

3 – How might lower EU migration affect the UK economy after Brexit?¹

Key points

- EU migrants have played an increasing role in the UK economy since enlargement of the EU in 2004, with particularly large impacts on London and certain sectors such as food manufacturing, hotels and restaurants, warehousing and construction.
- Highly skilled EU migrants also play a key role in sectors like finance, business services, technology, healthcare, academia and the arts.
- As an illustration, we have considered the economic impact of a recent ONS population scenario in which future EU migration is reduced by 50%. Our modelling work suggests that reduced migration of this scale could decrease the level of UK GDP in 2030 by around 1.1%, or around £22 billion at 2017 GDP values.
- However, a better measure might be the impact on average GDP per capita in 2030, which we estimate to be reduced by around 0.2%, or around £60 per person at 2017 GDP values, in this scenario.
- In the long run, efforts could be made to fill skill gaps from reduced EU migration through enhanced training of UK nationals and automation. But, realistically, such alternatives are unlikely to make up fully for any large reduction in EU migrant workers over the next 5-10 years.
- Government policy decisions on the post-Brexit EU migration regime need to take full account of these considerations.

Introduction

Net migration from the UK to the EU has risen rapidly since enlargement of the EU in 2004 and now forms an important part of the labour force in many industry sectors in the UK. While non-EU migrants have faced tighter controls in recent years, there have been no such restrictions on EU migration. As a result, migration from the EU became an increasing proportion of total net inflows to the UK in the run-up to the EU referendum in June 2016, though it has fallen back somewhat since the Brexit vote.

At present, it remains unclear exactly how Brexit will affect future migration from the EU to the UK, but the general assumption is that the government will impose some degree of tighter controls on this, at least after some transitional period. Even before any such changes in the legal regime, however, net migration from the EU has fallen since the Brexit vote in June 2016 as Figure 3.1 shows, so the referendum result already seems to be having an effect, although other factors (e.g. stronger growth in some other EU economies) could also be playing a part here.

In this article, we contribute to the debate on this topic by reviewing past trends in UK migration and existing studies on the economic impacts this has had on the UK economy. We then go on to present updates of earlier PwC Computer General Equilibrium (CGE) model projections of how alternative future migration regimes could affect the UK economy (as measured by both GDP and GDP per capita) after Brexit.

The discussion is organised as follows:

- Section 3.1 reviews past trends in UK migration (from the EU and elsewhere)
- Section 3.2 reviews previous studies on the economic impact of migration
- Section 3.3 presents our own updated model estimates of the economic impact of alternative post-Brexit migration scenarios to 2030
- Section 3.4 summarises and draws conclusions from the analysis.

Further details of the modelling methodology and assumptions are contained in a technical annex at the end of the article.

¹ It is worth noting here that the extra £10 billion announced for the ‘Help to Buy’ scheme at the Conservative Party conference is counted as a ‘below the line’ financial transaction in the national accounts, and so does not add to annual public sector net borrowing, although it does add to the stock of government debt until the associated loans are repaid. However, if the government allows local authorities to build more social housing, this will add directly to the annual budget deficit.

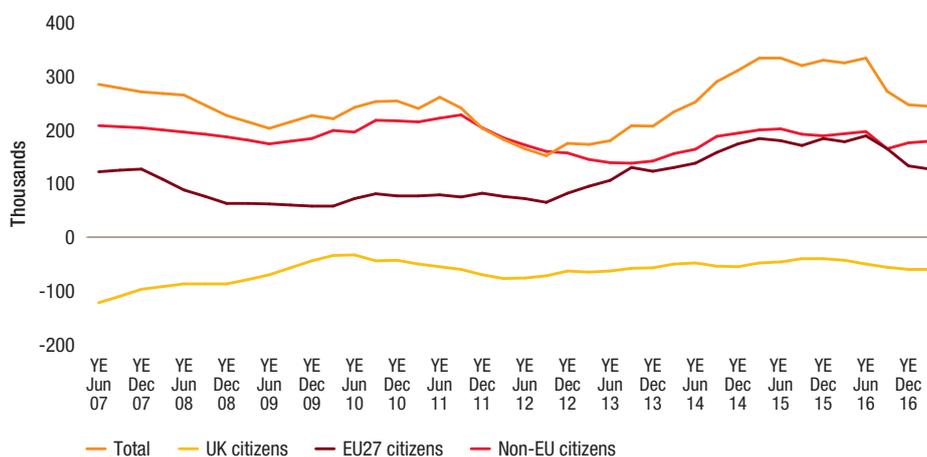
3.1 – Past trends in UK migration

Net migration to the UK was relatively low until 1997 but then started to pick up, accelerating after 2004 when Poland and other Central and Eastern European countries (EU8) with relatively low income levels joined the EU. At the time, the UK economy was doing well and this generated much larger net flows of EU workers to the UK in 2004-7.

As Figure 3.1 shows, there was a notable drop in net migration to the UK from 287,000 in the year to June 2007 to a recent low point of 160,000 in the year to September 2012 as the financial crisis hit both the pound and labour demand. But net migration then picked back up again to over 330,000 in 2015 as the economy and, in particular, the jobs market recovered faster in the UK than elsewhere in the EU. The accession of Romania and Bulgaria (EU2) to the EU also drove a further rise in net migration in 2015-16.

The rise in EU migration has offset more subdued net inflows from non-EU countries in recent years as immigration regimes have been tightened for non-EU migrants. Since mid-2016, however, net migration has fallen back to 246,000 in the year to March 2017, which the ONS assesses to be a statistically significant decline from a peak of 336,000 in the year to June 2016. This appears to be particularly focused on more EU8 migrants leaving the UK, only partly offset by a continuing flow of migrants to the UK from the EU2.

Figure 3.1 – Trends in long-term net international migration to the UK



Source: ONS

Various factors could explain this trend, including the weaker pound making the UK less attractive as a place to work, the post-referendum political environment seeming less positive and more uncertain as regards attitudes to EU migrants and a recovery in other EU economies while the UK has slowed somewhat. Given that, at the time of writing, we only have three quarters of a year of post-referendum data, it is not possible to distinguish between these factors with any precision, but it is plausible that all have had an influence to some degree.

Which UK sectors and regions are most reliant on European migrant workers?

Work is the most important reason for immigration to the UK, particularly for EU migrants, and has the most significant impact on the UK economy as a whole (although overseas students are also very important for British universities and English language schools).

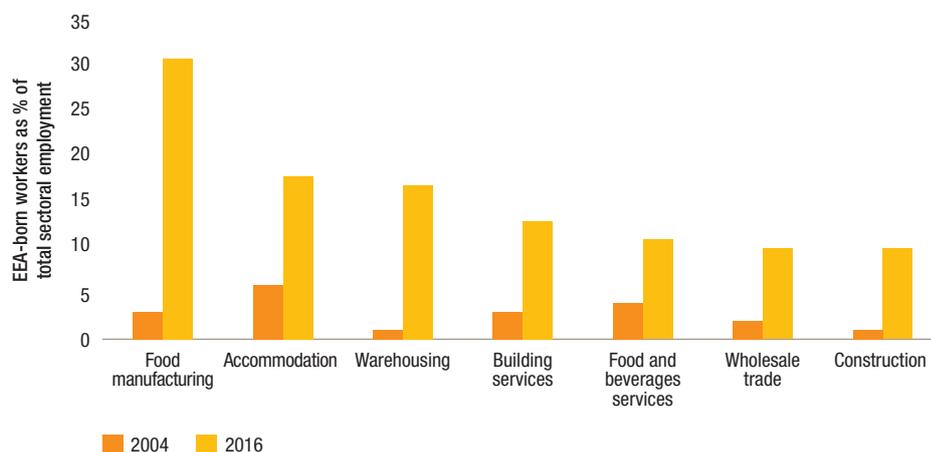
Workers born in other European Economic Area (EEA²) countries now account for around 7% of total UK employment, up from around 2% in 2004. However, as illustrated in Figure 3.2, some sectors have become heavily reliant on EEA workers since 2004. In food manufacturing, almost a third of the workforce in 2016 was EEA-born, while it is around 10-20% in a range of other sectors including accommodation (18%), warehousing (17%), food and beverage services (13%) and construction (10%).

There are also marked differences in the share of EEA-born workers at a regional level, as shown in Figure 3.3.

London has more than twice the proportion of EEA-born workers (14% vs the UK average of 7% in 2016) and this has doubled since 2004, but some other regions have seen even greater proportional increases. Wales is the part of the UK with the lowest reliance on EEA-born workers, though even there it has risen significantly since 2004.

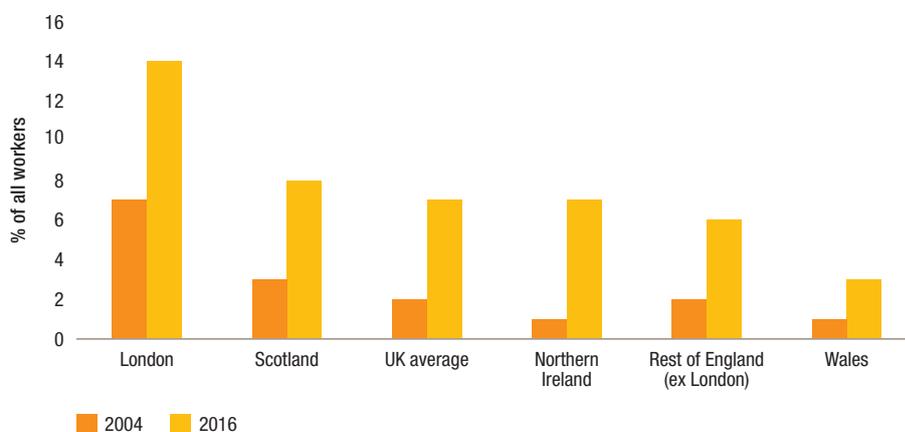
Further analysis of the figures reveals some sectoral concentrations within regions. In particular, in 2016 almost 30% of construction workers in London were EEA migrants and over 35% of accommodation and food services workers in London were from EEA migrants. So these industries in London could potentially be hard hit by any significant post-Brexit restrictions on inward migration from the EEA.

Figure 3.2 – UK industry sectors with highest reliance on EEA-born workers



Source: ONS Labour Force Surveys

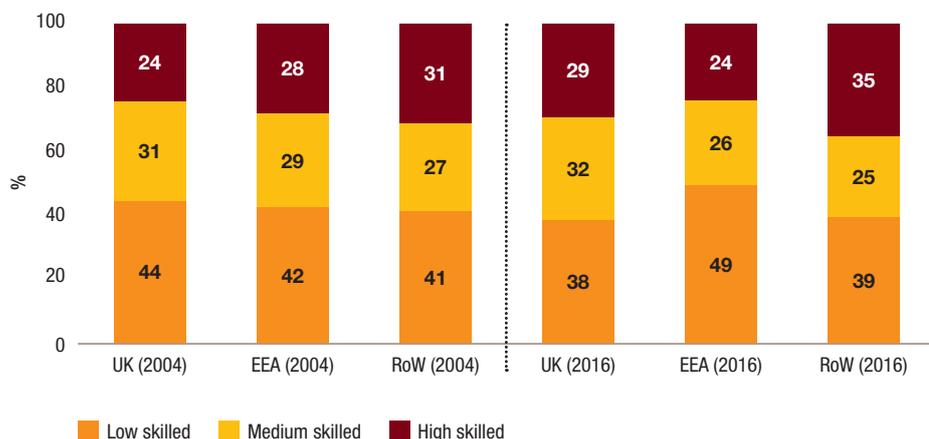
Figure 3.3 – Share of workers that are EEA-born by region (%)



Source: ONS Labour Force Surveys

2 As well as the EU, the EEA also includes Iceland, Liechtenstein and Norway.

Figure 3.4 – Relative skills mix of UK-born, EEA-born and Rest of World-born workers in UK (2004 and 2016)



Source: ONS Labour Force Surveys (low skilled = NQF 1-2; medium skilled = NQF 3-4; high skilled = NQF 5+)

As shown in Figure 3.4, EEA-born workers have a range of skill levels, as for UK-born workers and those born outside the EEA.

The skill mix was fairly similar across the UK, the EEA and the rest of the world in 2004, although somewhat more weighted to higher skilled migrants from outside the EEA. By 2016, however, the skill mix for EEA-born workers has shifted to becoming more focused on lower skilled workers (NQF1-2), which made up almost half of all EEA-born workers in that year, as compared to just under 40% for workers born in the UK or outside the EEA.

Nonetheless, around a quarter of EEA workers were in the high skilled category in 2016. This includes many critical workers in sectors such as financial and professional services, technology, academia, medicine and the arts. As discussed further below, any reductions in the numbers of such workers due to limitations on recruiting them after Brexit could have particularly negative implications for longer term UK productivity and international competitiveness in these sectors.

Other statistics on total UK migration of relevance to pressure on health and education systems are that:

- New GP registrations by migrants in England and Wales rose from 534,000 in 2005 to 731,000 in 2016, although the latter was still just 1.3% of the total resident population in that year. Since many migrants are relatively young, however, particularly those from other EU countries, this may not necessarily translate into significantly greater pressure on GP services. In addition, of course, the NHS relies heavily now on doctors and nurses from other EU and non-EU countries.
- The proportion of total UK live births to mothers born outside the UK rose from around 20% in 2005 to around 27% in 2016. This would initially have implications for demand for NHS services and later for education demand if the children remain in the UK.

3.2 – Previous assessments of the economic impact of migration

There have been a number of previous studies of the economic impact of migration to the UK, as summarised, for example, in a Migration Advisory Committee (MAC) briefing note published in August 2017³ to accompanying a call for evidence on post-Brexit migration policy.

A study by Nickell and Saleheen⁴ published by the Bank of England in December 2015 found that there were negative but relatively small effects of increased migration on the average wages of native UK workers, particularly at the lower skilled end of the labour market. But the effects for the wages of higher skilled native workers could be positive, reflecting the fact that their skills were more likely to be complementary to, rather than substitutable by, migrant workers.

An earlier 2014 MAC study⁵ focused on lower skilled workers found similar results in terms of wages. It also considered whether increased migration of lower skilled workers would allow prices to be kept lower, so benefiting UK consumers, but found the net impact on average prices to be ‘minute’ after allowing also for the fact that migrant workers would also add to the demand for consumer goods in the UK, so pushing up prices to some degree.

There have also been a number of studies on the impact of migration on the UK public finances as surveyed by Vargas-Silva (2017)⁶. The general conclusion is that the overall fiscal impact of migration has been small, but tends to be more positive for EEA migrants than non-EEA migrants⁷. This reflects the fact that EEA migrants tend to be working and so paying taxes, while also being relatively young and so putting less pressure on the NHS and other public services. However, this could change in the long run if migrants make their home in the UK, start families and eventually grow old. In the shorter term, however, the net fiscal impact of restricting EEA migration seems likely to be negative according to these studies, and this is also the conclusion from previous OBR projections using different migration assumptions.

There are also studies that suggest some types of higher skilled migration can boost long-term productivity growth through increased entrepreneurial activity, innovation and trade. As discussed in Portes and Forte (2017)⁸, this could translate into significant long-term losses in GDP if there were significant restrictions on higher skilled EEA migration to the UK after Brexit.

So far, most of the policy discussion has focused more on potential restrictions to lower skilled migration, where the productivity implications may be less significant. But there could still be significant negative implications for those sectors (see Figure 3.2 above) that make extensive use of lower skilled EEA migrants such as food manufacturing, hotels and restaurants, warehouses and construction companies.

These negative effects would be particularly severe in the hospitality, healthcare and construction sectors in London, as confirmed by PwC discussions with businesses in the capital. In construction, for example, around 30% of London workers are (non-UK) EEA nationals and 20% non-EEA nationals, while a fifth of UK-born workers are due to retire in the next five years and there are now around 60,000 vacancies in the industry in London. More broadly, in a recent study⁹ for London First, we estimated that London’s 1.8 million migrant workers contribute around £83 billion to the capital’s economy (c.22% of London’s annual Gross Value Added).

Future EU migration controls would also hit other UK regions where sectors like food manufacturing and seasonal agricultural work are focused.

In summary, the evidence from past studies suggests some potential negative economic impacts from restricting EU/EEA migration to the UK after Brexit. But different studies reach different conclusions as to the magnitude of these effects and they will vary by sector and region.

To explore this further, we present in the next section of this article our own latest model projections of the potential impacts on UK GDP and GDP per capita of alternative future EU migration scenarios.

3 Migration Advisory Committee, ‘EEA workers in the UK labour market’, August 2017: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/636286/2017_08_08_MAC_Briefing_paper.pdf

4 Nickell and Saleheen (2015): <http://www.bankofengland.co.uk/research/Documents/workingpapers/2015/swp574.pdf>

5 Migration Advisory Committee (2014):

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/333083/MAC-Migrants_in_low-skilled_work_Full_report_2014.pdf

6 Vargas-Silva (2017): <http://www.migrationobservatory.ox.ac.uk/resources/briefings/the-fiscal-impact-of-immigration-in-the-uk/>

7 However, these studies were mostly done before the International Health Surcharge was introduced for non-EEA migrants, which will have increased their net fiscal contribution.

8 Portes and Forte (2017): <http://voxeu.org/article/economic-impact-brexit-induced-reductions-migration-uk>

9 ‘Facing Facts: the impacts of migrants on London, its workforce and its economy’ (March 2017):

<http://londonfirst.co.uk/wp-content/uploads/2017/03/Facing-Facts-The-impact-of-migrants-on-London-its-workforce-and-economyFINAL.pdf>

3.3 – PwC model estimates of the economic impact of alternative post-Brexit migration scenarios

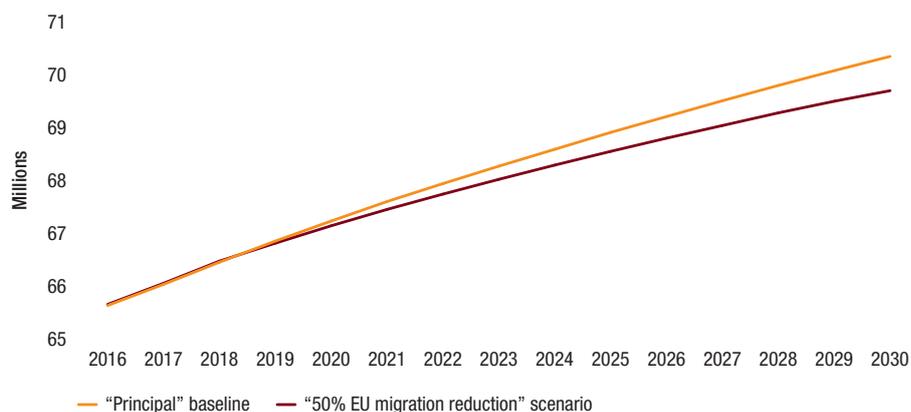
The ONS recently updated their UK population projections¹⁰ and provided a number of variants for different migration scenarios. We have used our Computable General Equilibrium (CGE) model¹¹ to assess the impact that two of these scenarios would have on the UK economy. This updates an analysis we conducted in March 2016 before the EU referendum¹².

For our baseline scenario, we use the ONS “principal projection”. This is their central case and, although it does not make any explicit assumptions on the change in migration expected due to the UK’s decision to leave the EU, it does assume that long term international net migration will be 20,000 per year lower than in the previous (2014-based) ONS principal projections (i.e. 165,000 per annum rather than 185,000 per annum from 2023 onwards).

Our second scenario is based on the ONS “50% future EU migration reduction” variant. As the name suggests, this projection assumes a 50% decrease in net EU migration from mid-2019 onwards, spread across sex and age categories (with equal percentage falls in both inflows and outflows). Non-EU migration is assumed to be as in the ONS principal projection. This scenario does not attempt to model future migration policy after Brexit in relation to, in particular, rebalancing the skills mix of EU and non-EU migrants.

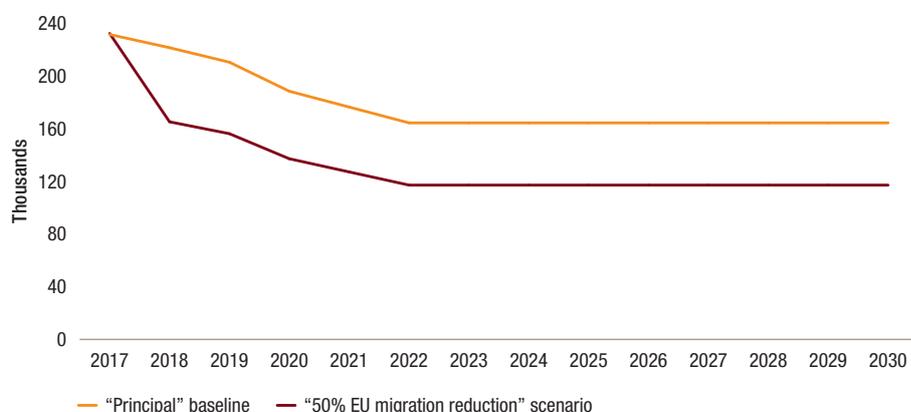
Estimated net long-term migration (EU and non-EU) falls to 117,000 per annum from 2023 in this alternative ONS scenario.

Figure 3.5 – UK population projections in the “Principal” baseline and “50% EU migration reduction” scenario



Source: ONS population projections (October 2017)

Figure 3.6 – Net migration projections in the “Principal” baseline and “50% EU migration reduction” scenario



Source: ONS population projections (October 2017)

10 For details of the latest ONS populations projections published on 26 October 2017 see: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/bulletins/nationalpopulationprojections/2016basedstatisticalbulletin>
 11 See technical annex for further details of our CGE model
 12 PwC, 2016. Leaving the EU: Implications for the UK economy

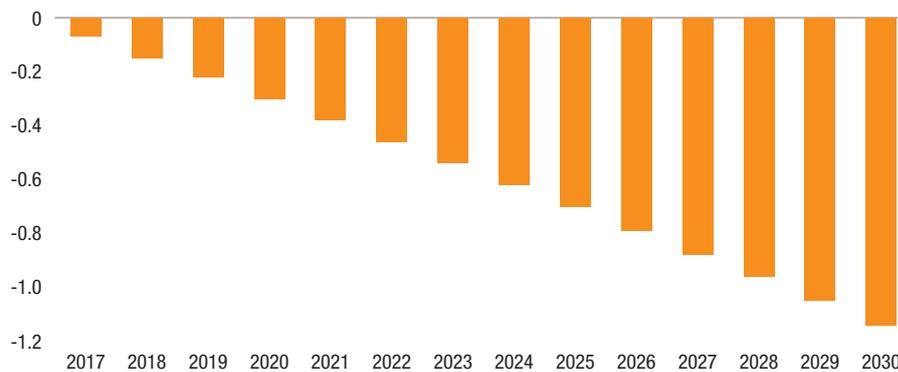
Although a 50% reduction might seem like a relatively extreme case for EU migration, it would still leave total migration slightly above the government's ultimate objective of getting this down to the 'tens of thousands'. So it is not unreasonable to consider this as an illustration of what a much tighter post-Brexit regime for EU migrants might imply in terms of total numbers (though it does not capture potential changes in the skills mix of migrants as we discuss further below in relation to the limitations of the analysis).

We present the overall UK population projections under each scenario in Figure 3.5. The difference between the scenarios is driven solely by migration, as factors such as the fertility and mortality rates are held constant between these two scenarios.

Figure 3.6 shows how net migration to the UK varies over time in these same two scenarios.

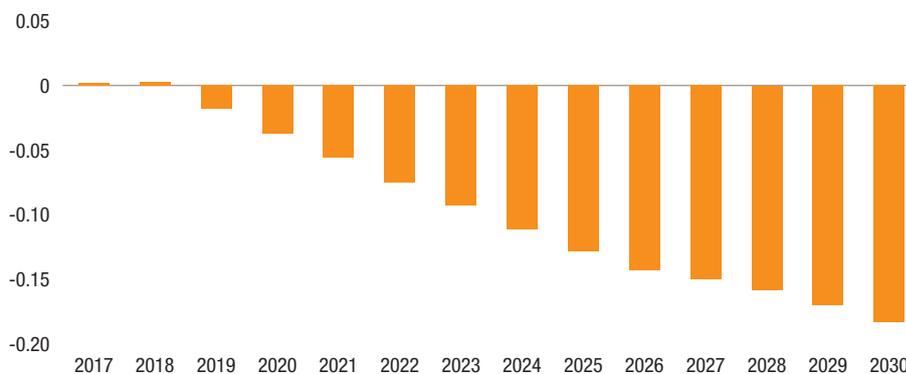
We then used our CGE model to forecast the impact of these alternative population scenarios on GDP, allowing also for the more detailed breakdowns by age group provided by the ONS. As shown in Figure 3.7, we estimate that GDP would be around 1.1% lower in the "50% EU migration reduction" scenario than the baseline scenario, equivalent to around £22 billion per year at estimated 2017 GDP values. In directional terms, this result is to be expected: an economy with more workers produces more output, so a reduction in population as a result of more tightly controlled immigration would be expected to reduce total GDP.

Figure 3.7 – % Difference in GDP between the "Principal" baseline and "50% EU migration reduction" scenario



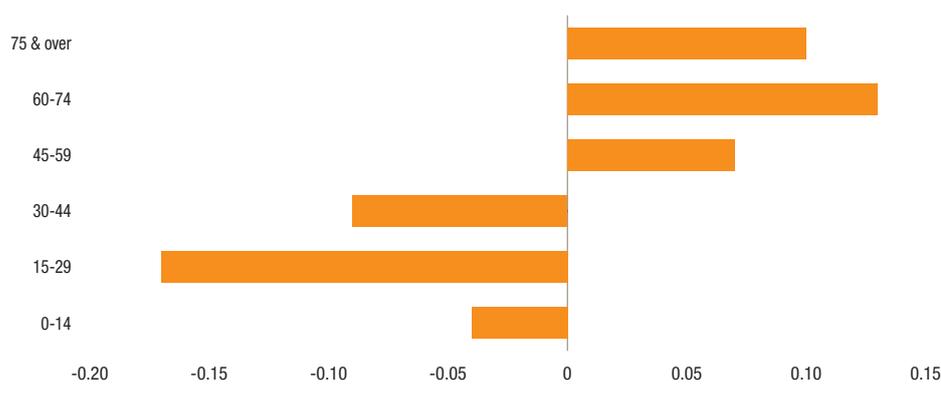
Source: PwC analysis based on ONS population projection variants

Figure 3.8 – % Difference in GDP per capita between the "Principal" baseline and "50% EU migration reduction" scenario



Source: PwC analysis based on ONS population projection variants

Figure 3.9 – Percentage point difference in 2030 in the proportion of the population in each age-group between the “Principal” baseline and “50% EU migration reduction” scenario



Source: PwC analysis based on ONS population projection variants

By contrast, the impact of lower migration on average output per person, as measured by GDP per capita, is less obvious. However, our analysis, as presented in Figure 3.8, suggests that a cut to EU migration would also reduce average GDP per capita, albeit by a much smaller proportion of around 0.2% by 2030, which is equivalent to around £60 per person at 2017 GDP per capita values.

This result is driven primarily by the fact that EU migrants tend mostly to be younger workers, rather than retired people. The change in the proportion of the population in each age-group in 2030 in the 50% EU migration reduction variant is shown in Figure 3.9.

We can see that the 15-44 age group, who will mostly be working, is relatively smaller as a share of the total population in the EU migration reduction variant, whereas the number of older people is relatively higher. This means that lower EU migration tends to reduce the ratio of workers to the total population, which also tends to reduce GDP per capita.

Limitations of the analysis

We should recognise that there are some limitations to this analysis. First, we are assuming here – in line with the ONS scenario considered - that the EU migrants who no longer come to the UK (or leave the UK if they are already here) will, on average, have the same skill levels as the workers that remain. As Figure 3.4 above shows, this may not be entirely representative of the current EU migrants in the UK, who on average tend to have slightly lower qualification levels than UK-born workers according to the ONS Labour Force Survey for 2016. Future migration policy after Brexit may well also be geared towards rebalancing overall migration towards higher skilled workers, although we don't yet know in any detail what post-Brexit migration policy will be and so have not tried to model it here.

Second, the model does not pick up the potential benefits of lower EU migration in terms of reduced pressure on transport systems, housing and key public services such as health and education. On the other hand, the model also does not pick up in sector-specific detail the significant negative effects that losing EU workers would have on many of these same sectors, whether they be doctors and nurses in the NHS, teachers in schools, or construction workers helping to build new houses, railways and roads.

3.4 – Summary and conclusions

Our analysis has shown that EU migrants have played an increasing role in the UK economy since 2004, with particularly large impacts on London and certain sectors such as food manufacturing, hotels and restaurants, warehousing and construction. High-skilled EU migrants also play a key role in sectors like finance, business services, technology, healthcare, academia and the arts.

As a quantitative illustration, we have modelled the economic impact of a recent ONS population scenario in which future EU net migration is reduced by 50%. Our analysis suggests that this could reduce the level of UK GDP in 2030 by around 1.1%, or around £22 billion at 2017 GDP values.

However, the fact that a lower population due to reduced migration leads to a lower level of GDP is not surprising. A better measure might be the impact on average GDP per capita in 2030, which we estimate to be reduced by around 0.2%, or around £60 per person at 2017 GDP values, in this scenario.

Any such model estimates have their limitations, and the net impacts on GDP per capita are relatively small compared to the many other uncertainties about average UK income levels in 2030. Indeed, based on earlier analysis¹³, the potential negative trade implications of a ‘no deal’ scenario where the UK had to fall back on WTO rules for its future trade with the EU27 would be worse than any negative impacts from migration changes.

Nonetheless, our analysis makes clear that unduly restricting future migration from the EU could have disproportionate effects on some industry sectors and regions. In the long run, efforts could be made to fill skill gaps left by reduced EU migration through enhanced training of UK nationals, and automation might also be a solution in certain sectors if we look 10-20 years ahead. But, realistically, such alternatives are unlikely to make up fully for any large reduction in EU migrant workers over the next 5-10 years. Government policy decisions on the post-Brexit EU migration regime need to take full account of these considerations.

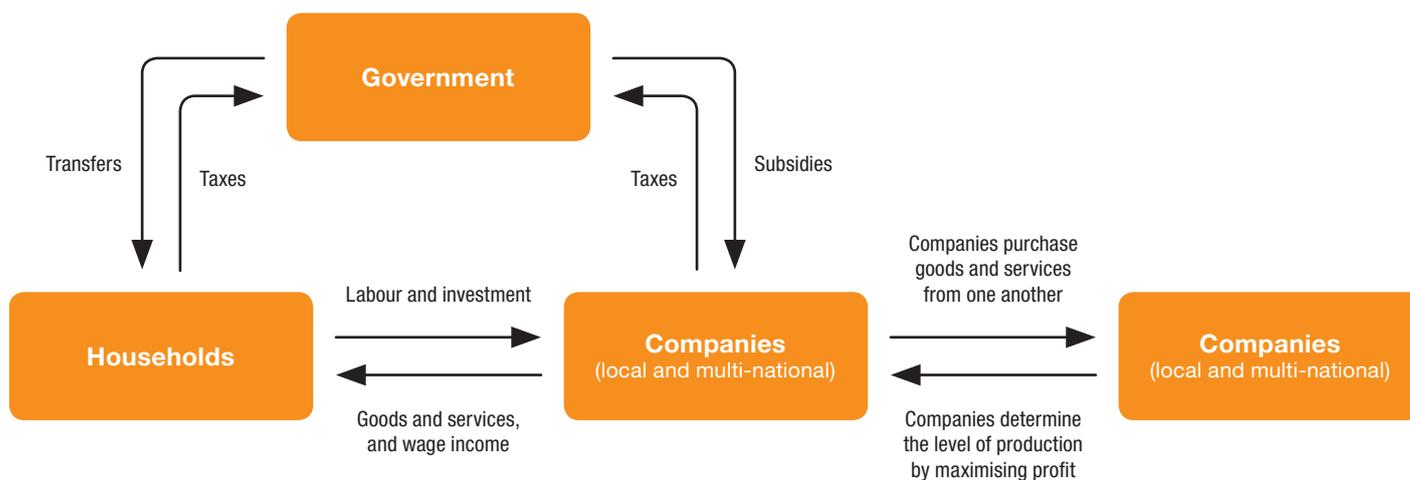
Our analysis makes clear that unduly restricting future migration from the EU could have disproportionate effects on some sectors and regions.

¹³ PwC (2016), ‘Leaving the EU: Implications for the UK economy’: <https://www.pwc.co.uk/services/economics-policy/insights/implications-of-an-eu-exit-for-the-uk-economy.html>

Technical annex

CGE modelling methodology and key assumptions

Figure 3.10 – A high level overview of how our CGE model works



Source: PwC

We have used a computable general equilibrium (CGE) model to estimate the impact of alternative future EU migration scenarios on the UK economy. CGE models are empirical tools used to capture the overall ('general equilibrium') impact of a shock (such as a policy decision) on the economy. Over the past 25 years, CGE modelling has become a standard approach to applied economic analysis, and an established tool to evaluate key policy decisions in the UK. Such models are widely used by government bodies such as HM Treasury and other international institutions such as the World Bank, IMF and OECD.

CGE models combine economic data and a complex system of equations to capture the economic interactions between the three main institutions in an economy – households, businesses and the government (see Figure 3.10).

Each institution is defined and linked through labour market or capital market flows, household consumption, intermediate product demand, taxes or government transfers. These micro-economic interactions are aggregated by the model and provide the foundations for the macro-economic relationships in the model.

CGE models assume that, in equilibrium, demand and supply in each market and sector in the economy is balanced. Hence, they simultaneously "solve" for all markets, institutions and factor resources to find the state of the macro-economy in which all the micro-interactions have worked through to equilibrium (this is what we mean by 'general equilibrium'). The model uses appropriate economic theory (the functions) for each interaction, combined with historical empirical data (the inputs) to achieve this.

Our model features the supply chain interactions of different industries in the economy based on the 2014 Supply and Use Tables for the UK compiled by the Office for National Statistics (ONS). The population projections we use as inputs into the model are also the latest published by the ONS (on 26 October 2017). The only input assumptions we vary in the model are the total population and the total workforce. This implicitly takes into account differences in age distributions, fertility rates and migration rates in the two ONS population projection variants we consider.

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