

The impact of migration from the new European Union Member States on native workers

Sara Lemos, *University of Leicester**

Jonathan Portes, *Department for Work and Pensions*

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Abstract: This paper examines the impact of migration from the new EU Member States on the labour market outcomes of natives in the UK. Building on Gilpin et al. (2006), and making a number of significant improvements and extensions, we find no statistically significant impact of A8 migration on claimant unemployment, either overall or for any identifiable subgroup. In particular we find no adverse impacts on the young or low-skilled. Nor do we find a statistically significant impact on wages, either on average or at any point in the wage distribution, although the evidence here is less complete.

JEL classification: J22.

Keywords: migration, employment, wages, UK.

* Corresponding author: Sara Lemos, University of Leicester, Economics Department, University Road, Leicester LE1 7RH, England, +44 (0)116 252 2480, +44 (0)116 252 2908 (fax), sl129@leicester.ac.uk. Special thanks to Alan Manning, Barry Chiswick, Steve Hall, Ian Preston, John Elliot and Tim Hatton. Also, thanks to comments of various discussants and participants in the following conferences and seminars: IZA-MEM, IZA-AM2, CReAM, CEPR-ELMR, UoL. Substantial contributions to the paper were made by a number of economists within the Department for Work and Pensions, including especially Jagdeep Athwal and David Finch, who provided invaluable research assistance, Suzanne Moroney, Iain Walsh, and Bill Wells.

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1. Introduction and summary

On May 1, 2004, eight Central and Eastern European countries (the “A8”) joined the European Union: the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovenia, and Slovakia.² Workers from these countries were free to come to the UK to seek and take up employment.³ The result has been described as “almost certainly the largest ever single wave of immigration the British Isles have ever experienced, with Poles the largest ever single national group of entrants.”⁴ Estimates of gross migrant flows from the A8 since 2004 range up to a million⁵ (although net flows, as explained below, are considerably lower).

This paper, by two of the same authors, builds on and extends the analysis set out in Gilpin et al (2006)⁶ [hereafter simply “Gilpin”], which examined the impact on the UK labour market of the first year of this influx. In the context of rising unemployment and considerable public concern that migrant workers were displacing native workers, that paper found that there was no statistical evidence of a significant negative impact on the labour market outcomes of natives.

As in Gilpin, we use administrative data from the government’s Worker Registration Scheme (WRS) combined with administrative data from claimants of Jobseekers’ Allowance (JSA). We extend the previous analysis in four ways:

² Malta and Cyprus also joined at the same time. However, given the different nature of migration between these countries and the UK, we do not look at Maltese or Cypriot nationals in this analysis.

³ The legal and policy background to this decision is set out in Gilpin et al (2006) [see footnote 6]; and also in Srisandarajah et al (2004), **EU enlargement and labour migration: an ippr factfile**, Institute for Public Policy Research, available at: <http://www.ippr.org/members/download.asp?f=%2Fecomm%2Ffiles%2FipprFFEUnlarge1%2Epdf>

⁴ Salt et al (2006), **Globalisation, population mobility and impact of migration on population**, The Economics and Social Research Council, available at: http://www.esrcsocietytoday.ac.uk/ESRCInfoCentre/Images/ESRC_Seminar_Global_tcm6-16062.pdf

⁵ Pollard et al (2008), **Floodgates or Turnstiles**, Institute for Public Policy, available at: http://www.ippr.org.uk/members/download.asp?f=/ecomm/files/floodgates_or_turnstiles.pdf&a=skip

⁶ Gilpin et al (2006), **The impact of free movement of workers from Central and Eastern Europe on the UK labour market**, Department for Work and Pensions, available at: <http://www.dwp.gov.uk/asd/asd5/WP29.pdf>

- I) we use a longer run of data, extending from May 2004 to May 2006, and in particular covering the entire period of the rise in claimant unemployment in 2005;
- II) we take advantage of the occupation data available for claimants of Jobseekers' Allowance (JSA) to examine whether migration had differential impacts for different occupational and demographic groups;
- III) we examine the impact on wages both at local level and at different points of the earnings distribution, using data from the Annual Survey of Hours and Earnings (ASHE).
- IV) We add a variety of controls and econometric tests not included in Gilpin. In particular, we account for the impact of A8 migration on net migration flows within the UK.

We also update the descriptive analysis in Gilpin to the most recent available data using WRS and LFS data, although our detailed econometric analysis extends only until May 2006. This paper is intended to be an accessible contribution to the policy debate, and in particular a response to the report of the House of Lord Economic Affairs Committee, which inter alia recommended further research on the impact of migration on the UK labour market⁷. It therefore does not describe the technical detail of our econometric analysis. This will be set out in a further, more academically oriented publication.

Consistent with Gilpin, we find no evidence that migration from the A8 countries has had any adverse impact on native workers. We find no impact on claimant unemployment. In particular, we find no impact on claimant unemployment either for younger workers or the lower skilled. Nor do we find any significant impact on

⁷ **The Economic Impact of Immigration**, House of Lords Select Committee on Economic Affairs (2008), available at: <http://www.publications.parliament.uk/pa/ld200708/ldselect/ldeconaf/82/82.pdf>

wages, even for lower paid workers.

From a methodological point of view, this paper's contribution is the extension of the use of two administrative datasets to analyse the labour market impact of migration. Both the WRS and JSA data are sufficiently large to permit geographical and temporal disaggregation at a relatively fine level (local authority district and month). This is in sharp contrast to most other analyses of migration to the UK, which generally use Labour Force Survey data, which does not support this level of disaggregation.

From a policy making point of view, the paper reaffirms the general consensus among economic analysts that A8 migration has had no adverse impact on the labour market outcomes of natives. Given the heated public debate about A8 accession – with a number of commentators making assertions that migration has resulted in a significant increase in UK unemployment, or falls in wages, but generally without referring to hard evidence – it is important to establish whether there is in fact any empirical evidence substantiating such assertions. Our conclusion is that as yet there is no empirical evidence of significant adverse effects on native labour market outcomes.

The analysis does, however, have policy implications for the UK labour market. It suggests that the generally poor labour market outcomes of low-skilled natives in the UK do not reflect either a lack of available jobs, structural factors in the labour market, or a lack of formal qualifications – since A8 migrants find it relatively easy to find employment – but rather issues around basic employability skills, incentives and motivation. Appropriate policies to mitigate such vulnerabilities are likely to include active labour market policies, to ensure that low-skilled natives are looking for available jobs, and the need for education and training policies in the UK to focus on employability for the lower-skilled. This argument is set out in more detail in Coats (2008)⁸; the Government's broad policy approach is set out

⁸ Coats, D. (2008), **Migration Myths: Employment, Wages and Labour Market Performance**, the work foundation, available at:
<http://www.theworkfoundation.com/Assets/PDFs/migration2.pdf>

in “Opportunity, Employment and Progression: Making Skills Work” (2007)⁹.

The remainder of this paper is organized as follows. In Section 2 we briefly review the existing literature. In Section 3 we describe the data and in Section 4 we describe our empirical approach. In Section 5 we discuss the results, in Section 6 we present robustness checks and in Section 7 we summarise and conclude.

2. Literature Review

There is an extensive literature on the impact of labour migration on economies and labour markets, which we will not summarise here. We will however briefly describe the conclusions of the recent literature on migration to the UK. A more detailed review of the economic research is presented in Wadsworth (2007).¹⁰ In addition, the Home Office and the Department for Work and Pensions recently produced, in a submission to the Economic Affairs Committee of the House of Lords, a comprehensive assessment of the available evidence on the economic and fiscal impact of immigration to the UK.¹¹

It is first important to note that – despite assertions to the contrary - there is no necessary presumption that migration has an adverse impact on the labour market outcomes of natives, particularly in a small, open economy with flexible labour and product markets – like the UK:

“The usual theoretical models do not establish a presumption for or against the existence of long run employment or wage effects. If the economy is

⁹ **Opportunity, Employment and Progression: Making Skills Work**, DWP & DIUS (2007), available at: <http://www.official-documents.gov.uk/document/cm72/7288/7288.pdf>

¹⁰ Wadsworth, J. (2007), **Immigration to the UK: The Evidence from Economic Research**, Centre for Economic Performance, available at: <http://cep.lse.ac.uk/pubs/download/pa010.pdf>

¹¹ **The Economic and Fiscal Impact of Immigration**, Home Office and DWP (2007), available at: <http://www.official-documents.gov.uk/document/cm72/7237/7237.pdf> [One of the present authors (Portes) contributed to this paper].

characterised by a large and heterogeneous traded goods sector, employment and wages may be insensitive to immigration” – Dustmann et al. (2003)¹²

“There is some presumption that output-mix adjustment fully absorbs the immigration shock... our presumption should be that immigration has no long run effect on labour market outcomes“ - Gaston and Nelson (2002)¹³

Consistent with this, we are not aware of any UK studies that find significant adverse impacts of migration on native employment. The most widely cited paper, which uses Labour Force Survey data, is Dustmann et al (2003) which found

“...if there is an impact of immigration on unemployment then it is statistically poorly determined and probably small in size.”

Other studies (including Gilpin, described above) came to similar conclusions.

There are also a number of studies that look at the wage impacts of migration. Here the evidence is more mixed. Looking at a period between the mid-1970s and the mid-2000s, Manacorda, Manning and Wadsworth (2006)¹⁴ found no evidence of any impact on native wages. They argue that the imperfect substitutability of immigrant and native workers means that to the extent that migration has any impact on wages it is on migrants’ own wages, not the wages of natives. However, Dustmann et al (2007)¹⁵, looking at the period 1997-2005, found that while there was, on average, a slightly positive effect on wage growth there were modest negative effects at the lower end of the distribution. We will discuss this paper in more detail below.

¹² Dustmann, C., Fabbri, F., Preston, I. and Wadsworth, J. (2003), **The local labour market effects of immigration in the UK**, Home Office, available at: <http://www.homeoffice.gov.uk/rds/pdfs2/rdsolr0603.pdf>

¹³ Gaston, N. and Nelson, D. (2001), **The Employment and Wage Effects of Immigration: Trade and Labour Economics Perspectives**, The Leverhulme Centre, research paper 2001/28, available at: http://www.gep.org.uk/shared/shared_levpublications/Research_Papers/2001/01_28.pdf

¹⁴ Manacorda, M., Manning, A. and Wadsworth, J. (2006), **The Impact of Immigration on the Structure of Male Wages: Theory and Evidence from Britain**, Centre for Economic Performance, available at: <http://cep.lse.ac.uk/pubs/download/dp0754.pdf>

¹⁵ Dustmann, C., Frattini, T. and Preston, I. (2007), **A study of migrant workers and the national minimum wage and enforcement issues that arise**, report commissioned by the Low Pay Commission, available at: <http://www.econ.ucl.ac.uk/cream/pages/LPC.pdf>

Summarising the literature, Blanchflower (2007)¹⁶ concluded

“The empirical literature from around the world suggests little or no evidence that immigrants have had a major impact on native labour market outcomes such as wages and unemployment. Recent work by a number of other authors for the UK is also consistent with this view.”

However, more recent articles by Blanchflower, although presenting suggestive rather than direct empirical evidence, imply that his view is that migration may be depressing wages for low-skilled native workers.¹⁷ Blanchflower’s argument appears to be that A8 migration to the UK (and Ireland) has increased the fear of unemployment (but not unemployment itself) hence depressing wages at the lower end.

It is important to note that virtually all the UK literature relies on data from the Labour Force Survey (LFS); but that LFS sample sizes mean that, in contrast to this study, analysis below the regional level is generally not feasible; this issue is discussed in more detail below. Nor are the LFS data sufficient to permit detailed analysis of A8 migration. Perhaps surprisingly, this paper (and its predecessor Gilpin) remain, as far as we are aware, the only robust econometric analyses of the impact of A8 migration, although for a thorough and comprehensive overview of the available data and evidence, and some additional statistical analysis, interested readers are directed to Coats (2008)¹⁸, which reaches similar conclusions to this paper.

¹⁶ Blanchflower, D., Saleheen, J. and Shadforth, C. (2007) **The Impact of the Recent Migration from Eastern Europe on the UK Economy**, Bank of England, available at: <http://www.bankofengland.co.uk/publications/speeches/2007/speech297.pdf>

¹⁷ For example see Blanchflower, D. (2007), **Fear, Unemployment and Migration**, Bank of England, available at: <http://www.bankofengland.co.uk/publications/speeches/2007/speech326.pdf> or his written evidence to the House of Lords Economic Affairs Committee, available at: <http://www.parliament.uk/documents/upload/EA218%20Blanchflower.doc>

¹⁸ Coats, D. (2008), as before

3. Data Sources

We use two principal data sources. Given their relative unfamiliarity, we describe them in detail here. The Worker Registration Scheme (WRS) is the primary data source for the numbers of A8 workers entering the UK labour market. It is a legal requirement for A8 nationals who wish to take up employment in the UK to register with the WRS. As well as the legal obligation to register, there are also some positive incentives, in particular the right to certain social security benefits after 12 months of continuous employment.

Relative to most administrative data, the WRS is a rich and timely data source. It records nationality, employment address, age, gender, number of dependents 16 or under, number of dependents 17 or over, date of application, date of entry, date of start of work, hourly wage rate, number of hours worked per week, sector, occupation and industry. Although the accession countries consist of ten Central and East European countries, namely Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovenia, Slovakia, Malta and Cyprus, Maltese and Cypriot citizens were not obliged to register with the WRS (and in any case they already had relative free access to the EU labour market prior enlargement). Our data therefore relates only to the A8.

The precise extent of compliance is unknown. Although evidence from other sources suggests it is likely to be fairly high, anecdotal evidence of non-registration amongst some A8 migrants has been reported, for example in Association of Labour Providers (2005)¹⁹. Another caveat is that self-employed workers are not required to register. This might explain, for example, why the numbers of Polish plumbers derived from anecdotal evidence might seem larger than the numbers recorded on the WRS. Because plumbers are often self-employed, they are underrepresented in the WRS.

An alternative administrative data source is provided by National Insurance

¹⁹ **The Workers Registration Scheme - the case for abolition**, Association of Labour Providers (2005).

Number registrations (NINOs). The Department for Work and Pensions publishes annual data on new registrations for NINOs by country of origin and local authority. NINO data has the advantage of including the self-employed. However, it also includes a number of other groups who are not necessarily participating in the labour market, and the data is less rich and timely. We therefore concentrate here on the WRS data. The two data sets appear to be broadly consistent, as shown in Section 4 below.

One important caveat associated with both the WRS and NINO data is that they measure gross flows only, as workers are not required to de-register when leaving the UK. With no measure of outflows, a direct estimate of net migration or of the stock of migrants cannot be constructed. The only available data source for these remains the Labour Force Survey.

The unemployment data we use is from the Department for Work and Pensions administered Jobseeker's Allowance (JSA). JSA is the principal benefit for those who are unemployed and looking for work in the UK: it includes both an insurance-based (non means-tested, but time-limited) and an income-based (means-tested, but not time-limited) component. Registering with the Jobcentre Plus local office is a requirement to qualify for either type of JSA, so we have a complete count of the unemployed claiming JSA. The numbers on JSA are generally referred to as "claimant unemployment" (as opposed to the internationally comparable LFS measure of unemployment, known as "ILO unemployment").

JSA data includes the claimant's National Insurance number, address, gender, date of birth, marital status, usual and sought occupation, claim start and end dates. As previously noted, we focus on claimant unemployment rather than the LFS measure, since the latter would not give us the necessary sample sizes to perform the panel analysis below.

We also use two major surveys, which are the standard data sources used in the UK labour economics literature. The wage data we use is from the Annual Survey

of Hours and Earnings (ASHE)²⁰ which is collected by the Office of National Statistics (ONS). This is a sample survey, conducted annually, with a sample size of about 140,000²¹. It provides measures of hourly wages; the sample size is sufficiently large to allow disaggregation to the Local Authority District (LAD) level. Finally, we use data from the Labour Force Survey (LFS) to define control variables that describe the UK working age population, and in the descriptive analysis below. The LFS interviews 60,000 households every quarter and is the largest household survey in the UK. The survey collects information about the personal circumstances and work of everyone who lives in the household, and includes demographic variables unavailable in administrative data, such as ethnicity and highest qualification.

For our econometric analysis, we use data covering the period May 2004 to May 2006, although in our descriptive analysis we extend the period covered to September 2007.

4. Descriptive analysis

In this section we describe the numbers and characteristics of A8 migrants; the evolution of the UK labour market in the relevant period; and conduct some preliminary analysis of the impact of A8 migration on the labour market, focusing in particular on whether at an aggregate level there is any association between A8 migration and native outcomes.

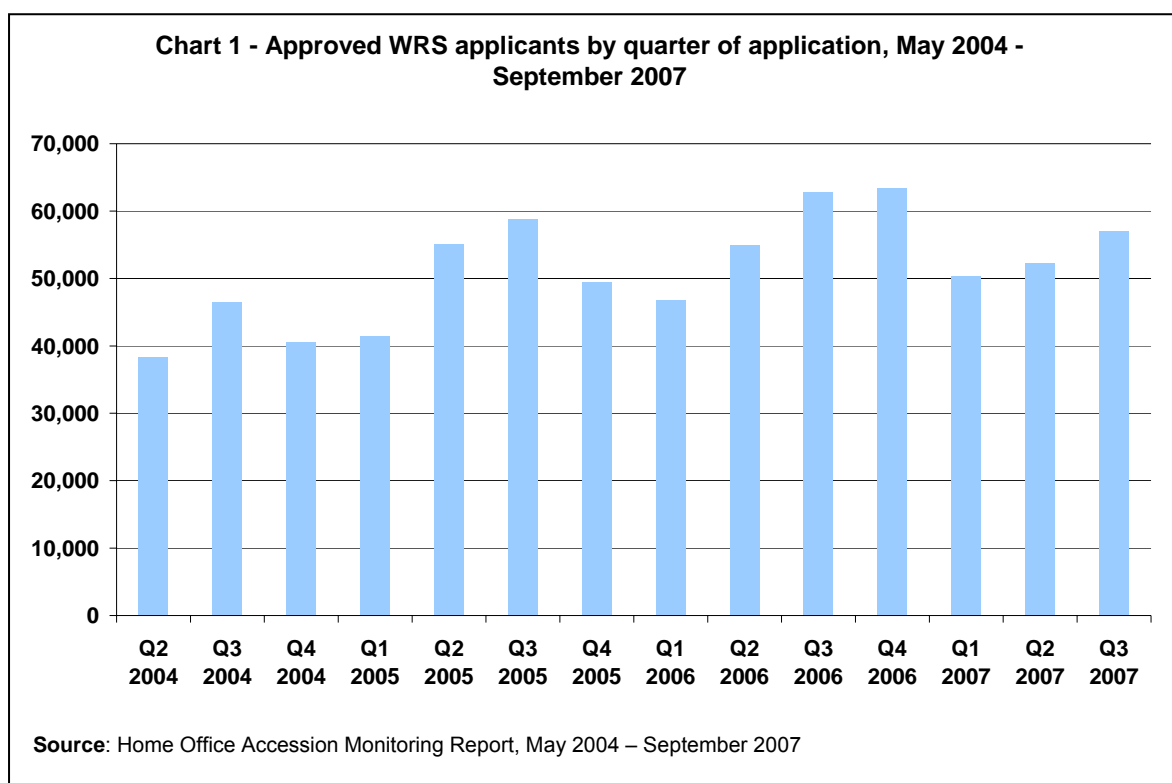
²⁰ The ASHE tables contain UK data on earnings for employees by sex and full-time/part-time workers. Further breakdowns include by region, occupation, industry, region by occupation and age-groups. These breakdowns are available for the following variables: gross weekly pay, weekly pay excluding overtime, basic pay including other pay, overtime pay, gross hourly pay, hourly pay excluding overtime, gross annual pay, annual incentive pay, total paid hours, basic paid hours and paid overtime hours.

²¹ The sample size was reduced in 2007 to approximately 142,000 returns, down from 175,000 in 2006.

A8 migrants

A thorough descriptive analysis of workers registering under the WRS is contained in successive editions of the Home Office Accession Monitoring Report.²² As of September 2007, the key features were the following:

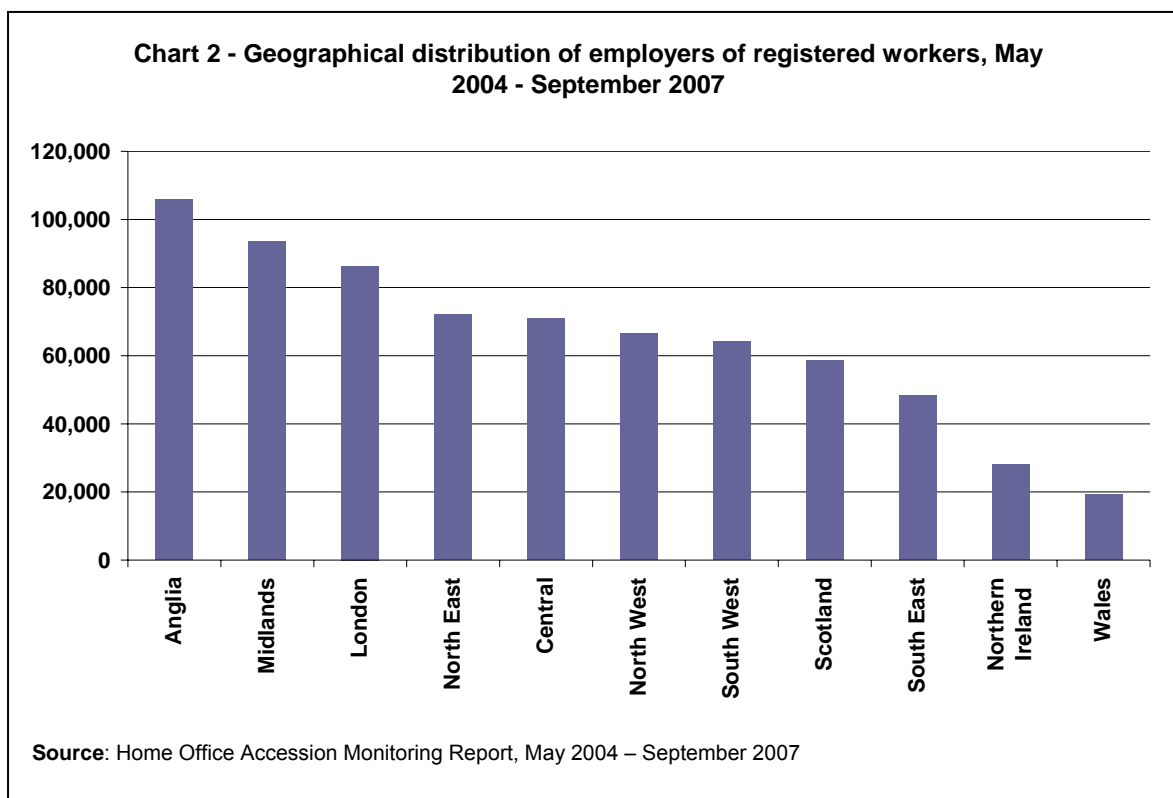
- a cumulative total of 715,000 applications to the WRS were approved between 1 May, 2004 and 30 September, 2007. Of these, 66% were Polish, 10% each Lithuanian and Slovak, and the rest other nationalities



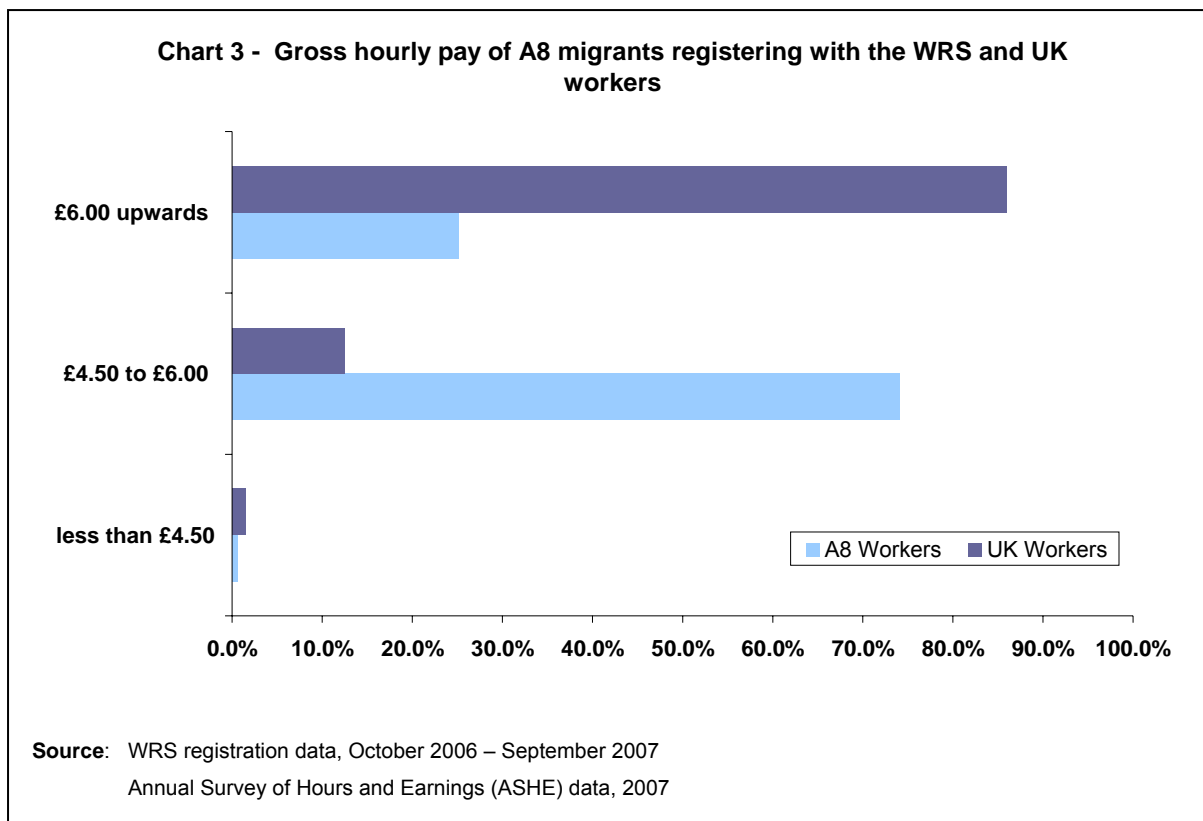
- 82% of registered workers were aged 18-34, with 44% under 25; 57% were male; 6% had dependents
- A8 migrants were much more geographically dispersed than previous migrant

²² **Accession Monitoring Report May 2004 - September 2007**, Home Office (2007), available at: http://www.ukba.homeoffice.gov.uk/sitecontent/documents/aboutus/reports/accession_monitoring_report/report13/may04sept07.pdf?view=Binary

influxes. Only 12% registered to work in London (while LFS data suggests almost 40% of working age migrants overall live in London). 15% registered in Anglia, but there were significant numbers in every UK region.

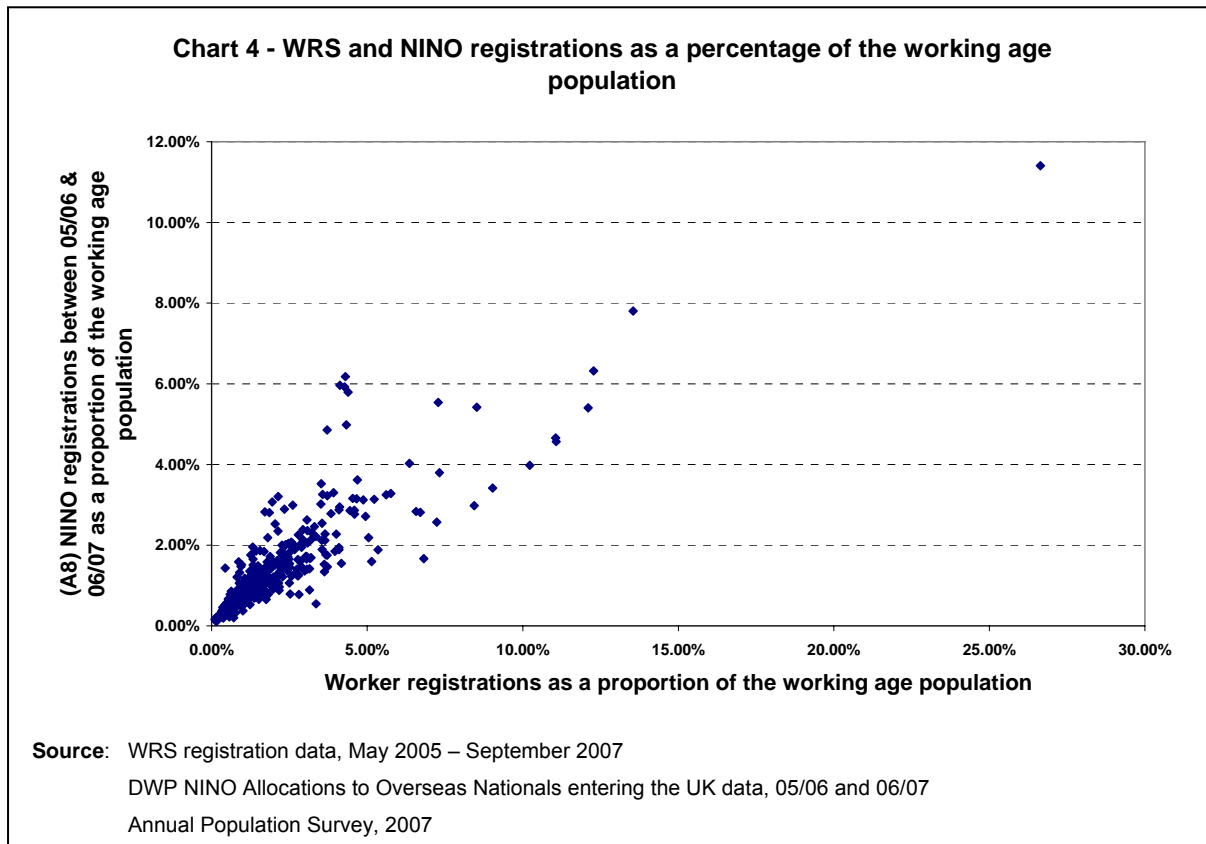


- the principal sectors in which they were employed were administration, business and management (38%), hospitality and catering (19%), agriculture (10%), manufacturing (7%) and food processing (5%).
- they were principally employed in relatively low skilled occupations (process operatives, warehouse operatives, etc). Correspondingly, they were relatively low paid, with 72% earning between £4.50 and £6 per hour, and a further 21% earning between £6 and £8, compared to median hourly earnings of £10.22.



These descriptive data run up to September 2007, in contrast to the data we use for our econometric analysis. However, the characteristics of the migrants in the earlier data are very similar to those reported above. There is no reason to believe that extending the period covered by the econometric analysis would materially alter the results.

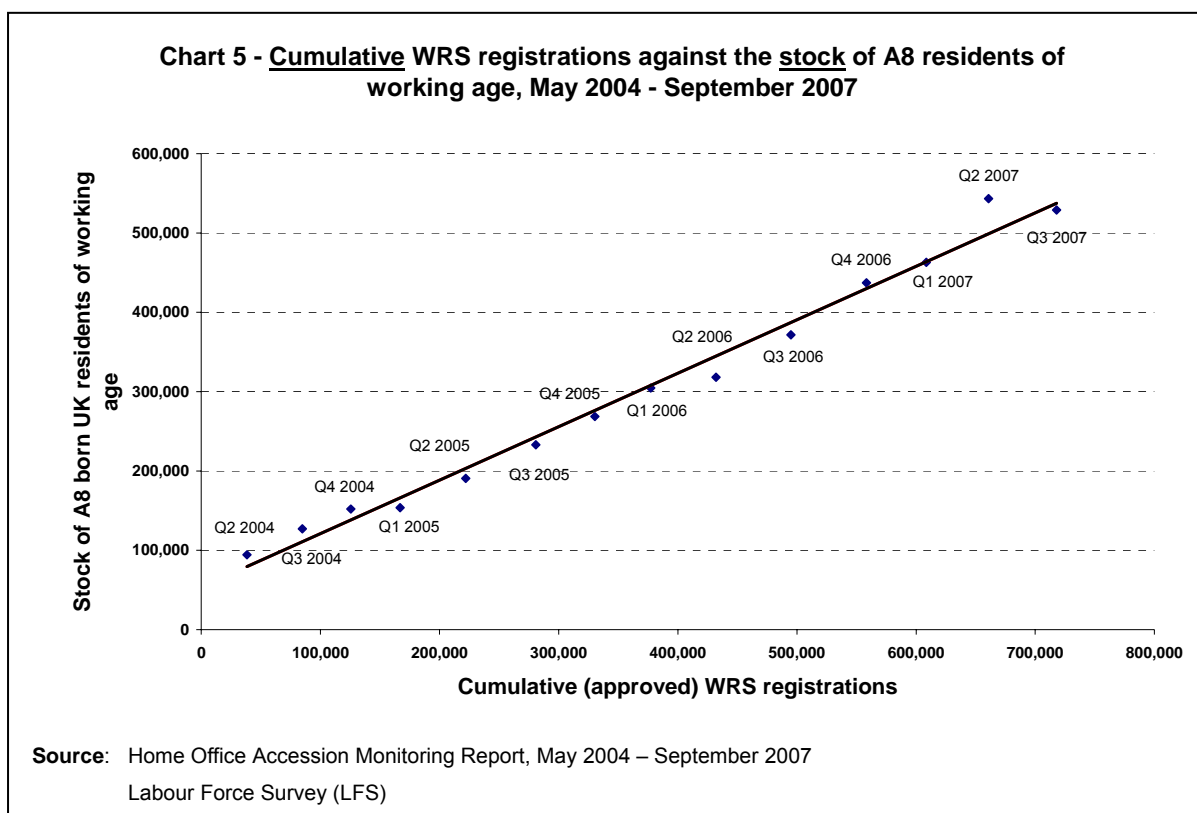
As noted above, an alternative data source on A8 migration to the UK is provided by the DWP's National Insurance Number registration data. This shows that during the three years 2004-05, 2005-06 and 2006-07, approximately 750,000 A8 nationals registered for a NINO. Since this covers a somewhat shorter time period than the WRS data, this suggests that NINO registrations exceed WRS registrations, for the reasons described above. However, the geographical distribution of those registering on each system is very similar, as shown in CHART 4.



As noted above, a key issue with both the WRS and NINO databases is that they measure only inflows, or gross migration, rather than net migration. It has been frequently observed that a substantial proportion of A8 migrants are likely to have returned to their home countries and that net migration is likely to be significantly less than gross migration.²³ This is supported by evidence from the WRS, which includes a question on likely length of stay. For the most recent available data, 57% of registrants said that they intended to stay for less than 3 months, while only 12% said more than a year. This is supported by the fact that 52% of registrants were in temporary employment. However, there is no direct measure of return migration, and there is no legal or practical reason why registrants cannot change their minds.

²³ e.g. Martin Ruhs (2007), Centre on Migration, Policy and Society (COMPAS) “There can be no doubt that many east European migrants who obtained national insurance numbers since May 2004 came to do temporary jobs and have already left” (<http://www.compas.ox.ac.uk/publications/coverage/220706%20Ruhs.pdf>). See also Pollard et al (2008), as before.

The most robust evidence on the stock of A8 migrants, and hence on net migration comes from the Labour Force Survey. While the LFS is likely to somewhat underestimate the stock of A8 migrants in the UK, particularly those who have been here less than 6 months and those living in communal establishments, it is the most reliable available data on stocks. CHART 5 plots **cumulative** WRS registrations against the **stock** of A8 residents of working age. The patterns are consistent, and suggest a return rate of (very roughly) 40%, taking account of the fact that both the WRS and LFS are, for different reasons, likely to somewhat understate the numbers of A8 migrants.²⁴



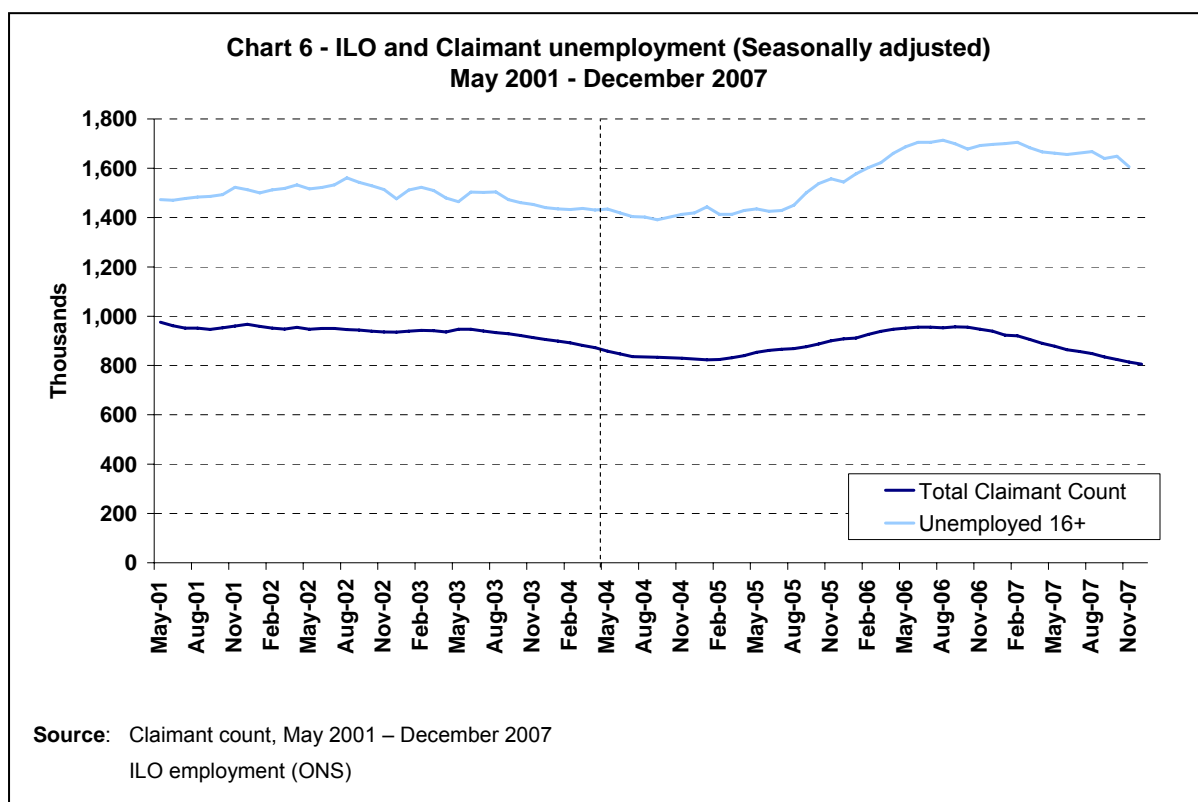
The UK labour market

At the time of accession the UK labour market was performing strongly in both historic and international terms. The overall employment rate in May 2004 was

²⁴ This is consistent with the analysis by Blanchflower, D., Saleheen, J. and Shadforth, C. (2007), as above. Pollard et al (2008), as above, using somewhat more recent data, estimate a return rate of about 50%.

74.7%, one of the highest on record, while claimant unemployment was 858,100, or 2.7%, the lowest since 1975. However, in about January 2005, the UK labour market weakened significantly, and remained relatively weak throughout 2005. Although employment overall continued to grow, claimant unemployment started to rise substantially in 2005, with a rise from trough to peak of about 135,000. ILO unemployment also rose, from 1.4m in May 2004 to 1.7m in August 2006.

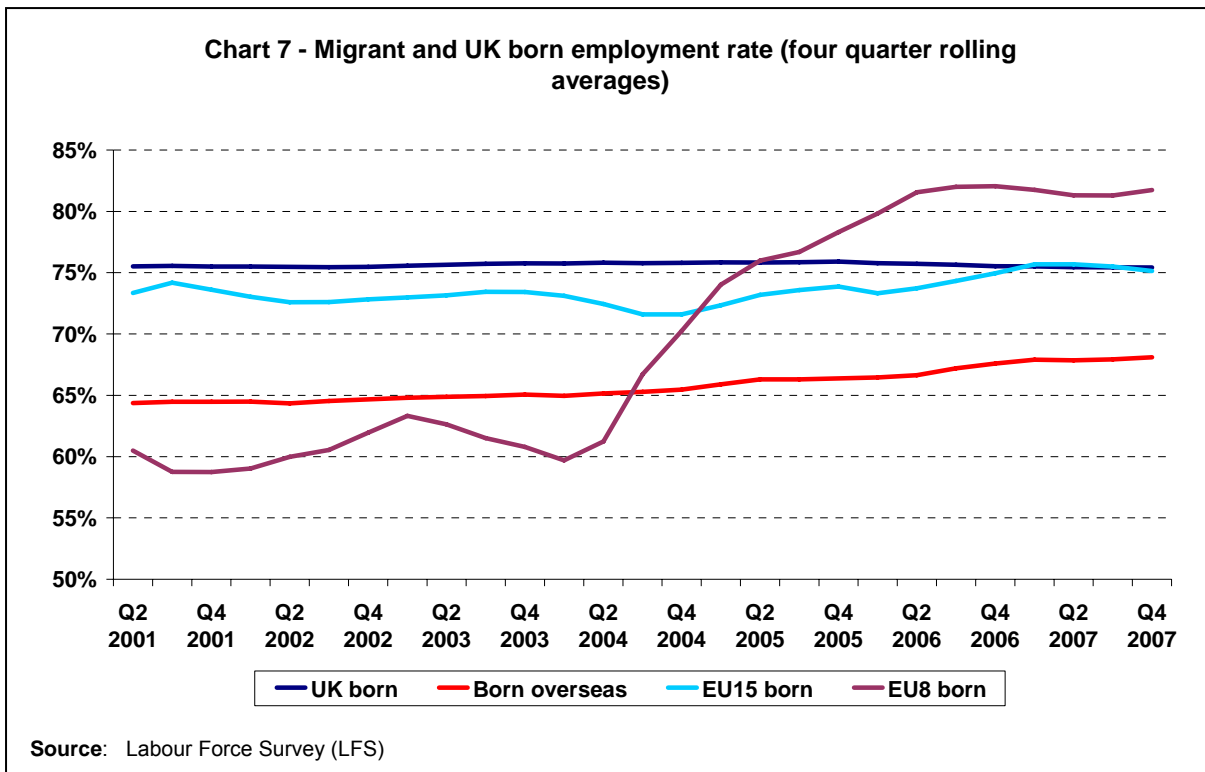
This weakness should not be exaggerated. Even at the trough, employment overall continued to grow, claimant unemployment was only about 10% higher than its lowest level for 30 years, redundancies were very low and vacancies very high by historical standards. There was no evidence of any structural weakness; rather, the increase in unemployment seemed to be largely driven by a temporary fall in (relative) demand. Internal DWP analysis at the end of 2005 suggested that further rises in unemployment would be limited. And indeed, the labour market began to recover in late 2006. By October 2006, claimant unemployment was falling, and soon after ILO unemployment also began to fall. By December 2007, claimant unemployment fell below its previous trough. CHART 6 shows ILO and claimant unemployment over the period May 2001 to December 2007.



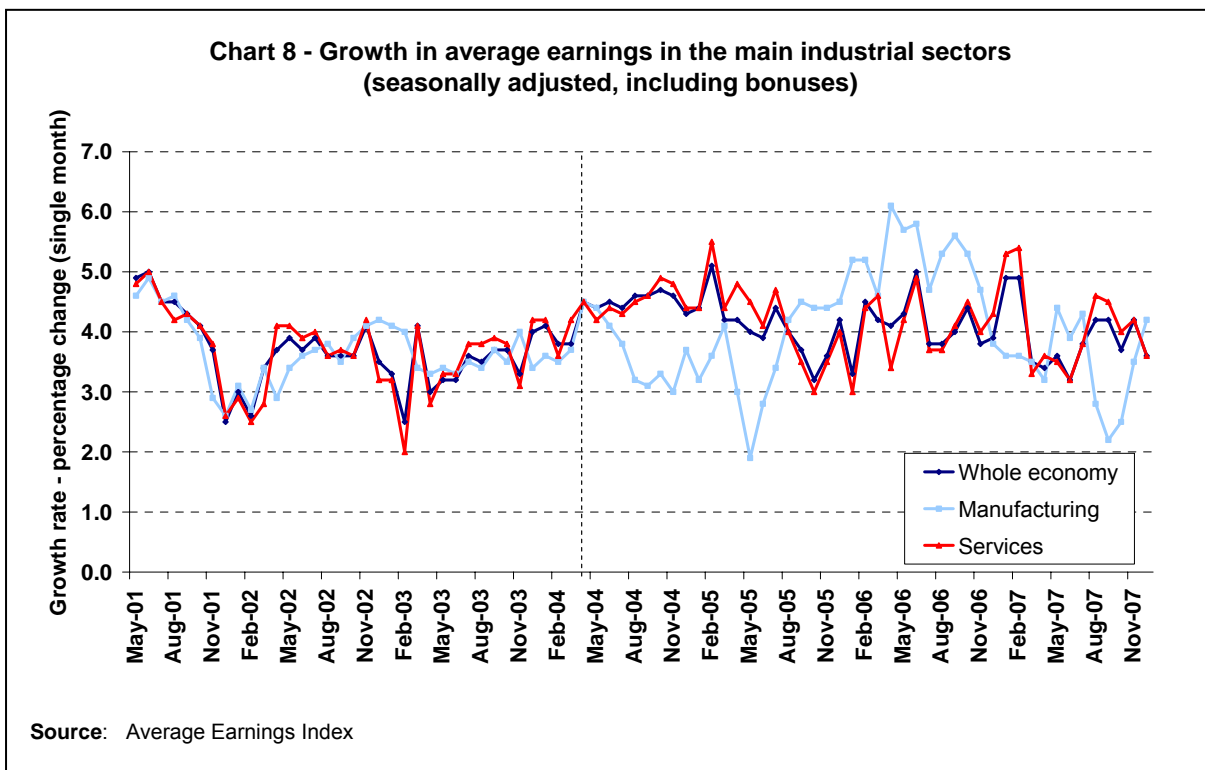
However, this temporary weakness in the UK labour market did coincide with the first two years of substantial migration from the A8 countries. Not surprisingly, therefore, there was widespread perception that the two were related. And indeed there was substantial anecdotal evidence that A8 migrants were filling jobs that would previously have been filled by low-skilled natives.

However, to conclude from this that A8 migration was increasing native unemployment would of course be a naïve example of the lump of labour fallacy – the assumption that the number of jobs is fixed, and that one more job for an immigrant means one fewer for a native. The number of jobs is not fixed, and the fact that a migrant is doing a job that could otherwise have been done by a native does not in itself reduce employment probabilities for natives.

In fact, simple descriptive analysis at an aggregate level does not suggest any connection between A8 migration and native employment levels. CHART 7 shows migrant and UK-born employment rates using a four quarter rolling average between April 2001 and December 2007. The substantial rise in the employment rate of A8 migrants does not appear to have been associated with a fall in the employment rates of other migrant groups or non-migrants. The employment rate of non-migrants has remained broadly constant and the employment rates of other migrant groups have continued to grow.



The story is similar for wage data. CHART 8 shows the monthly growth in average earnings between May 2001 and December 2007. A8 migration does not appear to be associated with a fall in nominal wage growth.



Before proceeding to the full econometric analysis, it is of interest to perform simple graphical analyses of the data to see whether there is any observable association between A8 migration and labour market outcomes. We plot changes in claimant unemployment and wages against WRS registrations aggregated over the entire period between May 2004 and September 2007. This analysis is not directly comparable with the regression analysis in Section 6 below, where we exploit the monthly variation in the data between May 2004 and April 2006. However, the conclusions from the graphical analysis – that A8 migration is not associated with labour market outcomes – are similar to those found in the more rigorous regression framework.

We begin with employment and unemployment. CHART 9 plots the change in claimant unemployment against the number of A8 migrants registering by region. Both are expressed as a proportion of the working age population. CHART 10 does the same at the LAD level. And CHART 11 repeats CHART 9 but plots the change in ILO rather than claimant unemployment. These figures do not suggest any clear or strong association between unemployment and A8 migration, either positive or negative.

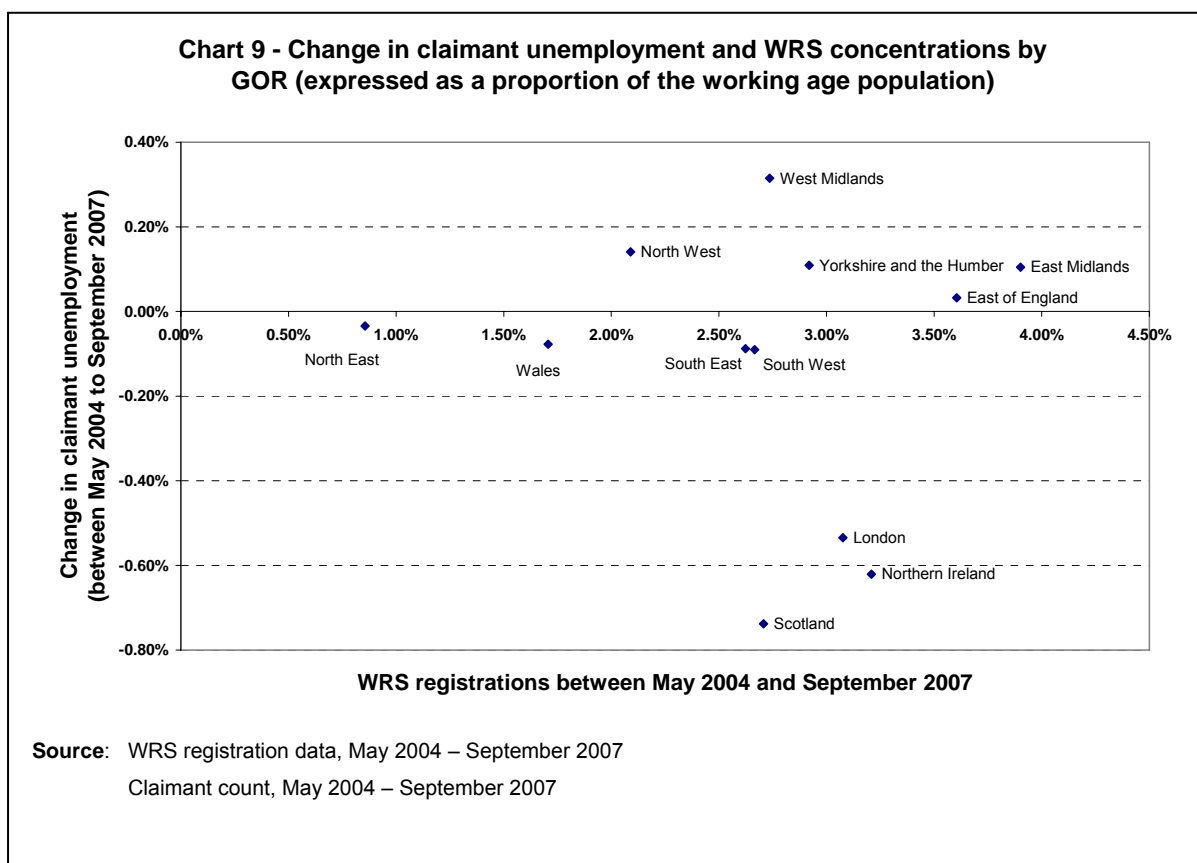
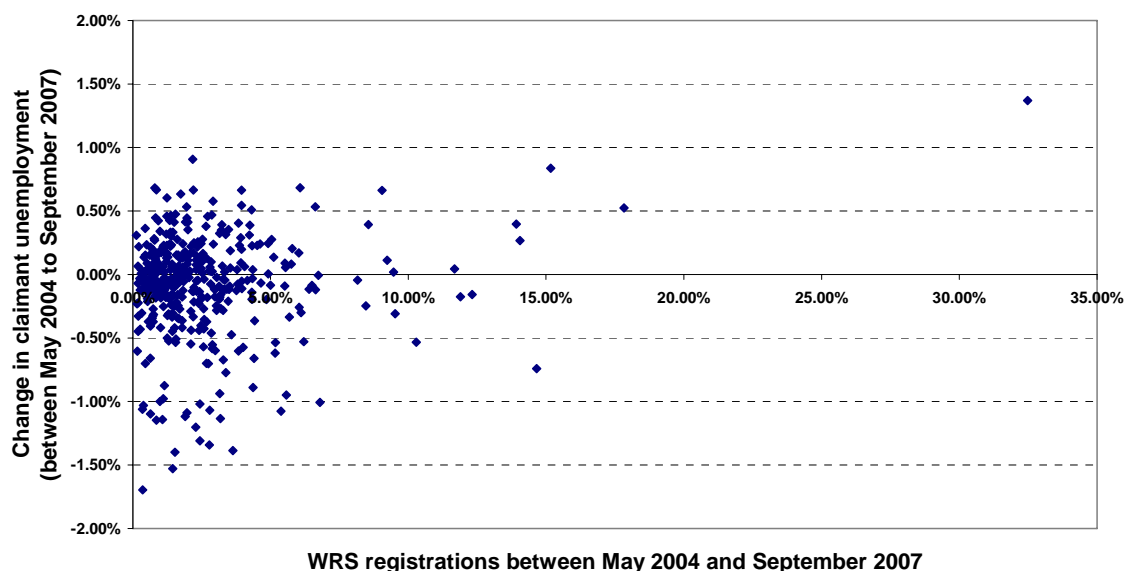
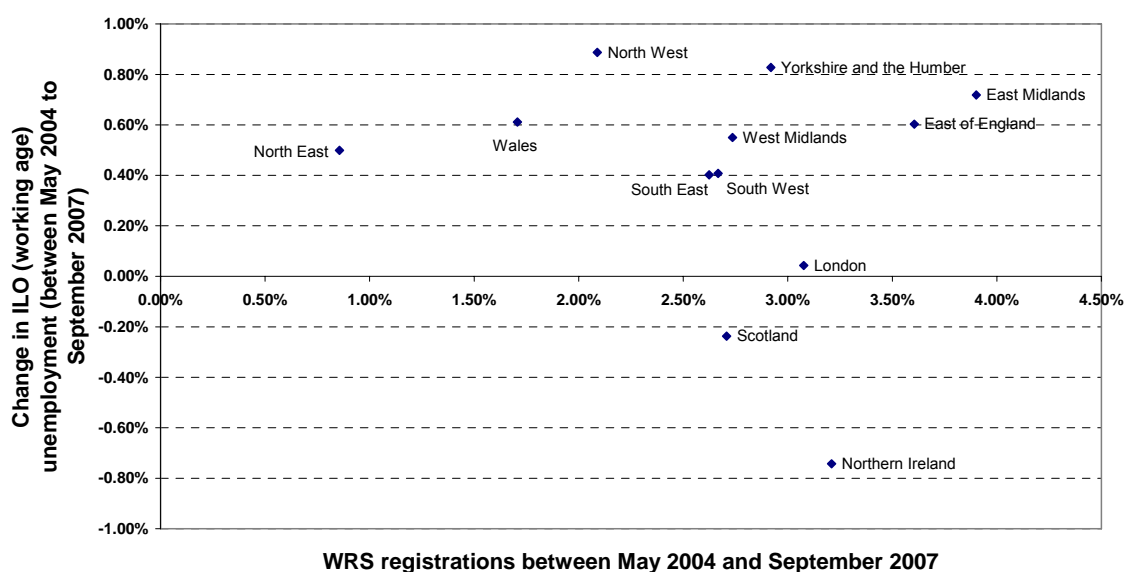


Chart 10 - Change in claimant unemployment and WRS concentrations by LAD (expressed as a proportion of the working age population)



Source: WRS registration data, May 2004 – September 2007
 Claimant count, May 2004 – September 2007
 Annual Population Survey, 2007

Chart 11 - Change in ILO unemployment and WRS concentrations by GOR (expressed as a proportion of the working age population)



Source: WRS registration data, May 2004 – September 2007
 Annual Population Survey, 2004 & 2007

CHART 12 repeats CHART 10, but focuses on native claimants normally employed in elementary occupations and hence most likely to be competing with A8 migrants. CHARTS 13 and 14 look at wages, both on average and at the 10th percentile of the wage distribution (again where we would expect the impact to be largest). Again, given sampling error for wage estimates at individual LAD level, these charts are primarily illustrative. However, once again they do not suggest any clear or strong association between wages and A8 migration.

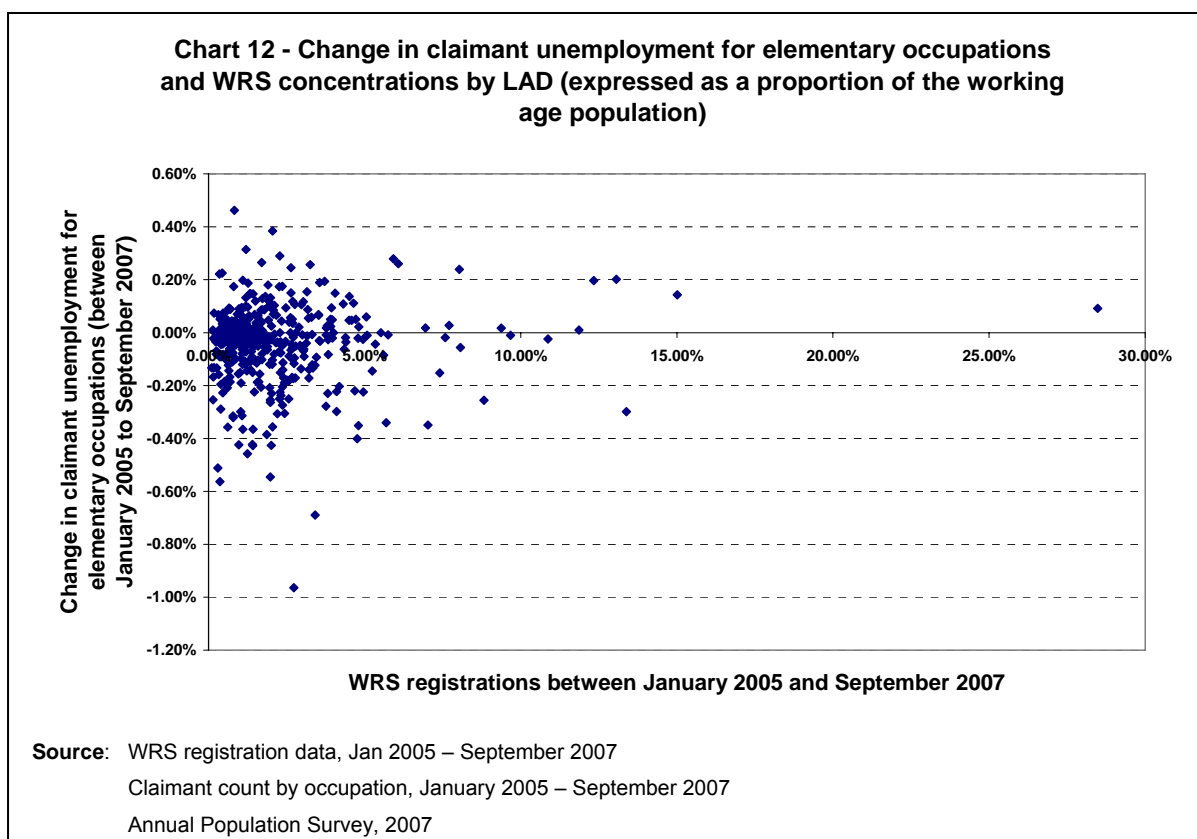
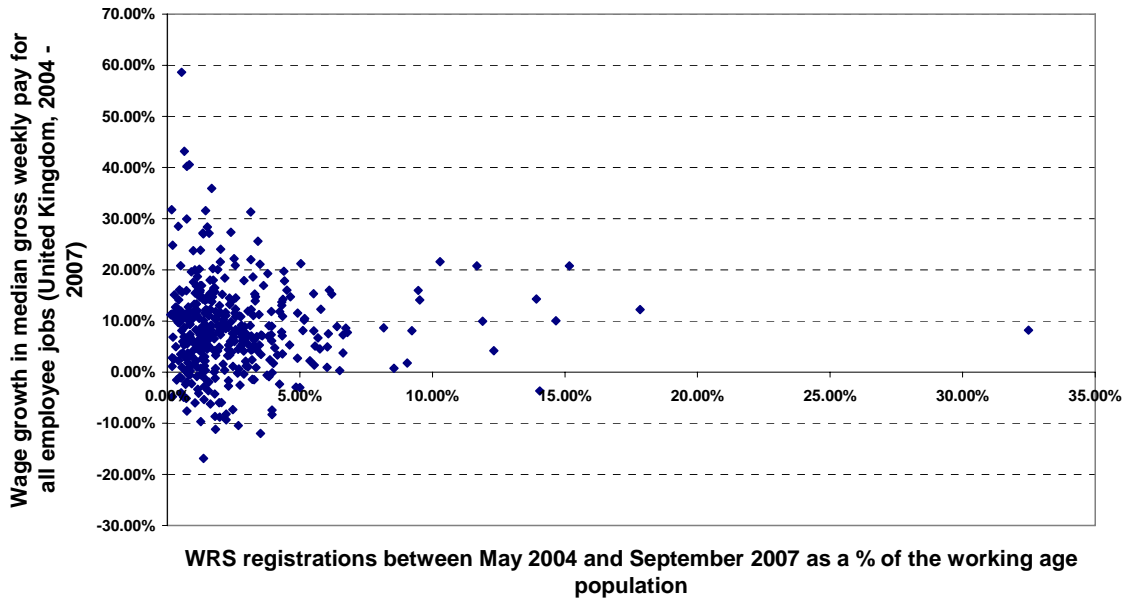
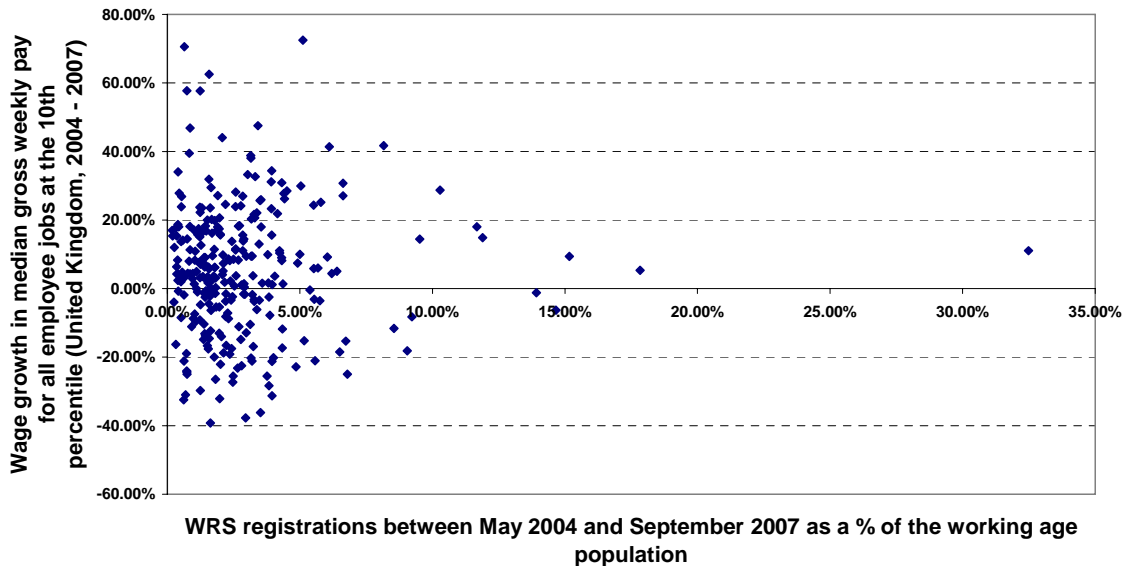


Chart 13 - Wage growth and WRS concentrations by LAD



Source: WRS registration data, May 2004 – September 2007
Annual Survey of Hours and Earnings (ASHE) data, 2004 & 2007
Annual Population Survey, 2007

Chart 14 - Wage growth at the 10th percentile and WRS concentrations by LAD



Source: WRS registration data, May 2004 – September 2007
Annual Survey of Hours and Earnings (ASHE) data, 2004 & 2007
Annual Population Survey, 2007

To sum up, a first look at the data suggests that there is no evidence of any clear or strong association between A8 migration and native labour market outcomes, whether measured by employment or wages – even among those (low paid and low skilled) workers where we would expect the largest impact. Of course, since we do not know the counterfactual, the analysis in this section does not permit us to conclude that A8 migration has had no impact on employment or wages for natives. We now proceed to examine the evidence in a more rigorous econometric framework.

5. Econometric analysis

Introduction and motivation

The majority of our econometric analysis is based on the standard approach in the literature. We wish to identify the impact of migrants on native labour market outcomes – employment and wages. But we do not observe the counterfactual – what would have happened to employment and wages of natives if migrants had not arrived. In order to estimate the impact, we therefore exploit variation in the number of migrants across place and time. Crudely, we are asking if places that received more migrants experienced worse labour market outcomes for natives.²⁵ We do this by estimating regression equations, disaggregated by time and place, that relate inflows of A8 migrants to changes in the (stock) of JSA unemployment and wages for natives.

A number of issues arise in such analysis:

- the level of geographic aggregation. Ideally, the geographic unit of analysis would conform to the local labour market. One weakness of most of the UK literature is that, since it relies on LFS data, sample sizes mean that analysis is typically performed at the regional level – and UK regions are clearly not labour markets. In addition, aggregation

²⁵ Virtually all papers that attempt to measure the labour market impact of migration adopt some variant of this approach.

at the regional level generally means that London – which accounts for almost half of all migrants in the UK, although significantly less for A8 migrants – is treated as one data point. We therefore take advantage of our use of administrative data to perform the analysis at LAD level. While LADs are not likely to coincide with local labour markets either, they might represent a more realistic practical radius of job search for most low skilled natives, so our analysis may be more likely to capture any real impacts. For robustness, and to provide comparability with the literature, we also aggregate across counties and regions.

- Endogeneity. We want to identify the impact of migration on labour market outcomes. But the causality may well run both ways. Migrants' decisions on where to locate may well be driven by the state of the local labour market – in particular, migrants may choose to move to places where jobs are plentiful. In that case it would be incorrect to say that migration had no negative impact on natives simply because places where migrants moved did not experience worse labour market outcomes than average. We deal with this issue in two ways; first, by controlling for observable factors that might influence where migrants move; and second, through the use of instrumental variables.
- Internal migration. It is of course theoretically possible that native out-migration could offset the impact of A8 immigration²⁶. We do indeed find some evidence, although not definitive, of a correlation between A8 migration and native net migration. We therefore control for native net migration. However, this does not make a substantial difference to our estimates, and in no case renders them statistically significant.
- Measurement error. This will be an issue to the extent that our migration, unemployment and wage variables are measured with error. As noted above, measurement error in the JSA data is unlikely to be

²⁶ This criticism was raised by Dr Rebecca Riley (NIESR), referring to Gilpin in testimony to the House of Lords Economic Affairs Committee.

severe. The WRS data is, as noted above, likely to miss some A8 migrants. However, we see no reason why such omissions should be systematic and they should therefore not bias the results.²⁷ The ASHE data is survey-based and hence, like most surveys, subject to some measurement error, but there is no reason to believe such error is systematic.

In addition to the local labour market or area approach, we also adopt the skill-occupation approach popularised by Borjas (2003)²⁸. This addresses the criticism that the impact of migration may – because of native labour mobility, or other compensating adjustments – not be observed at a local level, and replaces disaggregation by geography with disaggregation by skill level or by occupation within a national labour market.

Model specification

We use a reduced form equation, typically used in the literature, grounded on the standard neoclassical theory, Borjas (1999)²⁹:

$$(1) \quad n_{it} = \alpha + \beta m_{it} + \lambda X_{it} + f_i + f_t + \varepsilon_{it}$$

where n_{it} is our outcome variable (changes in unemployment), m_{it} is our measure of migration, X_{it} are labour supply and demand shifters, f_i and f_t are area and time fixed effects, and ε_{it} is the error term in local authority district i and year-month t , where $i = 1, \dots, 409$, and $t = 1, \dots, 24$.³⁰

We define our unemployment measure as the proportion of the working age

²⁷ A detailed technical discussion of issues relating to endogeneity and measurement error is included in Gilpin at Appendix B.

²⁸ Borjas, G. J. (2003), **The Labor Demand Curve is Downward Sloping: Reexamining the Impact of Immigration on the Labor Market**, The Quarterly Journal of Economics, available at: <http://ksghome.harvard.edu/~GBorjas/Papers/QJE2003.pdf>

²⁹ Borjas, G. J. (1999), **The Economic Analysis of Immigration**, available at: <http://ksghome.harvard.edu/~GBorjas/Papers/HANDBOOK.pdf>

³⁰ We use a very similar specification for the wage regressions, described below.

population in receipt of JSA; we refer to this as the claimant unemployment rate.³¹ We define our migration measure as the number of WRS migrants as a proportion of the working age population and refer to it as the (gross) migration rate.

We model time fixed effects by using month dummies. This controls for the effect of UK level macro shocks. We estimate Equation (1) in differences, and thus the individual fixed effects are differenced out. The migration variable is a flow variable, and therefore not differenced (as discussed in detail in Gilpin). The interpretation of our coefficient of interest is that a 1 percentage point increase in the proportion of WRS migrants in the working age population increases the UK claimant unemployment rate by β percentage points.³²

We also control for exogenous supply and demand conditions. Supply shifters included are the proportion of the total population who are women, who are young (younger than 24 years of age and between 24 and 35 years of age), who are ethnic minorities and who are migrants coming from outside the A8 countries. This data is drawn from the Annual Local LFS. Further supply shifters include the lagged proportion of WRS migrants who are women, who are young, and who have children (along with average number of children); and the lagged average number of hours worked by the WRS migrants. We also include the lagged proportion of WRS migrants in elementary and machine operative occupations, as these are the occupations that received most A8 migrants, to control for occupation specific shocks that might be affecting unemployment or wages in a particular district and month.

To control for demand conditions, we include lagged average claim duration. This accounts for the fact that unemployment might be higher in areas with historically

³¹ Note that we are implicitly defining “natives” as those eligible for JSA. In the relevant time period, the JSA claimant rate among A8 migrants was negligible (see Gilpin for an explanation). However, JSA claimants will include other migrants who have been resident in the UK for a longer period; we treat them as natives for these purposes.

³² The basic specification estimates the short-run impact. As in Gilpin, we also experimented with two types of dynamics. First, we included the lagged migration rate. Second, we included the lagged claimant unemployment rate. This allows lagged adjustment costs because employment and wages may not adjust instantaneously to changes in the production function. Lagged unemployment is also typically used as a measure of labour demand. However, neither substantially changed the coefficient estimates.

long spells of unemployment. Including lagged claim duration should separate this source of higher unemployment from the source of higher unemployment due to the arrival of WRS migrants. Also, lagged claim duration can be interpreted as a measure of labour demand. Finally, lagged claim duration alleviates problems arising from serial correlation in the residuals. As further measures of demand conditions, we include the lagged proportion of unemployed who are women and who are young in each local authority district. In further specifications, we also control for working age population growth and the native net migration rate.

We include each set of extra controls in turn to evaluate how each affects our coefficient of interest β . We discuss the robustness of β to these various checks when we analyze the results below. We perform a Generalized Least Square correction to account for heteroskedasticity arising from aggregation and to account for the relative importance of each LAD. Also, standard errors are corrected for serial correlation across and within areas.

6. Results

Claimant Unemployment

Generalised Least Square estimation

TABLE 1 shows Generalized Least Square β estimates from Equation 1. Our starting point is an ad hoc base specification where all coefficients in Equation 1 are assumed to be zero, except α and β . This gives us the raw correlation between our measures of unemployment and migration. The -0.015 estimate in row one shows that a one percentage point increase in the proportion of WRS migrants in the working age population is correlated with a decrease in the claimant unemployment rate of 0.015 percentage points. However, this coefficient is insignificantly different from zero.

Controlling for supply and demand shocks above turns the coefficient positive, which, however, remains statistically insignificant. We also control for native net-

migration, and the coefficient remains insignificant and positive, though smaller. This addresses the possibility that following an influx of migrants – either for labour market or other reasons – there is an increase in native out-migration and/or a decrease in native in-migration. The relative persistence of employment and unemployment differentials between UK LADs over time suggests that native net migration does not necessarily facilitate labour market adjustment in the UK, certainly not over the timeframe of this paper. In fact, controlling for native net migration does not render the estimates more adverse, and indeed appears to reduce their magnitude. In Annex 1 we present analysis suggesting a small correlation between A8 migration and native net migration, which is itself of interest, although these results should be interpreted with caution, given the weaknesses in the data on native net migration.

We also perform the analysis at three geographic levels – LAD, county, and region. Estimates based on the LAD level could be biased if the impact of A8 migration is not observed in the LAD where the migration occurs, either because those impacted by migration live in one LAD and work in another, or because A8 migration results in native out-migration. Aggregating data at a larger geographic level further reduces the likelihood of either type of bias.

The estimates are generally insignificantly different from zero. Our conclusion, as in Gilpin, is that there is no statistically significant impact of A8 migration on the claimant unemployment rate, regardless of the level of geographical aggregation and the choice of controls.

Table 1 - EFFECT OF IMMIGRATION ON CLAIMANT UNEMPLOYMENT		
Models	Coefficient	Standard errors
A - Local Authority District Level		
(1) Raw coefficient	-0.015	0.015
(2) Adding time effects	-0.051	0.054
(3) Adding controls	0.037	0.087
(4) Adding working age population growth	0.020	0.075
(5) Adding natives net migration	0.003	0.078

B - County Level		
(1) Raw coefficient	-0.072	0.045
(2) Adding time effects	0.085	0.065
(3) Adding controls	0.071	0.078
(4) Adding working age population growth	0.062	0.085
(5) Adding natives net migration	0.057	0.086
C - Government Region Level		
(1) Raw coefficient	-0.161	0.166
(2) Adding time effects	0.274	0.053
(3) Adding controls	0.134	0.081
(4) Adding working age population growth	0.119	0.108
(5) Adding natives net migration	0.115	0.106

- (a) These are GLS estimates weighted by the sample size used to calculate the dependent variable (except in row 1, where OLS unweighted estimates are shown).
- (b) The dependent variable is the UK unemployment rate and the independent variable of interest is the proportion of immigrants from the A8 countries in the working age population.
- (c) Time fixed effects are modelled with month dummies; area fixed effects are differenced out. See text for discussion on controls.
- (d) The interpretation of the coefficient is that an increase of one percentage point in the proportion of A8 countries immigrants in the working age population increases the claimant unemployment rate of UK natives by b percentage points.

We also perform a similar analysis on a variety of subgroups of the native population. First, we restricted our claimant unemployment variable to specific demographic groups; the low-skilled (those normally employed in elementary occupations), women and younger workers (under 25). The latter are of particular interest, since as highlighted above the A8 migrants are almost all young, and might be expected to compete directly with young natives; in addition, youth unemployment is an issue of serious concern in the UK, because employment rates for younger unskilled workers have not improved as much as for other groups over the last decade. A number of external commentators have suggested, generally without presenting any empirical evidence, that A8 migration might be associated with an increase in youth unemployment.³³ Again coefficient estimates were small, without a consistent sign, and almost always insignificant. Results are shown in TABLE 2.

We also restricted our sample geographically, looking at two subgroups of LADs where the impact might be most pronounced: London, Southeast and the East of England, and LADs with large numbers of agricultural workers. For most of these

³³ See, for example, the House of Lords Economic Affairs Committee Report, **The Economic Impact of Immigration** (as above) and testimony referenced therein.

specifications, estimates are small and almost always insignificant, as shown in TABLE 2.

Table 2 - EFFECT OF IMMIGRATION ON CLAIMANT UNEMPLOYMENT (robustness checks)		
Models	Coefficient	Standard errors
A - Local Authority District Level		
(1) Low Skilled	-0.021	0.028
(2) Young	-0.030	0.033
(3) Female	0.015	0.017
(4) London Southeast and Eastern	0.051	0.057
(5) Agriculture	0.073	0.014
B - County Level		
(1) Low Skilled	0.043	0.029
(2) Young	0.006	0.028
(3) Female	0.020	0.013
(4) London Southeast and Eastern	-0.055	0.014
(5) Agriculture	0.043	0.037
C - Government Region Level		
(1) Low Skilled	0.043	0.041
(2) Young	0.106	0.038
(3) Female	0.015	0.024
(4) London Southeast and Eastern	-0.166	0.278
(5) Agriculture	-0.014	0.070

(a) Notes as in Table 1.

(b) All estimates here to be compared with estimates in row (3) of each respective panel of Table 1.

Instrumental variables estimation

As noted above, a frequent concern in the literature is endogeneity. In particular, if A8 migrants are attracted to areas with low (or falling) unemployment, then our coefficient will be downwardly biased (that is, the impact on unemployment will appear to be less adverse than it is in reality). Anecdotally, there is considerable evidence that A8 migrants are moving to areas where there is strong demand for their labour.³⁴ However, we do not necessarily expect endogeneity to be a major concern for our analysis. Since we are looking at changes in unemployment rather than levels, we are already allowing for the fact that migrants may move to areas where the level of unemployment is already low. And we are already

³⁴ See, for example, Pollard et al (2008), as before.

controlling for a wide variety of LAD-specific characteristics and shocks. Consistent with this, the Hausman test in TABLE 3 below suggests little evidence of endogeneity.

All this suggests that endogeneity should not severely bias the estimates above. Nevertheless, to ensure consistency with the existing literature, we used the standard approach – instrumental variables estimation – to further confirm the robustness of our results above.

We experimented with a variety of instrumental variables. The most obvious approach is to use historic or lagged migration rates, as is standard in the literature (Dustmann et al 2003, 2007). The lagged migration rate is a relevant instrument, since it is highly correlated with the migration variable itself, as shown by the F-tests in TABLE 3; and, because it is for an earlier period, it is not endogenous, which is confirmed by the Sargan-Hansen tests reported in TABLE 3. We used a variety of different migration variables, including lags of the WRS data and historic international migration data derived from the International Passenger Survey and the Census.

Coefficient estimates were consistently negative (implying A8 migration reduced claimant unemployment), but mostly statistically insignificant. We also experimented with a more novel instrument, using data from the Civil Aviation Authority: we interacted a flight indicator variable – which indicates the existence of a flight between a particular A8 country and a particular LAD in the UK – with the distance between that A8 country and that LAD. Again, coefficient estimates were negative and mostly insignificant.

While it is suggestive that, using a variety of different instrumental variables, all the coefficient estimates are negative, most are insignificant. It would therefore be premature to draw strong conclusions. However these results strengthen the conclusion above that there is no evidence that A8 migration has increased claimant unemployment.

Table 3 - UNEMPLOYMENT EFFECT OF AN INCREASE IN THE % OF IMMIGRANTS IN THE WORKING POPULATION (Instrumented)									
Models	Coefficient	Standard errors	Hansen-Sargan test		Hausman test		F test		
			Statistic	df	Statistic	df	Statistic	df	
A - Local Authority District Level									
Lagged migration rates	-0.029	0.020	21.95	4	0.02	1	337.75	5	7310
Lagged entry-migration rates	-0.024	0.023	11.18	3	0.00	1	124.05	4	7718
Historic migration rates (census)	-0.144	0.071	0.03	1	3.47	1	109.84	2	8534
Historic migration rates (IPS)	-0.102	0.140	2.74	1	0.28	1	20.65	2	8534
Flight indicator interacted with distance between LADs and the A8 countries	-0.137	0.061	23.56	13	2.55	1	17.01	14	8522
B - County Level									
Lagged migration rates	-0.104	0.054	11.36	4	0.00	1	122.77	5	1028
Lagged entry-migration rates	-0.104	0.062	5.40	3	0.26	1	47.98	4	1087
Historic migration rates (census)	-0.106	0.202	3.70	1	0.06	1	15.25	2	1205
Historic migration rates (IPS)	-0.087	0.244	1.45	1	0.01	1	12.30	2	1205
Flight indicator interacted with distance between LADs and the A8 countries	-0.139	0.067	22.23	13	1.27	1	16.64	14	1193
C - Government Region Level									
Lagged migration rates	-0.222	0.134	5.05	4	2.52	1	78.81	5	182
Lagged entry-migration rates	-0.174	0.169	3.27	3	0.16	1	28.78	4	194
Historic migration rates (census)	-0.087	0.174	3.59	1	0.77	1	42.54	2	218
Historic migration rates (IPS)	-0.045	0.220	0.49	1	0.11	1	22.07	2	218
Flight indicator interacted with distance between LADs and the A8 countries	-0.072	0.107	9.55	10	2.88	1	24.50	11	211

(a) Notes as in Table 1. See text for details on the specification and instrumental variables.

(b) All estimates here to be compared with estimates in row (3) of each respective panel of Table 1.

Results by occupation

A particularly useful feature of our data is that we have data on occupation both for WRS registrants and JSA claimants. Since there is a high concentration in both groups among low skilled jobs – classified as “elementary occupations” – it is of interest to re-examine the data focusing on the potential for different impacts for different occupation groups. Here, following Borjas (2003)³⁵, we are implicitly treating the entire UK as one labour market, with low-skilled native and migrant workers competing for jobs across the whole country. This addresses criticisms of the geographical approach by abstracting entirely from local effects and native internal migration. Thus, we re-estimate Equation 1 aggregating the data at the occupation and month level. The first panel shows data aggregated across the entire UK. In the second panel, data is aggregated at occupation-regional level. Coefficient estimates are positive but small and statistically insignificant. Again, these results strengthen the conclusion above that there is no evidence that A8 migration has increased claimant unemployment.

Table 4 - EFFECT OF IMMIGRATION ON UNEMPLOYMENT (by occupation)		
Models	Coefficient	Standard errors
A - Occupation Level		
(1) Raw coefficient	0.055	0.068
(2) Adding time effects	0.030	0.038
(3) Adding controls	0.017	0.025
B - Occupation and Government Region Level		
(1) Raw coefficient	0.054	0.022
(2) Adding time time-area and time-occupation fixed effects	0.030	0.096
(3) Adding controls	0.056	0.066

(a) Notes as in Table 1. As before, time fixed effects are modeled with month dummies. Area and/or occupation fixed effects (and their interaction) are differenced out.

³⁵ Borjas, G. J. (2003), as above.

Wages

We now turn to examine the impact on wages. Theory suggests that to the extent that migration has any impact on native labour market outcomes, it should be divided between wages and employment – that is to say, if all the necessary adjustment comes through wages, then employment might not change, and vice versa. So the fact that employment effects, if any, have been rather small, suggests that wage impacts are worthy of examination. Some outside commentators (e.g. Blanchflower; Bank of England) have indeed suggested that A8 migration has dampened wage growth, although with suggestive rather than definitive empirical evidence.

We thus re-estimate Equation 1 defining n_{it} to be the log of average weekly pay from the ASHE across 409 LADs and across three years ($t=2004, 2005, 2006$). The controls now included are the proportion of the total population who are women, who are young (younger than 24 years of age and between 24 and 35 years of age), who are ethnic minorities and who are migrants coming from outside the A8 countries; the proportion of WRS migrants who are women, who are young, and who have children (along with average number of children); and the average number of hours worked by the WRS migrants. We also estimated impacts at different percentiles of the wage distribution. The interpretation of our coefficient of interest is now that a 1 percentage point increase in the proportion of WRS migrants in the working population increases wages in the UK by $\beta\%$.

TABLE 5 shows positive effects, but insignificantly different from zero, both for average wages and at all points of the income distribution. The results (except at the 5th percentile, where the operation of the minimum wage may have affected the results) are smaller at the bottom of the distribution, suggesting a small, but still positive, impact on wage growth for lower paid workers. However, the standard errors on these estimates are relatively large. We conclude that the available data does not show any statistically significant impact on native wages resulting from A8 migration.

It is of interest to contrast these results with Dustmann et al (2007)³⁶. He found that migration had a significant positive impact on wages at the middle and upper ends of the income distribution, but a negative one at the bottom³⁷. However, that paper looked at a rather diverse group of migrants over a long period of time, while we are looking at a shorter time period and a more homogeneous group of migrants. Moreover, the minimum wage was in force and increasing throughout the period of our data, possibly mitigating or offsetting possible negative wage impacts for lower paid workers. Our estimates of the average impact on wages are not inconsistent with those found in Dustmann, although they are somewhat smaller.

Table 5 - EFFECT OF IMMIGRATION ON WAGES		
Models	Coefficient	Standard errors
5th percentile	0.212	0.190
10th percentile	0.110	0.220
20th percentile	0.162	0.305
25th percentile	0.323	0.313
30th percentile	0.365	0.239
40th percentile	0.453	0.250
50th percentile	0.438	0.307
Average wage	0.246	0.276

(a) Notes as in Table 1, except that the dependent variable is now the average and various percentiles of the wage distribution. Time effects are now modelled with year dummies.

7. Conclusion

The evidence presented in this paper supports the conclusion of Portes and French (2005)³⁸ and Gilpin that overall, there has been no adverse impact of migration from the new EU Member States on the labour market outcomes of

³⁶ Dustmann, C., Frattini, T. and Preston, I. (2007), as above.

³⁷ We use wage data from ASHE while Dustmann uses LFS. However, it has been shown elsewhere that the two sources are consistent.

³⁸ Portes, J. and S. French (2005), **The Impact of Free Movement of Workers from Central and Eastern Europe on the UK Labour Market: early evidence**, Department for Work and Pensions, available at: www.dwp.gov.uk/asd/asd5/WP18.pdf

natives, reflecting the flexibility and speed of adjustment of the UK labour market. Using a variety of approaches, and making a number of significant improvements and extensions to Gilpin, we find no statistically significant impact of A8 migration on claimant unemployment, either overall or for any identifiable subgroup. Nor do we find a statistically significant impact on wages, either on average or at any point in the wage distribution, although the evidence here is less complete.

Annex 1 – the impact of A8 migration on native net migration

As set out in Section 6 above, controlling for native net migration, as taken from the ONS Annual Population estimates³⁹ does not substantially change our estimates above. However it is of interest to analyse whether there is any correlation between A8 migration and native net migration.

CHART 15 shows native net migration before and after mid-2004. This shows there is a considerable amount of persistence in the data, with the overall picture, both before and after 2004, being dominated by substantial native out-migration from London. TABLE 6 shows that there is a significant correlation between A8 migration and native net migration at the LAD level. Controlling for a variety of variables, following the literature [Hatton and Tani (2005)⁴⁰, Borjas (2005)⁴¹, Card (2000)⁴²], leads to reduced but still significant negative estimates at all geographical levels. Our preferred estimates are those in row 5. These estimates are somewhat smaller than those found in Hatton and Tani (2005) (whose estimates are comparable to those in row 4).

Considerable care should be taken when interpreting these results for a variety of reasons. The net migration data is not particularly robust. Endogeneity may be an issue here – we have not attempted instrumental variables estimation – so the causality still remains unclear. Moreover since, as shown in the main body of the paper, controlling for native net migration does not substantially affect our coefficient estimates for claimant unemployment, it is not clear that this is a primarily labour market driven phenomenon. It is possible that A8 migrants are moving to areas where locals are independently choosing to leave because the job opportunities being generated locally are not attractive to natives; or because

³⁹ The data used can be found at:
http://www.statistics.gov.uk/downloads/theme_population/Migration_indicators_by_LA_2001-2006_final.xls

⁴⁰ Hatton, T. J. and M. Tani (2005), **Immigration and Inter-Regional Mobility in the UK, 1982-2000**, The Economic Journal

⁴¹ Borjas, G. J. (2005), **Native Internal Migration and the Labour market Impact of Immigration**, National Bureau of Economic Research

⁴² Card, D. and J. E. DiNardo (2000), **Do Immigrants Inflows Lead to Native Outflows?**, American Economic Review

of other factors unrelated to the labour market. While inconclusive at this stage, this phenomenon clearly merits further research.

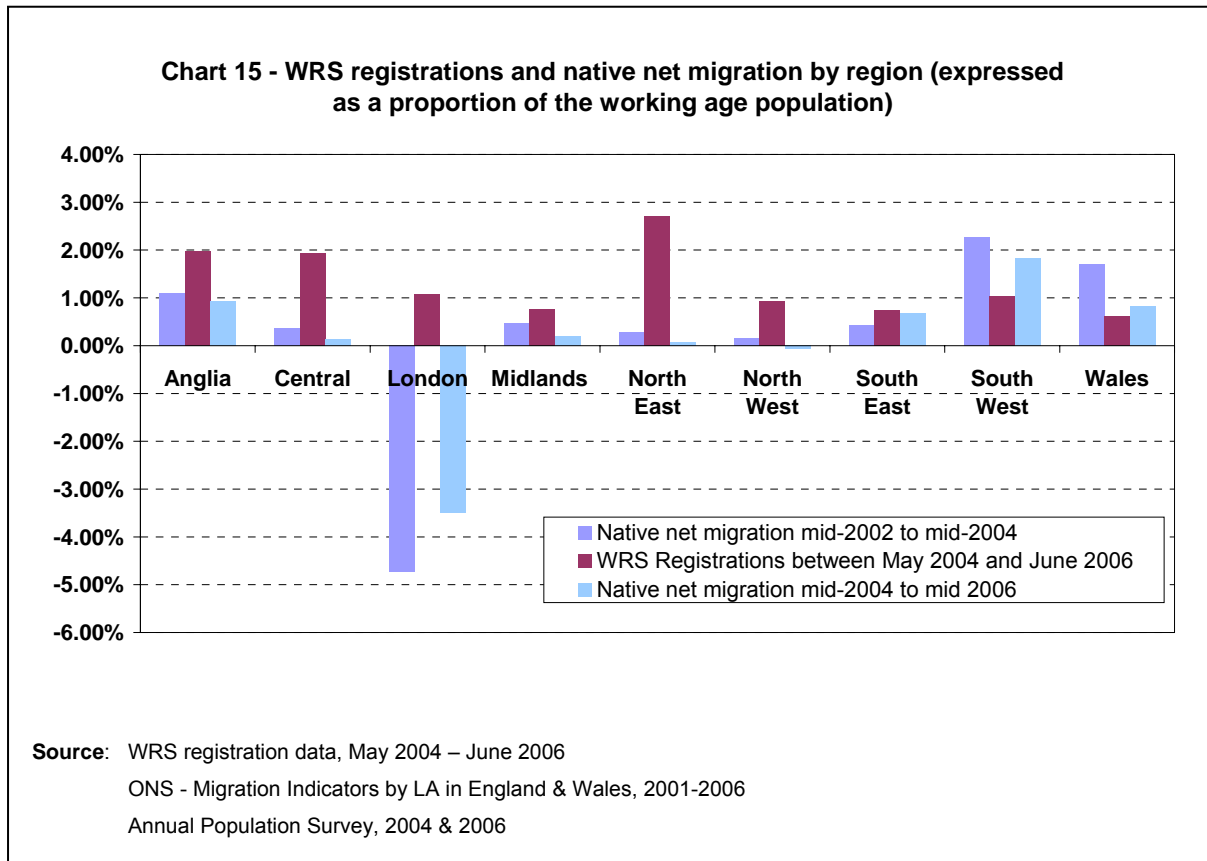


Table 6 - NATIVES NET MIGRATION		
Models	Coefficient	Standard errors
A - Local Authority District Level		
(1) Raw coefficient	-0.182	0.012
(2) Adding time effects	-0.301	0.006
(3) Adding working age population growth, wages and unemployment rate	-0.293	0.006
(4) Adding house prices and vacancies	-0.294	0.006
(5) Adding area specific growth rate	-0.036	0.001
<i>In migration rate</i>	0.059	0.042
<i>Out migration rate</i>	-0.030	0.032
<i>Excluding London</i>	-0.029	0.002
B - County Level		
(1) Raw coefficient	0.058	0.022
(2) Adding time effects	-0.098	0.001
(3) Adding working age population growth, wages and unemployment rate	-0.056	0.002
(4) Adding house prices and vacancies	-0.088	0.003
(5) Adding area specific growth rate	-0.058	0.003
<i>Excluding London</i>	-0.045	0.001
C - Government Region Level		
(1) Raw coefficient	-0.210	0.109
(2) Adding time effects	-0.539	0.019
(3) Adding working age population growth, wages and unemployment rate	-0.010	0.004
(4) Adding house prices and vacancies	-0.066	0.009
(5) Adding area specific growth rate	-0.124	0.013
<i>Excluding London</i>	-0.075	0.010

(a) Notes as in Table 1, except that the dependent variable is now the natives net migration rate.

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