	148.89	3.91	1.00	0.19	1.00	3.60
22	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	960.83	1.00	1.00	1.00	5.77
23	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1648.	0.00	1.00	1.00	5.81
24	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	37.42	10.83	11.26	1.00	1.00	1.00	1.00	0.01
31	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.19	1.00	1.00	1.00	1.00	1.00	0.61
32	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	51.18	1.00	179.46	1.00	1.00	0.90
33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	26.77	1.00	1.00	8212.	16.60	1.00	1.00	20.00
34	1.00	1.00	1.00	4.44	1.00	1.00	1.00	1.00	1.00	3.78	1.00	1.00	39.64	1.00	1.00	0.05
35	1.00	1.00	1.00	0.25	139.24	0.17	1.00	1.00	1.00	1.00	3.45	8.23	1.00	1.00	1.85	1.00
41	1.00	1.00	1.00	1.00	1.00	1.00	0.53	1.00	0.05	0.35	0.00	0.00	1.00	1.00	1.00	0.49
42	1.00	1.00	1.00	1.00	1.00	1.00	0.04	1.00	1.00	1.00	1.00	0.78	0.13	1.00	1.00	0.32
51	432.74	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.37
52	1.00	1.00	1.00	0.01	1.00	1.00	1.00	1.00	1.00	1.00	1.00	5.97	1.00	1.00	1.00	0.42
53	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
54	1.00	1.00	1.00	0.01	1.00	1.00	1.00	47.98	3.44	1.00	1.00	1.00	1.00	1.00	1.00	0.08
61	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.94	1.00	1.00	1.00	0.03	10.42	1.31	43152.	1.00
62	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	108.18	1.00	1.00	0.27
71	8.76	1.00	1.00	1.00	1.00	1.00	3.00	0.31	0.02	1.00	0.10	1.00	1.00	1.00	1.00	0.05
72	1.00	1.00	1.00	1.00	2130.	1.00	9.05	1.00	22.69	1.00	1.00	1.00	1.00	1.00	1.00	0.21
81	1.00	1.00	1.00	2.48	1.00	1.00	0.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.13
82	1.00	1.00	1.00	1.00	1.00	1.00	0.16	1.00	5.88	1.00	1.00	1.00	1.00	1.00	1.00	0.46
91	1.00	1.00	1.00	0.03	1.00	1.46	0.02	1.00	7.05	1.00	0.07	1.00	1.00	1.00	1.00	0.02
92	1.00	1.00	1.00	1.00	1.00	1.00	1.00	79.61	2.83	1.00	0.40	1.00	0.07	1.00	19.32	1.00
All	0.25			0.10	5.99	0.38	0.17	0.21	0.00	0.33	0.02	1.81	1.04	0.00	0.00	86.83
														!		0.00

Annex 8: Occupational profile of WRS approvals in the East Midlands

a) SOC Sub-Major Groups in which registered workers are employed in the East Midlands, by quarter applied, May 2004 – June 2006

Occupation	04/2004	07/2004	10/2004	01/2005	04/2005	07/2005	10/2005	01/2006	04/2006	Total
11 : Corporate Managers	19	19	19	17	10	17	9	8	12	130
12 : Managers and Proprietors in Agriculture and Services	18	14	10	10	9	19	7	7	15	109
21 : Science and Technology Professionals	3	6	7	5	9	12	10	14	3	69
22 : Health Professionals	0	0	1	12	8	7	15	8	11	62
23 : Teaching and Research Professionals	1	2	5	3	2	3	5	8	3	32
24 : Business and Public Service Professionals	6	1	1	2	0	12	3	2	7	34
31 : Science and Technology Associate Professionals	13	1	0	0	8	3	4	2	0	31
32 : Health and Social Welfare Associate Professionals	4	1	1	6	4	5	5	11	2	39
33 : Protective Service Occupations	0	0	1	0	0	0	0	0	0	1
34 : Culture, Media and Sports Occupations	0	5	2	7	8	5	9	12	4	53
35 : Business and Public Service Associate Professionals	2	13	8	4	8	4	7	4	6	56
41 : Administrative Occupations	4	25	25	14	19	19	21	16	18	161
42 : Secretarial and Related Occupations	17	12	13	7	19	18	19	24	11	140
51 : Skilled Agricultural Trades	0	17	35	28	29	24	13	36	22	204
52 : Skilled Metal and Electronic Trades	2	24	59	49	60	51	91	98	76	510
53 : Skilled Construction and Building Trades	0	26	17	14	26	39	29	46	33	230
54 : Textiles, Printing and Other Skilled Trades	23	105	188	148	159	100	168	173	106	1170
61 : Caring Personal Service Occupations	6	46	68	85	101	128	115	103	91	743
62 : Leisure and Other Personal Service Occupations	8	5	1	10	8	17	5	6	12	72
71 : Sales Occupations	0	52	54	24	29	55	42	50	60	366
72 : Customer Service Occupations	0	3	4	2	5	2	1	4	6	27
81 : Process, Plant and Machine Operatives	436	1419	1780	1596	2471	2660	2671	2509	2256	17798
82 : Transport and Mobile Machine Drivers and Operatives	17	65	167	108	166	157	158	145	116	1099
91 : Elementary Trades, Plant and Storage Related Occupations	476	1288	976	1191	1259	1503	1502	1516	1284	10995
92 : Elementary Administration and Service Occupations	143	365	313	276	330	469	415	412	402	3125
	1198	3514	3755	3618	4747	5329	5324	5214	4556	37256

Source: WRS applications, Fol request.

b): Percentage share of registered worker employment by SOC Sub-Major Group in the East Midlands, by quarter applied, May 2004 – June 2006

Occupation	04/2004	07/2004	10/2004	01/2005	04/2005	07/2005	10/2005	01/2006	04/2006	Total
11 : Corporate Managers	1.6	0.5	0.5	0.5	0.2	0.3	0.2	0.2	0.3	0.3
12 : Managers and Proprietors in Agriculture and Services	1.5	0.4	0.3	0.3	0.2	0.4	0.1	0.1	0.3	0.3
21 : Science and Technology Professionals	0.3	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.1	0.2
22 : Health Professionals	0.0	0.0	0.0	0.3	0.2	0.1	0.3	0.2	0.2	0.2
23 : Teaching and Research Professionals	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.1	0.1
24 : Business and Public Service Professionals	0.5	0.0	0.0	0.1	0.0	0.2	0.1	0.0	0.2	0.1
31 : Science and Technology Associate Professionals	1.1	0.0	0.0	0.0	0.2	0.1	0.1	0.0	0.0	0.1
32 : Health and Social Welfare Associate Professionals	0.3	0.0	0.0	0.2	0.1	0.1	0.1	0.2	0.0	0.1
33 : Protective Service Occupations	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34 : Culture, Media and Sports Occupations	0.0	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.1
35 : Business and Public Service Associate Professionals	0.2	0.4	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.2
41 : Administrative Occupations	0.3	0.7	0.7	0.4	0.4	0.4	0.4	0.3	0.4	0.4
42 : Secretarial and Related Occupations	1.4	0.3	0.3	0.2	0.4	0.3	0.4	0.5	0.2	0.4
51 : Skilled Agricultural Trades	0.0	0.5	0.9	0.8	0.6	0.5	0.2	0.7	0.5	0.5
52 : Skilled Metal and Electronic Trades	0.2	0.7	1.6	1.4	1.3	1.0	1.7	1.9	1.7	1.4
53 : Skilled Construction and Building Trades	0.0	0.7	0.5	0.4	0.5	0.7	0.5	0.9	0.7	0.6
54 : Textiles, Printing and Other Skilled Trades	1.9	3.0	5.0	4.1	3.3	1.9	3.2	3.3	2.3	3.1
61 : Caring Personal Service Occupations	0.5	1.3	1.8	2.3	2.1	2.4	2.2	2.0	2.0	2.0
62 : Leisure and Other Personal Service Occupations	0.7	0.1	0.0	0.3	0.2	0.3	0.1	0.1	0.3	0.2
71 : Sales Occupations	0.0	1.5	1.4	0.7	0.6	1.0	0.8	1.0	1.3	1.0
72 : Customer Service Occupations	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1
81 : Process, Plant and Machine Operatives	36.4	40.4	47.4	44.1	52.1	49.9	50.2	48.1	49.5	47.8
82 : Transport and Mobile Machine Drivers and Operatives	1.4	1.8	4.4	3.0	3.5	2.9	3.0	2.8	2.5	2.9
91 : Elementary Trades, Plant and Storage Related Occupations	39.7	36.7	26.0	32.9	26.5	28.2	28.2	29.1	28.2	29.5
92 : Elementary Administration and Service Occupations	11.9	10.4	8.3	7.6	7.0	8.8	7.8	7.9	8.8	8.4
	100.0									

Source: WRS applications, FoI request.

c): Numbers of registered workers in SOC Sub-Major Groups with largest numbers of such workers in the East Midlands, by quarter applied, May 2004 – June 2006

Occupation	04/2004	07/2004	10/2004	01/2005	04/2005	07/2005	10/2005	01/2006	04/2006	Total
521 : Metal Forming, Welding And Related Trades	0	18	41	24	40	29	45	64	38	299
522 : Metal Machining, Fitting & Instrument Making Trades	2	3	12	9	7	11	21	12	21	98
523 : Vehicle Trades	0	0	2	5	5	2	0	3	7	24
524 : Electrical Trades	0	3	4	11	8	9	25	19	10	89
543 : Food Preparation Trades	2	24	59	49	60	51	91	98	76	510
6115: Care assistants and home carers	0	32	61	82	79	117	106	98	85	660
8111: Food, drink and tobacco process operatives	401	1413	1761	1573	2446	2630	2653	2496	2244	17617
821 : Transport Drivers And Operatives	17	19	97	86	112	121	125	103	79	759
822 : Mobile Machine Drivers And Operatives	0	46	70	22	54	36	33	42	37	340
911 : Elementary Agricultural Occupations	454	718	237	301	358	492	221	375	238	3394
912 : Elementary Construction Occupations	0	92	57	45	61	75	80	91	91	592
913 : Elementary Process Plant Occupations	2	318	376	474	445	466	429	399	302	3211
914 : Elementary Goods Storage Occupations	20	160	306	371	395	470	772	651	653	3798
921 : Elementary Administration Occupations	0	36	38	23	31	68	31	32	37	296
922 : Elementary Personal Services Occupations	115	217	160	137	177	217	162	165	189	1539
923 : Elementary Cleaning Occupations	28	107	110	114	118	170	211	177	153	1188
924 : Elementary Security Occupations	0	3	0	0	2	14	9	34	19	81
925 : Elementary Sales Occupations	0	2	5	2	2	0	2	4	4	21

Source: WRS applications, Fol request.

Annex 9: Details of methodology for identifying migrants and merging LFS datasets for analysis of migrant density of employment

LFS data used in analyses

The Labour Force Survey (LFS) is based on a sample survey of households in the UK. The LFS is organised on a rolling cohort basis. An individual who enters the survey is tracked for 5 successive quarters and then leaves. Therefore each quarter one fifth of the LFS sample leaves the survey and the sample is replenished by incorporating a new wave of people. Based on this design, and to avoid double counting of individuals, we merge every 5th quarterly LFS since spring 2002. This ensures that everybody entering the LFS since spring 2001 is included in the analysis. The following LFS quarterly datasets are merged:

- Mar-May 2002 quarterly LFS (i.e. includes everybody entering since March 2001)
- Jun-Aug 2003 LFS
- Sep-Nov 2004 LFS
- Dec 2005 - Feb 2006 LFS

Definition of Migrants

For the purposes of the LFS analysis migrant workers are defined using the variables:

- CRYO (country of origin)
- CAMEYR (year of arrival to UK; where applicable)

Using these variables, a migrant is defined as a person born outside of the UK⁴³. The analysis is then restricted to more recent migrants. Two definitions are utilised, based on those arrived in the UK after a particular point in time. The following two groups are defined:

- Post 1991 migrants (i.e. those arriving in the UK after 1991, or equivalently within the past 15 years)
- Post 2001 migrants (i.e. those arriving in the UK after 2001, or equivalently within the past 5 years)

Some attention is paid also to:

- A8 migrants (i.e. those arriving in the UK from Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia or Slovenia following the enlargement of the EU in 2004)

However in the latter case there are serious issues relating to sample numbers for the East Midlands region.

Sample numbers

Based on the merged LFS sample described above we are able to analyse density of employment based on the sample numbers shown in Table 9.1. These relate to the number of migrants who are in employment at the time of the survey. As well as the raw sample numbers the table also presents the aggregated estimate of the actual population numbers based on an application of the LFS weights⁴⁴. Note that the numbers of A8 migrants are based on an analysis of the latest of the merged quarterly LFS datasets (i.e Dec 2005 - Feb 2006) since A8 migrant numbers increase significantly only after 2004. It therefore must be noted therefore that the migrant population estimates are calculated on a different basis and cannot therefore be compared directly.

⁴³ i.e. CRYO >= 6. Note that migrants include those born in the Republic of Ireland.

⁴⁴ The LFS weights are used for re-grossing purposes and are designed such that the quarterly LFS fully weighted reconciles back to the population base, on various dimensions, by Government Office region.

As shown in Table 9.1, raw LFS sample numbers of migrant workers in the East Midlands region (unweighted) are fairly small, even based on the merged LFS datasets. In part this is due to the relatively small size of the region, in employment terms, compared to the UK as a whole. For the East Midlands region, densities of employment (see next section) are calculated based on proportions of employment for the 369 post-1991 and 141 post-2001 migrant workers. A separate analysis of density of employment of A8 migrant by sector and occupation is not undertaken given the very restricted sample numbers available in the region.

Table 9.1 Numbers of working migrants in LFS

Definition	East Midlands		United Kingdom	
	Sample	Weighted Population	Sample	Weighted Population
Migrants				
Post 1991	369	47,000	8,371	1,141,000
Post 2001	141	19,000	2,443	339,000
A8 **	47	24,000	408	229,000
Total Workforce				
All	17,001	2,036,000	219,000	28,020,000

Notes: (1). ** Numbers and population estimates of A8 migrants are based on the latest LFS (Dec 2005 - Feb 2006); (2). The East Midlands region is based on information taken from the LFS on Government Office Region of residence; (3). Weighted population estimates are rounded to the nearest thousand.

Annex 10: Details of migrant dense industries and occupations

Table 10.1 Migrant dense industry sectors in the East Midlands

Industry Sector	% employment of: post 1991 migrants	% empl. of UK born	Relative Employment of Migrants
H * Hotels & Restaurant	9.0	11.5	2.34
K * Real Estate, Renting	14.1	14.4	1.48
N * Health & Social Work	14.2	12.6	1.25
D Manufacturing	21.0	22.9	1.12
I Transport, Storage	7.2	10.8	1.08
All Migrant Dense Sectors	65.6	72.1	1.30
Employed Population (000)	46.6	18.6	2012.4
LFS Sample Size	368	141	1,683

Note: (1) Sectors are ranked by relative employment of migrants using the post 1991 definition.

(2) * Indicates an industry division which is also found to be migrant dense for the UK as a whole.

(3) Industries where LFS regressed estimates of total employment in the East Midlands are less than 3,000 are treated as being non-reportable and are therefore excluded from the analysis.

Table 10.2 Migrant dense industry divisions in the East Midlands

SIC Industry Division	% Employment of: post 1991 migrants	% Empl. of UK born	Relative Employment of Migrants
18 Manufacture of Clothing	2.5	2.4	5.27
15 * Manufacture of Food Products and Beverages	7.4	8.0	3.71
32 * Manufacture of Radio, Television Equipment	0.7	1.6	2.60
55 * Hotels and Restaurants	9.0	11.5	2.34
91 Activities of Membership Organisations NEC	1.3	1.4	2.16
51 Wholesale Trade (excl. Motor Vehicles)	5.5	7.0	1.80
74 Other Business Activities	10.0	13.1	1.61
26 * Manufacture of Other Mineral Products	1.0	1.7	1.41
17 Manufacture of Textiles	1.0	1.4	1.32
25 Manufacture of Rubber and Plastic Products	1.8	2.2	1.27
85 * Health and Social Work	14.2	12.6	1.25
35 Manufacture of Other Transport Equipment	1.3	1.5	1.19
60 Land Transport; Transport Via Pipelines	2.9	5.0	1.17
63 * Auxiliary Transport Activities	2.8	4.3	1.17
All Migrant Dense Sectors	61.3	73.7	1.68
Employed Population (000)	46.6	18.6	2012.4
LFS Sample Size	368	141	1,683

Note: (1) Sectors are ranked by relative employment of migrants using the post 1991 definition.

(2) * Indicates an industry division which is also found to be migrant dense for the UK as a whole.

(3) Industries where LFS regressed estimates of total employment in the East Midlands is less than 3,000 are treated as being non-reportable and are therefore excluded from the analysis.

Table 10.3 Migrant dense 2-digit occupations in the East Midlands

SOC 2 digit	% employment of: post 1991 migrants	% employment of: post 2001 migrants	% empl. of UK born	Relative Employment of Migrants
22 * Health Professionals	2.4	1.5	0.7	3.50
72 Customer Service Occupations	2.9	1.4	1.2	2.36
91 * Elementary Trades, Plant and Storage Related	9.8	16.4	4.7	2.08
81 Process, Plant and Machine Operatives	11.1	11.6	5.5	2.01
92 * Elementary Administration and Service	15.5	20.2	8.5	1.82
23 Teaching and Research Professionals	5.7	5.0	4.1	1.38
24 * Business and Public Service Professionals	3.1	3.0	2.6	1.23
82 Transport & Mobile Machine Drivers and Operatives	5.1	7.4	4.3	1.19
61 * Caring Personal Service Occupations	6.4	9.5	6.0	1.07
All Migrant Dense Sectors	61.9	75.9	37.5	1.65
Weighted Employment Estimate (000)	46.6	18.6	2012.4	
LFS Sample Size	368	141	1,683	

Table 10.4 Migrant dense 3-digit occupations in the East Midlands

SOC 3 digit	% employment of: post 1991 migrants	% employment of: post 2001 migrants	% empl. of UK born	Relative Employ ment of Migrants
232 * Research Professionals	1.4	1.4	0.2	8.29
913 * Elementary Process Plant Occupations	6.9	12.2	1.3	5.13
244 * Public Service Professionals	1.7	1.5	0.5	3.69
811 * Process Operatives	6.3	6.1	1.8	3.56
221 * Health Professionals	2.4	1.5	0.7	3.50
Information And Communication				
213 * Technology Professionals	3.7	1.8	1.1	3.32
Elementary Personal Services				
922 * Occupations	9.0	14.5	3.2	2.78
721 Customer Service Occupations	2.9	1.4	1.2	2.36
924 Elementary Security Occupations	2.0	1.4	1.1	1.88
813 Assemblers And Routine Operatives	3.7	4.8	2.1	1.74
Healthcare And Related Personal				
611 * Services	5.3	8.7	3.1	1.70
321 * Health Associate Professionals	3.7	2.6	2.2	1.63
923 * Elementary Cleaning Occupations	3.7	3.6	2.7	1.40
Metal Forming, Welding And Related				
521 Trades	0.9	0.8	0.7	1.31
822 Mobile Machine Drivers And Operatives	1.0	0.9	0.8	1.27
243 Architects, Town Planners, Surveyors	0.6	1.5	0.5	1.20
821 Transport Drivers And Operatives	4.2	6.5	3.6	1.17
All Migrant Dense Sectors	59.1	71.2	26.7	2.22
Employed Population (000)	46.6	18.6	2012.4	
LFS Sample Size	368	141	1683	

Note: (1) Occupations are ranked by relative employment of migrants using the post 1991 definition. (2) * Indicates an occupation which is also found to be migrant dense for the UK as a whole. (3) Occupations where LFS regressed estimates of total employment in the East Midlands is less than 3,000 are treated as being non-reportable and are therefore excluded from the analysis.

Annex 11: Details of analysis of migrants and wages

Data

Merged LFS data for 2001-2006 is used in the analysis of earnings data. Data on earnings is recorded in the first and last wave of the LFS where each individual in the LFS is tracked for 5 successive quarters. To avoid double counting of individuals we use *first wave* data on earnings only. The earnings data therefore consists of a merged dataset of each wave 1 (only) of the LFS for the period:

- 2001 Mar-May – 2006 Apr-Jun

Information on earnings is retained in the form of gross hourly pay. This information is taken from the LFS variable **HOURPAY** which is an Office for National Statistics (ONS) derived variable calculated based on the responses to questions relating to gross hourly pay (GRSSWK) and total hours worked in main job. The total hours worked is obtained from the LFS variable TTACHR which records total actual hours worked in main job, including overtime. It is important to note in using the LFS that information on pay is based on individual recall of earnings in the previous week. Consequently, there is scope for potential recall error and response bias (i.e. under- or over-stating of income). In order to make meaningful comparisons, wages in each period were **adjusted** (i.e. inflated upwards in each respective quarter) to spring 2006 wage levels, using a separate index for the East Midlands and the UK as a whole constructed from mean wages for each quarter.

Wage gaps and differential wage growth

Table 11.1 compares hourly wages for UK-born and migrant workers.

Table 11.1 Comparisons of hourly wages for UK-born and migrant workers

Descriptive Statistic	East Midlands	UK
UK-born workers		
Mean (£)	10.35	11.04
Median (£)	8.51	8.84
Inter quartile range (£)	6.15 – 12.49	6.25 – 13.30
Sample	12,405	159,757
Post-1991 Migrant workers		
Mean (£)	9.29	11.39
Median (£)	7.31	8.56
Inter quartile range (£)	5.41 – 10.43	5.89 – 13.50
Sample	275	5,653
Post-2001 Migrant workers		
Mean (£)	8.23	10.06
Median (£)	6.21	7.40
Inter quartile range (£)	5.14 – 8.51	5.46 – 11.53
Sample	107	1,15

Source: merged LFS datasets 2001-2006.

Note: Figures are based on spring 2006 (constant) adjusted wage levels.

A simple regression model, which models median wage levels and growth (expressed using a standard logarithmic equation) against dummy variables (*M(.)*) for migrants by years of

arrival, pre-1992, 1992-2001 and post 2001 respectively, plus a dummy variable to incorporate the East Midlands specific effects (em), was used to consider the wage gap and wage growth for groups of migrants depending on year of arrival in the UK. The regression model is shown in equation (1). The results are shown in Table 11.2.

$$\log[w(t)] = [\alpha + g \cdot t] [1 + \phi_1 M(pre - 1992) + \phi_2 M(1992 - 01) + \phi_3 M(post - 2001) + em] \quad (1)$$

Table 11.2 Wages and median wage growth for migrant and UK-born workers

Year of arrival	Wage Level (£ per hour)	Wage trend (Percent per annum)
Base category		
UK-born	7.20 * (1.00)	4.15 * (0.12)
Migrant by year of arrival (difference)		
Pre-1992	0.76 * (0.12)	0.16 (0.53)
1992 - 2001	0.43 * (0.17)	-0.93 (0.74)
2001 -	-0.90 (0.50)	-1.21 (1.66)
East Midlands	-0.60 * (0.10)	0.59 (0.42)

Source: merged LFS datasets 2001-2006.

Note : standard error in brackets * significantly different from zero at the 5 percent error level.

Regression models of the effects of migrant dense employment sectors on wages

The regression model, shown in equation (2), models median wage levels and growth (expressed using a standard logarithmic equation) against dummy variables for industry of employment. The regression includes a dummy for each of the migrant dense industries in the East Midlands based on industry divisions of employment, $MD(i)$, compared to the base category i.e. an industry of employment which is not migrant dense.

$$\log[w(t)] = [\alpha + g \cdot t] \left[1 + \sum_i \theta_i MD(i) + \phi em \right] \quad (2)$$

Regression results for a UK model (with East Midlands specific effects) are presented in Table 11.3, while those for a model focusing on the East Midlands are shown in Table 11.4. Results of a respecified model, where all industry divisions which are classified as migrant dense are grouped together, such that employment is dichotomously classified as being in a migrant dense or non-migrant dense sector, are shown in Table 11.5.

Table 11.3 Regression model of migrant density by industry division

Variable	Wage Level (£ per hour)	Wage trend (Percent per annum)
	coefficient (s.e.)	coefficient (s.e.)
Non-migrant dense industries	7.58 * (1.00)	3.95 * (0.14)
Additive effect		
Food, beverage manufacture	-1.20 * (0.20)	-0.27 (0.87)
Textile manufacture	-1.93 * (0.39)	-0.22 (1.75)
Clothing, fur manufacture	-2.85 * (0.48)	4.33 (2.33)
Rubber, plastic products manufacture	-0.52 * (0.28)	-0.94 (1.18)
Other non-metallic products manufacture	0.16 (0.36)	-0.83 (1.55)
Health, social Work	0.16 (0.37)	2.54 (1.67)
Radio, TV, communication eqt. manufacture	2.26 * (0.27)	-0.78 (1.16)
Other transport eqt. manufacture	-0.05 (0.16)	-2.35 * (0.71)
Wholesale trade	-3.17 * (0.13)	0.41 (0.56)
Hotels, restaurants	-0.76 * (0.19)	0.01 (0.82)
Transport by land	-0.25 (0.18)	-0.90 (0.76)
Auxiliary transport activities	0.41 * (0.11)	0.01 (0.47)
Other business activities	-0.65 * (0.08)	0.95 * (0.33)
Activities of membership organisations	-1.17 * (0.29)	0.01 (1.22)
East Midlands	-0.66 * (0.10)	0.78 * (0.41)

Note : standard error in brackets * significantly different from zero at the 5 percent error level.

Table 11.4 Regression model of migrant density by industry division (East Midlands only)

Variable	Wage Level (£ per hour)	Wage trend (Percent per annum)
	coefficient (s.e.)	coefficient (s.e.)
Non-migrant dense industries	7.05 * (1.01)	4.02 (0.43)
Additive effect		
Food, beverage manufacture	-1.26 * (0.07)	3.09 (2.26)
Textile manufacture	-2.44 * (0.11)	7.36 * (3.55)
Clothing, fur manufacture	-2.52 * (0.12)	3.84 (4.64)
Rubber, plastic products manufacture	0.00 (0.09)	-3.27 (2.74)
Other non-metallic products manufacture	0.07 (0.12)	3.02 (3.72)
Health, social Work	-0.66 * (0.19)	10.81 (6.27)
Radio, TV, communication eqt. manufacture	1.56 * (0.10)	3.97 (2.94)
Other transport eqt. manufacture	-0.66 * (0.06)	-0.55 (1.89)
Wholesale trade	-2.98 * (0.06)	1.18 (1.80)
Hotels, restaurants	-0.74 * (0.07)	0.53 (2.15)
Transport by land	-0.01 (0.07)	-1.96 (1.93)
Auxiliary transport activities	-0.42 * (0.05)	1.31 (1.50)
Other business activities	-0.95 * (0.03)	2.75 * (1.03)
Activities of membership organisations	-1.50 * (0.14)	1.13 (4.02)

Note : standard error in brackets * significantly different from zero at the 5 percent error level.

Table 11.5 Regression model of migrant density grouping industry divisions⁴⁵

Variable	Wage Level (£ per hour)		Wage trend (Percent per annum)	
	coefficient	(s.e.)	coefficient	(s.e.)
Non-migrant dense industry division	7.58 *	(1)	3.96 *	(0.16)
Additive effect				
Migrant dense Industry division	-0.82 *	(0.06)	0.16	(0.26)
East Midlands	-0.59 *	(0.11)	0.47	(0.46)

Note : standard error in brackets * significantly different from zero at the 5 percent error level.

Wage growth in the East Midlands by industry

Median wage growth by migrant dense sector in the East Midlands over the period 2001–06 was calculated using a simple median wage regression of the type described in equation (3), by industry division. (Note that this analysis was restricted to industry divisions where the overall number of individual wage observations was greater than 30)⁴⁶.

$$\log[w(t)] = \alpha + g \cdot t \quad (3)$$

Regression models of the effects of migrant dense occupations on wages

The regression analysis followed equation (2), modelling median wage levels and growth against dummy variables relating to occupation of employment, MD(i), using 3-digit SOC.⁴⁷ The regression results for a model on UK data with East Midlands specific effects are presented in *Table 11.6*, while those for a model focusing on the East Midlands are shown in *Table 11.7*. Results of a respecified regression model, using a 3-fold categorisation of migrant dense occupations, are presented in *Table 11.8*. *Table 11.9* presents the results of the regression model which separates 3-digit occupations into either migrant dense or non-migrant dense occupations.

Wage growth in the East Midlands by occupation

Median wage growth by migrant dense sector in the East Midlands over the period 2001–06 was calculated using a simple median wage regression of the type described in equation (3).

⁴⁵ Running the same regression but restricting the analysis to only the East Midlands region reveals no significant effect on wage growth for migrant dense sectors.

⁴⁶ Note that this excludes the migrant dense sector: Radio, TV, communication equipment. Manufacture.

⁴⁷ For a list of migrant dense sectors see previous analysis.

Table 11.6 Regression model of migrant density using 3-digit occupations

Variable	Wage Level (£ per hour)	Wage trend (Percent per annum)
	coefficient (s.e.)	coefficient (s.e.)
Non migrant dense occupations	7.86 * (1.00)	3.96 * (0.10)
Additive effect		
ICT Professionals	6.27 * (0.17)	-0.70 (0.72)
Health Professionals	9.04 * (0.25)	-0.34 (0.98)
Research Professionals	3.33 * (0.44)	-1.57 (1.67)
Architects, Town Planners, Surveyors	4.43 * (0.31)	0.86 (1.23)
Public Service Professionals	2.98 * (0.26)	-0.09 (1.02)
Health Associate Professionals	1.77 * (0.13)	0.35 (0.51)
Metal Forming, Welding And Related Trades	-0.50 * (0.28)	-0.70 (1.19)
Healthcare And Related Personal Services	-2.56 * (0.11)	1.14 * (0.44)
Customer Service Occupations	-1.52 * (0.17)	-1.02 (0.70)
Process Operatives	-1.60 * (0.16)	-1.28 * (0.68)
Assemblers And Routine Operatives	-2.12 * (0.16)	0.16 (0.68)
Transport Drivers And Operatives	-2.01 * (0.13)	1.34 * (0.52)
Mobile Machine Drivers And Operatives	-1.46 * (0.27)	-0.06 (1.09)
Elementary Construction Occupations	-2.18 * (0.28)	0.51 (1.11)
Elementary Process Plant Occupations	-2.84 * (0.19)	0.50 (0.81)
Elementary Personal Services Occupations	-3.73 * (0.12)	0.59 (0.48)
Elementary Cleaning Occupations	-3.46 * (0.12)	0.58 (0.51)
Elementary Security Occupations	-3.09 * (0.19)	0.87 (0.79)
East Midlands	-0.43 * (0.08)	0.29 (0.31)

Note : standard error in brackets * significantly different from zero at the 5 percent error level.

Table 11.7 Regression model of migrant density by occupation (East Midlands only)

Variable	Wage Level (£ per hour)		Wage trend (Percent per annum)	
	coefficient	(s.e.)	coefficient	(s.e.)
Non migrant dense occupations	7.05 *	(1.01)	4.37	(0.38)
Additive effect				
ICT Professionals	6.15 *	(0.10)	-2.38	(3.18)
Health Professionals	6.90 *	(0.13)	2.88	(3.69)
Research Professionals	0.81 *	(0.32)	2.36	(7.29)
Architects, Town Planners, Surveyors	5.04 *	(0.17)	-4.47	(4.68)
Public Service Professionals	3.30 *	(0.15)	-0.59	(4.29)
Health Associate Professionals	1.87 *	(0.07)	1.07	(1.96)
Metal Forming, Welding And Related Trades	-0.37 *	(0.12)	-1.85	(3.78)
Healthcare And Related Personal Services	-2.47 *	(0.05)	3.16	(1.67)
Customer Service Occupations	-0.80 *	(0.09)	-3.10	(2.81)
Process Operatives	-1.77 *	(0.07)	2.03	(2.24)
Assemblers And Routine Operatives	-1.74 *	(0.06)	-0.93	(2.07)
Transport Drivers And Operatives	-1.18 *	(0.06)	0.58	(1.73)
Mobile Machine Drivers And Operatives	-0.71 *	(0.11)	-3.18	(3.59)
Elementary Construction Occupations	-0.86 *	(0.12)	-4.54	(3.80)
Elementary Process Plant Occupations	-2.05 *	(0.08)	-2.32	(2.54)
Elementary Personal Services Occupations	-3.13 *	(0.06)	0.10	(1.73)
Elementary Cleaning Occupations	-2.91 *	(0.06)	-0.14	(1.88)
Elementary Security Occupations	-2.26 *	(0.11)	-1.07	(3.13)

Note : standard error in brackets * significantly different from zero at the 5 percent error level.

Table 11.8 Regression model of migrant density by occupation clusters

Variable	Wage Level (£ per hour)		Wage trend (Percent per annum)	
	coefficient	(s.e.)	coefficient	(s.e.)
Non migrant dense occupations	7.87 *	(1.00)	4.03 *	(0.13)
Additive effect				
Professional MD	5.21 *	(0.14)	-0.28	(0.57)
Operative and elementary occupations MD	-2.80 *	(0.07)	0.42	(0.29)
Other MD	-1.10 *	(0.09)	-0.26	(0.38)
East Midlands	-0.33 *	(0.10)	-0.11	(0.39)

Note : standard error in brackets * significantly different from zero at the 5 percent error level.

Table 11.9 Regression model of migrant density grouping occupations

Variable	Wage Level (£ per hour)		Wage trend (Percent per annum)	
	coefficient	(s.e.)	coefficient	(s.e.)
Non migrant dense occupations	7.87 *	(1.00)	4.00 *	(0.13)
Additive effect				
Migrant Dense 3-digit Occupation	-2.06 *	(0.06)	0.70 *	(0.24)
East Midlands	-0.47	(0.10)	0.07	(0.41)

Note : standard error in brackets * significantly different from zero at the 5 percent error level.

Annex 12: Vacancies and recruitment problems

With regard to employment and the role of labour migrants in the economy, an important question is the extent to which labour migrants are filling hard-to-fill and skill-shortage vacancies. Analysis of vacancy densities for total, hard-to-fill and skill-shortage vacancies for migrant dense industries versus the 'all industries' figure reveals no significant differences at industry level, so suggesting that migrants are not responding purely to problems of labour/skills shortage. However, vacancy density declined slightly between 2003 and 2005 in the East Midlands (Owen, 2006), at a time of increasing immigration. The decrease in vacancy density was greatest in food, drink & tobacco; wood and paper; construction; transport and miscellaneous services, some of which have high shares of migrants. Analysis of the 2005 National Employer Skills Survey (NESS) reveals that in low-skilled occupations (notably operative and elementary occupations where analysis of WRS data shows A8 migrant are concentrated), key reasons for hard-to-fill vacancies are a lack of applicants. This highlights the availability of openings for migrants in such occupations.

Annex 13: Details of analysis of employment impacts of migrant workers

Generating employment estimates

Once re-grossed by applying the appropriate employment weights, the quarterly LFS provides estimates of employment by sector and occupation at regional level (i.e. for the East Midlands) each period. Estimates of employment for each successive quarter are used to estimate rates of employment growth by industry and occupation. Using data since spring 2001, a line of best fit regression is fitted to estimate the **rate of growth** of employment (annualised), calculated using a simple log-linear regression as shown in equation (1), where E is total employment in sector / occupation *i* at time *t*. Using this equation the rate of growth is *g*, which for purposes of presentation is expressed as an annual rate.

$$\log[E(i,t)] = \alpha + g \cdot t \quad (1)$$

A rate of average annualised percentage rate of employment growth (or decline) between spring 2001- spring 2006 is calculated for each by industry and occupation (separating out migrant dense industries/ occupations) for the following groups of workers: (1) the UK-born, (2) migrant (using the post-1991 definition), (3) all workers. Note that growth rates are only estimated where raw sample sizes of employment per occupation / industry are greater than 30.

Industries and occupations displaying employment growth

Table 13.1 shows the fastest growing and fastest declining industries and occupations in terms of employment in the East Midlands, flagging those that are migrant dense.

Table 13.1 Fastest growing industries and occupations in terms of employment in the East Midlands, 2001-2006

Area of employment	Rate of growth, % per annum	Migrant Dense
Industry		
90 Sewage and Refuse Disposal, Sanitation, etc	10.1	-
93 Other Service Activities	8.9	-
30 Manufacture of office Machinery and Computers	8.8	-
14 Other Mining and Quarrying	7.9	-
01 Agriculture, Hunting, Related	5.6	-
80 Education	4.7	-
52 Retail Trade	4.2	-
73 Research and Development	3.8	-
75 Public Administration and Defence	3.7	-
85 Health and Social Work	3.1	MD
Occupation		
232 Research Professionals	35.3	MD
355 Conservation Associate Professionals	25.3	-
613 Animal Care Services	17.5	-
351 Transport Associate Professionals	17.3	-
211 Science Professionals	16.9	-
622 Hairdressers And Related Occupations	15.5	-
118 Health And Social Services Managers	11.7	-
342 Design Associate Professionals	11.4	-
924 Elementary Security Occupations	11.0	MD
925 Elementary Sales Occupations	10.7	-

Source: LFS 2001-2006

Table 13.2 shows the fastest growing and fastest declining industries and occupations in terms of employment in the East Midlands, flagging those that are migrant dense.

Table 13.2 Fastest declining industries and occupations in employment terms in the East Midlands

Area of employment	Rate of growth, % per annum	Migrant Dense
Industry		
18 Manufacture of Wearing Apparel	-17.9	MD
10 Mining of Coal and Lignite; Extraction of Peat	-16.1	
17 Manufacture of Textiles	-15.5	MD
32 Manufacture of Radio, TV, Communication Equipment	-14.0	-
31 Manufacture of Electrical Machinery NEC	-12.1	-
67 Activities Auxiliary To Financial Intermediation	-10.9	-
19 Manufacture of Leather Goods, Related	-9.4	-
41 Collection, Purification and Distribution of Water	-8.7	-
40 Electricity, Gas, Steam and Hot Water Supply	-8.2	-
33 Manufacture of Medical, Precision and Optical Instruments	-7.5	
Occupation		
521 Metal Forming, Welding And Related Trades	-10.2	MD
414 Administrative Occupations: Communications	-9.2	-
912 Elementary Construction Occupations	-8.6	MD
621 Leisure And Travel Service Occupations	-8.4	-
811 Process Operatives	-8.1	MD
541 Textiles And Garments Trades	-8.1	-
413 Administrative Occupations: Records	-7.6	-
213 ICT Professionals	-7.4	MD
532 Building Trades	-7.2	-
813 Assemblers And Routine Operatives	-6.8	MD

Source: LFS 2001-2006

Regression analysis testing the displacement hypothesis

The regression model in equation (2) was used to estimates the differential effect on employment growth for UK-born workers of a sector or occupation being classified as migrant dense. The analysis of employment growth is similar to that presented previously but includes trend and intercept effects for being in the East Midlands region (*em*) and the sector or occupation being a migrant dense (*MD*) rather than non-migrant dense sector, using appropriate dummy variables.

$$\log[E(i,t)] = [\alpha + g \cdot t][1 + \theta MD + \phi em] \quad (2)$$

The model is presented in *Table 13.3* (based on migrant dense industries) and *Table 13.4* (based on migrant dense occupations). In each case the model is estimated for the whole of the UK and is restricted to UK-born workers. Parallel models for the East Midlands only are presented in *Table 13.5* and *Table 13.6*, respectively.

Table 13.3 Differential employment growth for migrant dense sectors

Variable	Employment level		Employment trend (Percent per annum)	
	coefficient	(s.e.)	coefficient	(s.e.)
Non migrant dense industry	16.50 *	(0.01)	0.56	(0.31)
Additive effect				
Migrant dense industry division	-0.56 *	(0.01)	- 1.08 *	(0.36)
East Midlands	-2.50 *	(0.01)	0.16	(0.36)

Note : standard error in brackets * significantly different from zero at the 5 percent error level.

Table 13.4 Differential employment growth for migrant dense occupations

Variable	Employment level		Employment trend (Percent per annum)	
	coefficient	(s.e.)	coefficient	(s.e.)
Non migrant dense occupation	16.63 *	(0.01)	1.20 *	(0.43)
Additive effect				
Migrant dense 3-digit occupation	-0.99 *	(0.02)	- 2.76*	(0.50)
East Midlands	-2.47 *	(0.16)	-0.42	(0.50)

Note : standard error in brackets * significantly different from zero at the 5 percent error level.

Table 13.5 Differential employment growth for migrant dense sectors, restricted to the East Midlands

Variable	Employment level		Employment trend (Percent per annum)	
	coefficient	(s.e.)	coefficient	(s.e.)
Non migrant dense industry	13.97 *	(0.01)	0.86 *	(0.19)
Additive effect				
Migrant dense industry division	-0.51 *	(0.01)	- 1.36*	(0.27)

Note : standard error in brackets * significantly different from zero at the 5 percent error level.

Table 13.6 Differential employment growth for migrant dense occupations, restricted to the East Midlands

Variable	Employment level		Employment trend (Percent per annum)	
	coefficient	(s.e.)	coefficient	(s.e.)
Non migrant dense occupation	14.10 *	(0.01)	1.50 *	(0.24)
Additive effect				
Migrant dense occupation	-0.88 *	(0.01)	- 4.15 *	(0.33)

Note : standard error in brackets * significantly different from zero at the 5 percent error level.

Annex 14: Details of unemployment analysis based on LFS data

Data

The analyses based on LFS data are based on information on individuals entering the LFS over successive quarters for the period from March-May 2001 – April-June 2006. The specific focus of interest is on the unemployment experiences of UK-born workers in the East Midlands. Hence, the analysis is limited to individuals born in the UK and resident in the East Midlands region (based on the country of origin, CRYO, and region of residence, GOVTOR, variables respectively). For the purposes of the unemployment analysis, the sample is restricted to individuals of working age (i.e. aged 16–59/64). Only wave 1 observations (i.e. as individuals enter the LFS) are used in order to avoid double counting. In this instance the LFS sample size (un-weighted) is relatively large with a dataset of 23,245 individuals over 21 successive quarters.

In addition to the quarterly LFS information from the longitudinal LFS data is utilised. The longitudinal LFS files track individuals in consecutive quarters, with information on economic activity as well as details of employment/unemployment observed each quarter. This data allows us to observe the quarterly employment transitions of UK-born workers currently employed in migrant dense industries/ occupations. The longitudinal analysis is based on the same LFS cohorts (i.e. spring 2001 cohort onwards) with the exception of the last quarter (spring 2006) whose follow-up observations are not yet available. In this instance we therefore have 20 rather than 21 successive LFS cohorts of UK-born workers in the East Midlands region.

Last industry and occupation of employment

Table 14.1 and Table 14.2 show last employment in migrant dense industries and occupations, respectively, for the UK-born unemployed.

Table 14.1 Last job of UK-born unemployed analysed by migrant dense industries

Migrant Dense Industries	Last job (% of unemployed)	Employment by Industry (%)	
Manufacture of Food Products and Beverages	2.8	2.0	*
Manufacture of Textiles	1.6	0.9	*
Manufacture of Clothing	1.6	0.4	*
Manufacture of Rubber and Plastic Products	1.4	1.3	*
Manufacture of Other Mineral Products	0.8	0.7	*
Manufacture of Radio, Television Equipment	0.5	0.3	*
Manufacture of Other Transport Equipment	1.1	1.3	
Wholesale Trade (excl. Motor Vehicles)	3.0	3.1	
Hotels and Restaurants	7.5	3.7	*
Land Transport; Transport Via Pipelines	2.0	2.6	
Auxiliary Transport Activities	2.6	2.5	*
Other Business Activities	6.3	6.2	*
Health and Social Work	10.7	11.1	
Activities of Membership Organisations NEC	0.6	0.5	*
Total	42.6	36.5	

Source: LFS merged dataset 2001-2006.

Note: The asterisk indicates where the 'last job' employment percentage is greater than the overall employment figure, indicating that unemployed workers have a higher propensity than we would expect to have last worked in one of these sectors.

Table 14.2 Last job of UK-born unemployed analysed by migrant dense occupations

Migrant Dense Occupations	Last job (% of unemployed)	Employment by Occupation (%)
ICT Professionals	0.7	1.1
Health Professionals	0.1	0.8
Research Professionals	0.1	0.1
Architects, Town Planners, Surveyors	0.1	0.4
Public Service Professionals	0.2	0.5
Health Associate Professionals	0.9	2.2
Metal Forming, Welding And Related Trades	0.6	0.8
Healthcare And Related Personal Services	4.8	3.1 *
Customer Service Occupations	0.8	1.3
Process Operatives	3.0	1.7 *
Assemblers And Routine Operatives	4.3	2.2 *
Transport Drivers And Operatives	2.8	3.6
Mobile Machine Drivers And Operatives	0.8	0.8
Elementary Process Plant Occupations	4.6	1.4 *
Elementary Personal Services Occupations	6.4	3.1 *
Elementary Cleaning Occupations	5.6	2.5 *
Elementary Security Occupations	1.9	1.0 *
Total	37.8	26.7

Source: LFS merged dataset 2001-2006.

Note: The asterisk indicates where the 'last job' employment percentage is greater than the overall employment figure, indicating that unemployed workers have a higher propensity than we would expect to have last worked in one of these occupations.

Annex 15: Details of claimant count analysis at local level in the East Midlands

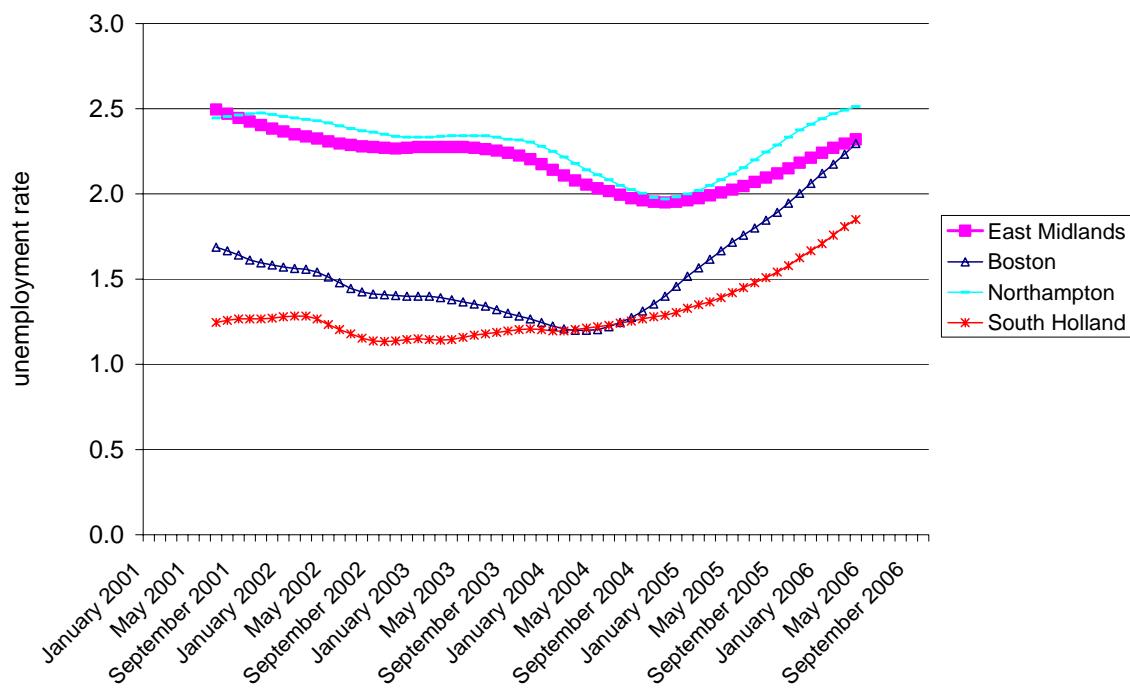
Table 15.1 Local Areas with fastest increasing unemployment rates, May 2004-October 2006

Local authority area	Rate of increase per month (%)
Boston	0.055
Nottingham	0.035
Lincoln	0.034
South Holland	0.033
Northampton	0.028
Erewash	0.028
Wellingborough	0.028
Derby City	0.027
Mansfield	0.027
East Midlands	0.022

Source: Claimant count residence-based proportions.

Figure 15.1 plots smoothed (12 month moving average) claimant count rates for Northampton, Boston and South Holland compared to the region as a whole. These three local authorities displayed the largest aggregate numbers of WRS registrations over the period from 2004 to the end of June 2006; (but it should be noted that some of the A8 labour migrants will have left the UK).

Figure 15.1 Claimant count unemployment rates in selected local areas



Source: claimant count (via Nomis).

Note: rates are smoothed using a 12 month moving average based on monthly unemployment counts.

The local authority areas shown are those with the largest aggregate numbers of WRS registrations over the period from 2004 to the end of June 2006.

Annex 16: Details of migrant contribution to GVA analysis

Data sources

The analysis utilised GVA estimates for the East Midlands over the period 2002–2005 (inclusive) from the Cambridge Econometrics/IER estimates of output based in the multi sector model of the UK economy. These are consistent with UK official employment and output data. The analysis presented here is based on a disaggregation of GVA using 14 broad industry categories based on SIC industrial sectors.

The GVA estimates were combined with information on employment of migrants for each of the SIC industry sectors each year. Estimates of total employment by sector were produced using the weighted (re-grossed) LFS data for the East Midlands for 2002-05 (inclusive). The LFS quarterly surveys used are Spring 2002, Summer 2003, Autumn 2004 and Winter 2005; (note that the five quarter time interval between the surveys ensures no double counting of individuals in the LFS). In the analysis sectors A and B and O,P and Q are merged, respectively, due to small raw sample numbers for the East Midlands in the LFS data. Employment estimates were produced for three groups of migrants, based on the year of arrival into the UK: (1) pPre-1992 migrants; (2) 1992-2001 migrants; (3) post 2001 migrants.

Calculating Migrant Contribution to GVA

Using data for the East Midlands, migrant contribution to GVA is calculated, in its simplest form, by multiplying the percentage of employment of migrants in industry i , $\mu(i)$, by the gross value added produced by that industry, $GVA(i)$. These numbers are then summed across all industries in the East Midlands to produce a monetary value of migrant contribution, MGVA, as expressed in equation (1). This monetary value figure is calculated at constant 2006-values. A percentage contribution to gross value added, pGVA, is then calculated by dividing by the total value of GVA at the regional level, as shown in equation (2). This process is repeated each year.

$$MGVA = \sum_{i=1}^{14} GVA(i) * \mu(i) \quad (1)$$

$$pMGVA = \frac{MGVA}{GVA} \quad (2)$$

Annual base estimates of gross value added by industry, $GVA(i)$, each year for the East Midlands are shown in Table 16.1. Migrants by industry expressed as a percentage of total employment, $\mu(i)$, each year for the East Midlands are shown in Table 16.2. Note that in this case the figures relate to all individuals born outside the UK; (although separate estimates were also produced for migrant sub-groups). Low percentages for migrant employment in some sectors point perhaps to the fact that migrants are not being picked up fully by the LFS; (an adjustment is made subsequently).

Table 16.1 GVA by Industry at constant 2006 values (£ million), East Midlands

Industry	2002	2003	2004	2005
AB: Agriculture, Forestry, Fishing	1,135	1,131	1,146	1,176
C: Mining, Quarrying	353	328	312	314
D: Manufacturing	17,130	17,615	18,032	18,063
E: Electricity Gas & Water Supply	1,358	1,442	1,371	1,361
F: Construction	5,056	5,236	5,405	5,368
G: Wholesale, Retail & Motor Trade	10,380	10,776	11,418	11,519
H: Hotels & Restaurants	2,359	2,527	2,645	2,751
I: Transport, Storage & Communication	5,351	5,557	5,809	5,903
J: Financial Intermediation	2,995	3,162	3,354	3,403
K: Real Estate, Renting & Business Act.	8,047	8,698	9,391	9,891
L: Public Administration & Defence	3,044	3,179	3,224	3,246
M: Education	5,029	5,091	5,085	5,122
N: Health & Social Work	5,398	5,664	5,969	6,205
OPQ: Miscellaneous Services	2,945	3,030	3,189	3,279
All Industries	70,579	73,436	76,348	77,602

Source: Cambridge Econometrics/IER

Table 16.2 Non-UK born workers as a percentage of the East Midlands Employment, by Industry⁴⁸

Industry	2002	2003	2004	2005
AB: Agriculture, Hunting & Forestry, Fishing	1.2%	2.0%	0.0%	0.0%
C: Mining, Quarrying	8.5%	8.3%	0.0%	4.7%
D: Manufacturing	6.0%	4.6%	8.0%	10.3%
E: Electricity Gas & Water Supply	4.8%	4.9%	2.7%	14.7%
F: Construction	2.3%	1.0%	1.6%	3.2%
G: Wholesale, Retail & Motor Trade	6.4%	4.9%	5.8%	6.4%
H: Hotels & Restaurants	8.7%	7.7%	8.5%	19.0%
I: Transport, Storage & Communication	5.4%	4.1%	6.0%	10.6%
J: Financial Intermediation	7.1%	6.8%	3.7%	6.9%
K: Real Estate, Renting & Business Activities	7.3%	5.3%	7.8%	10.0%
L: Public Administration & Defence	6.9%	3.9%	4.7%	5.9%
M: Education	7.6%	7.0%	6.7%	7.9%
N: Health & Social Work	4.9%	8.0%	8.2%	8.6%
OPQ: Miscellaneous Services	3.8%	4.9%	6.2%	2.4%
All Industries	5.9%	5.1%	6.3%	8.1%

Source: Labour Force Survey

Two adjustments were made to these base estimates to take account of: (a) the occupational distribution of migrant workers; and (b) under-counting of migrant workers in the LFS.

(a) The occupational distribution of migrant workers

The methodology described to yield base estimates deals only with the distribution of migrant employment across industries and does not take into account the occupations of migrant workers. This consideration is important since, as other analyses show, migrant workers may be concentrated in low skilled (or conversely high skilled jobs) within each sector. If this was the case the simple percentage calculation would not necessarily reflect

⁴⁸ Note that there are small sample sizes for some industries in some years.

migrant ‘productivity’, in terms of how much they are adding to the value of production. Improving the calculation by using detailed employment by occupation within sector is not methodologically possible here because: (a) GVA data is not available by occupation; and (b) even if it was sample numbers of migrants (in each cell) would prove prohibitively small. Instead, a way around this problem is therefore found using hourly wage data from the LFS. Wages are correlated with productivity (via marginal value of output) and, moreover, at an aggregate level, the total ‘wage bill’ accounts for over 80 percent of GVA. The monetary value of migrant contribution, MGVA, is therefore adjusted based on the ratio of mean migrant wages to mean wages for all workers by sector. In simple terms, if migrant workers are paid less than UK-born workers reflecting their ‘productivity’, then this lowers the MGVA figure. In terms of the formula (3) this introduces an adjustment factor, $\rho(i)$, into the calculation where:

$$MGVA = \sum_{i=1}^{14} GVA(i) * \mu(i) * \rho(i) \quad (3)$$

where $\mu(i)$ is the ratio of mean wages of migrant and overall industry wages. i.e.

$$\rho(i) = \frac{\bar{w}(\text{migrants})}{\bar{w}(\text{all})} \quad (4)$$

The resulting estimates of migrant contribution to GVA are termed *wage-adjusted* estimates.⁴⁹

(b) Under-counting of migrant workers in the LFS

Another important issue is, potentially, the under-counting of migrant workers in the LFS. Previous discussion (see Salt *et al* [2006] and Rendall *et al* [2003]) has raised the issue that the LFS may under-count of migrant workers, relative to their ‘true’ numbers in the workforce. This may be due to migrants being transitory in nature, for example often moving addresses or locations. Equally, this may due to the type of accommodation they live in (e.g. communal residences). There are also cultural and language issues which may lead to exclusion of some migrants.

Given these considerations, the estimates derived above should be considered as *lower bound* estimates of migrant contribution to GVA. It should also be borne in mind that it is probably the case that certain occupations or industries may suffer from ‘under-counting’ in the LFS more than others. In higher skilled jobs, workers are likely to be more settled in terms of housing tenure and location. However, this might not be the case where labour supply is more transitory, for example in agricultural work or construction, where LFS numbers for migrants appear to be quite low.

It is not altogether clear how to proceed in adjusting the figures (base or wage-adjusted estimates) to reflect the degree of under-counting in the LFS. One crude mechanism is to apply a rescaling value to all of the estimates to correct for under-counting. This is our approach here based on the analysis Rendall *et al* (2003) who estimated that the LFS undercounts migrants by 15 – 25 per cent.⁵⁰ Using this figure we reflate our estimates upward by a factor of 20 per cent. This rescaling value is applied to the wage-adjusted estimates and the resulting figures are termed *LFS reflated* estimates.

⁴⁹ Distortions due to number of hours worked were investigated also. However, no significant differences were found between migrant and UK workers in this respect, based on an analysis of the LFS.

⁵⁰ The analyses were undertaken on 2001 data.

Results

Tables 16.3-16.5 show contribution to GVA by industry for different migrant groups:

Table 16.3 Contribution to GVA by Industry: Pre-1992 Migrants

Industry	% of GVA, 2002-05 average
AB: Agriculture, Forestry, Fishing	0.0%
C: Mining, Quarrying	3.8%
D: Manufacturing	4.6%
E: Electricity Gas & Water Supply	4.1%
F: Construction	1.6%
G: Wholesale, Retail & Motor Trade	3.4%
H: Hotels & Restaurants	6.1%
I: Transport, Storage & Communication	4.8%
J: Financial Intermediation	4.7%
K: Real Estate, Renting & Business Act.	4.5%
L: Public Administration & Defence	4.5%
M: Education	4.9%
N: Health & Social Work	4.9%
OPQ: Miscellaneous Services	3.2%
All Industries	4.2%

Table 16.4 Contribution to GVA by Industry: 1992-2001 Migrants

Industry	% of GVA, 2002-05 average
AB: Agriculture, Forestry, Fishing	0.3%
C: Mining, Quarrying	0.9%
D: Manufacturing	1.4%
E: Electricity Gas & Water Supply	1.6%
F: Construction	0.3%
G: Wholesale, Retail & Motor Trade	1.2%
H: Hotels & Restaurants	2.1%
I: Transport, Storage & Communication	1.1%
J: Financial Intermediation	2.6%
K: Real Estate, Renting & Business Act.	2.2%
L: Public Administration & Defence	1.0%
M: Education	1.5%
N: Health & Social Work	1.5%
OPQ: Miscellaneous Services	1.0%
All Industries	1.4%

Table 16.5 Contribution to GVA by Industry: Post-2001 Migrants

Industry	% of GVA, 2002-05 average
AB: Agriculture, Forestry, Fishing	0.5%
C: Mining, Quarrying	0.0%
D: Manufacturing	0.8%
E: Electricity Gas & Water Supply	0.0%
F: Construction	0.2%
G: Wholesale, Retail & Motor Trade	0.8%
H: Hotels & Restaurants	2.4%
I: Transport, Storage & Communication	1.3%
J: Financial Intermediation	0.0%
K: Real Estate, Renting & Business Act.	0.9%
L: Public Administration & Defence	0.2%
M: Education	0.7%
N: Health & Social Work	0.9%
OPQ: Miscellaneous Services	0.4%
All Industries	0.8%