The impact of migration: a review of the economic evidence

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Executive Summary

This report has been commissioned by The National Assembly for Wales, on behalf of the Welsh Assembly Government to (i) to provide a comprehensive review of the economic literature on the socio-economic impact of migration; (ii) to assess this evidence base in the context of significant migration from the new EU states; (iii) to summarise what is known about the characteristics of migrants to the UK and Wales; and (iv) to consider the likely policy implications for Wales.

Assessing the overall net gain or loss to the economy from immigration is a challenging task both from a theoretical and an empirical point of view. In part 1 of this report we provide a comprehensive overview of the economic literature on the socio-economic impact of migration and assess the evidence base in the context of significant migration from the new EU states. In part 2, we summarise characteristics of immigrants in the UK with a particular focus on Wales.

- Our literature review discusses a large variety of channels by which immigration can affect the receiving economy. The most important ones are through (i) wages or employment effects on native workers, (ii) changes in output structure, technology and competitiveness (iii) fiscal effects, through benefit claims and contributions to the tax or welfare system, (iv) effects on house prices, (v) effects through the creation of new jobs and opportunities, by self-employment or managerial activities of immigrants, and (vi) complementarities and additions to the skill base.

- The most analysed adjustment channel is through wages. In the simplest possible model, and if capital prices are set on world markets (which means that capital supply is perfectly elastic), and immigrants are different in their skill composition from native workers, immigration will put downward pressure on wages of native workers who are competing with immigrants, and increase wages of native workers who are complements. The effect on average wages will be zero or slightly positive. The reason is that immigration generates a "surplus" which, in the case of perfectly elastic capital supply, is going to native workers.

- If capital supply is inelastic, then, again, immigration will be more detrimental to those who compete with immigrants, but the overall average effect on wages may now be negative. The reason is that in this case it is capital owners who gain most from immigration.

- The empirical evidence overwhelmingly suggests that there are zero or small negative effects of immigration on wages. Some papers find positive effects. The studies for the UK do not find negative wage effects.

- Economies can also adjust through their output mix, i.e. in the relative composition of output goods produced. This may happen in small open economies, where the prices for tradable goods are set on international markets. In this case immigration may lead to an expansion of those industries that use immigrant labour most intensively, without affecting (relative) wages.

- Alternatively, economies can adjust through technology, by adopting technologies that employ more of those skills which immigrants bring with them.

- A series of recent papers for the US suggest that there is some adjustment of the economy through output mix. Adjustment through technology, however, plays a more important role in absorbing immigrant inflows.

- In part 2 of this report we offer an overview of the characteristics of the immigrant population in the UK and, particularly, in Wales.

- According to the LFS, the percentage of foreign born in the total working age population in Wales has increased from 2.9% in 1992 to 4.6% in 2005. In 2005, the national GB average was 11.5%.

- Within Wales immigrants are overall similarly distributed across counties as natives with the exception of Mid and South Glamorgan where they are significantly under- and over-represented, respectively.

- Immigrants in Wales are more educated than natives but experience lower employment and participation rates. In comparison to other areas in the UK, Wales has a large share of immigrants originating from Western Europe but has received relatively few immigrants from the new EU accession countries since 2004. The ones who did settle in Wales, however, fared substantially better than their counterparts in other parts of the UK with an employment rate of 84.5% compared to only 58% in London and 64.2% nationwide.

- Within Great Britain, immigrants tend to go to regions with higher wage growth. However, there seems to be no relationship between changes in employment rates and immigrant inflows.

- According to the LFS, in 2002-2005 almost 32% of immigrants in Wales were from Western Europe. This figure is above the national GB average of 21%, and the figure for London (16.5%).

- Only 4% of immigrants in Wales are from the new EU accession countries, while the corresponding figure for GB and London are respectively 7.7% and 9.3%. The most recent inflows are very similar in composition to the pre-existing immigrant population.

- In Wales, and in the rest of Britain, non-white immigrants tend to have considerably lower employment rate than white immigrants. However, average wages for white and non-white foreigners in Wales are almost the same. This is in contrast to the rest of Britain where whites have higher average wages.

Part 1: The Impact of Migration: Theory and Evidence

The first part of this report surveys the literature on the impact of migration. We commence in section 1.1 with giving a brief account of what economic theory would predict happens when immigration occurs. We explain within a very simple model which consequences one may expect from immigration for wages and employment (under different assumptions about e.g. the openness of the economy, or the supply elasticity of capital), and which distributional consequences may follow. We then turn to the difficulties and challenges researchers face when attempting to quantify effects of immigration on resident worker's outcomes in the receiving country. Section 1.3 is a survey of the literature. Most of the empirical literature is for the US, and our discussion reflects that. Finally, in section 1.4 we discuss macroeconomic perspectives on the impact of immigration.

1.1 The impact of immigration – economic theory

One of the key questions on migration concerns its benefits and costs for the receiving economies. Fears that migration may, at least in the short run, have adverse effects on labour market opportunities of the resident working population are a main reason for opposition to more liberal migration policies. In this report we will focus on the possible mechanisms by which immigration may affect wages and employment of the native resident work force. We will explain some of the mechanisms, which may lead to negative employment and wage effects of migration, and the circumstances under which adverse effects may not occur.

The first question that arises is how to model immigration and immigrants. Some early papers assume a closed economy, with only one skill type, and capital complementary to labour. In

these papers, immigrants are considered as a distinct factor of labour (see e.g. Grossman 1982). Such models give valuable insights into the effects of immigration on wages and returns to capital. However, much of the debate on immigration is about whether immigrants are skilled or unskilled, and how the inflow of immigrants of particular skill endowments affects economic outcomes of skill groups in the resident population. It seems therefore natural to distinguish between different skill groups when modelling the impact of immigration.

Much of the later literature has taken this into account, by distinguishing between different types of labour. Grossman's idea that immigrants and natives may be different factors of production has been taken up again in the latest literature, which assumes that immigrants and natives are imperfect substitutes within skill groups (see e.g. Borjas 2003 and Ottaviani and Perri 2006).

In what follows, we discuss a simple model framework and extend it in directions that seem important for studying the possible labour market effects of immigration. We distinguish between skilled and unskilled workers who may be natives (born in the destination economy) or immigrants (born in a country other than the destination economy). We commence by assuming that immigrants and natives within a particular skill group are perfect substitutes, i.e. they are exchangeable. Finally, we assume throughout that capital supply is perfectly elastic. This means that firms obtain capital at a fixed interest rate, which could be thought of as being set on an international market. We thus exclude from our consideration possible redistributional effects of migration from workers to capital owners (see Borjas 1995 for discussion), but concentrate on possible redistribution between skilled and unskilled labour.

Suppose now that such an economy experiences immigration. Immigrants could be either skilled, or unskilled, or both. A first key observation is that immigration only affects economic outcomes of resident workers if it changes the skill mix of the economy. Obviously, immigration inflows affect the skill composition of the labour force of the immigration country only if the skill composition of immigrants differs from the skill composition of natives. For example, suppose that before immigration, 50 percent of the native workforce is skilled and 50 percent unskilled. Immigration of only unskilled workers would shift the composition of the total workforce towards the unskilled.

Suppose further the economy is in labour market equilibrium before immigration in the sense that all workers are fully employed at equilibrium wages, which may differ for the skilled and the unskilled. If now immigration occurs, and immigrants differ in their skill composition from native workers, any change in the skill composition as a result of immigration will lead to disequilibrium between supply of and cost-minimizing demand for different labour types at existing wages and output levels. If for example all immigrants are unskilled, there will be an excess supply of unskilled workers at the going wage rate. Absorption of these new workers into the economy, and restoration of equilibrium will therefore almost certainly involve short-run changes in wages and employment levels of different skill types. Whether effects on wages and employment are permanent or only temporary depends on some other characteristics of our economy which we have not yet discussed. In particular, it depends on the different possibilities of the economy to adjust to the labour supply shock induced by immigration and the consequent changes in relative supply of skilled and unskilled workers. In the simplest case the economy produces one good only, and any adjustment to a change in the skill composition of the labour force through immigration will be through wages. In more realistic cases, where the economy consists of multiple sectors, adjustment can also take place by changing the output mix.

For illustration, we compare below the effects of immigration on an economy with only one output good with that on an economy with multiple traded output goods. Technical details can be found in Dustmann, Fabbri and Preston (2005) or Dustmann and Preston (2006). See also Altonji and Card (1991), Borjas (1995), Friedberg and Hunt (1995), Borjas (1999a), Gaston and Nelson (2000), Card (2001) and Glitz (2006) for related discussions.

Before we discuss these cases, we would like to emphasize that in the economy characterized above, wage- and possibly employment effects occur only if the skill distribution of immigrants differs from that of the native work force and therefore changes the relative supply of different skill groups in the economy (always maintaining our assumption of free international flow of capital). If the skill distribution of immigrants is equal to that of natives (for our example, this would mean that 50 percent of immigrants are skilled, and 50 percent of immigrants are unskilled), immigration will not change the structure of wages, as it does not affect the relative supply of skills. Output will increase, but no effects on wages and employment are to be expected in this case.

1.1.1 One output, skilled and unskilled labour

The simplest case is one where the economy produces only one output good with a constant returns to scale technology. A constant return to scale technology is a technology where output is doubled if all factors of production are doubled. The three factors of production used in our economy are capital, skilled labour, and unskilled labour. Assume that the rate of return to capital (the interest rate) is set by the world market, and supply of capital is therefore perfectly elastic. Furthermore, assume that labour supply of both skill groups is completely inelastic. This means that workers are willing to work at whatever wage is offered to them.

We will relax this assumption later. Finally, assume that the skill composition of immigrants differs from that of native workers. For illustration, we will consider the extreme case where all immigrants are low-skilled. Immigration will now lead to an excess supply of unskilled labour at the pre-immigration wages. Because unskilled labour is in excess supply, firms will therefore be able to satisfy their demand for labour even at lower wages. This leads to a decrease in wages of unskilled workers, which, in turn, increases demand, until all unskilled workers (immigrants and natives) are employed, but at a lower wage than the pre-migration wage.

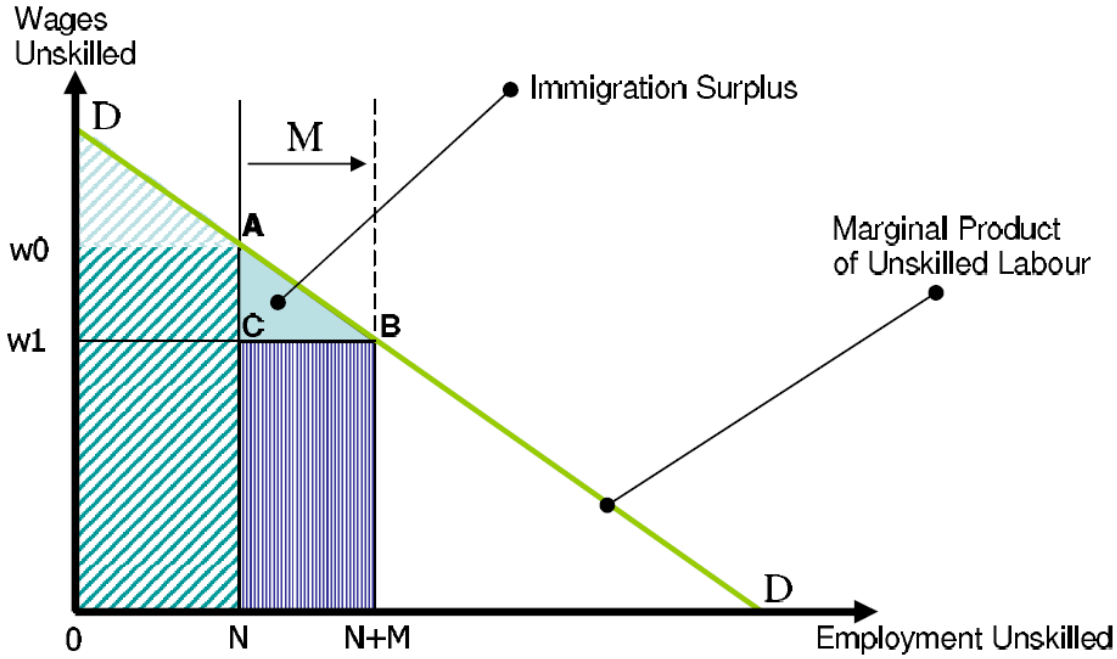
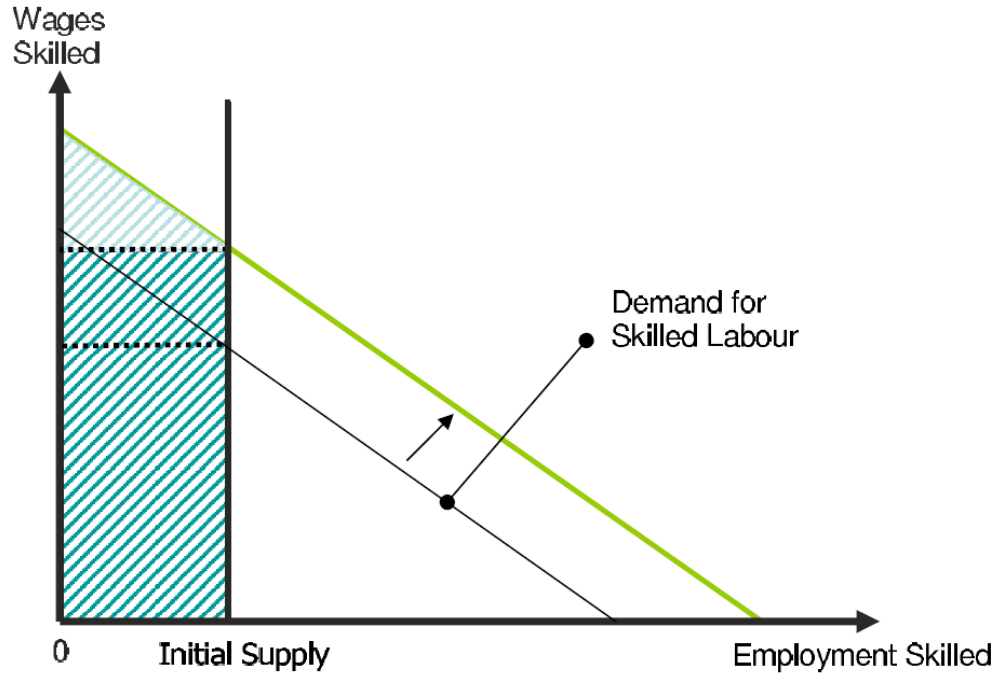


Figure 1: Effects of Unskilled Immigration

Accordingly, low-skilled native workers lose as a consequence of immigration. However, a supply shock of unskilled workers leads to relative scarcity of skilled workers in our economy, driving up their wages. Skilled workers therefore enjoy a surplus from immigration. While wages of unskilled workers fall, wages of skilled workers will rise. In our simple economy, the surplus accruing to skilled workers will be higher than the loss to unskilled

workers (with the difference often referred to as "immigration surplus").[1] We have demonstrated this in Figure 1, concentrating on unskilled workers only. On the vertical axis we have wages, and on the horizontal axis employment. In the pre-migration period, all native workers (N) are employed at wages w_0, and the pre-migration equilibrium is in point A. Immigration of size M leads to a shift in the (perfectly inelastic) labour supply schedule. As skilled labour remains constant, this leads to a relative excess supply of unskilled labour, thus driving wages down the marginal product curve. The new equilibrium is in point B, where wages have decreased to w_1. In this new situation, the total output share that goes to unskilled workers has decreased by an amount reflected by the area of the rectangle ($w_0 - w_1$ – A – C). This share of output falls now to skilled labour. As all unskilled workers including immigrants work at a wage that is equal to the marginal product of the last immigrant, immigrants create an additional surplus, which is given by the area (A – B – C) and which also falls to skilled native workers.



[1] Note that the owners of capital will neither lose nor win, as the interest rate is assumed to be set on international markets and, thus, capital will be supplied perfectly elastically.

Figure2: Effects of Unskilled Immigration on Skilled Native Wages

There is therefore an aggregate gain but also redistribution, with one labour type losing whereas the other gains. However, skilled workers gain more than unskilled workers lose, leaving the receiving economy with a surplus. This is shown in Figure 2: The demand curve for skilled labour shifts outwards, and the wage for skilled workers increases.

More generally, in such an economy, and if immigrants differ in their skill composition from natives, per capita income of the native population will increase as a consequence of migration, but the gains of migration are unequally distributed. Notice that in this economy therefore, *average* wages will increase due to the surplus, but wages of workers that compete with immigrants will decrease. Notice further that this result depends on the assumption that capital is perfectly elastic in supply. If on the other hand capital is constant, the surplus will go to capital owners, and average wage effects may be negative. Therefore, within this setting immigration may have on average positive or negative wage effects, depending on the elasticity of capital supply. The quicker capital supply adjusts to immigration, the smaller will be its effect on average wages in the economy. The growth and real business cycle literature has typically estimated the speed with which capital supply responds to deviations from its long-run growth path at around 10% per year (for an overview see Ottaviano and Peri 2006a). Dustmann, Frattini and Preston (2007) provide a detailed theoretical and empirical analysis for the UK.

One strong assumption we made above was that workers supply labour whatever the wage – we referred to that situation as one where labour supply is completely inelastic. We now relax this assumption and assume that labour supply is somewhat elastic. This means that some workers will not want to work any more if wages are decreasing, and rather choose

unemployment. In this situation, there are equilibrium employment effects. Immigration may cause (voluntary) unemployment among those native workers whose wages fall.

We illustrate this in Figure 3. Here the labour supply curve is upward sloping, and an increase in labour supply through migration leads to some native workers not being prepared any more to work at the new, lower equilibrium wage. These workers (N0-N1 in Figure 3) remain therefore *voluntarily* unemployed.

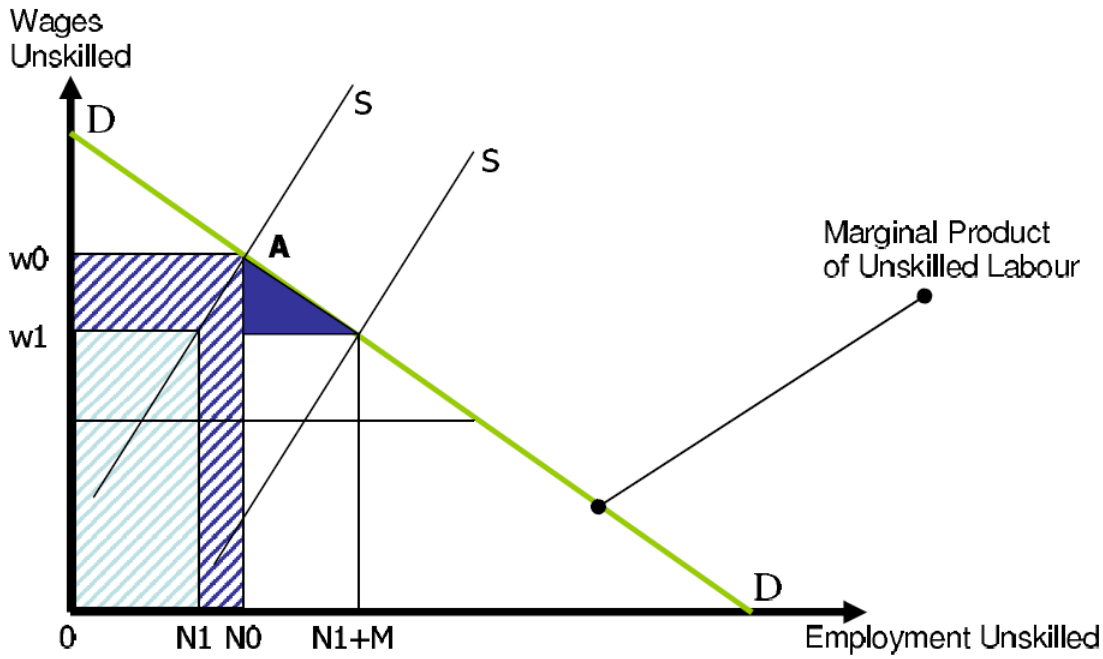


Figure 3: Employment Effects of immigration

Our example focused on the case where all immigration is unskilled, thus changing the skill composition towards unskilled labour. Of course, if we assume the other extreme case (namely that all immigrants are skilled), it will be unskilled wages that rise, and skilled wages that fall, creating a redistribution and a surplus that favours unskilled rather than skilled labour. More generally, in this simple setting, the beneficiary of immigration will always be that skill group whose relative supply has decreased as a consequence of immigration. As we

stress above, no effects are to be expected if the skill composition of immigrants resembles that of the native population.

The model we have outlined above is the basis for much of the empirical work done in the area. It is attractive because of its simplicity and clear-cut implications. However, it does not capture all the aspects of adjustment of the receiving economy to an inflow of immigrants, and we will discuss a simple extension below.

1.1.2 Multiple outputs, skilled and unskilled labour

The economy we have characterized above is a one-sector economy, where only one output good is produced. Such an economy can only react to a change in the composition of its workforce (by e.g. immigration) through changes in the wage structure. Now assume a multi-sector economy, where each sector produces one output good. Assume also that all output goods can be traded, with output prices fixed on world markets. Such an economy has an additional way to adjust to changes in the skill composition of its workforce, namely by adjusting the mix of output goods it is producing. We discuss in the next paragraph how that works.

To focus ideas, we will again assume that labour supply is inelastic, i.e. that all workers will supply their labour whatever the wage level is. Again, we will relax this assumption below. We assume also that there are only two sectors, one being intensive in the use of unskilled labour, and one being intensive in the use of skilled labour. These two sectors produce two output goods, both traded on world markets. Furthermore, assume, as above, that all immigration is unskilled. Holding the output ratio fixed, immigration would, as before, drive down wages of unskilled workers (and increase wages of skilled workers). This however

drives up profits in that sector which uses unskilled labour more intensively. As a consequence, this sector will expand production, which, in turn, pushes up demand for unskilled labour. This will then again increase unskilled wages. Accordingly, while the immediate impact of immigration is to lower wages of unskilled workers, in the longer run wages will increase again. Assuming the eventual equilibrium continues to involve positive production in all traded goods sectors, wages should return to the initial pre-immigration equilibrium. Leamer and Levinsohn (1995) refer to this as the hypothesis of factor price insensitivity. In the context of the discussion on immigration, this is sometimes referred to as the structural hypothesis – meaning that immigration changes the industry structure, rather than the wage structure.[2]

What is different in this economy that leads to different effects of immigration compared to an economy with only one output good? Remember that there are multiple goods produced in this extended economy, as compared to one good only in the economy we discussed above. Rather than impacting on wages, long-run effects of immigration are felt in the output mix with production of output goods expanding that use unskilled labour relatively intensively. In other words, the economy reacts to an inflow of unskilled workers by expanding production in that sector that uses unskilled workers more intensively.

Again, and as before, if labour supply is elastic, there may be both employment and wage effects in the short run, before the output mix can fully adjust. As in the one output case, no effects of migration on wages and employment are to be expected (neither in the short- nor in

[2] In the extreme case, and for sufficiently large scale immigration of unskilled labour, the economy may specialize in producing only the good that uses the immigrating factor more intensively (see Bhagwati and Srinivasan, 1983). Obviously, in such a case there will be factor price effects, that is effects on skill-specific wages, for the obvious reason that once one good ceases production, the economy (for our example) behaves like a one-sector economy.

the long run) if the composition of migrant labour resembles that of the resident pre-migration population.

These results can be generalised to multiple factors and multiple outputs, and it can be extended to the case of non-traded goods, with the relevant algebra being detailed in trade theory models (see for example Ethier 1984 and Woodland 1982). Important is that there are more traded goods in the economy than factors of production, to allow the economy to react through flexibility in its output mix.

A further adjustment mechanism is through technology. While above the economy adjusts to changes in the skill composition (induced through immigration) by adjusting the output mix, adjustment could also take place through technology changes, in the way that technology adjusts so that the relatively more abundant type of labour is used more intensively. Lewis (2004) emphasises this possible way of adjustment and provides empirical evidence for his hypothesis for the US. We will discuss his study below.

1.2 Measuring the immigrant impact on the labour market

How can the effect of immigration on native employment and wages be estimated, what are the problems of empirical assessment, and what is the empirical evidence on the effects of immigration on wages and employment of resident workers? In this section we discuss the problems that may arise in the empirical analysis, and the methods that are used to address them.

1.2.1 The spatial correlation approach

The usual approach in the literature is motivated by the following thought experiment. Consider an economy that can be divided into two regional labour markets R1 and R2, both identical to each other. Now suppose immigration takes place, and all immigrants are sent to labour market R1. The effect of immigration on wages and employment could now be measured by comparing wages (and employment) between labour market R1 and labour market R2, and relate it to the relative magnitude of immigration. In this example, labour market R2 serves as the *counterfactual*: it represents labour market R1 in the absence of immigration.

Following this thought experiment, and extending it to more than 2 regions, an empirical implementation would then regress a measure of employment or wages of resident workers in a given area on the relative quantities of immigrants in that particular locality and appropriate controls. This approach is often referred to as the *spatial correlation approach.* Spatial units are intended to correspond to geographical labour markets. In the U.S. context, the spatial units usually used for empirical analysis are standard metropolitan statistical areas. Work by Dustmann, Fabbri and Preston (2005) for the UK for example uses UK regions.

Permanent effects

If implementing this approach, however, the analyst makes a number of assumptions. Most importantly, it is assumed that the allocation of immigrants is random and independent of permanent labour market conditions in the respective region. However, pre-migration conditions in local labour markets are usually not identical (e.g. Greater London is economically more successful than the South-West of the UK), and the allocation of immigrants to local labour markets is a choice of immigrants. Typically, immigrants will choose the local labour market that provides the best economic prospects. Immigrant

populations may also be concentrated in areas of enduring low or high economic prosperity as a consequence of historic settlement patterns and policies. This may lead to a positive or negative statistical correlation between immigrant concentration and economic outcomes (depending on whether immigrants tend to settle in areas with persistently low or high economic performance), even in the absence of any genuine effects of immigration on outcomes of native workers. In other words, the levels of immigrant shares and levels of labour market outcomes may be spatially correlated because of common fixed influences.

The way to deal with this problem is to estimate models that remove any such "fixed effects". Two approaches to this are common. One is to estimate the relationship using differences, which is to say to relate the *changes* in immigrant concentration between two points in time to *changes* in economic outcomes. Taking differences eliminates any persistent effects present in all periods. Following our example above, we would relate the *change* in economic outcomes of the resident population (such as employment or wages) to the *change* in the concentration of immigrants in R1 relative to R2. A similar approach, known as *within groups estimation*, is equivalent to including a full set of dummy variables for the relevant spatial units.

The idea of this approach is that the additional variation within regions (by observing outcomes as well as immigrant ratios at two points in time) allows for conditioning on region specific fixed effects. In the absence of longitudinal data, other approaches are possible to eliminate such permanent region specific effects if additional variation within regions is available. Card (2001) for example allocates immigrants and natives to six different skill groups, assuming that within each skill group, immigrants and natives are perfect substitutes. His data is based on the 1990 census and he distinguishes 175 local labour markets. As he observes in each of these labour markets six different occupation groups, he can condition on region specific fixed effects. We will discuss Card's study in more detail below.

Simultaneity

However, this within groups and difference approach is problematic, too. Suppose that there are two periods, and economic conditions are identical in both regions at the start of period 1. At the end of period 1, a positive shock hits region R2. Immigrants enter the economy at the start of period 2. They are free to choose the region of residence, and they observe the shock before they decide about where to settle. Obviously, it is likely that they will choose region R2 over region R1.

The direction of causality between immigrant inflows and labour market outcomes is therefore not necessarily clear-cut, even if we relate differences in economic outcomes to differences in the immigrant concentration. Immigrants may be attracted to those areas that are enjoying current economic success. In this case not only may immigrant inflows drive labour market changes, but labour market changes are driving inflows. This selective settlement would lead to an upwardly biased estimate of the effects of immigrants' concentration on labour market outcomes. Specifically, any depressive impact of immigration on wages could be masked by the fact that the inflows of immigrants occur most strongly in regions where the effect is offset by positive economic shocks.

One way to address this problem empirically is based on the following thought experiment. Suppose the decision of immigrants about where to settle is based on two factors. First, immigrants may take the relative economic prosperity of an area, induced by transitory economic shocks, as one reason for settlement - this is what creates the problem. They may however also take account of other aspects of an area, such as existing networks and the presence of individuals with the same culture and language as themselves. Thus, besides possibly choosing areas that were subject to favourable recent economic shocks, immigrants

may tend to settle in areas with already high immigrant concentrations. Ann Bartel (1989) was the first to empirically show this tendency of new immigrants to move to enclaves established by older immigrant cohorts of the same origin or ethnicity. In fact, her analysis suggests that the existing ethnic concentration in a locality is the most important factor in the locational choice of new immigrants. Pre-existing immigrant concentrations are now unlikely to be correlated with current economic shocks if measured with a sufficient time lag. Therefore, historic settlement patterns may help to solve the simultaneity problem and identify the effects of the inflow of immigrants on economic outcomes. A number of empirical studies follow this approach (see, for instance, Altonji and Card 1991, Hunt 1992, Card 2001, Card and Lewis 2005, Dustmann et al. 2003). The idea of estimation in this case is to utilise the variation in the regional allocation of immigrants that can be solely explained by variation in existing networks (which is uncorrelated with current economic shocks) to estimate the effect of migration after differencing out permanent regional differences. This technique is called *instrumental variables regression* and historic settlement patterns are in this case the *instrument*. The approach amounts to regressing *differences* in regional economic outcomes on *differences* in immigrant/resident ratios, using past immigrant densities as an instrument for the latter.

It has to be stressed that the assumption that lagged values of immigrant stocks are correlated with employment changes only through their relation with immigrant inflows is an identifying assumption that is not testable. It could be problematic if local economic shocks were persistent and instruments were insufficiently lagged. The strength of correlation between lagged concentrations and current inflows is observable in the data and can therefore be assessed.

Measurement error

A further problem is directly related to the poor data quality often encountered by researchers, in particular for countries where estimation depends on survey information. Measures of immigrant concentrations may suffer from measurement error due to small sample sizes.[3] Furthermore, the consequences of any measurement error in measures of regional concentration of immigrants are aggravated when using methods proposed above for eliminating the problem of fixed effects, since these tend to magnify the importance of the measurement error relative to the informative variation in the data. Measurement error leads to a tendency towards finding no effect even when one is present in reality. The mismeasured inflows will be less strongly associated with labour market outcomes than the true inflows, and the estimated effects may therefore be biased towards zero. This is known as attenuation bias. It will typically be a minor problem where sample sizes used to derive measures of immigrant inflows are large (for instance when large sub-samples from national censuses are used), but may be more serious where smaller data sources are employed (see Abdurrahman and Borjas (2006) for a discussion).

One solution to this problem is the same as to simultaneity – instrumental variable estimation. As long at the effect of immigrant concentration on economic outcomes of the resident population is linear, the instrumental variable estimator discussed in the previous section will remedy both problems. Other examples of instruments in the context of measurement error would be alternative measures of immigrant flows from other surveys, or variables believed to exert a causal influence on the true immigrant flows, and which are measured with uncorrelated measurement error.

Out-migration of natives

[3] Measurement error due to sampling imprecision will be zero on average. It is therefore not to be thought of as similar to the sort of systematic measurement error which could arise through misreporting, poor data definition and so on.

A further problem arises from the fact that local labour markets are not closed economies and workers are free to move in or out. If immigration does drive down local wages for certain skill groups then one would expect there to be pressure for currently resident workers of that skill type to move elsewhere to gain high wages. This will tend to disperse the wage impact of immigration through the national economy and undermine the ability to identify the wage impact from looking at effects within localities. This leads to estimates of the effect of immigration on wages or employment of workers currently resident in local labour markets that are not as negative as the effects which one would obtain without internal migration responses. This point has been stressed in numerous contributions. The U.S. literature contains conflicting opinions on the seriousness of the problem. Filer (1992), Frey (1995, 1996), and Borjas (1999, 2003) for example, regard it as more serious than Card and DiNardo (2000) or Card (2001).

There are several ways the literature has responded to this problem. One is to address it in two stages. If one could establish in a first step that out-migration of native workers as a reaction to immigration into a particular spatial unit is unimportant, then the problem can in principle be ignored when estimating the effects of immigration on employment and wages. As mentioned, there is dispute in the literature whether out-migration is in fact modest or not. In a number of recent papers Card and co-authors finds little to no evidence of this for U.S. data (Card and DiNardo 2000, Card 2001). However, others (such as Borjas, Freeman and Katz 1997 and Borjas 2003) consider out-migration of natives as a result of wage-depressing effects of immigrants a far more important factor, leading to a bias towards zero when estimating the effects using the spatial correlation approach.

Another way to remedy this problem is to consider the econometric problem arising as one of an omitted term in the estimated equation. One obvious solution to this is to measure outflows of residents and incorporate them directly into the estimation. However such outflows are likely to be correlated with shocks to local economic conditions for the same reasons as immigrant flows, discussed above, creating a further simultaneity issue. These outflows therefore also need instrumenting and it is theoretically less clear what would serve as a suitable instrument; lags are one option. This approach has been taken by Dustmann, Fabbri and Preston (2005).

Finally, the problem may be more severe when using small spatial units, like (in the UK context) wards. Using larger spatial units may lead to internalisation of possible native migration responses. For example, if natives react to immigration for instance to South London, it is likely that they will not move to Manchester, but to say North London instead.

1.2.2 Simulation based approaches

Simulation based approaches are aimed at avoiding identification of the effects of immigration from local labour market information only. The counterfactual – the labour market conditions in the absence of immigration – is constructed by simulation (see Borjas, Freeman and Katz 1997). The basic idea of what these authors call the *aggregate factor proportions approach* is a comparison of the actual supplies of workers in particular skill groups to those that would prevail in the absence of immigration. These changed factor proportions due to immigration will lead to different wages and employment situations for native skilled and unskilled workers.

This approach is creating the counterfactual situation based on a structural economic model and pre-estimated parameters rather than on direct estimation. Therefore, it creates estimates that are sensitive to the chosen model structure, as well as these underlying parameters that are used for simulation. A key parameter is the responsiveness of relative wages to relative skill supplies, the elasticity of substitution. An advantage is that it allows additional insight into the way immigration relates to e.g. trade (see Borjas, Freeman and Katz 1997). The model excludes factor price equalisation, which we have discussed above, and which may lead to adjustment through output mix rather than factor prices.

The simulation approach relies on a few crucial assumptions. Most importantly, it is not clear what the counterfactual situation looks like, for instance what the trend in relative demand for different skill groups during the period of analysis has been. This uncertainty is reflected in the choice of the elasticity of substitution between skilled and unskilled labour, which translates the changes in relative labour supply into wage and employment effects, and which is very much driving the results for the immigrant impact on native outcomes. Also, as Rachel Friedberg and Jennifer Hunt (1995) point out, the increase in relative supply of unskilled workers on wages is by construction constrained to be the same independent of whether the increase occurred due to immigrants or natives. For that reason an important assumption for obtaining unbiased results is that natives and immigrants are perfect substitutes within each skill group.

1.2.3 The skill cell correlation approach

In a recent paper George Borjas (2003) suggests an alternative estimation method to retrieve possible wage- and employment effects. Arguing that the spatial correlation approach may lead to an underestimation of wage- and employment effects, he suggests using an analysis

that is based on the national level and therefore robust to the problem of out-migration or, for that matter, other ways of adjustment of local labour markets. Borjas argues that workers are not necessarily perfect substitutes within education groups, as labour market experience is adding another important component of human capital, thus leading workers to become distinct even in the same education group according to the human capital they have accumulated. Following this argument he defines skill groups as education-experience cells and assumes that workers within education-experience groups are perfect substitutes. Consequently, immigrants in the lowest education group compete only with workers in their experience cell. The impact of immigration on native employment and wages is then estimated by regressing the cell-specific native outcomes on the immigrant share in the respective education-experience group. A recent study by Sarit Cohen-Goldner and Daniele Paserman (2004) uses similar cell definitions in an analysis for Israel.

This cell correlation approach is not dissimilar to the idea in Card (2001) who distinguishes between six skill groups, in that it creates additional variation that can be used for estimation. For a sufficiently large number of cells, and additional time variation, estimation does not need to rely on variation obtained from spatial segregation.

In his study Borjas (2003) uses data over four decades. He has therefore variation over time, and across education- and experience groups. While the key identification assumption in the spatial approach that uses data over time and conditions on region- and time effects is that the impact of migration can be identified from changes within spatial units over time, Borjas's identifying assumption in this approach is that the impact of immigration can be identified from changes within education-experience cells over time. In particular, it excludes the possibility that immigrants select into those skill cells where economic conditions are better,

or that immigrants are for some reasons forced into particular cells, that is "downgraded" in the host economy's labour market.

An important assumption underlying the skill cell correlation approach is the perfect substitutability between natives and immigrants within skill cells. Two recent studies by Marco Manacorda, Alan Manning, and Jonathan Wadsworth (2006) and Gianmarco Ottaviano and Giovanni Peri (2006a) analyse in how far this assumption is valid for the UK and the U.S., respectively. Both studies find that immigrants are not perfect substitutes for natives even within narrowly defined skill groups but partly complement their skills, so that their effect on native wages is substantially smaller than previously estimated. With imperfect substitutability of natives and immigrants within skill cell, the group most affected by new immigrant inflows are according to both studies previous immigrants.

An additional important prerequisite of the skill cell correlation approach is that immigrants can be allocated to skill groups based on their observable characteristics. This, however, may be very difficult, as immigrants downgrade just after arrival, and improve their economic position in the years after arrival. That may therefore make pre-allocation difficult. Dustmann, Frattini and Preston (2007) provide evidence for the UK that downgrading is substantial.

1. 3 Empirical findings: A survey of the literature

We provide here a brief survey of empirical findings, highlighting the different empirical approaches along the discussion in the previous section. Other earlier surveys include, for instance, Friedberg and Hunt (1995) and Gaston and Nelson (2002).[4] Although an increasing number of studies have been conducted over the last years for countries other than the US,

[4] Gaston and Nelson (2002) provide a comprehensive survey of the empirical literature, emphasizing in particular the distinction between labour- and trade-theoretic approaches to migration.

most analyses on the impact of migration that can be found in the literature are for the US. Much of our survey will therefore naturally draw on US evidence.

1.3.1 Estimating production functions

Some of the first papers in the literature trying to empirically assess the impact of immigration on wages and employment in the host economy were guided by neoclassical input demand theory, estimating production functions and distinguishing between different labour inputs and capital. The estimated parameters from these models inform about the substitutability or complementarity between the different factors and thus allow assessing which effects changes in their relative supply might have.

Jean Grossman (1982) was among the first to estimate such models. In her study she estimates a translog production function for the U.S. to obtain elasticities of factor complementarity between natives, second generation natives, foreign-born workers and capital.[5] Estimations are based on 19 SMSAs (Standard Metropolitan Statistical Areas), using data from the National Origin and Language Subject Report, the County and City Data Book, U.S. Census 1970, the Census of Manufacturing, and the Annual Survey of Manufacturing. Among her main findings are that, first, second generation workers and foreign-born workers are both substitutes for native workers in production, with the former being more highly substitutable for natives than the latter. Second, foreign-born workers substitute for second generation workers more easily than for natives. Finally, capital is complementary with all types of labour, but strongest with foreign-born and weakest with native workers. With regard to the impact of immigration, she finds small but non-negligible effects on employment and (absolute) wages of natives and other immigrants which vary with the maintained assumption on wage flexibility in the economy.

[5] For a detailed discussion of factor substitutability and complementarity in production see Hamermesh (1993).

George Borjas (1987) argues that Grossman's analysis may mask important channels by which immigration can affect wages and employment in that it neglects race-specific differences. He extends the analysis, by choosing a generalised Leontief technology and distinguishing between immigrants' race and ethnic origins. Based on 1980 U.S. Census data and data on the capital stock for 84 SMSAs from the Census of Manufactures and the Annual Survey of Manufactures, he finds that immigrants are substitutes for some labour market groups (e.g. native white men) and complements for others (black native-born men). Furthermore, all numerical effects of an increase in immigrant supply on the (absolute) earnings of native-born men are small. His analysis also confirms non-trivial effects on wages of resident immigrants, leading to the conclusion that immigrants' main competitors in the labour market are other immigrants.

In contrast to the previous two studies, Ira Gang and Francisco Rivera-Batiz (1994) do not consider immigrants and natives as different factors in production, but distinguish between education, unskilled labour and experience inputs. In a first step they estimate a translog production function from which they obtain factor price elasticities between these three inputs. Both for the U.S. and Europe, their results imply that education, unskilled labour and experience are complementary inputs. They then proceed by calculating composite elasticities of complementarity between natives and immigrants using their average human capital characteristics. Based on these results, the simulated impact of immigration on native residents is found to be very small.

1.3.2 Using spatial correlations

One of the most influential papers on the impact of immigration on local labour markets is by David Card (1990), who uses a natural experiment to investigate this issue. He evaluates the

effects of the Mariel boatlift on wages and unemployment rates of less-skilled workers. After an extraordinary sequence of events, the Cuban president Castro allowed all Cubans who wished to do so to emigrate to the United States from the harbour of Mariel. As a result, some 125,000 Cuban immigrants arrived in Miami between May and September 1980, increasing Miami's labour force by 7 %. It is not unreasonable to assume that this inflow of low-skilled immigrants was exogenous to the local labour market conditions in Miami. Card compares absolute and relative wages, employment and unemployment in the pre-migration situation with those occurring after the Mariel boatlift, controlling for common trends by comparing the outcomes in Miami with those of four other major cities: Atlanta, Houston, Los Angeles and Tampa-St. Petersburg. In his analysis, which is based on Current Population Survey (CPS) data, he distinguishes between effects on whites, blacks, Cubans and Hispanics. Maybe somewhat surprisingly the empirical results of this study show neither an effect of the Cuban immigrant inflow on the wage rates nor on the unemployment rate of the less-skilled non-Cuban population in Miami. This suggests a rapid absorption of immigrants into the labour force. Card points out, however, that the Miami labour market may be atypical of other local labour markets in the U.S., in the sense that Miami's industry structure, with a high concentration of apparel and textile industries, was particularly well-suited to incorporate low-skill immigrants. Also, the high existing concentration of Hispanics could have facilitated integration. Finally, domestic native and earlier immigrant migration into Miami slowed down significantly after the Boatlift, hence the *Mariels* may have partly displaced potential other migrants.

In a different study, Joseph Altonji and David Card (1991) use the spatial correlation approach to examine the effect of changes in immigrant density across 120 SMSAs on the labour market outcomes of the native population. Their analysis focuses on less-skilled natives (male native high school dropouts, black males and females and white females with

high school education or less), arguing that these groups are likely to be most affected by immigrant inflows. The authors base their estimation equation on a model similar to the one that we have discussed above, where factors of production are capital, skilled labour and unskilled labour. In their paper, they first investigate whether immigrant inflows have displaced less-skilled natives from particular industries. For this purpose they calculate an index of competition between immigrants and the different native groups which reflects the overlap in their respective industry distributions. They then estimate the effect of immigration on various labour market outcomes of native unskilled workers. In these estimations, which are based on U.S. Census data for 1970 and 1980, they use the stock of immigrants in 1970 as an instrument for the change in the fraction of immigrants in the population between 1970 and 1980 to control for the endogenous immigrant choice of region (see our discussion above). This instrumental variable approach uses the fact that immigrants tend to go where earlier immigrant cohorts have already established immigrant enclaves (see Bartel 1989). Altonji and Card find some evidence of native displacement out of low-wage immigrant-intensive industries. The estimated effects on (absolute) wages and employment are relatively small. A 1 percentage point increase in the fraction of immigrants in an SMSA reduces the number of natives who worked in the previous year by 0.25 percentage points and reduces their wages by 1.2% at most. They do not find a significant effect on the labour force participation rate or the employment/population rate. They conclude that the degree of competition between immigrants and less-skilled natives is modest.

For the same time period, Robert LaLonde and Robert Topel (1991) use the changes in the immigrant supply in 119 SMSAs in the U.S. between 1970 and 1980 to identify the wage effects on natives and immigrants of older cohorts. The distinctive feature in this study is that different cohorts of immigrants are treated as different inputs within local labour markets. The analysis focuses then on the effect of newly arriving immigrants on all the other immigrant

cohorts, which, they argue, serves as an upper bound for the impact on native workers. As expected and consistent with the assimilation of immigrants over time, new immigrants reduce earnings of other new immigrants the most relative to natives and this effect dissipates with increasingly older immigrant cohorts. Thus the best substitute for an immigrant is another immigrant of the same cohort, whereas the substitutability between an immigrant cohort and native workers increases with the cohort's time spent in the country. Overall they conclude that the effect on natives appears to be quantitatively unimportant.

A further paper based on the spatial correlation approach by Kristin Butcher and David Card (1991) deals with the question whether the decline in the earnings of the least-skilled workers in the U.S. in the 1980s can be related to immigration. For that reason, Butcher and Card look at changes in the lower tail of the wage distribution, in particular of the 10^{th} percentile of wages, in 24 major cities during the period 1979-1989 and how they correlate with changes in immigrant densities. Using data from the CPS (Current Population Survey) for the years 1979 – 1980 and 1988 – 1989 and the U.S. Census for 1980, they find that there is no evidence of any effect of immigration on the level of wages across cities in 1979-1980. Furthermore, wages in the upper end of the wage distribution grew significantly faster than those in the lower end during the 1980s. Although the rise in wage inequality was bigger in cities with bigger immigrant inflows, this is due to a more rapid increase in the 90^{th} percentile of wages, rather than a decline in the 10^{th} percentile. They thus find no evidence of a significant adverse effect of immigration on wages.

In a more recent paper, Card (2001) examines the impact of immigration on the relative labour market outcomes of individuals in specific skill groups in 175 metropolitan statistical areas (MSAs), using U.S. Census data from 1990. In the underlying theoretical model, six different labour inputs are defined according to occupational groups, within which immigrants

and natives are perfect substitutes.[6] In this model the effect of immigration then arises through the induced changes in the relative supply of different labour inputs, in particular an increase in the supply of workers in low-skill occupation groups. Unobserved demand and productivity shocks which would render the immigrant inflows into a specific region-occupation group endogenous are instrumented with the so called supply-push component, which is the expected inflow rate into an occupation on the basis of earlier immigrant settlement patterns. The results of the empirical analysis show again that the effects on native relative wages and employment are small: a 10 % increase in the population share of a particular skill group through immigration reduces the employment/population rate of that group by 1 – 1.5 percentage points and the relative wage of that group by around 1.5 %. Furthermore Card does not find evidence that inflows of new immigrants lead to offsetting mobility flows of natives or earlier immigrants which would lead to an underestimation of the effect of immigration on wages and employment.

1.3.3 Simulation based approaches

As pointed out earlier, instead of estimating the effects of immigration by means of spatial correlation analyses, an alternative approach has been put forward: the simulation or factor proportions approach.

In a first paper following this approach, George Borjas, Richard Freeman and Lawrence Katz (1992) analyse how immigration and trade have affected the – for the case of trade implicit – aggregate supply of workers in particular skill groups in the U.S. economy between 1980 and 1988 using CPS data and the 1980 U.S. Census. They then compare the prevailing wages and employment outcomes to the case which would have occurred in the absence of immigration

[6] In an earlier version of this paper (Card 1997) skill groups are defined by estimating a wage distribution and stratifying individuals into deciles of that distribution. Hence there are 10 different labour inputs within which natives and immigrants are again treated as perfect substitutes.

or trade, using an economy-wide estimated elasticity of substitution to simulate the counterfactual outcomes. As in the paper by Butcher and Card (1991), the motivation for this study is to investigate whether immigration and trade are possible reasons for the increasing wage inequality in the U.S. over the 1980s. They observe that both immigration and trade increase the factor which is relatively scarce in the U.S., unskilled labour, whereupon the annual increase in implicit labour supply due to trade is larger than the one due to immigrants. Overall they conclude that immigration had only a small effect on the college/high school wage differential in the 1980s but a substantial negative effect on the relative earnings and employment opportunities of the least-skilled workers (high school dropouts). The changes in relative skill endowments induced by trade and immigration together can explain over 40 percent of the relative wage earnings decline of high school dropouts during the 1980s.

Revisiting their previous work, Borjas, Freeman and Katz (1996) directly compare the results from their factor proportions approach with estimates obtained from a spatial correlation model, using U.S. Census data for 1980 and 1990. For their spatial correlation analysis they examine the effect of the immigrant/native ratio and changes thereof, both overall and within education groups, on the weakly earnings of an individual. In an interesting experiment they use increasingly larger geographic areas as the units for their estimations. Controlling for local labour market conditions and education fixed effects and taking first differences, they obtain different estimates of the effect of immigration on absolute and relative native earnings, dependent on the regional unit of analysis. The estimated coefficient on the immigrant/native ratio tends to become more negative the larger the area of analysis: It is 0.0012 for metropolitan areas, -0.0369 for states and -0.0432 for even larger regions. For this phenomenon they offer two explanations: Native out-migration and the re-allocation of capital as a response to immigrant inflows. They then turn towards the factor proportions analysis, following a similar strategy as in their previous paper to estimate how immigration and trade

have changed the national supply of different skill groups. Since this approach looks at nationwide changes in relative supplies and translates these into changes in relative earnings, it is not affected by neither native migratory responses to immigration nor changes in the allocation of capital. As before, they conclude that immigration has been important in reducing the pay of high-school dropouts, while immigration and trade have contributed only modestly to the falling pay of high-school equivalent workers.

In another paper on this issue a year later, Borjas, Freeman and Katz (1997) extend their work in various directions. Most importantly they study a longer time horizon using data from the Public Use Microdata Samples (PUMS) of the Census for 1960, 1970, 1980 and 1990. Again they first perform a spatial correlation analysis separately for each decade. Their findings show that the correlation between changes in immigrant shares and changes in wages by state switches from +0.591 in 1960-1970 to -0.103 in 1980-1990 for men, and from +0.203 to -0.022 for women, respectively. They conclude from these results that in using a spatial correlation approach, one's inferences about the impact of immigration will differ according to which period is analysed. They argue that unobserved structural forces, which have little to do with immigration, are the main drivers of the regional wage structure and that they dominate any effect immigrants might have on native wages and employment. They conclude that a spatial correlation approach is therefore not suitable to identify the causal impact of immigration on native labour market outcomes. They then proceed by investigating whether immigrant inflows into a labour market induce native outflows. In their estimations for the period 1970 – 1990 they also include pre-1970 demographic trends, basically estimating a difference in difference specification, in order to control for the growth trend in a labour market before immigration occurs. While their initial findings show a positive correlation between immigrant inflows and native inflows, this specification reveals a significant negative effect of immigration on the growth trend of the native population, suggesting a

considerable displacement of native workers. These results are compatible with the hypothesis that the impact of immigration is diffused across the country through native migration flows. As before they then turn towards the factor proportions approach, basically confirming their earlier results: Immigration has had a strong negative impact on the relative wage of high school dropouts, explaining between 44 to 55% of the decline in the relative wages of high school dropouts over the period 1980-1995. Trade on the other hand can explain less than 10 percent of that decline. Finally, neither immigration nor trade seem to explain much of the increase in the college-high school wage differential.

In a study based on PUMS data from 1980 and 1990, David Jaeger (1996) estimates a nested production function in which natives and immigrants are disaggregated by sex and educational attainment to obtain elasticities of substitution between natives and immigrants of the same sex and with similar skills. In this analysis he adjusts the relative quantities of supplied labour for changes in relative average productivity of immigrants and natives and furthermore takes account of potential measurement error in the relative size of the immigrant to the native population and the relative wages which would bias the elasticity of substitution upwards by instrumenting with the real relative population changes taken from the 1980 and 1990 Censuses. The important finding of this first part of the study is that immigrants and natives are essentially perfect substitutes in production within sex-skill groups. Using this result, Jaeger then proceeds to estimate the impact of immigration on native wages by assuming an aggregate nationwide production function, which is nested such that dropouts and high-school graduates form a low-skill, and those with some college education form a high-skill labour aggregate. He then simulates the wage effects of the immigrant inflow with various values for the elasticities of substitution between high- and low-skill workers on the one hand, and dropouts and high school graduates on the other. The results imply that immigration lowered the native dropout wage by up to 3%, accounting for up to one third of

its decline during the 1980s. It also reduced the wage of high school graduates by about 1% and increased the wage of college equivalents by about 1%. Finally, according to these results, immigration accounts for approximately 15-25% of the increase in the relative wage gap between low- and high-skill workers during the 1980s.

1.3.4 Recent developments in the literature

In the last few years renewed attempts have been made to identify the causal impact of immigration on the labour market, which partly make use of new strategies to avoid some of the problems encountered in earlier studies.

In a recent skill cell correlation analysis, George Borjas (2003) uses U.S. Census data for the years 1960-1990 and CPS data for 1998-2001 and exploits variation in supply shifts across education-experience groups in the economy. The underlying assumption is that individuals with similar education but different experience are not perfect substitutes but separate labour inputs. Skill groups are then defined in terms of education and work experience. Changes in relative supplies of these skill groups are observed on the national level, hence avoiding the problem of migratory responses of natives. By incorporating these assumptions into a three level CES production function, Borjas then proceeds to estimate both own and cross factor price elasticities which are subsequently used to calculate the wage impact of the actual immigrant inflow into the U.S. between 1980 and 2000. His empirical results imply that a 10% increase in the immigrant share reduces the wages of competing native workers by 3-4%. The actual immigrant inflow between 1980 and 2000, which increased the labour supply of working men by 11%, reduced the (absolute) wages of the average native by 3.2%, the high-school dropouts by 8.9%, the college graduates by 4.9% and the high school graduates by 2.6% and barely changed the wages for workers with some college. Overall these estimates

imply that the immigration of the 1980s and 1990s has substantially worsened the labour market opportunities for most groups of natives.

Using data from the U.S. Censuses 1960 to 2000, George Borjas, Jeffrey Grogger and Gordon Hanson (2006) specifically turn the attention to the immigrant impact on the wages and employment rates of African-Americans (see also Borjas 1987, Altonji and Card 1991, and LaLonde and Tope 1991) and link immigrant inflows to black incarceration rates. In their model, a reduction in wages induces natives to exit the labour force and either shift to leisure or into illegal activities. Their empirical results show that a 10% increase in skill-specific labour supply due to immigration lowers the corresponding black wage rate by 4%, lowers the employment rate of black men by 3.5 percentage points and increases the incarceration rate of blacks by about 0.8 percentage points. While the wage elasticity is similar for whites, the effects of immigration on employment and incarceration are significantly larger for blacks than for whites. With these results being potentially highly controversial, the authors emphasise that although the immigrant effect seems to be numerically important, much of the decline in employment and increase in incarceration in the black population between 1960 and 2000 still remains unexplained.

While most of the emphasis in the literature is on the immigrant impact on low-skilled natives, Borjas (2006a) turns towards the high-skill sector and investigates the effect of foreign student inflows on the earnings of doctorates in the U.S. using data from the Survey of Earned Doctorates and the Survey of Doctoral Recipients for the years 1993 to 2001. Defining skill groups by 22 doctoral fields in science and engineering and by the year of graduation, he uses variation in the supply shock to these groups at different points in time caused by the influx of foreign students to identify the wage impact of immigration on high-skilled workers. The estimated wage elasticities imply that a 10% increase in the supply of doctorates due to

immigration lowers the wages of competing native doctorates by 3 to 4%, with about half of this wage effect being explained by an increased prevalence of post-doctoral appointments in fields that are subjected to immigration. Overall, the inflow of foreign students between 1993 and 2001 increased the supply of doctorates by 13.9% and reduced the wage of the average doctorate in science and engineering by around 3.6%, although there are some fields that experienced substantially larger wage losses of up to 10% such as computer science and mechanical engineering. The author points out though, that these simulation results are based on the assumption that there are no spill-overs between different doctorate fields, for instance by students moving to other departments in response to the inflow of foreign students, and that all other factors such as the demand of firms for doctorate students and the supply of native students are held constant. Therefore, the results are best interpreted as the short-run impact of high-skill immigration before any additional adjustments to immigration have taken place.

Gianmarco Ottaviano and Giovanni Peri (2006a) claim that the assumption of perfect substitutability within experience-education cells, as assumed by Borjas, may be inappropriate. They set up a general equilibrium framework in which they allow for imperfect substitutability between natives and immigrants within skill cells as well as short- and long-run responses of physical capital. Defining skill groups by education and experience and using U.S. Census data for the period 1960 to 2000 and the American Community Survey sample for 2004, their results substantially revise earlier estimates about the impact of immigration on native wages. Accordingly, the average wage rate of all U.S.-born workers experienced a significant increase of 1.8% as a consequence of immigration during the 1990 to 2004 period. The only native group suffering a negative wage effect are the least educated workers with a long-run real wage decline of moderate 1.1%. All other native groups gained from immigration with wage increases between 0.7% and 3.4%. The groups most negatively

affected are previous cohorts of immigrants, confirming earlier results in the literature of, for instance, Borjas (1987) and LaLonde and Topel (1991). These groups suffered substantial wage decreases of around 20%.

1.3.5 Studies for countries outside the U.S.

Apart from the studies above, which were all conducted for the U.S. labour market, there is a substantial literature for other countries which tries to answer the same question about the effect of immigration on native labour market outcomes in the context of their country-specific labour markets and immigration experiences, the most important of which we will now present.

One of the first papers for a European country was a study by Jennifer Hunt (1992) which analyses the impact of a large immigrant inflow from Algeria into the French labour market as a consequence of Algeria's independence from France in 1962. Within the space of a year, 900,000 people of European origin, called repatriates, returned from Algeria to France, constituting a significant labour supply shock to the economy. In her study, which uses French Census data for 1962 and 1968, Hunt uses regional variation in the proportion of immigrants and changes thereof for 88 regions to evaluate the effect of the repatriates on (absolute) wages, unemployment and labour force participation of non-repatriates, and the migration decisions of other groups. She argues that the immigrant inflow after Algeria's independence can be viewed as a natural experiment since the timing of the inflows does not depend on economic conditions in France. Furthermore, since basically everyone of European origin returned to France, selection of immigrants does not seem to be an issue in this case. Finally, observing that the location choice of the repatriates is driven by cultural and climatic factors, she uses the average temperature and the stock of pre-1962 repatriates in a region as

instruments for the change in the immigrant share. The empirical results imply that a 1 percentage point increase in the immigrant share of the labour force reduced the average wage in a region by at most 0.8% and increased the unemployment rate of natives by 0.2 percentage points, which compared to U.S. studies (e.g. Altonji and Card 1991) shows more adjustment through employment than through earnings which might be due to France's strong wage setting institutions. Also, there is no evidence that potential immigrants from abroad and migrants within France were discouraged from moving to areas with many repatriates. Hunt concludes that the inflow of repatriates to France after 1962 had little impact on the labour market outcomes of the native population.

In a similar case study for Portugal, William Carrington and Pedro de Lima (1996) evaluate the effects of the inflow of repatriates from Mozambique and Angola to Portugal in the aftermath of Portugal's loss of its African colonies in 1974-1976. During these years around 600,000 immigrants came to Portugal, increasing its labour force by some 10%. In order to identify their effect on wages, unemployment and the employment/population rate, Carrington and de Lima choose two different approaches. First, they use Spain and France as the comparison group, arguing that in particular Spain was in a similar situation to Portugal before the immigrant shock occurred. Second, they look at spatial correlations between the repatriate density and changes in the daily wages in the construction industry within Portugal's 18 regions. In one specification they use the fraction of repatriates in 1981 as an instrument for the change in a district's population which itself drives the changes in daily wages in construction in a region. From their time-series comparison with Spain and France, they conclude that the immigration of repatriates did cause some short-run unemployment but this effect is overshadowed by European-wide increases in unemployment. In the spatial correlation analysis, high immigration districts showed much slower wage growth in the

decade after the immigration than before. However, the timing and persistence of the wage effects raise the question whether the immigrants were the causal reason for this downturn.

In a panel analysis for Germany for the period 1984-1989, John De New and Klaus Zimmermann (1994) examine in how far immigrant concentrations in an industry affect native wages. Using individual level data from the German Socio-Economic Panel (GSOEP), they distinguish two labour inputs, blue and white collar workers, within which immigrants and natives are substitutes and use the variation in the immigrant share across industries to identify the wage effect of immigration. In order to control for the endogenous choice of the industry sector, the authors use industry dummies, industry growth rates and overall and industry specific time trends as instruments. Their estimates imply that a 1 percentage point increase in the overall share of immigrants reduces the overall hourly wage by 5.9% for blue collar workers and increases the wage of low-experience white collar workers by 3.5%. In a similar study, using the same framework and data, Haisken-De New and Zimmermann (1995) identify the effect of immigrants on native wages using regional variation in the foreign share in an industry. Contrary to the results of their previous work, their estimates point towards complementarity between immigrants and natives with no significant wage effects for native white collar workers and positive effects on experienced native blue collar workers.

In another study for Germany, Jörn-Steffen Pischke and Johannes Velling (1997) look at spatial correlations between the immigrant share and native employment in 167 German regions between 1985 and 1989 using aggregate data from the German Federal Statistical Office and the *Bundesforschungsanstalt für Landeskunde und Raumordnung*, the Federal Institute for Regional Planning in Germany. They observe that the unemployment rate in Germany does not follow a random walk but is strongly mean reverting over the period 1985-1989. Therefore the use of lagged levels of immigrant shares as an instrument as proposed by

Altonji and Card (1991) is unsuitable for the German context. Instead they use previous labour market outcomes as instruments for potential immigrant selection into local labour markets. To check whether native migratory responses to immigration might have diffused the effect on wages, they also regress internal migration rates of Germans on contemporaneous migration flows of foreigners from abroad and other regions in Germany. They find no effect of increased immigration on the unemployment rate and some evidence that a larger inflow of foreigners lowers the employment rate for natives: A change in the foreign share of 1 percentage point reduces the employment/population rate of Germans by 0.44 percentage points. Furthermore they do not find evidence that foreign immigration affects native migration patterns. They conclude that there are no significant displacement effects due to immigration in the German labour market.

Instead of using regional or industry variation in the immigrant share for the empirical analysis, Thomas Bauer (1998) follows Grossman (1982) in estimating a translog production function to obtain elasticities of complementarity between natives and immigrants of different skill levels in Germany, using data from the German Labour Force Survey for 1990. Under the assumption of separability between capital and labour inputs, the empirical results show that white collar immigrants are substitutes for low skill blue collar and white collar natives with factor price elasticities of -0.02 and -0.008 respectively. Furthermore, low skill blue collar immigrants detrimentally affect high skill blue collar natives (factor price elasticity -0.008). All other groups of immigrants and natives are complements. Bauer concludes that overall the wage effects of immigrants on different native skill groups are small.

In a couple of studies Rudolf Winter-Ebmer and Josef Zweimüller (1996, 1999) examine the Austrian case. Using data from the Austrian Social Security Records, they estimate the impact of immigration on the earnings of young male native blue collar workers by regressing the

logarithmic monthly earnings of natives on the immigrant share in either 93 labour market regions or in 78 industries for the period 1988-1991 (Winter-Ebmer and Zweimüller 1996). The endogenous immigrant share in a region (or industry) is instrumented with the lagged foreign share and the average wage among immigrants, as well as the employment growth, the share of women and the share of blue-collar workers. In contrast to other studies (e.g. De New and Zimmermann 1994), nearly all regressions show a positive and significant effect of the immigrant share on the native earnings: at the regional level, a 1 percentage point increase in the share of foreign workers increases (absolute) native male blue-collar earnings by 2.1-3.7%, on the industry level by 0.2-1.0%. These results are not reconcilable with the expectation of substitutability between natives and immigrants. For that reason the authors proceed by presenting a two-tier bargaining model which can explain a positive wage impact of increased immigration even if natives and migrants are substitutes. Using firm level data they then estimate a simultaneous-equation system of the joint determination of the natives' wage rate and the share of foreigners in the firm's work force. The results confirm the earlier finding that natives seem to be able to exploit the presence of foreigners in a two-tier wage system – employing more foreigners at a lower wage increases the firm's profit, of which natives can benefit through bargaining.

In a second paper for the same period, Winter-Ebmer and Zweimüller (1999) turn their attention to the displacement risk of young natives arguing that it measures the "first-round effect" of increased immigration. They estimate a probit model that relates the experience of unemployment to the immigrant share in 76 regions or 46 industries, focusing on young native workers below the age of 35. As in their earlier study they use variables describing the structure of employment as instruments for the endogenous immigrant share in a sector (region). The estimation results indicate no effect of the immigrant share on the unemployment risk on the regional level. For certain subgroups on the sectoral level such as

seasonal workers and foreign employees, however, the effects of immigrant density on the unemployment probability are quantitatively large.

An interesting feature offers a study by Alessandra Venturini (1999) who examines the Italian case. In her empirical analysis she focuses on the effect of illegally working immigrants on native Italians' legal employment, using Central Statistical Office figures for the period 1980 to 1995. Based on a production function with three labour inputs – regular, non-regular natives and non-regular foreigners – she estimates elasticities of labour demand which provide evidence of the relationship between these types of labour. The results imply that non-regular labour, both of natives and immigrants, has a small adverse effect on legal employment. The estimated long-run elasticities vary between -0.02 and -0.01 meaning that an inflow of illegal workers by 10% reduces labour demand for legal employment by 0.2%. These results vary significantly according to the economic sector in question with strong negative effects particularly in the agricultural sector and complementarity in the non-tradable services sector. Overall, however, the conclusion is that non-regular foreign workers do not seem to have displaced native workers in any significant way.

Israel experienced an enormous immigrant inflow in the 1990s, predominantly from the former Soviet Union, increasing its population by 18%. Rachel Friedberg (2001) analyses the effects this inflow had on the national Israeli labour market in the years 1990 to 1994, using variation in immigrant inflows across occupations. To control for the selection of immigrants into specific occupation, she uses the immigrants' former occupations abroad as instruments. For her estimations which are performed both on an individual- and on an aggregate-occupation level, she uses data from three different sources: The Israeli Immigrant Employment Survey (IES), the Israeli Income Surveys (IS), and the Labor Force Surveys (LFS) 1989 and 1994. As for the case of the French repatriates (Hunt 1992) and the Mariel

immigrants (Card 1990), the immigration to Israel in the early 1990s can be seen as exogenous due to the lifting of emigration restrictions in the Soviet Union. In contrast to the Mariel immigrants, however, the immigrant labour force in Israel was highly skilled and had substantial labour market experience. In a first result based on OLS estimations, Friedberg finds that natives in occupations which received more immigrants experienced lower wage growth. However, controlling for the endogeneity of the occupational choice, the hypothesis that the Russian immigration did not affect the earnings or employment of native Israelis cannot be rejected. At the individual level the effect of immigration on wage growth of natives is significantly positive which could indicate complementarity between immigrants and native workers. The effects on employment are not significantly different from zero. The IV results imply that the negative effects which are initially found in the OLS specification are due to the fact that immigrants enter occupations with low wages, low wage growth and contracting employment as opposed to a genuine causal effect of immigration on native labour market outcomes.

In another paper on the immigrant inflows to Israel of the early 1990s, Sarit Cohen and Chang-Tai Hsieh (2001) choose a different approach. They look at national level time series of unemployment rates, wages and labour force participation rates and focus in particular on the mechanisms by which the Israeli economy adjusted to the very significant supply shock. They set up a standard neoclassical model with an aggregate production function, competitive markets, adjustment costs of labour and capital, and standard preferences over consumption and labour supply, to examine whether the immigration shock induced capital accumulation in Israel. They find that this model explains very well both the short- and the medium-run response of the Israeli economy to the Russian supply shock: initially the average effective wages of native Israelis fell by 20% between 1990 and 1991, while the return to capital increased sharply. By 1997, however, both average wages and the return to capital had

returned to pre-immigration levels because of an externally funded investment boom. Furthermore, Rybczynski-type changes in the product-mix do not seem to explain the absorption of the Russian immigrants; the primary reason for this phenomenon is the increase in the relative utilisation of skilled natives and immigrants within industries (see also Lewis 2004). An important factor in this context which prevented a reduction of the skill-premia for native Israelis despite the high educational levels of the Russian Jews was their substantial occupational downgrading on the Israeli labour market. Cohen and Hsieh conclude that the Russian immigration has been a classical labour endowment shock with a large short-run effect on wages of all native Israelis, which did, however, not exert a downward pressure on the skill-premia of native Israelis despite the high educational levels of the Russian immigrants.

Joop Hartog and Aslan Zorlu (2002) estimate wage elasticities in The Netherlands, the UK and Norway, relating ethnicity-specific immigrant shares in geographical areas to wages of natives and other immigrants in each country, using micro-level data. They incorporate three different types of labour inputs, and distinguish between wage effects for the low, medium and high skilled workers. However, they do not control for region-specific fixed effect due to data limitations. They find relatively small effects on (absolute) wages with no dominant robust pattern of complementarity or substitutability between immigrants and natives of different skill levels. Immigrants seem to be substitutes for low skilled natives in The Netherlands (with an elasticity of -0.036) but complements in Norway (with an elasticity of 0.070). For the UK the estimated parameters are not significant. The effects on wages of earlier immigrant are generally larger but less precise. As the authors acknowledge, one potential problem in their estimations is the lack of information on the actual skill composition of the immigrant population in each country.

In a recent study which focuses on the UK, Christian Dustmann, Francesca Fabbri, and Ian Preston (2005) examine how the immigrant share and changes thereof in 17 regions affect native wages (for 1992-2000), employment, participation, and unemployment (1983-2000), using panel data taken from the Labour Force Surveys between 1983 and 2000. They first point out that in the UK, and in contrast to many other European countries, the educational structure of resident immigrants as well as recent immigrants resembles very much that of natives, suggesting that immigration may lead to more modest changes in the overall skill distribution. In their empirical work they instrument changes in the immigrant share in a region with the lagged immigrant share, making use of the idea that immigrants move where earlier immigrants of the same nationality have already settled. Their empirical results show no evidence of significant overall adverse effects of immigration on native outcomes, but suggest that effects are different for different educational groups.

In a new study, Christian Dustmann, Tommaso Frattini and Ian Preston (2007) use 1997-2005 LFS and ASHE data to study the impact of immigration on natives' wages and the wage distribution in the UK. They first present a theoretical model where they show that if capital is supplied at a price fixed on international markets, immigration will have on average a positive wage effect, as long as immigrants differ from natives in their skill composition. This is a direct consequence of the immigration surplus being allocated to native workers in this case. However, along the distribution of wages, some workers will lose, while others will gain. They propose an estimation method along the distribution of wages that does not necessitate pre-allocation of immigrants to particular skill groups. In accordance with the implications of their theory, they find evidence of an overall positive wage effect of immigration over the period of study. Their estimates suggest a magnitude that would associate an increase in the immigrant population by 1% of the native population with an increase in (absolute) native wages of between 0.3 and 0.4%. Their investigation of the effects of immigration along the

distribution of wages of non-immigrant workers suggests that there are clear and significant differences. Non-immigrants in the middle of the wage distribution gain from immigration, while individuals at the bottom of the distribution lose in terms of wages. This is compatible with evidence on the relative location of recent immigrants in the non-immigrant wage distribution. Over the period 1997 to 2005, immigrants tended to be more concentrated than natives below the first quartile of the native wage distribution, exactly where the authors find evidence that wages were held back, and less concentrated from there on upwards, where they find positive wage effects. Christian Dustmann, Tommaso Frattini and Ian Preston (2007) also demonstrate that there is substantial downgrading of recent immigrants in the UK labour market, which would make pre-allocation of immigrants to particular skill groups questionable.

Following the skill cell correlation approach and allowing for imperfect substitutability between immigrants and natives within the same skill group, Marco Manacorda, Alan Manning and Jonathan Wadsworth (2006) investigate for the UK in how far the immigrant inflows over the period 1975 to 2005 have affected both native and immigrant relative wages. Using data from the Labour Force Survey (LFS) as well as the General Household Survey (GHS) and starting from a multi-level CES production function, they first estimate elasticities of substitution between immigrants and natives and between workers in different age and education groups. They then proceed by simulating the effect of immigration to the UK between 1975 and 2005 on the return to education among natives and the overall native-migrant wage differential. Similar to Ottaviano and Peri (2006a), they find evidence that natives and immigrants are imperfect substitutes within the same age-education cell. Their empirical findings then show that immigration has raised the return to education for natives by a very modest 0.4% but has increased the native-migrant wage differential by 5.5%. They conclude that the immigrant impact on the wage distribution of the native population is small

and that immigration in the UK primarily impacts the wages of immigrants who are already in the country.

On 1 May 2004, eight countries from Central and Eastern Europe plus Cyprus and Malta joined the European Union. As opposed to most other old EU member states, the UK (as well as Ireland and Sweden) granted all workers from the new accession countries free access to the UK labour market. Between May 2004 and September 2005, around 300,000 individuals, mostly from Poland (58%), Lithuania (14%) and Slovakia (11%), registered on the Worker Registration Scheme (WRS) to work in the UK, equivalent to roughly 1% of total employment in the UK.[7] During the same period, claimant unemployment in the UK rose by over 90,000. Using variation in the proportion of migrants from the new accession countries across local authority districts, Nicola Gilpin, Matthew Henty, Sara Lemos, Jonathan Portes and Chris Bullen (2006) investigate in detail in how far the immigrant inflows are part of the explanation for this rise in unemployment. Combining data on claimant unemployment with data from the WRS and the LFS, the authors estimate a comprehensive set of regression models for various groups of workers. In all specifications, the presence of new accession migrants has a small and insignificant effect on the claimant count rate of UK natives. The inflow of immigrants from the new EU member states since May 2004 does therefore not seem to cause the rise in claimant unemployment in the UK.

In a related study, David Blanchflower, Jumana Saleheen and Chris Shadforth (2007) analyse the impact of immigration from Eastern Europe to the UK between May 2004 and late 2006 from a macro-economic perspective. During those years, approximately 500,000 migrants from the new accession countries came to work in the UK, half of which are likely to have

[7] Since there is no requirement to de-register from the WRS, this number reflects gross inflows only and does not take into account migrants who worked in the UK for only a short period. According to data from the Labour Force Survey, the stock of migrants from the new accession countries aged 16 and over increased by around 120,000 between spring 2004 and summer 2005.

already returned to their country of origin by the time the analysis was carried out. Based on descriptive evidence, the authors argue that the recent immigrant inflows have increased supply by more than demand in the UK economy due to their high productivity in the labour market and their lower propensity to consume while resident in the UK compared to domestic workers. Through this differential effect on supply and demand, recent immigration to the UK has acted to reduce inflationary pressures and, by lowering the wage bargaining power of native workers, the natural rate of unemployment.

Finally, in a recent paper for Spain, Raquel Carrasco, Juan F. Jimeno and Carolina Ortega (2007) also use the skill cell correlation methodology and estimate the impact of both legal and illegal immigration flows on the employment rates and wages of native workers between 1991 and 2002. To obtain the required data they use three different sources: The Census of Population for 1991 and 2001 which includes both legal and illegal immigrants, the Register of Work Permits for 1993 to 1999 and the Wage Structure Survey for 2002. Their results show overall no evidence of a significant negative effect of immigration on neither employment rates nor wages of native workers.

1.3.6 Native migratory responses

The overwhelmingly small estimated effects of immigration on native labour market outcomes in spatial correlation studies have lead to the question of how local labour markets are able to absorb the in some cases very significant immigrant inflows. Two explanations in particular have been put forward: First it could be that natives respond to immigrant inflows by moving out of a labour market, thus compensating for the relative supply changes induced by immigrants. Second, in a multi-sector economy, the industry structure and the output-mix could adjust to changes in the skill composition of its labour force. In the case of unskilled

immigration, this would mean an expansion of production in those sectors which use unskilled labour more intensively. There are a number of studies which directly aim at evaluating the validity of these explanations.

In an important study for the period 1975 to 1980, Randall Filer (1992) examines whether the arrival of immigrants in a local labour market in the U.S. induces native migration responses. Using U.S. Census data from 1980, the author presents both simple correlations between natives and immigrant locational decisions, and regression results where native mobility patterns are related to immigrant arrival rates. Besides estimating by OLS, three-stage least squares estimations are performed to account for the endogeneity of the locational choice of immigrants. The results from this analysis show that the arrival of immigrants both reduced native in-migration and at the same time increased native out-migration so that overall the natives' migratory response more than offset the arrival of immigrants. In particular, the mobility responses seem to be concentrated among low-skilled natives and stronger among whites than other minorities. Filer concludes that a high concentration of recent immigrants has a negative impact on the attractiveness of an area for native workers, which may partly be attributed to psychological reasons. A similar conclusion is reached in studies by Frey (1995), who evaluates immigration-induced out-migration of natives from California, and Walker, Ellis and Barff (1992). In a recent study for the UK, using data for the 12 regions in the UK, Hatton and Tani (2003) find a correlation between immigrant inflow and native outflows, in particular for the Southern UK regions.

However, the conclusion that immigrant inflows lead to net native outflows is controversial. In an empirical study by Richard Wright, Mark Ellis and Michael Reibel (1997), no evidence for a native response to the presence of immigrants in a local labour market could be found. Using PUMS data for 1980 and 1990 and distinguishing between five categories of education

in the native-born labour force, the authors use a model in which the effect of immigration and the effect of metropolitan area size are separated. Their results show that the net migration loss of unskilled native workers from metropolitan areas is likely to be a function of those cities' population size rather than immigrant inflows. They then proceed by checking the consistency of these results by using different samples of metropolitan areas and excluding high immigration cities from the estimation (especially New York and Los Angeles). From these robustness checks it becomes clear that model specification plays a critical role in assessing the relationship between immigration and internal migration.

More recently, David Card and John DiNardo (2000) analyse in how far immigrant inflows have changed the skill distribution across cities between 1980 and 1990. Their approach is to examine the correlation of the relative movements of native workers in different skill groups with the relative inflow rates of immigrants. They test the alternative scenarios of "demographic balkanization", in which natives move out of the labour markets as a response to immigration, against the case of no such migratory response. To control for the endogeneity of immigrants' location choice, the authors use the past fraction of Mexican immigrants in a city as an instrument. Their empirical results, which are based on US census data for 1970, 1980, and 1990 and 119 larger MSAs, show that there is not much of a native out-migration as a response to immigration. Quite the contrary, increases in the immigrant population in a skill group seem to lead to slight increases of the native-born population. Therefore, immigration did have quite a significant effect on the skill distribution of some MSAs. Card and DiNardo thus conclude that the small measured effects of immigration on the labour market outcomes of the native population in spatial correlation studies are mitigated by other adjustment mechanisms, such as endogenous shifts in the local industry structure, rather than by a compensating native migration response.

Rather than looking for evidence of native out-migration or the absence thereof separately, Borjas (2006b) models the influence of immigrant supply shocks on the joint determination of wages and internal migration decisions in local labour markets using data from the 1960 to 2000 U.S. Censuses. In this model, immigration leads to an immediate wage effect upon which native workers base their future internal migration decisions. The theoretical model predicts that the factor price elasticity that measures the wage impact of immigration on the national level can be obtained from the elasticity estimated from cross-region wage regressions by scaling the latter by a factor that incorporates the relationship between in-migration of immigrants and net out-migration of natives. The empirical analysis reveals that immigration is associated with lower wages, lower in-migration rates and higher out-migration rates and thus with a decline in the growth rate of the native workforce. Accordingly, for every 10 immigrants who enter a particular state 2 fewer natives choose to live in that area and for every 10 immigrants that enter a particular metropolitan area between 3 and 6 natives will choose not to live there. Depending on the geographic definition of a local labour market, the results furthermore imply that native migratory responses attenuate the measured wage impact of immigration in spatial correlation studies and can account for 40 to 60% of the difference in the measured impact between analyses carried out on the national and analyses carried out on the local level.

1.3.7 Industry and technology adjustments

The potential adjustment to immigrant-induced changes in the labour supply in a local labour market through adjustments of the industry structure has been thoroughly investigated by Ethan Lewis (2004a). In his original analysis he evaluates two possible explanations for the surprisingly small effects of immigration on relative labour market outcomes in the literature: 1. interregional trade that mitigates the impact of supply shocks through immigration, and 2.

production technology that rapidly adapts to the new mix of labour inputs. He estimates the effect of increases in relative supplies of skill groups on the relative growth of different industries (between industry changes) and their relative utilisation of those labour inputs (within industry changes). Similar to the analysis of Card (2001) he uses the supply-push component of immigration, which is the predicted immigrant inflow to a local labour market based on the historical settlement pattern of older immigrants of the same nationality, to instrument for the endogeneity of the locational choice of immigrants. To assess whether the adoption of skill-complementary technologies in response to changes in the local worker mix can explain the lack of impact on wages and employment, Lewis then examines in a case study whether changes in the share of high-skilled workers have induced industries to take-up computers more quickly, indicating skill-biased technological change. The data sources for his work are the PUMS for 1970, 1980, and 1990, and, for the establishment-level data on output and employment, the Annual Survey of Manufactures (ASM). In a first step he repeats the common spatial correlation estimations for 179 metropolitan areas, finding that a 10% increase in the population share of a particular skill group (defined by education) reduces the mean wage by 0.9% and the employment/labour force rate by 0.4%. He then focuses his analysis on the industry adjustments. The empirical results show that changes in the relative supply of skill groups have only little effect on the local industry mix but lead to increases in the relative factor intensity of the now more abundant skill group. The relative wages within a locale remain more or less unchanged. Hence the adjustment to immigrant-induced local labour supply takes place within industries (74%) rather than between industries (4%). Lewis concludes that the standard Heckscher-Ohlin model is not a very good description of how local labour markets adjust to changes in the labour supply mix. Instead of an expansion of those industries that use low-skilled labour more intensively, industries seem to adjust their production technology to complement the local factor supply mix they are facing. This

finding is supported by the fact that on the job computer use expanded most rapidly in those areas where the relative supply of skilled labour grew fastest.

Lewis (2004b) assesses the importance of industry adjustments in the absorption of immigrant inflows in the well-known case of the Mariel boatlift (see Card 1990) using confidential data from the ASM. Again distinguishing within and between industry effects, he shows that after the boatlift the relative output of manufacturing industries in Miami trended similarly to the output in comparable cities, thus ruling out industry mix adjustments as an explanation of how Miami was able to absorb the Mariels without major effects on the labour market outcomes of natives. On the other hand, Lewis finds that the utilisation of Cuban labour in Miami's industries grew proportionately to the increase in its supply while at the same time computer use at work in Miami was lower than in cities that had similar levels of computer use before the boatlift. These results imply that Miami's industries reacted to the shock in relative local labour supply by employing more unskilled-intensive production technologies, which explains the apparent insensitivity of native wages in Miami to the substantial inflow of Cuban immigrants.

Having identified changes in production technology as the main channel of adjustment to shifts in local labour supply, Lewis (2005) uses plant-level data from the 1988 and 1993 Surveys of Manufacturing Technology (SMTs) and U.S. Census data to investigate more directly in how far the skill mix of the local workforce in a manufacturing plant's MSA affects its use of a number of automation techniques. The empirical findings show that in areas with a larger relative supply of unskilled workers, comparable plants operating in the same narrow industry use substantially less automation. A 10 percentage point increase in the supply of low-skilled workers accordingly reduces the number of technologies in use at a typical worker's plant by about 8%. The observed relationship between skill supplies and automation

use points towards an endogenous adoption of production technologies by firms as suggested by Paul Beaudry and David Green (2003, 2005). Such
technology adoption could then explain why in many impact analyses relative wages do not respond negatively to labour supply shocks caused by immigration.

Paul Beaudry, Mark Doms and Ethan Lewis (2006) take up this last point in more detail and specifically examine cross-city differences in PC-adoption, relative wages and changes in relative wages over the period 1980 to 2000 using U.S. Census data and establishment-level data which include information on the use of technologies. Within the framework of a neoclassical model of endogenous technological adoption, which links the supply of skill, the returns to skill, technology adoption, and changes in the return to skill, the authors derive a set of predictions which they then test empirically on a sample of 230 U.S. cities. Consistent with these predictions, in regions with a relatively large and thus cheap skilled workforce, the adoption of PCs took place more aggressively than in regions with a relatively small and expensive skilled workforce. As a result, the returns to skills increased the most in those regions in which PCs were most intensively implemented, however, not so much as to create a positive association between the relative supply of skills (or the PC intensity) and the return to skill. Overall, their results support the existence of endogenous technology adoption of firms in response to local factor supply conditions.

1.3.8 Other approaches and perspectives

Besides the more standard spatial correlation and simulation approaches, a number of studies have chosen alternative ways and perspectives to look at the impact of immigrants on the labour market.

Joshua Angrist and Adriana Kugler (2003), for instance, investigate how the native employment rates across 18 Western European countries are related to the respective immigrant shares in those countries, using Eurostat data for the period 1983 to 1999, which is compiled from country-specific labour force surveys. In particular, they examine whether the employment consequences vary with labour market institutions in each country which could affect labour market flexibility. These could be, for example, employment protection legislation, high replacement rates or business entry costs. The initial empirical results imply that a 10% increase in the foreign share reduces native employment by 0.2 to 0.7 percentage points with OLS estimates at the low end and IV mostly larger. As instruments for the potentially endogenous immigrant flows the authors use the distance from Sarajevo and Pristina interacted with year dummies, making use of the significant immigration from Yugoslavia in the 1990s. Turning towards the central issue of the influence of labour market institutions, they estimate their model introducing interactions between the immigrant share in a country and three institutional indicators: an index of labour standards (employment protection, administrative and union oversight in hiring and firing decisions, minimum wages, restrictions of work hours and employment contracts), the average replacement rate, and a measure of business entry costs. The estimates from these regressions show larger adverse immigration effects when the labour market flexibility in a country is low, and replacement rates and entry costs are high. These findings suggest that reduced labour market flexibility and restrictive institutions fail to protect natives from job losses due to immigration, and may even make immigration-related job losses worse.

In a couple of recent papers looking at Israel, the dynamic aspect of the impact of immigration on the host economy's labour market has moved into the centre of attention. In the first instance, Zvi Hercowitz and Eran Yashiv (2002) look at Israel's mass immigration experience from the former USSR between 1990 and 1999 from a macroeconomic open economy

perspective. They try to identify the dynamic effects this inflow might have had on native employment. Key to their approach is the modelling of dynamic effects of immigration on not only labour supply but also labour demand via the immigrants' participation in the local goods market. Most importantly they allow for differential entry of immigrants into the goods and the labour market at different points in time. They estimate their dynamic model of two equations, one for the native employment rate and one for the relative price of domestic goods, using data from Israeli Labour Force Surveys. The empirical results show that in early stages of immigration, immigrants tend to participate more in the goods market relative to the labour market, increasing the relative prices of domestic goods which in turn leads to increases in labour demand and native employment. Negative employment effects only appear with a delay of about a year after arrival, when the immigrants' relative participation in the goods market declines and the direct substitution effect of immigrants for natives dominates the labour demand effect.

In a different study, Sarit Cohen-Goldner and Daniele Paserman (2004) evaluate the dynamic impact of immigration using a cell correlation approach. In particular they try to distinguish between short- and long-run effects of immigrant inflows. Looking at the period of mass immigration to Israel between 1989 and 1999 using Income and Labor Force Survey data, they first set up a dynamic model in which immigrants with different local experience in the labour market can have different effects on native wages and employment. In this way they avoid making the assumption of homogeneous immigration effects over time which is common in most other studies. Their empirical results from this model then enable the authors to assess opposing hypotheses about the substitutability of natives and immigrants at the time of arrival and over time. Controlling for immigrant cohort effects and the selection of immigrants into low wage or low wage growth segments, they find that immigration did have a short-run adverse effect on native wages: a 10% point increase in the share of immigrants

reduced native wages by 1.2 to 5.7%. However, this effect was dying out after 5 to 7 years. In contrast, they find no evidence of any immediate or delayed detrimental effect on native employment. On the basis of these results they conclude that within occupation-based segments immigrants and natives are close substitutes in the short run until the labour market adjusts to the changes in labour supply through changes in other factors of production, such as capital or technology.

In a recent paper Simonetta Longhi, Peter Nijkamp and Jacques Poot (2004) make use of the various studies that look at the effect of immigration on the labour market by performing a meta-analysis using a sample of eighteen papers. They relate the estimated coefficient of the immigrant share of those studies, 344 overall, to various parameters of the research design such as approach chosen (factor proportions approach, spatial correlation approach), country, size of the labour market, affected group, type of immigrants, definition of wages etc. They also explicitly account for study quality and publication bias which arises due to the tendency of authors and editors to favour the publication of statistically significant results. Their finding suggests an overall small effect of the proportion of immigrants in the labour force on wages: a 1 percentage point increase of the former lowers wages across the investigated studies by 0.12%. More specifically, the negative impact seems to be larger in EU countries than in the US and immigrants appear to be more in competition with each other than with natives. Their overall finding seems to confirm the broad conclusion in the literature: that the impact of immigration on wages is, if statistically significant, quantitatively small.

Robert W. Fairlie and Bruce D. Meyer (2003) turn the attention towards the effect of immigration on native self-employment. They first set up a general equilibrium model of self-employment and wage/salary work that predicts small negative effects of immigration on native self-employment rates and earnings for a range of plausible parameter values. Using

PUMS data for 1980 and 1990, they then examine the relationship between changes in immigration and native self-employment rates and earnings exploiting variation in the immigrant share across the 132 largest metropolitan areas in the U.S.. Their empirical results from a first-difference specification indicate a large negative effect of immigration on the probability of self-employment among native non-blacks. The estimates imply that for each self-employed immigrant, 0.37 to 0.85 self-employed native men and 0.09 to 0.19 self-employed native women are displaced. The large magnitude of these effects stands somewhat in contrast to the predictions of their theoretical model as well as the results of previous work on black self-employment. However, overall native self-employment in the U.S. was on the rise between 1980 and 1990, leading the authors to the conclusion that at the national level immigrants may have primarily taken away opportunities for natives to start new businesses rather than actually pushing self-employed natives out of business. Also contrary to the theoretical predictions, the results for the effects of immigration on native self-employment earnings indicate a positive effect which, as the authors point out, could be explained by immigrants primarily displacing marginal or low-income self-employed natives.

1. 4 Macroeconomic perspectives on the impact of immigration

Like the analysis on the labour market impact of immigration, empirically assessing its macroeconomic impact, faces similar difficulties. Again, the reason is the absence of an obvious *counterfactual* situation (compare section 1.2), that is how the macroeconomic situation of a particular country would be in the absence of immigration. This situation will have to be constructed somehow. In the following we will point out some efforts that have been made in this direction. The overall empirical evidence, however, on the macroeconomic impact of immigration is quite limited.

1.4.1 Growth

There is a relatively broad theoretical literature that investigates the impact of immigration on the economic growth of the host country. Stephen Drinkwater, Paul Levine, Emanuela Lotti and Joseph Pearlman (2002) survey the different models that are being used and identify three broad approaches which in turn emphasise one of three engines of economic growth that are affected by migration: Capital accumulation (e.g. Pietro Reichlin and Aldo Rustichini (1998)), human capital accumulation (e.g. Uwe Walz (1996) or Nadeem U. Haque and Se-Jik Kim (1995)) or innovation and technology (e.g. Per Lundborg and Paul S. Segerstrom (1998, 2000) or Lucas Bretschger (2001)). The predictions from these models are mixed and depend on a variety of assumptions about, for example, the skill composition of migrants, capital mobility and the existence of economies of scale in the host economy. There is, however, some general agreement in the literature that there is probably a small positive effect on GDP per capita from immigration. For instance, a general equilibrium study by Jacques Poot, Ganesh Nana and Bryan Philpott (1988) for New Zealand found that a net inflow of 15,000 people increases GDP per capita by 0.2 percent per year and GDP per worker by 0.15 percent per year. Similarly for the U.S., George Borjas (1995) estimates the economic gains of immigration accruing to natives to be relatively small, of the order of 0.1 percent of GDP while Robert Barro and Xavier Sala-i-Martin's (1992) results suggest that a 1 percentage point higher net migration rate in the U.S. is associated with a 0.1% higher growth rate.

1.4.2 Inflation

There is a general perception that immigration helps keeping inflation low in an economy by restraining wage growth which would otherwise have been passed on by employers to consumers. The empirical evidence on this issue, however, is scarce. In a recent paper, Patricia Cortes (2006) uses PUMS data for 1980, 1990 and 2000 and exploits regional

variation in immigrant concentrations in the U.S. to analyse the impact of immigration on the prices of goods and services. Her results show that a 10% increase in the share of low-skilled immigrants in the labour force reduces the prices of immigrant-intensive services such as housekeeping and gardening by 1.3% and those of other non-traded goods by 0.2%. The main channel through which these price changes come about is through a negative effect of low-skilled immigration on the wages of low-skilled workers, in particular of low-skilled immigrant workers. The author estimates that a 10% increase in the share of low-skilled immigrants reduces wages of other low-skilled immigrants by 8.0% and those of low-skilled natives by 0.6%. These wage reductions are then passed on to the consumer in the form of lower prices of non-traded goods and services. The different impact of immigration on other immigrants compared to natives supports the recently promoted view that even within the same skill group, immigrants and natives are imperfect substitutes (compare Ottaviano and Peri (2006a) and Manacorda et al. (2006)).

In an earlier study and using a similar empirical methodology, Khananusapkul (2004) also explores the effect of low-skilled immigration on the prices of immigrant-intensive services. Her results imply that a one percentage point increase in the proportion of low-skilled female immigrants in a metropolitan area raises the proportion of private household workers by 6 percentage points and lowers their wages by 3%.

An additional and very important mechanism through which immigration can affect inflation is through its effect on house prices and we will summarise a few studies that have tried to address this issue in the next section.

1.4.3 Housing

Exploiting the immigration shock to Miami in the aftermath of the Mariel boatlift in 1980 (compare Card (1990)) which increased Miami's renter population by 9%, Albert Saiz (2003)

analyses the short-run response of the housing market to a large immigration shock. He examines the change in rental prices in Miami and compares these to three comparison metropolitan areas. His empirical findings show that the rents in Miami increased by 8% to 11% more than those in the comparison groups between 1979 and 1981 and large parts of this rent differential persisted in subsequent years. While rental units of higher quality were not affected by the immigration shock, those occupied by low-income Hispanic residents before the immigration occurred experienced an extra 8% hike relative to other low-income units. This implies a distributional effect of immigration arising indirectly from its impact on housing prices with a larger negative impact on real consumption wages of unskilled workers since these are more likely to live in low-income rental housing units. The positive effect of immigration on rental prices could also be one of the reasons why some studies (for instance Filer (1992)) find that native workers seem to avoid and migrate out of areas with high levels of immigration. The author also finds evidence for a decrease in housing prices in response to the immigrant inflows which could be explained by immigration being perceived as a negative amenity by higher income residents which decided to move out of the Miami metropolitan area. The resulting decrease in demand for higher-quality rental units will lead to vacant units of higher quality which in turn puts downward pressure on the prices of all housing units.

In a related study, Saiz (2006) moves away from Miami and investigates the short- and long-run impact of immigration on housing rents as well as housing prices at the metropolitan area level throughout all of the U.S. The advantage of this study is that the results are general in the U.S. context and not limited to specific time periods of immigration. As in his earlier study, he finds a positive effect of immigration on housing rents. Accordingly, a 1% immigrant inflow is associated with an increase in rents by 1%. In this study, the author also finds a positive effect on housing prices of about 1%. The fact that rents and prices increase

due to immigration is consistent with the idea that immigrants do not displace natives one-for-one, since in that case housing demand would remain unchanged and so should prices. The authors show theoretically that the impact of immigration is lower in the long run than in the short run due to new supply of housing and the potential out-migration of natives. Generally, the impact is higher in cities with inelastic housing supply and lower in cities with high price elasticity of housing demand or a mobile native population.

The findings of Saiz are supported by a study carried out by Gianmarco Ottaviano and Giovanni Peri (2006b) who also find a strong positive association between immigration and house prices of native individuals across the U.S. Because immigrants have lower house ownership rates than natives across all skill levels, the house price increases caused by immigration act, on average, as an income transfer from immigrants to natives both in the short and in the long run. In all reasonable simulations the authors find that the overall wage plus housing income effect of immigration is positive for natives of all skill levels. In particular even for the average native low-skilled worker, the small negative wage effect from immigration is more than offset by the positive effect on housing prices which they can reap due to their higher house ownership rates. Those most negatively affected from immigration are thus low-skilled natives that are renting and do not own any equities in housing, since for them wages fall while rental rates increase.

1.4.4 Fiscal effect

Estimating the net fiscal effect of immigration is quite intricate. While earlier studies have computed the instantaneous net government surplus for a particular year using a cross section of immigrants residing in the host country (e.g. Donald Huddle (1993) and George Borjas (1994)), more recent studies have adopted a dynamic approach by considering the fiscal

impact of immigrants over time. Adding a dynamic perspective is important due to the age-dependency of tax and expenditure programs, and the necessity to include future descendants of immigrants in the calculations. Using the methodology of generational accounting (see Alan J. Auerbach, Jagadeesh Gokhale and Laurence J. Kotlikoff (1994)) in which the discounted net tax contribution (taxes net of transfer payments received) of a representative individual in his/her lifetime is calculated, a number of studies have assessed the dynamic effects of immigration on the fiscal balance in a variety of countries.

Based on a calibrated general equilibrium overlapping generations model, Kjetil Storesletten's (2000) findings for the U.S. show that the discounted net government gain from immigration varies substantially across age and skill levels of new immigrants. For all groups, the net present value of new immigrants' contribution is found to be hump-shaped over their life cycle and peaking between the ages 35 and 44. Using the composition of current new immigrants in the U.S., the net gain of a representative legal immigrant is calculated at $7,400. Distinguishing by skill level, the corresponding gains of a representative high-, medium-, and low-skilled immigrant are calculated to be $96,000, -$2000, and -$36,000, respectively. The discounted government cost of new illegal immigrants can be as large as $54,000 per immigrant, compared to $36,000 for legal low-skilled immigrants. If immigrants bring existing children with them when immigrating, these net contributions are reduced due to the associated government transfers to these children. The author thus concludes that if the aim was to maximise the public coffer contribution per immigrant, the government should target high-skilled immigrants, preferably without children and aged between 40 and 44 years.

Consistent with these findings, Alan Auerbach and Philip Oreopoulos (1999) find very small fiscal effects of current immigration relative to the size of the overall fiscal imbalance in the U.S., so that, in their view, immigration should be viewed as neither a source nor a solution to the existing imbalance in the U.S. Following an approach similar to Storesletten (2000),

Ronald Lee and Timothy Miller (2000) find a larger net present value of immigrants' contributions to the fiscal system of around $99,000. Their results suggest that a policy of admitting only highly-skilled immigrants could be particularly beneficial. However, they also conclude that overall the fiscal impact of immigration is quite small.

In a recent study for Germany, Holger Bonin (2006) calculates the net contribution of foreigners to the public coffers in Germany in the fiscal year 2004. His findings show that in that year tax revenues exceeded transfer payments by 2,000 Euros per foreigner. This contribution stays positive even after accounting for demographic aging in the future with an expected rest-of-life net government gain of 11,600 Euros per capita in present value terms.

Dolores Collado, Inigo Iturbe-Ormaetxe and Guadalupe Valera (2004) use data from the European Community Household Panel Survey (ECHP) in order to analyse the impact of immigration on the Spanish welfare state. Employing the generational accounting approach, they simulate the effects of a number of different immigration policies. Their calculations reveal a positive net contribution of immigrants with a present value of around 98,000 Euros for a representative male immigrant and a corresponding 43,000 Euros for a female immigrant in 2000.

Finally, using a static approach, a home office report by Ceri Gott and Karl Johnston (2002) estimated a net direct fiscal contribution (taxes and contributions paid minus benefits received and public services consumed) of first generation immigrants in the UK in 1999/2000 of £2.5 billion. The authors emphasise that immigrants are heterogeneous and that those who are economically particularly successful are the biggest contributors by paying more taxes and national insurance contributions and receiving less publicly provided services and benefits. Economic outcomes in turn are influenced by characteristics such as age, skills, qualifications and English language proficiency so that policies designed to improve these characteristics

are likely to improve fiscal outcomes. Due to its static nature, there are a number of limitations in this analysis so that the authors are quite cautious in the interpretation of their results. Most importantly, the fiscal effect of immigration should be considered over the immigrants' life cycle. Since at present immigrants in the UK are younger than natives, their instantaneous net contribution is likely to be positive but will turn negative once they retire. Other factors not considered are the effects of immigrants on natives. If immigrants push natives into unemployment and lower wages, then the tax income from natives will decline and benefits expenditures to natives will increase, leading to an indirect negative fiscal impact of immigration. Furthermore, infrastructure expenditures to accommodate the immigrants such as additional health facilities, schools and housing have not been taken into account in this study. Finally, the period of analysis, 1999/2000, was a particularly good year in terms of macroeconomic conditions so that the estimated contribution from immigrants is likely to be an upper bound of their actual annual contribution.

1.4.5 Are earnings spent locally or returned to family members in the originating country?

How much of their earnings do immigrants spent in the UK, and how much do they spend in their country of origin, in form of remittances? In this section we will briefly discuss some basic considerations about immigrants' remittance behaviour, and how it relates to observable characteristics of immigrants and particular forms of migration. For the UK, no data on remittances is available.

Remittances are an important source of external funding for developing countries. They rank only behind foreign direct investment (FDI), and are much higher in magnitude than total official development assistance and private non-FDI flows (see Ratha, 2003). Remittances

have several advantages compared to other sources of external financing. First, they are more stable than private capital flows. While private capital flows often move pro-cyclically, remittances help to buffer recipient countries from the impact of negative shocks. Second, remittances are directed to households and individuals, while other sources of external financing such as foreign aid goes to public agencies in receiving countries. Its effectiveness may therefore be hindered by corruption of government officials (see Kapur, 2005).

Both due to their scale and effectiveness in reaching households, one should therefore expect remittances to have a greater impact on growth and poverty reduction than foreign aid. In a recent paper, Adams and Page (2005) find empirical confirmation of a statistically significant impact of remittances on poverty. Their estimates show that a 10% increase in per capita official remittances has lead to a 3.5% decline in the share of people living in poverty.

A large literature has developed on the subject, see Rapoport and Docquier (2005) for an excellent survey. Some of the key issues in the debate on migration are to understand which migrant populations remit, for which purposes, and what determines the amount of remittances. On the determinants of remittances, a number of papers (see e.g. Lucas and Stark (1985,1988), Funkhouser (1995), Faini (2006), Osili (2007), Amuedo-Dorantes (2006) among others) develop models on the different motives that may trigger remittances, and explore some of their empirical implications.

One can distinguish a number of motives for remittances. First, remittances due to altruistic motives. In principle, this motive for remittances can be viewed simply as an intra-family transfer across national borders. Remittances that follow this motivation are dependent on the way the immigrant's family is spread across national borders. Second, remittances that are intended to create assets in the home country. Remittances in this category are not different

from an intertemporal allocation of consumption, or investment into durable consumption goods across national borders. Finally, remittances that respond to family and social commitments. This motive is in its essence a simple exchange: some transfers to extended family and the home community are a price to be paid for the option to return back home at a later stage. One reason for why migrants may want to agree to remit for this motive is that there is a positive probability that the migration is terminated, either by choice, or by unforeseen events. Little is known about the relative magnitude of these different motives, and how they contribute to the overall remittance flows we observe. Even less is known about how permanency of migrations affects the different channels of remittance behaviour.

In a recent study, Dustmann and Mestres (2007) use panel data for Germany on remittance behaviour of immigrants to investigate this issue in detail. They focus on one particular aspect: the way the temporary or permanent character of a migration interacts with the magnitude of remittance flows, and with the different purposes of remittances. In their study, they find that temporary immigrants have a 18 percent higher probability to remit, conditional on individual and household characteristics. In addition, the overall amount remitted is about 25-50 percent higher for those migrants who want to return to their home countries. Their analysis distinguishes between remittances for family support, savings and other remittances and relates them to individual and household characteristics both at home and host country.
They find that the support to family and friends via remittances has a non-altruistic component of insurance or exchange after controlling for individual unobserved fixed effects and the potential endogeneity of temporary migration. In addition, they investigate migrants' asset accumulation and show that migrants' intention to return modifies the property accumulation patterns both in the host and home countries, as well as the investments made in the home country. Overall, their study shows the importance of accounting for the potential temporary nature of migration and its effects on remittances, savings and asset accumulation.

Although there is not information of remittance behaviour of immigrants in the UK, the findings of Dustmann and Mestres' study are likely to be relevant for Britain. In a recent paper, Dustmann and Weiss (2007) illustrate that return migration from the UK is very considerable. Based on the British Labour Force Survey, they approximate the survival rates of immigrant cohorts in the UK. We display these in Figure 4 where we distinguish between males and females (left figure) and white and non-white immigrants. As the figures show, the return rates are very similar across genders, with only about 60 percent of male immigrants still residing in the UK after about 5 years, where the time axis starts in the first year after arrival. The figures are therefore likely to underestimate the total return rates of immigrants which are likely to be higher, as returns during the first year of arrivals are not considered.

The right-hand figure displays results distinguishing between white and non-white immigrants. The graphs suggest that returns are particularly high in the white immigrant population.

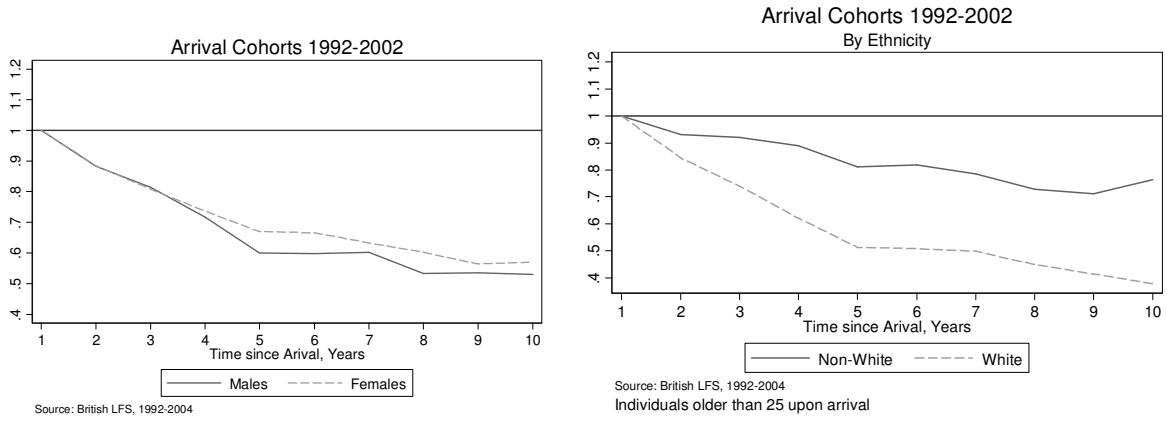


Figure 4: Survival rates immigrants. Source: Dustmann, C and Y. Weiss (2007)

According to these figures, return migrations to Britain are frequent; this suggests, according to the study by Dustmann and Mestres (2007) that a significant fraction of immigrants' earnings in the UK are remitted back home.

Part 2: Immigration to Wales

2.1 Location Choice of Immigrants in Wales and their type of employment

In this section we will investigate the settlement patterns of immigrants in Wales. Our analysis is based on data from the 1991 and 2001 Census as well as the LFS.

Table 2.1.1 shows the percentage of all working age (16-65) immigrants (columns 1-3) and recent immigrants (columns 4-6) in the total working age population in Wales (columns 1 and 4), Greater London (columns 2 and 5), and in the whole of Britain (columns 3 and 6) for years 1992-2005. We define as "recent" immigrants who have arrived in the UK in the year they are interviewed or in the previous year.

The share of immigrants in the total Welsh population is not only well below the corresponding share in London, which is the area with the highest immigrant concentration in Britain, but also below the national GB average. In 2005, 4.6% of the Welsh population, 37.1% of the London population, and 11.5% of the British population was foreign born. However, the share of immigrants in Wales has increased much faster than the national average between 1992 and 2005. In 1992, only 2.9% of the Welsh population were immigrants, while by 2005 this had increased to 4.6%, a 60% increase. The corresponding increase was 32% for London and 35% for Britain. The share of immigrants who have not been in the UK for more than two years on the total population in 2005 was 0.6% in Wales, 3.7% in London, and 1.3% in Britain as a whole.

Table 2.1.1 – Percentage of immigrants in total population and percentage of recent immigrants in total population, Wales – Greater London – Britain

	Immigrants / total population			Recent immigrants / total population			Sample size		
	Wales	London	GB	Wales	London	GB	Wales	London	GB
1992	2.87	28.12	8.47	0.24	1.84	0.47	19,494	44,190	392,592
1993	3.34	27.89	8.36	0.20	1.70	0.47	19,274	43,899	388,873
1994	2.88	27.94	8.42	0.24	1.86	0.52	18,942	42,626	374,334
1995	3.12	27.78	8.30	0.36	2.01	0.57	18,991	41,993	372,405
1996	3.16	27.67	8.38	0.36	2.31	0.60	18,785	41,304	366,482
1997	3.11	30.19	8.70	0.15	2.17	0.60	17,839	39,886	355,360
1998	3.08	30.22	9.00	0.26	2.53	0.73	17,428	39,494	351,639
1999	3.06	30.21	9.09	0.28	2.67	0.74	16,869	39,022	344,115
2000	3.18	32.32	9.40	0.25	3.22	0.89	16,679	37,260	330,665
2001	3.43	33.25	9.75	0.21	3.28	0.92	17,061	38,025	332,338
2002	3.81	34.56	10.19	0.33	3.35	1.02	16,931	36,935	325,615
2003	4.26	35.22	10.45	0.42	2.80	0.95	15,878	34,824	312,350
2004	4.09	36.43	10.89	0.52	3.59	1.11	15,296	33,294	303,302
2005	4.62	37.14	11.50	0.61	3.68	1.31	14,905	32,200	297,145

Entries are the percentage of working age (16-65) immigrants or new arrivals on the total working age population of each region in each year
Recent immigrants are defined as immigrants arrived in the interview year, or the previous year
The last columns report the sample size for each year.
Source: LFS, various years

In table 2.1.2 we report the distribution of immigrants within Welsh counties in 1991 and 2001, and the difference between the two years (columns 1/3).[8] For reference we display also the distribution of natives in 1991 and 2001 (columns 4 and 5). Finally we report the share of immigrants in the total population for each county in 1991 and 2001 (columns 6 and 7). The last rows report the total number of immigrants and natives in Wales in the two years (columns 1-5) and the share of immigrants in the total population in Wales (columns 6 and 7). The distribution of the immigrant population within Wales tends to mirror the distribution of natives, although immigrants are more concentrated in South Glamorgan than natives: in 2001 almost 30% of immigrants and about 15% of natives were living there. Immigrants were 6.5% of the total population in South Glamorgan in 2001 (over 5% in 1991), while they were slightly less than 3% of the total population in all other counties except in Mid Glamorgan. The immigrant distribution has remained quite constant over time, although between 1991 and

[8] County boundaries are held fixed as they were in 1991.

2001 the concentration of immigrants has tended to decrease in Clwyd and Gwent and increase in South Glamorgan. The ratio of immigrants to total population, on the other hand has increased in all counties between 1991 and 2001.

Table 2.1.2 – Settlement patterns of Immigrants within Wales, 1991-2001, and percentage of Immigrants in the total population by county

County	Immigrants			Natives		Immigrants/total population	
	1991	2001	Increase 1991-2001	1991	2001	1991	2001
Clwyd	12.60	10.33	-2.28	14.44	12.83	2.35	2.57
Dyfed	11.97	11.47	-0.50	12.12	12.50	2.65	2.92
Gwent	13.71	12.28	-1.43	15.65	13.22	2.35	2.96
Gwynedd	8.13	9.21	1.08	8.31	10.13	2.62	2.90
Mid Glamorgan	11.70	12.02	0.32	19.04	20.46	1.66	1.89
Powys	3.44	3.55	0.11	4.16	4.38	2.22	2.59
South Glamorgan	26.76	29.84	3.07	13.50	14.13	5.17	6.48
West Glamorgan	11.69	11.31	-0.38	12.78	12.36	2.46	2.92
All Wales						2.68	3.18
All Wales (count)	75,938	92,263	16,325	2,759,135	2,810,822		

Entries in rows 1-8 are the percentage of the total immigrant population in Wales in each Welsh county (as in 1991) in 1991 and 2001 (column 1 and 2), and the changes between 1991 and 2001 (column 3). Columns 4 and 5 show the distribution of natives in Welsh counties in 1991 and 2001 The last two columns report the ratio of immigrants to total population in each Welsh county (rows 1-8) and in Wales as a whole (row 9) in 1991 and 2000.
Row 10 reports the number of foreign and native born individuals in the whole Wales in 1991 and 2001, and changes thereof (column 3)
For 2001 unitary authorities have been aggregated to match 1991 county boundaries.
Source: Census 1991, 2001

Table 2.1.3 shows that immigrants tend to have a lower employment (the ratio of employed individuals to the working age population) and participation (the ratio of individuals employed or actively seeking job to the working age population) rate than natives, in Wales and in Britain as a whole, as reported in table 2.1.3. However, immigrants in Wales have an employment rate above the average employment rate for immigrants in Britain: 66.1% versus 63.8%. On the other hand, the participation rate of immigrants in Wales and in Britain is very

similar. It is also worth noting that the situation for natives is exactly the opposite: employment and participation rates of natives in Wales are lower than in Britain as a whole.

Table 2.1.3 - Employment and Participation rate of immigrants and natives in Wales and in GB, 2002-2005

	Wales		GB	
	Natives	Immigrants	Natives	Immigrants
Employment Rate	68.44	66.05	72.96	63.82
Participation Rate	71.95	69.50	76.57	68.99
Sample size	60,356	2,654	1,115,350	123,062

Entries are the employment and participation rate of working age (16-65) immigrants and natives in Wales and GB
Employment rate is defined as the ratio of employed to working age population
Participation rate is defined as the ratio of employed and unemployed to working age population
The last row reports the sample size.
Years 2002-2005 pooled
Source: LFS, 2002-2005

Table 2.1.4 reports the educational attainment of working age immigrants and natives in Wales and in Britain. The table illustrates the dramatically higher fraction of immigrants in the highly educated category, both in Wales and in Britain. We define education using survey information on the age at which individuals left full time education. We code as low educated all individuals who left full time education at age 16 or earlier, as intermediately educated those who left full time education between the age of 17 and 20, and as highly educated those who left full time education after the age of 21.[9]

Almost 34% of immigrants in Wales have a high education, while this was only the case for 13.5% of natives. Similarly, 35% of immigrants in Wales have a low level of education, but the percentage of natives with the same level of education is almost 60. Both immigrants and natives tend to be slightly more educated in Britain than in Wales.

[9] The LFS has two alternative measures for educational achievements, age at which individuals left full time education, and "highest qualification achieved". The problem with the latter measure is that it is defined on the British education system and classifies all foreign classifications as "other qualification" (see the discussion in the appendix of Manacorda et al. (2006)).

Table 2.1.4 – Educational attainment of immigrants and natives in Wales and in GB, 2002-2005

	Wales		GB	
	Natives	Immigrants	Natives	Immigrants
high education	13.53	33.72	15.76	34.46
intermediate education	26.54	31.51	26.00	35.04
low education	59.93	34.78	58.25	30.50
Sample size	53,315	2,295	994,564	109,493

Entries are the percentage of working age (16-65) immigrants and natives with each education level in the total number of working age immigrants and natives in Wales and GB.
Education is defined in terms of age at which individuals left full time education:
High education: left full time education at age 21 or later
Intermediate education: left full time education between age 17 and 20 (included)
Low education: left full time education not after age 16, or never had full time education
The last row reports the sample size.
Years 2002-2005 pooled
Source: LFS, 2002-2005

In Table 2.1.5 we display the occupational distribution of working age immigrants in Wales and in Britain, where we distinguish between 16 occupational categories. Categories are derived from the National Statistics Socio-Economic Classification (NS-SEC), used in the LFS since 2001. We aggregate these categories to match the previously used Socio-Economic Group Classification (SEG) and drop members of the armed forces.

The occupational distribution of immigrants and natives, both in Wales and in Britain, is remarkably similar. The main regional difference is the higher share of employers and managers in London compared to Wales, among immigrants and natives. However, the share of professional employees among immigrants in Wales, over 13%, is much higher than the share of professional employees in Britain, although the corresponding figures for natives are the same in both regions. Moreover, the share of immigrants employed in personal services in Wales is only 1.3%, lower than the share of natives of 1.9%. In Britain, on the other hand, this share is substantially higher, at 2.4%, and higher than the share of natives of 1.6%.

Table 2.1.5 – Occupational choice of immigrants and natives in Wales and GB, 2002-2005

	Wales		GB	
	Natives	Immigrants	Natives	Immigrants
employers and managers (large establishments)	4.03	4.06	5.42	5.49
employers and managers (small establishments)	8.39	8.95	9.53	9.37
Professional workers (self-employed)	0.87	1.83	1.09	1.75
professional workers (employees)	4.08	13.21	4.37	7.84
intermediate non-manual workers	21.65	23.69	22.66	24.51
junior non-manual workers	17.25	15.24	19.05	14.59
personal service workers	1.87	1.31	1.63	2.42
foreman and supervisors (manual)	9.54	7.40	8.08	6.61
skilled manual workers	8.75	5.24	8.25	4.78
semi skilled manual workers	10.72	11.53	8.03	11.04
unskilled manual workers	4.61	1.72	4.07	3.85
own account workers	6.34	5.52	7.00	7.55
farmers (employers & managers)	0.19	0.00	0.10	0.03
farmers (own account)	1.34	0.16	0.35	0.08
agricultural workers	0.38	0.12	0.35	0.10
Sample size	40,355	1,705	799,161	78,273

Entries are the percentage of working age (16-65) immigrants and natives in each occupation on the total working age immigrant and native population in Wales and GB.
Occupation is defined according to the Socio-Economic Group Classification (SEG)
The last row reports the sample size.
Years 2002-2005 pooled
Source: LFS, 2002-2005

In terms of occupational mobility, the available data does unfortunately not allow us to investigate the career pattern of individual workers nor to look at Wales separately due to a lack of observations. To get an idea of the career pattern of migrant workers in the UK, table 2.1.6 shows the occupational distribution of the immigrant cohort that arrived in Great Britain between 1995 and 1998, over time. Notice that, as we can not identify individuals over time, the patterns we report in the table may be due to occupational changes, or to out-migration. The figures show that while the shares of immigrants working as employers and managers and professional workers drop substantially in the first seven years after arrival, the shares of intermediate non-manual workers, foremen and supervisors and semi skilled manual workers

increase. Interestingly, the share of immigrants working in low-paying personal services jobs, which are arguably relatively easy to obtain upon arrival, also decreases significantly from 13.3% in the first year to 2.1% after seven years in Great Britain, pointing towards an

Table 2.1.6 – Occupational distribution of immigrants of the 1995/1998 arrival cohort by years in Great Britain

	Years in Britain			
	1	*3*	*5*	*7*
employers and managers (large establishments)	10.06	8.09	6.60	5.92
employers and managers (small establishments)	6.05	6.12	7.67	8.50
Professional workers (self-employed)	1.70	1.35	1.27	0.86
professional workers (employees)	14.18	12.98	9.20	10.31
intermediate non-manual workers	19.47	20.37	21.74	24.30
junior non-manual workers	16.53	16.87	14.78	13.78
personal service workers	13.27	8.55	6.45	2.10
foreman and supervisors (manual)	1.50	2.72	5.69	7.27
skilled manual workers	3.12	4.57	4.27	4.67
semi skilled manual workers	6.23	9.66	11.86	11.21
unskilled manual workers	4.31	4.65	4.65	4.45
own account workers	2.83	3.66	5.82	6.64
farmers (employers & managers)	0.12	0.07	0.00	0.00
farmers (own account)	0.05	0.00	0.00	0.00
agricultural workers	0.58	0.32	0.00	0.00
Sample size	3782	2831	2137	1918

Entries are the share of working age (16-65) immigrants in Great Britain of both sexes that arrived between 1995 and 1998 in each occupation group after one, three, five, and seven years from arrival.
The last row reports the sample size.
Source: LFS, various years

occupational upgrading of these individuals.[10]

Occupations differ not only in the type of tasks they require, but also in their average wages. Table 2.1.7 shows the average wage of immigrants and natives by occupation in both Wales and the UK. Employers and managers, professionals, and intermediate non-manual workers are the highest paid occupations, while unskilled manual workers, personal service workers,

[10] As said above, the figures in table 2.1.6 do not take account of selective out-migration of immigrants which could be particularly significant for high-skilled workers who spend a few years in the UK before returning home. See Dustmann and Weiss (2007) for a discussion.

and agricultural workers are the occupations with the lowest wages.[11] The inter-occupational wage variability is very similar for immigrants and natives, and for Wales and the rest of Britain (we discuss regional wage differentials in section 2.2). It is worth noting that in Britain wages in the highest paid occupations tend to be higher for immigrants than for natives, while in other occupations immigrants and natives have very similar wages. However, in Wales the average wage of natives in high-pay occupations are usually higher than the average wage of immigrants. A remarkable exception are foreign-born professional workers in Wales, that earn on average 8% more than native-born professionals. All immigrant manual workers (except foremen and supervisors) in Wales earn higher wages than natives.

Table 2.1.7 – Average wage of immigrants and natives by occupation in Wales and GB, 2002-2005

	Wales		GB	
	Natives	Immigrants	Natives	Immigrants
employers and managers (large establishments)	18.11	18.00	20.21	22.46
employers and managers (small establishments)	11.88	11.25	13.26	14.28
professional workers (employees)	15.37	16.65	16.92	18.45
intermediate non-manual workers	11.93	11.89	12.78	13.54
junior non-manual workers	6.96	6.42	7.67	8.24
personal service workers	5.25	4.64	5.20	5.27
foreman and supervisors (manual)	8.00	6.61	8.20	7.83
skilled manual workers	7.82	9.65	8.17	8.39
semi skilled manual workers	6.53	7.10	6.71	6.44
unskilled manual workers	6.36	6.65	6.24	6.40
agricultural workers	5.26	-	5.91	6.43
Sample size	10,050	369	204,766	17,329

Entries are the average hourly wage of working age (16-65) immigrants and natives in each occupation in Wales and GB. Wage information is not available for self employed.
Occupation is defined according to the Socio-Economic Group Classification (SEG).
The last row reports the sample size.
Years 2002-2005 pooled
Source: LFS, 2002-2005

[11] Note that the sample size for agricultural workers is very small. In particular, there is no foreign-born agricultural worker in Wales with information on wages.

2.2 Factors that influence the decision whether and where to migrate

In this section we will first provide some brief background on the decisions of immigrants whether and where to migrate, and what the underlying determinants are. Based on the LFS, we will relate changes in migration inflows between 1992-1995 and 2002-2005 from abroad into different UK regions to changes in economic indicators (like employment and wages), using the LFS.

Table 2.2.1 reports the average wage of working age natives and immigrants in 1992/1995 and 2002/2005 for different regions in Britain[12], expressed in 2005 prices.[13]

Table 2.2.1 – Average hourly real wage of immigrants and natives

Region	1992-1995				2002-2005				
	Natives		Immigrants		Natives		Immigrants		%
	Wage	*Sample*	Wage	*Sample*	Wage	*Sample*	Wage	*Sample*	Difference
Tyne & Wear	7.25	*2,241*	8.42	*36*	8.92	*4,726*	9.67	*149*	8.41
Rest of Northern Region	7.35	*4,477*	7.19	*83*	9.10	*7,893*	9.28	*218*	1.98
South Yorkshire	7.32	*2,642*	7.01	*57*	9.04	*5,411*	10.36	*200*	14.60
West Yorkshire	7.79	*4,398*	7.90	*203*	9.59	*9,183*	8.53	*636*	-11.05
Rest of Yorks.& Humberside	7.19	*3,622*	8.33	*86*	9.34	*6,825*	9.81	*290*	5.03
East Midlands	7.64	*8,511*	8.18	*349*	9.46	*16,929*	9.66	*994*	2.11
East Anglia	7.64	*4,652*	8.89	*266*	9.86	*7,915*	10.93	*588*	10.85
Greater London	**10.48**	***9,248***	**10.11**	***2,509***	**13.97**	***14,528***	**12.41**	***6,063***	**-11.17**
Rest of South East	9.13	*22,077*	9.58	*1,494*	11.5	*46,022*	12.01	*4,287*	4.43
South West	7.67	*9,265*	8.03	*411*	9.57	*20,391*	10.08	*1,280*	5.33
West Midlands (metropolitan counties)	7.44	*4,318*	6.99	*363*	9.41	*8,095*	9.16	*827*	-2.66
Rest of West Midlands	7.65	*5,621*	7.94	*197*	9.6	*11,472*	9.84	*460*	2.50
Greater Manchester	7.77	*4,531*	7.69	*212*	9.55	*8,546*	9.42	*486*	-1.36
Merseyside	7.60	*2,268*	9.47	*65*	9.27	*4,009*	8.97	*126*	-3.24
Rest of North West	8.09	*4,990*	8.74	*142*	9.71	*9,117*	9.85	*355*	1.44
Wales	**7.27**	***5,132***	**9.54**	***123***	**9.29**	***10,474***	**10.42**	***390***	**12.16**
Scotland	7.80	*10,575*	9.58	*269*	9.74	*21,685*	10.54	*842*	8.21
Great Britain	8.20	*108,568*	9.25	*6,865*	10.32	*213,221*	11.34	*18,191*	9.88

Entries are the average hourly wage of working age (16-65) immigrants and natives in each region and in GB in years 1992-1995 pooled and 2002-2005 pooled, and the sample size for each group. The last column reports, for 2002-2005 only, the percentage difference between immigrants and natives hourly wage.
Wages are expressed in 2005 terms.
Source: LFS, various years

[12] The LFS originally identifies 19 regions in Britain. We unify Inner and Outer London into Greater London, and Strathclyde and the Rest of Scotland into Scotland, to create territorially homogeneous regions.
[13] We discount wages using the 2005-based CPI.

London and the South East stand out in both periods as the regions with highest real wages for immigrants and natives. Wales, on the other hand, was in the first period the region with the third lowest natives' wages, while in the most recent period it had the fifth lowest wages for natives. However, despite the low natives' wages, immigrants in Wales greatly outperform natives in both periods. Indeed, immigrants' wages in Wales are among the highest in Britain: only London, the South East, Scotland, and East Anglia (in the second period only) have higher average immigrants' wages. Even more remarkable is the relative immigrant-native wage differential: in 2002-2005 wages of immigrants in Wales were on average over 12% higher than wages of natives. This is the second largest wage differential, after South Yorkshire. The national average is below 10%. These figures, together with those reported in tables 2.1.2, 2.1.3, 2.1.5 and 2.1.7 seem to suggest that immigrants to Wales are somehow "better selected" than immigrants in other regions. They tend to move to Wales *because* they have a well paid job, rather than *in order to* look for a job. To give an example, we know from table 2.1.5 and 2.1.7 that the share of the foreign-born working as professionals in Wales is three times higher than the corresponding share of the native-born and that, at the same time, they earn on average 8% more than their native-born counterparts. The opposite seems to be true for London, where immigrants tend to cluster regardless of the availability of a specific job. This is presumably because the number of job opportunities there is higher, and the pre-existing ethnic networks stronger than anywhere else in Britain.

Tables 2.2.2.a and 2.2.2.b show the real average wage broken down by age groups in 1992/1995 (table 2.2.2.a.) and in 2002/2005 (table 2.2.2.b). For each age group and time period the regional distribution of wages is similar to the overall average. However it is worth noting that Wales has in the first period 1992/1995 the highest wages for immigrants over 45. Wales is also one of the few regions, in which average wage levels of immigrants peak at the age of 46 to 55. The only other regions where this is the case in 2002/2005 are Tyne & Wear,

the Rest of the Northern Region, South Yorkshire, East Anglia and the Rest of the North West.

Table 2.2.2.a – Average hourly real wage of immigrants and natives 1992-1995

Region	Natives					Immigrants				
	16-25	*26-35*	*36-45*	*46-55*	*56-65*	*16-25*	*26-35*	*36-45*	*46-55*	*56-65*
Tyne & Wear	5.37	7.36	8.04	8.03	6.95	4.97	11.86	8.53	8.56	3.18
Rest of Northern Region	5.06	7.18	8.28	8.49	7.29	3.63	6.74	8.74	10.54	6.62
South Yorkshire	5.27	7.47	8.27	8.01	6.45	4.88	6.82	8.41	6.97	5.27
West Yorkshire	5.38	8.56	8.68	8.22	7.13	4.96	7.81	9.57	7.16	8.08
Rest of Yorks.& Humberside	4.88	7.32	7.99	8.23	7.23	6.27	8.12	10.46	9.13	4.57
East Midlands	5.22	7.77	8.90	8.31	7.52	6.02	7.96	8.67	9.12	7.45
East Anglia	5.16	7.80	8.82	8.62	7.34	5.69	8.86	10.12	10.71	6.84
Greater London	**6.85**	**11.43**	**12.32**	**11.23**	**9.40**	**6.85**	**10.51**	**11.18**	**10.71**	**8.49**
Greater London sample size	*1,827*	*3,004*	*2,092*	*1,638*	*687*	*269*	*806*	*731*	*480*	*223*
Rest of South East	5.81	9.45	10.63	10.13	8.71	5.43	10.31	10.95	10.00	8.83
South West	5.25	7.88	8.83	8.34	7.29	5.29	8.85	8.56	7.65	9.16
West Midlands (metropolitan counties)	5.31	7.77	8.68	8.02	6.75	5.97	6.85	7.79	6.76	6.70
Rest of West Midlands	5.00	7.78	8.84	8.46	7.31	5.38	9.59	9.48	6.05	6.78
Greater Manchester	5.17	8.00	9.05	8.50	7.47	5.30	7.45	8.11	7.37	11.79
Merseyside	5.04	7.73	8.72	8.45	7.38	7.67	9.30	10.44	9.81	9.02
Rest of North West	5.17	8.40	8.98	9.12	8.35	3.78	11.62	8.53	8.76	8.04
Wales	**5.13**	**7.47**	**8.12**	**8.08**	**6.93**	**5.97**	**8.48**	**9.55**	**12.15**	**12.67**
Wal;es sample size	*988*	*1,345*	*1,334*	*1,144*	*321*	*15*	*35*	*39*	*25*	*9*
Scotland	5.29	7.96	9.00	8.65	7.75	5.54	8.52	11.49	11.95	13.03
Great Britain	5.50	8.57	9.43	9.02	7.87	5.98	9.66	10.38	9.70	8.49
Great Britain sample size	*20,183*	*30,090*	*27,077*	*22,458*	*8,760*	*843*	*2,069*	*2,014*	*1,320*	*619*

Entries are the average hourly wage of immigrants and natives in each age group and in each region and in GB in years 1992-1995 pooled.
Wages are expressed in 2005 terms.
For Greater London, Wales, and Greate Britain we also report the sample size.
Source: LFS, 1992-1995

Table 2.2.2.b – Average hourly real wage of immigrants and natives 2002-2005

Region	Natives					Immigrants				
	16-25	*26-35*	*36-45*	*46-55*	*56-65*	*16-25*	*26-35*	*36-45*	*46-55*	*56-65*
Tyne & Wear	6.17	9.35	9.83	9.67	8.80	7.48	8.87	11.49	14.90	6.77
Rest of Northern Region	5.81	9.12	9.78	10.29	9.66	5.35	9.73	9.99	11.43	8.39
South Yorkshire	6.07	9.07	9.99	9.98	8.86	4.90	9.12	11.30	15.06	14.64
West Yorkshire	6.11	10.25	10.65	10.51	9.56	5.54	8.30	10.39	8.74	10.63
Rest of Yorks.& Humberside	5.83	9.20	10.42	10.35	10.17	5.71	9.24	12.35	9.78	11.77
East Midlands	6.02	9.75	10.80	10.62	8.79	5.85	8.69	11.34	10.55	11.15
East Anglia	6.30	9.92	11.02	10.99	9.63	7.18	10.26	12.50	12.76	9.95
Greater London	**8.30**	**15.08**	**15.80**	**15.33**	**12.95**	**8.20**	**13.01**	**13.45**	**12.53**	**11.93**
Greater London sample size	*2,164*	*3,984*	*4,020*	*2,856*	*1,504*	*658*	*1,964*	*1,719*	*1,190*	*532*
Rest of South East	6.71	12.06	13.18	12.58	11.34	6.70	11.83	14.15	12.70	11.78
South West	6.00	9.98	10.69	10.70	9.30	6.31	10.08	11.87	10.85	9.35
West Midlands (metropolitan counties)	6.36	9.95	10.51	10.11	9.03	6.25	9.99	9.63	8.56	9.48
Rest of West Midlands	5.94	9.71	11.07	10.50	9.39	6.61	10.53	10.67	10.63	6.75
Greater Manchester	6.21	9.97	10.48	10.76	9.37	5.78	9.04	10.90	10.40	9.96
Merseyside	6.12	9.47	10.36	10.43	8.63	5.33	9.75	9.66	9.60	8.66
Rest of North West	5.96	9.68	11.33	10.99	9.45	5.17	10.83	9.92	11.50	10.20
Wales	**6.12**	**9.43**	**10.57**	**10.22**	**9.21**	**6.31**	**9.73**	**12.14**	**12.20**	**9.94**
Wales sample size	*988*	*1,345*	*1,334*	*1,144*	*321*	*48*	*129*	*110*	*78*	*25*
Scotland	6.14	9.88	10.88	10.96	10.01	6.24	9.64	13.28	12.86	12.15
Great Britain	6.45	10.85	11.70	11.42	10.16	7.09	11.59	12.88	11.97	11.45
Great Britain sample size	*31,340*	*47,980*	*59,713*	*49,181*	*25,007*	*2,120*	*5,661*	*5,100*	*3,778*	*1,532*

Entries are the average hourly wage of immigrants and natives in each age group and in each region and in GB in years 2002-2005 pooled.
Wages are expressed in 2005 terms.
For Greater London, Wales, and Greate Britain we also report the sample size.
Source: LFS, 2002-2005

In table 2.2.3 we display the employment rate of working age immigrants and natives by region in 1992/1995 and in 2002/2005. Employment rates have increased for everyone in every region between the first and the second period (the only exception is for immigrants in Tyne and Wear and the Rest of Northern Region). Natives have almost everywhere and in every period higher employment rates than immigrants (exceptions are Merseyside in 1992/1995 and East Anglia in 2002/2005). Natives' and immigrants' employment rates are not always highly correlated: in some regions such as West Yorkshire the employment rate is very high for natives, but very low for immigrants. On the other hand, the region with the

highest natives' employment rate in both periods (South East) has also a very high immigrant employment rate.

Wales has in both periods the fourth lowest employment rate for natives. Immigrants' employment rate, on the other hand, is in both periods right in the middle of the regional distribution.

Table 2.2.3 – Employment rate of immigrants and natives

Region	1992-1995				2002-2005			
	Natives		Immigrants		Natives		Immigrants	
	Emp.rate	*Sample*	Emp.rate	*Sample*	Emp.rate	*Sample*	Emp.rate	*Sample*
Tyne & Wear	60.51	*30,661*	58.15	*766*	66.85	*23,883*	56.76	*1,126*
Rest of Northern Region	65.08	*56,293*	57.88	*1,256*	67.78	*44,072*	65.23	*1,232*
South Yorkshire	62.92	*35,418*	49.32	*1,386*	69.68	*28,490*	49.17	*1,554*
West Yorkshire	71.00	*53,087*	49.00	*4,458*	73.62	*44,602*	54.59	*4,997*
Rest of Yorks.& Humberside	69.60	*43,515*	62.45	*1,328*	72.96	*35,312*	69.68	*1,573*
East Midlands	70.62	*105,955*	61.70	*6,420*	74.09	*83,789*	64.13	*6,292*
East Anglia	72.87	*55,219*	66.53	*3,567*	75.12	*44,210*	75.48	*3,573*
Greater London	**68.13**	***125,085***	**57.15**	***47,623***	**71.67**	***88,845***	**61.50**	***48,408***
Rest of South East	72.94	*272,591*	66.22	*22,166*	76.68	*228,886*	71.94	*23,663*
South West	71.05	*120,920*	68.01	*5,862*	75.62	*102,081*	72.54	*6,714*
West Midlands (metropolitan counties)	65.27	*60,044*	48.29	*8,354*	69.57	*45,946*	52.48	*7,086*
Rest of West Midlands	71.82	*71,376*	64.87	*2,972*	74.81	*58,039*	72.79	*2,428*
Greater Manchester	66.59	*62,114*	48.14	*5,260*	71.23	*42,569*	53.75	*3,543*
Merseyside	58.03	*35,913*	59.61	*1,100*	65.91	*26,504*	63.10	*905*
Rest of North West	70.22	*63,276*	53.94	*2,906*	73.16	*46,304*	60.84	*2,375*
Wales	**63.19**	***74,392***	**57.47**	***2,309***	**68.44**	***60,356***	**66.05**	***2,654***
Scotland	67.03	*139,800*	59.66	*4,812*	71.72	*111,462*	66.84	*4,939*
Great Britain	68.88	*1,405,659*	58.65	*122,545*	72.96	*1,115,350*	63.82	*123,062*

Entries are the employment rate of working age (16-65) immigrants and natives in each region and in GB in 1992-1995 pooled and 2002-2005 pooled, and the sample size for each group.
Employment rate is defined as the ratio of employed to working age population
Source: LFS, various years

In tables 2.2.4.a and 2.2.4.b immigrants and natives' employment rates are broken down by age group. For both immigrants and natives, and in both periods, the age group with the highest employment rate is the age group 36-45 while the age group with the lowest employment rate is, not surprisingly, the oldest age group aged 56-65. Both in Wales and overall in Great Britain, the employment rates of immigrants are always lower than those of

their native counterparts of the same age with the only exception of age group 56-65 in Wales, where immigrants have on average a 2 percentage point higher employment rate than natives. For all age groups, the regional distribution is very similar to the overall distribution.

Table 2.2.4.a – Employment rate of immigrants and natives by age group1992-1995

Region	Natives					Immigrants				
	16-25	26-35	36-45	46-55	56-65	16-25	26-35	36-45	46-55	56-65
Tyne & Wear	57.72	69.98	73.1	64.62	29.95	57.24	62.88	67.05	60.36	24.02
Rest of Northern Region	63.02	73.11	77.98	70.72	32.72	49.40	70.87	69.62	53.75	34.57
South Yorkshire	57.78	70.40	76.88	71.14	30.13	35.24	57.18	67.23	55.59	26.42
West Yorkshire	63.71	79.16	83.75	78.60	41.78	35.45	50.89	62.52	57.66	30.07
Rest of Yorks.& Humberside	66.39	75.95	81.15	77.31	41.33	40.92	66.64	73.88	73.23	48.62
East Midlands	63.75	77.28	82.21	79.48	42.95	47.85	67.48	73.63	70.67	34.01
East Anglia	68.34	78.44	83.11	80.01	47.02	62.00	73.50	71.52	72.45	41.84
Greater London	**59.28**	**75.08**	**77.17**	**75.75**	**46.44**	**42.73**	**60.61**	**66.02**	**63.92**	**41.20**
Greater London sample	*28,709*	*35,321*	*24,768*	*19,903*	*16,384*	*6,502*	*13,028*	*12,360*	*8,818*	*6,915*
Rest of South East	67.10	78.54	82.96	80.24	48.69	55.90	72.86	74.32	71.89	44.86
South West	65.89	77.16	82.61	78.71	44.63	56.67	74.85	77.93	75.15	49.50
West Midlands (met. counties)	56.79	72.47	77.97	73.96	41.18	34.03	52.30	60.13	55.15	30.13
Rest of West Midlands	67.66	78.63	82.90	78.58	43.52	49.60	65.83	81.60	76.25	38.07
Greater Manchester	59.48	74.72	79.78	72.98	37.60	36.55	53.89	58.59	51.94	30.91
Merseyside	50.94	67.12	70.78	64.02	32.73	40.33	70.21	68.11	69.42	45.83
Rest of North West	65.10	77.80	83.34	77.22	39.75	45.65	55.06	64.61	62.01	32.49
Wales	**58.63**	**72.29**	**76.06**	**70.45**	**31.59**	**45.06**	**62.67**	**71.68**	**67.74**	**33.4**
Wales sample size	*14,944*	*16,224*	*15,952*	*15,145*	*12,127*	*383*	*613*	*551*	*363*	*399*
Scotland	63.76	75.12	78.33	72.35	38.36	51.29	62.01	69.37	70.09	37.42
Great Britain	63.06	75.89	80.33	76.12	41.73	46.21	63.18	68.41	65.50	39.34
Great Britain sample	*281,789*	*334,371*	*299,179*	*271,490*	*218,830*	*17,821*	*31,631*	*31,849*	*22,289*	*18,955*

Entries are the employment rate of immigrants and natives in each age group and in each region and in GB in 1992-1995 pooled. For Greater London, Wales, and Greate Britain we also report the sample size.
Employment rate is defined as the ratio of employed to working age population
Source: LFS, 1992-1995

Table 2.2.4.b – Employment rate of immigrants and natives by age group 2002-2005

Region	Natives					Immigrants				
	16-25	26-35	36-45	46-55	56-65	16-25	26-35	36-45	46-55	56-65
Tyne & Wear	61.09	77.56	78.87	74.59	36.84	46.15	63.39	58.94	66.80	28.21
Rest of Northern Region	61.45	76.24	81.24	75.57	40.40	54.75	76.26	69.06	70.94	26.17
South Yorkshire	61.77	78.57	81.63	76.29	45.22	35.40	58.73	57.29	52.59	32.09
West Yorkshire	62.31	82.77	85.04	81.07	51.63	43.56	58.09	63.40	59.06	39.28
Rest of Yorks.& Humberside	65.64	80.74	84.49	81.54	49.58	52.65	73.46	85.31	75.27	42.27
East Midlands	65.28	81.89	85.39	81.53	52.33	51.61	66.42	72.99	75.42	40.91
East Anglia	67.53	82.11	85.58	82.44	55.04	63.08	75.25	83.83	84.32	65.16
Greater London	**54.16**	**82.27**	**80.45**	**80.18**	**55.04**	**45.29**	**68.90**	**67.24**	**66.94**	**44.26**
Greater London sample	*18,541*	*21,213*	*21,284*	*15,335*	*12,472*	*7,073*	*14,013*	*12,276*	*8,973*	*6,073*
Rest of South East	68.60	83.75	85.20	84.64	56.69	57.19	76.17	79.93	78.65	53.98
South West	69.46	83.45	85.85	83.99	53.18	58.14	80.45	78.59	79.38	54.49
West Midlands (met. counties)	57.39	77.31	81.62	79.55	49.36	37.04	55.23	63.00	60.31	34.98
Rest of West Midlands	67.73	83.18	85.62	81.52	52.83	61.74	77.12	81.54	82.97	44.01
Greater Manchester	61.97	81.06	82.51	79.06	46.72	38.32	61.02	57.83	64.26	34.14
Merseyside	57.60	76.65	75.49	75.26	39.83	39.06	66.74	82.80	69.04	41.41
Rest of North West	65.70	83.17	85.20	79.94	48.45	52.02	70.13	74.05	57.05	29.48
Wales	**60.55**	**78.84**	**81.88**	**76.03**	**43.12**	**52.28**	**73.88**	**76.11**	**70.77**	**45.57**
Wales sample size	*10,786*	*11,251*	*13,606*	*12,422*	*12,291*	*448*	*717*	*648*	*469*	*372*
Scotland	65.21	80.4	82.44	78.33	47.21	53.03	70.64	73.30	79.51	48.41
Great Britain	63.80	81.59	83.51	80.76	50.73	48.82	69.70	71.07	70.45	45.34
Great Britain sample size	*197,249*	*215,066*	*263,755*	*231,389*	*207,891*	*18,063*	*33,733*	*30,953*	*24,193*	*16,120*

Entries are the employment rate of immigrants and natives in each age group and in each region and in GB in 2002-2005 pooled. For Greater London, Wales, and Greate Britain we also report the sample size.
Employment rate is defined as the ratio of employed to working age population
Source: LFS, 2002-2005

Table 2.2.5 shows the share of immigrants in the whole working age population of each region in 1992/1995 and in 2002/2005, and the difference between the two periods.

The immigrant share has increased in almost all regions over the ten year interval. The region with the highest immigrant concentration, and with the largest increase in the share, is London. West Midlands, West Yorkshire, and the South East also have a very high share of immigrants, and the latter two regions have experienced a sizeable increase in their share during the period considered.

Table 2.2.5 – Percentage of immigrants in the total population

Region	1992-1995		2002-2005		Difference between periods
	% immigrants	*Sample size*	% immigrants	*Sample size*	
Tyne & Wear	2.51	*31,427*	4.55	*25,009*	2.04
Rest of Northern Region	2.15	*57,549*	2.83	*45,304*	0.68
South Yorkshire	3.83	*36,804*	5.20	*30,044*	1.37
West Yorkshire	7.75	*57,545*	10.09	*49,599*	2.34
Rest of Yorks.& Humberside	2.96	*44,843*	4.32	*36,885*	1.36
East Midlands	5.80	*112,375*	7.06	*90,081*	1.26
East Anglia	6.23	*58,786*	7.71	*47,783*	1.48
Greater London	**27.93**	*172,708*	**35.85**	*137,253*	**7.92**
Rest of South East	7.53	*294,757*	9.57	*252,549*	2.04
South West	4.61	*126,782*	6.19	*108,795*	1.58
West Midlands (metropolitan counties)	12.16	*68,398*	13.54	*53,032*	1.38
Rest of West Midlands	3.99	*74,348*	4.04	*60,467*	0.05
Greater Manchester	7.94	*67,374*	7.88	*46,112*	-0.06
Merseyside	2.98	*37,013*	3.29	*27,409*	0.31
Rest of North West	4.38	*66,182*	4.87	*48,679*	0.49
Wales	**3.05**	*76,701*	**4.19**	*63,010*	**1.14**
Scotland	3.35	*144,612*	4.38	*116,401*	1.03
Great Britain	8.39	*1,528,204*	10.76	*1,238,412*	2.37

Entries are the percentage of immigrants in the total working age (16-65) population in each region and in GB in 1992-1995 pooled and 2002-2005 pooled, and the difference between the shares.
We also report the sample size for each year and region.
Source: LFS, various years

Figure 2.2.1 relates changes in regional average wages (on the vertical axis) to changes in the regional share of immigrants (on the horizontal axis) between 1992/1995 and 2002/2005. The figure shows a positive relationship between the two changes, which suggests that immigrants tend to go to regions where wages are rising faster.[14]

In figure 2.2.2 we have plotted changes in the regional employment rate (on the vertical axis) versus changes in the regional share of immigrants (on the vertical axis). In this case no strong relationship between the two changes is apparent from the figure.

[14] Without the outlier representing London, the relationship is still positive but not statistically significant, largely due to the small number of observations.

Figure 2.2.1 Average wages, population (natives and immigrants)

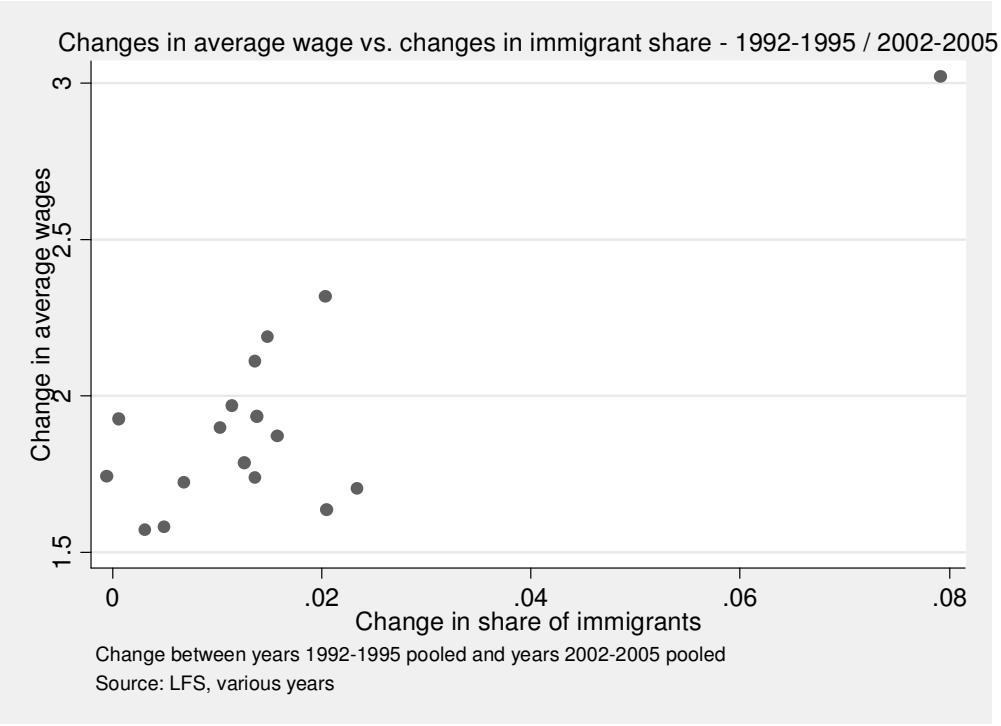
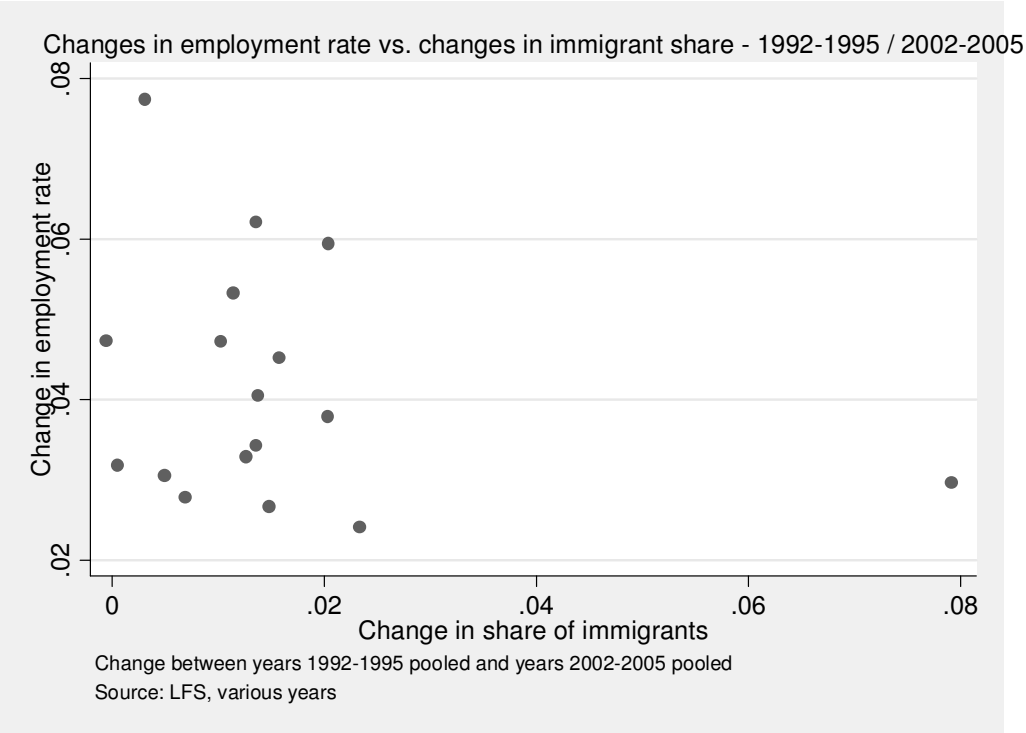


Figure 2.2.2 Employment rate, population (natives and immigrants)



2.3 Characteristics of EU and other migrants into Wales and the UK

Analysis in this section will be based on data from the LFS. We will distinguish between EU immigrants (making a distinction between the EU as it was in 2003 and the new accession countries), and immigrants from other parts of the world. The level of detail is heavily dependent on what the data allows us to do: in order to keep the sample size sufficiently large we will break down non-European immigrants in three further groups: Old Commonwealth, Indian Sub-Continent, and Other countries. Characteristics we will consider are individual characteristics (age, education, etc), and labour market outcomes (wages, employment, self-employment etc). Our analysis will compare Wales with other parts of the UK. Further, we will differentiate between recent immigrants (those who arrived in 2000 or later) and immigrants who have been here for longer.

Table 2.3.1 reports the composition of working age immigrants by area of origin in Wales, London and Great Britain.

Table 2.3.1 – Immigrants by origin, years 2002-2005 pooled

	Wales	Greater London	GB
European Union (2003)	31.80	16.46	20.86
EU New Accession	4.04	9.27	7.71
Old Commonwealth	10.20	7.23	8.57
Indian Sub-Continent	16.25	16.66	19.55
Other	37.7	50.37	43.30
Sample size	2,654	48,408	123,062

Entries are the share of individuals from each area of origin on the total working age (16-65) immigrant population in each region.
The last row reports the sample size.
Countries of origin are grouped as follows:
European Union (2003): Belgium, Denmark, France, Germany, Greece, Irish Republic, Italy, Luxembourg, Netherlands, Portugal, Spain, Andorra, Austria, Gibraltar, Finland, Sweden.
EU New Accession: Cyprus, Malta and Gozo, Former Yugoslavia, Bulgaria, Former Czechoslovakia, Hungary, Poland, Romania, Former USSR.
Old Commonwealth: Canada, South Africa, Australia, New Zealand
Indian Sub-Continent: Bangladesh, India, Pakistan
Years 2002-2005 pooled
Source: LFS, 2002-2005

Western European migrants (EU 2003) are about one third of the total foreign population in Wales. This proportion is much higher than the corresponding for London, 16.5%, and Britain, 20.9%. On the other hand, while more than 9% of immigrants in London, and almost 8% of immigrants in Britain are from an EU new accession country, this share is only 4% in Wales. 10.2% of immigrants in Wales are from the Old Commonwealth countries: this share is larger than in London (7.2%) and Britain (8.6%). The proportion of immigrants from the Indian Sub-Continent is very similar in the three regions.

Table 2.3.2 looks at the area of origin of recent immigrants only (those who have arrived in the UK since 2000) in Wales, London, and Britain.

Table 2.3.2 –Recent Immigrants by origin, years 2002-2005 pooled

	Wales	Greater London	GB
European Union (2003)	25.22	15.70	15.23
EU New Accession	5.42	14.35	12.57
Old Commonwealth	8.73	14.29	12.48
Indian Sub-Continent	12.61	12.15	13.85
Other	48.02	43.51	45.88
Sample size	644	10,498	27,551

Entries are the share of recent arrivals on total working age (16-65) population from each area of origin in each region.
Recent immigrants are defined as all immigrants arrived in 2000 or later.
The last row reports the sample size.
Countries of origin are grouped as follows:
European Union (2003): Belgium, Denmark, France, Germany, Greece, Irish Republic, Italy, Luxembourg, Netherlands, Portugal, Spain, Andorra, Austria, Gibraltar, Finland, Sweden.
EU New Accession: Cyprus, Malta and Gozo, Former Yugoslavia, Bulgaria, Former Czechoslovakia, Hungary, Poland, Romania, Former USSR.
Old Commonwealth: Canada, South Africa, Australia, New Zealand
Indian Sub-Continent: Bangladesh, India, Pakistan
Years 2002-2005 pooled
Source: LFS, 2002-2005

In each region, the composition of the recent immigrant population is very similar to that of the whole immigrant population, although everywhere the share of EU new accession countries is larger, and the share EU Western countries is smaller. The only notable difference in the comparative analysis of table 2.3.1 and 2.3.2 is that the share of recent Old

Commonwealth immigrants in Wales is smaller than in the other regions, and is also smaller than the share of Old Commonwealth immigrants

In table 2.3.3 we display the education of immigrants from each area of origin in Wales, London, and Britain. Immigrants from the Europe and from the Old Commonwealth tend to be more educated in London and in Britain than in Wales: 29% of Western Europeans, 21% of immigrants from EU new accession countries, and 28% of Old Commonwealth immigrants in Wales have a high education, while the figures are respectively 32%, 34%, and 43% in Britain. On the other hand, immigrants from the Indian Sub-Continent tend to be more educated in Wales, where 42% of them have a high education, than in London (30%), or in Britain.

Table 2.3.3 – Education of immigrants by origin, years 2002-2005 pooled

	Education	*EU 2003*	*New accession*	*Old Commonwealth*	*Indian Sub-Continent*	*Other*	*Sample size*
Wales	*High*	29.00	21.17	28.29	42.31	36.82	*770*
	Intermediate	35.35	38.47	40.35	17.15	31.43	*715*
	Low	35.65	40.36	31.36	40.54	31.76	*810*
Greater London	*High*	40.67	35.77	56.61	30.82	36.73	*15,794*
	Intermediate	32.13	40.78	36.54	30.51	39.23	*15,828*
	Low	27.19	23.46	6.85	38.67	24.05	*11,440*
GB	*High*	32.11	34.08	43.16	27.56	37.07	*36,691*
	Intermediate	31.76	40.97	40.27	28.00	37.72	*38,277*
	Low	36.13	24.95	16.57	44.44	25.21	*34,525*

Entries are the share of individuals with a level of education on the total of working age (16-65) individuals from the same area of origin in each region.
The last column reports the sample size.
Education is defined in terms of age at which individuals left full time education:
High education: left full time education at age 21 or later
Intermediate education: left full time education between age 17 and 20 (included)
Low education: left full time education not after age 16, or never had full time education
Countries of origin are grouped as follows:
European Union (2003): Belgium, Denmark, France, Germany, Greece, Irish Republic, Italy, Luxembourg, Netherlands, Portugal, Spain, Andorra, Austria, Gibraltar, Finland, Sweden.
EU New Accession: Cyprus, Malta and Gozo, Former Yugoslavia, Bulgaria, Former Czechoslovakia, Hungary, Poland, Romania, Former USSR.
Old Commonwealth: Canada, South Africa, Australia, New Zealand
Indian Sub-Continent: Bangladesh, India, Pakistan
Years 2002-2005 pooled
Source: LFS, 2002-2005

Table 2.3.4 reports the employment rate of working age immigrants by area of origin in Wales, London, and Britain. The employment rate of Western Europeans (EU 2003) is quite constant at around 70% in the three regions. The employment rate of immigrants from new accession countries, on the other hand, is very high in Wales, at almost 85%, but much lower in London and Britain, at 58% and 64% respectively. Immigrants from the Old Commonwealth countries have very high employment rates, above 80% in all the regions considered, while immigrants from the Indian Sub-Continent have a very low employment rate at around 52-53% in all regions.

Table 2.3.4 – Employment rate of immigrants by origin, years 2002-2005 pooled

	Wales	Greater London	GB
EU 2003	68.85	69.7	70.07
New accession	84.56	58.13	64.23
Old Commonwealth	81.79	87.86	82.91
Indian Sub-Continent	53.30	52.07	52.34
Other	62.95	58.78	62.14
Sample size	*2,654*	*48,408*	*123,062*

Entries are the share of employed on the total working age (16-65) population from each country of origin in each region.
The last row reports the sample size.
Countries of origin are grouped as follows:
European Union (2003): Belgium, Denmark, France, Germany, Greece, Irish Republic, Italy, Luxembourg, Netherlands, Portugal, Spain, Andorra, Austria, Gibraltar, Finland, Sweden.
EU New Accession: Cyprus, Malta and Gozo, Former Yugoslavia, Bulgaria, Former Czechoslovakia, Hungary, Poland, Romania, Former USSR.
Old Commonwealth: Canada, South Africa, Australia, New Zealand
Indian Sub-Continent: Bangladesh, India, Pakistan
Years 2002-2005 pooled
Source: LFS, 2002-2005

We have reported in table 2.3.5 the share of self-employed individuals from each area of origin in Wales, London and Britain.

Wales tends to have the lowest share of self-employed, compared to London and Britain. The highest regional variation in self-employment rates is for immigrants from EU new accession countries: less than 8% of immigrants from new accession countries in Wales are self-employed, while almost 25% of those who are in London, and over 15% of those in Britain.

Self-employment rates for other communities are usually smaller: for Old Commonwealth immigrants it ranges between 5.7% in Wales and 7.7% in London, while for immigrants from the Indian Sub-Continent it is between 7.7% in Wales and 12.2% in Britain.

Table 2.3.5 – Self-employment of immigrants by origin, years 2002-2005 pooled

	Wales	Greater London	GB
EU 2003	9.75	9.29	8.73
New accession	7.92	24.83	15.40
Old Commonwealth	5.70	7.73	6.92
Indian Sub-Continent	7.75	9.63	12.25
Other	5.98	8.94	8.13
Sample size	*1,705*	*29,288*	*78,273*

Entries are the share of self employed on the total working age (16-65) population from each area of origin in each region.
Countries of origin are grouped as follows:
European Union (2003): Belgium, Denmark, France, Germany, Greece, Irish Republic, Italy, Luxembourg, Netherlands, Portugal, Spain, Andorra, Austria, Gibraltar, Finland, Sweden.
EU New Accession: Cyprus, Malta and Gozo, Former Yugoslavia, Bulgaria, Former Czechoslovakia, Hungary, Poland, Romania, Former USSR.
Old Commonwealth: Canada, South Africa, Australia, New Zealand
Indian Sub-Continent: Bangladesh, India, Pakistan
Years 2002-2005 pooled
Source: LFS, 2002-2005

2.4 Evidence of ethnic differences in economic outcomes

The analysis in this section is again based on the LFS. We will analyze economic outcomes of white and non-white immigrants, as well as further subgroups where possible. To obtain a sufficient data base for analysis we will pool over several years of the LFS.

In Table 2.4.1 we report, for Wales, London, and Britain, the employment rate and the average wage of white and non-white immigrants.

There are considerable differences in the economic outcomes of immigrants of different ethnicities. Non-white immigrants have much lower employment rates than white in all regions, about 56% vs. 71%. Moreover, non-white immigrants in London and in Britain tend also to have lower average wages than white immigrants. In Wales however, the average

wage of white and non-white immigrants is almost the same with a statistically insignificant difference of around 2%.

Table 2.4.1 – Employment and average wage of immigrants by ethnicity, years 2002-2005 pooled

	Wales				Greater London				GB			
	Employment		Average Wage		Employment rate		Average Wage		Employment rate		Average Wage	
	%	*Sample size*	Wage	*Sample size*	%	*Sample size*	Wage	*Sample size*	%	*Sample size*	Wage	*Sample size*
Non-white	56.98	*1,056*	10.59	*119*	55.90	*29,999*	10.54	*3,484*	56.75	*65,048*	9.98	*8,155*
White	71.61	*1,583*	10.36	*269*	70.21	*18,321*	14.78	*2,566*	71.94	*57,820*	12.53	*10,014*

Entries are the employment rate and average wage of white and non-white working age (16-65) immigrants in each region, we also report the sample size for each group and variable
Years 2002-2005 pooled.
Source: LFS, 2002-2005

In table 2.4.2 we examine in more detail differences in economic outcomes by ethnicity in Wales, London, and Britain.

Table 2.4.2 – Employment and average wage of immigrants by ethnicity, years 2002-2005 pooled

	Wales				Greater London				GB			
	Employment		Average Wage		Employment		Average Wage		Employment		Average Wage	
	%	*Sample size*	Wage	*Sample size*	%	*Sample size*	Wage	*Sample size*	%	*Sample size*	Wage	*Sample size*
White	71.61	*1,583*	10.36	*269*	70.21	*18,321*	14.78	*2,566*	71.94	*57,820*	12.53	*10,014*
Black – Caribbean	47.94	*19*	7.05	*3*	64.92	*2,553*	10.28	*353*	64.73	*4,479*	9.59	*653*
Black – African	38.42	*104*	13.63	*9*	53.08	*6,195*	9.32	*673*	55.71	*9,381*	9.07	*1,230*
Indian	65.26	*194*	11.69	*26*	68.94	*6,244*	11.74	*968*	68.46	*14,853*	11.10	*2,255*
Pakistani	53.21	*106*	12.19	*8*	44.98	*1,915*	9.78	*147*	42.28	*9,046*	8.73	*667*
Bangladeshi	47.22	*125*	5.03	*9*	36.81	*2,492*	8.72	*141*	38.21	*4,090*	7.90	*258*
Chinese	59.80	*134*	13.52	*13*	55.43	*1,303*	12.12	*148*	56.02	*4,012*	10.97	*487*
Other – Mixed	61.64	*374*	10.10	*51*	54.08	*9,297*	10.56	*1,054*	57.18	*19,187*	9.97	*2,605*

Entries are the employment rate and average wage of white and non-white working age (16-65) immigrants in each region, we also report the sample size for each group and variable.
Years 2002-2005 pooled.
Source: LFS, 2002-2005

Among non-white immigrants, Indians are those with highest employment rate in Wales, London, and Britain. Black Africans are the group with the lowest employment rate in Wales, while Bangladeshis have the lowest employment rates in London and Britain.

In all regions Bangladeshis have the lowest average wages, while the group with highest wages is different in every region. In Wales Black Africans, Chinese, Pakistanis, and Indians have higher wages than white immigrants. In London and Britain white immigrants have higher wages than non-whites, and the Chinese and Indians have the highest wages among the non-whites.

Part 3: Discussion and Conclusion

To assess the overall net gain or loss to the economy from immigration is a challenging task both from a theoretical and an empirical point of view. In part 1 of this report we provide a comprehensive overview of the economic literature on the socio-economic impact of migration and assess the evidence base in the context of significant migration from the new EU states. In part 2, we summarise characteristics of immigrants in the UK with a particular comparative focus on Wales.

Our literature review discusses a large variety of channels by which immigration can affect the receiving economy. The most important ones are through (i) wages or employment effects on native workers, (ii) changes in output structure, technology and competitiveness (iii) fiscal effects, through benefit claims and contributions to the tax or welfare system, (iv) effects on house prices, (v) effects through the creation of new jobs and opportunities, by self-employment or managerial activities of immigrants, and (vi) complementarities and additions to the skill base.

Most papers concentrate on the analysis of one single channel. As our survey suggests, this is already a difficult task which involves a number of challenging empirical issues. To bring all these different channels together to assess the overall impact of migration is obviously even more difficult, and a large research project in its own right. In this context and with a view to future research, we would here like to discuss a number of aspects that seem relevant to us.

Most importantly, there is an intertemporal aspect to all the issues related to the labour market impact of immigration. Much of the work so far is done in a static framework, with little consideration of the intertemporal and intergenerational implications. For instance, to date

most of the literature on employment- and wage effects is non-dynamic, which is mostly due to lack of good data. Also, studies that consider the fiscal effects of immigration usually neglect intergenerational issues, as well as changes of the relative position of immigrants in the earnings distribution over the life cycle.

To arrive at an overall assessment one furthermore needs to specify exactly which aspects of immigration should and should not be considered. For instance, one aspect which is not included in our list is the education and skill that is embedded in newly arriving immigrants and that has been financed in part by the country of origin. This is often not counted as a benefit, but likely to be substantial in magnitude. Also, spending patterns of immigrants and their effect on aggregate demand (as discussed in the section on remittances) are often neglected. On the other hand, possible adverse long-term consequences are difficult to assess and to measure.

It seems important to stress again that the effects immigration has for the receiving country in all the dimensions listed above depends on the particular migration that is under consideration, as well as on the particularities of the receiving economy. The empirical evidence that we present in our literature survey clearly shows that results obtained from one country through careful research can and should not be generalised to other countries. For instance, we have shown above that the effects immigration has on wages and inequality depends on the type of immigrants. Australia, which runs a high-skill migration policy, is likely to face different consequences than the U.S., where migration is much more low-skilled. Also, even if immigration was the same in terms of the skill structure for the two countries, consequences are likely to differ, because the skill mix of the receiving country is different. Similar considerations hold for any other aspects of what immigration may do to the receiving country.

Finally, it is not always clear-cut what is beneficial and what is detrimental. For instance, in the UK, the governor of the Bank of England suggested in a number of speeches and comments that he views immigration as having an anti-inflationary impact on the UK economy. These can only work through wages, which implies that immigration depresses wages in the first place – which on the other hand is seen as detrimental by employees. (As we discuss above there is no evidence that immigration decreases average wages in the UK, though). Also, immigration may lead to an increase in housing prices – which clearly enhances wealth of natives who own property, but may be seen as negative by those who have not yet made the first step on the property ladder.

In our view, evaluations of the possible net effect of migration need to be assessed with much care, and generalisations should be avoided.

In part 2 of this report we offer an overview of the characteristics of the immigrant population in the UK and, particularly, in Wales. Although the share of immigrants in the working age population in Wales is relatively low compared to the rest of the UK, it has increased substantially between 1992 and 2005 from 2.9% to 4.6%. Within Wales immigrants are overall similarly distributed across counties as natives with the exception of Mid and South Glamorgan where they are significantly under- and over-represented, respectively. Interestingly, and opposed to many other countries, immigrants in Wales are more educated than natives but experience lower employment and participation rates. In comparison to other areas in the UK, Wales has a large share of immigrants originating from Western Europe but received relatively few immigrants from the new EU accession countries since 2004. The ones who did settle in Wales, however, fared substantially better than their counterparts in other parts of the UK with an employment rate of 84.5% compared to only 58% in London

and 64.2% nationwide. As in the rest of the UK, non-white immigrants have considerable lower employment rates than white immigrants in Wales but, as opposed to the rest of the UK, average wages of these two groups are almost the same.

Immigration policy plays an important role in obtaining migrant populations that are enhancing the welfare of the receiving population the most. It is indeed perceived as a key issue in most OECD countries, and common trends can be identified in the main immigration-receiving countries. The annual OECD publication International Migration Outlook, previously called Trends in International Migration (OECD, various years), offers a review of the different migratory policies in place in different countries, and of its most recent developments.

According to this, an increasing number of countries have in recent years moved towards selective migration policies, in an effort to attract highly skilled immigrants. Such policies have been in place for many years in Australia and Canada, and are now being adopted in different forms by several European OECD countries, such as Ireland, the Netherlands, and the Czech Republic (OECD, 2006). The United Kingdom is also moving from the existing two-tier work permit system to a five-tier system in which great importance is given to high skilled migration.

Another key migration policy area is directed to manage the need for temporary low-skilled immigration. Low-skilled immigration is thought to serve the purpose of filling temporary, often seasonal, labour shortages. Programs designed to facilitate the entry of temporary agricultural worker have recently been introduced in countries such as Finland, Greece, and Hungary.

Finally, a growing number of countries are now directing their attention towards the regional distribution of immigrants (OECD, 2004), with a bigger role being given to local authority in managing migration flows in accordance to local labour market needs. A regional management of immigration is believed to facilitate immigrants' integration in the host country, avoiding segregation and isolation.

It remains to be seen how the recent changes in the UK immigration policy with a focus on more high-skilled immigration will affect the Welsh labour market. Overall, immigrants in Wales are doing quite well, both compared to other immigrants in the UK and relative to the native population in Wales. With a relatively low immigrant share, part of the explanation could be that those immigrants who decide to settle in Wales are positively selected. Whether this would continue if immigration to Wales was to increase depends on the job opportunities in Wales and the ability to attract the most productive immigrants to the region.

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