OXFORD ECONOMICS

THE FISCAL IMPACT OF IMMIGRATION ON THE UK

A REPORT FOR THE MIGRATION ADVISORY COMMITTEE

JUNE 2018

Oxford Economics

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28 June 2018

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EXECUTIVE SUMMARY

On leaving the European Union (EU), the UK government will gain greater control over its immigration policy with respect to EU migrants. In preparation for this new era, the government has asked the Migration Advisory Committee (MAC) to report on the economic and social impacts of the UK's exit from the EU, and how the UK's immigration system should be aligned with a modern industrial strategy. The MAC commissioned Oxford Economics to help improve the existing evidence base on this issue—specifically, to analyse the fiscal implications of immigration. In this report, we present our findings in what is the most comprehensive assessment to date of the net contribution migrants make to UK public finances.

Migrants living in the UK today, and those who may come in future, are not a homogeneous group. Defined in this study as people living in the UK who were born elsewhere, each migrant's individual contribution to the UK economy, wider society and their local community will be determined by their personal circumstances, skills and preferences—as will their contribution to the public finances. There is no archetypal migrant, and this makes analysing the fiscal impact of immigration a challenge.

We provide a comprehensive assessment of the fiscal impact of migrants by analysing it from two perspectives. We begin with a *static* assessment, which estimates the fiscal contribution of the overall migrant population in the 2016/17 fiscal year. This provides a useful lens on the net contribution migrants made that year, relative to the UK population as a whole.

But it is only a snapshot in time. When considering the contribution of each individual migrant, it must be remembered that today's working adult, paying large amounts of tax, will become tomorrow's state pensioner, with above-average healthcare costs. Today's secondary-school pupil, educated at the expense of the taxpayer, will tomorrow contribute through the income taxes they pay once they enter the labour market. From the perspective of a policy-maker, therefore, what really matters is whether an additional migrant is likely to make a positive or negative net fiscal contribution over their entire time in the UK, from the day of arrival to the day they leave or the end of their life.

To fully capture the fiscal implications of an additional migrant to the UK, therefore, one must make a *dynamic* assessment. In this report, we take the results from the static analysis and historical information on migration flows to predict the lifetime net fiscal contribution of those migrants who arrived in the UK in 2016.

Throughout, we use several household surveys to construct our analysis from the "bottom up". Rather than simply estimating the migrant share of government expenditure and revenue totals, we estimate each element of tax and spending associated with every individual in a representative sample of the population. As a result, we can more easily analyse the differences between migrants with different characteristics—for example, our results present new evidence of the role that age, place of origin, number of children and income levels play in determining the net fiscal contributions of migrants.

STATIC ANALYSIS: KEY RESULTS

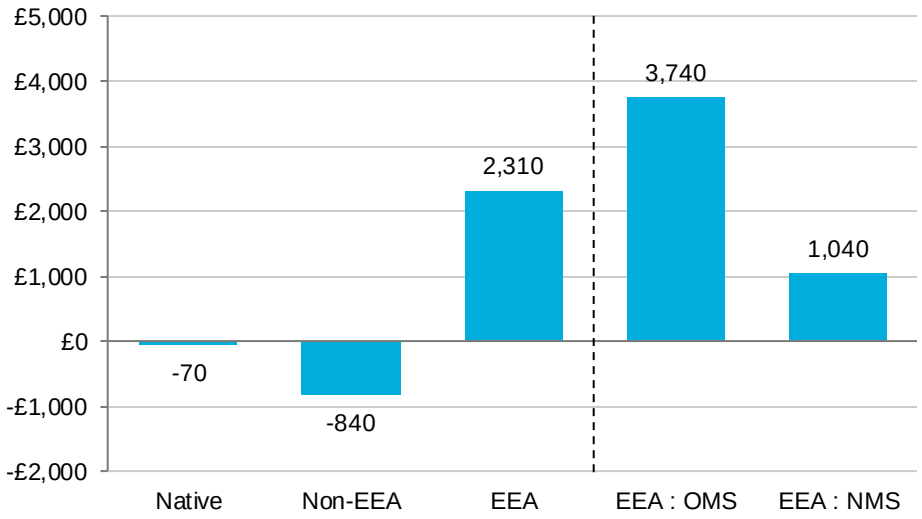
£2,300

Net contribution made by EEA migrants to the UK's public finances in 2016/17

Relative to national average

In 2016/17, the average adult migrant from the European Economic Area (EEA) contributed approximately £2,300 more to UK public finances than the average adult currently living in the UK[1] (see Fig. 1). We also found that the average non-EEA migrant contributed over £800 less than the average adult in the UK. In all figures, the fiscal costs of dependent children are included in the net fiscal contribution of their responsible parent, a unit of analysis we refer to as the "accountable adult". Within the EEA migrant group, our analysis finds a significant split between the net fiscal contribution of migrants from what we refer to as older member states (OMS)[2], and those from new member states (NMS)[3]. OMS migrants contributed around £3,700 more to the public finances in 2016/17 than the average adult, while NMS migrants were over £1,000 above the national average.

Fig. 1. Average annual net fiscal contribution of each migrant and native, relative to the average UK adult, 2016/17
(£ per 'accountable adult')



Source: Oxford Economics

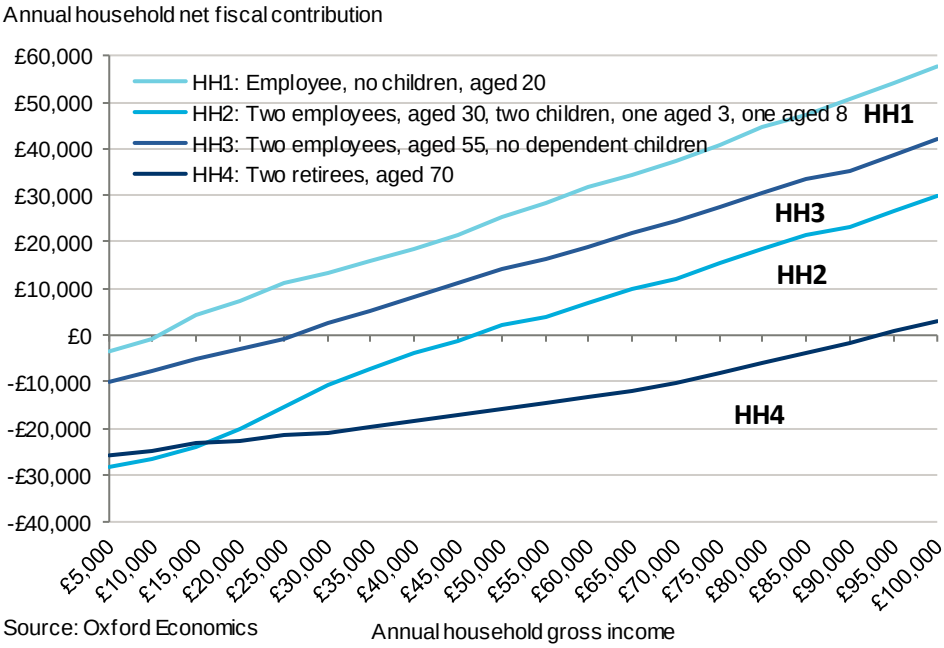
The more favourable contribution of EEA migrants can be partly explained by their higher levels of income tax and national insurance contributions (NICs). The average EEA migrant from OMS contributes around 50 percent more in income tax and NICs than the average NMS migrant, and around 30 percent more than non-EEA migrants and natives. We estimate that natives contribute more in other taxes, such as capital gains and inheritance tax, primarily because they tend to be older and are therefore assumed to be wealthier.

[1] Both UK born and non-UK born
[2] Older Member States (OMS) refer to EEA member states that joined prior to 2004, plus Switzerland.
[3] New Member States (NMS) refer to EEA member states that joined since 2004, with the exception of Croatia, as its membership is yet to be ratified by the UK.

In addition, EEA migrants typically incur less public spending than either natives or non-EEA migrants. This is particularly true for NMS migrants, as they have a lower age profile and are therefore responsible for considerably less expenditure on health and state pensions. However, NMS migrants typically have more children, and therefore receive considerably more in terms of education spending, family benefits and tax credits than the average native.

We conducted a specimen analysis to illustrate that different types of migrant households have very different "break-even" points. The net contribution made by a migrant adult individual in 2016/17 depended heavily on the stage of life they were at. To illustrate this point, we conducted a specimen analysis for four different types of households, in each case establishing the annual household gross income required to make a positive net fiscal contribution (see Fig. 2). A household income of just over £10,000 per year is sufficient for a single childless person in early adulthood (HH1) to "break even", as they tend to require less government support and use of public services. Around £45,000 per year is required for a working couple with two dependent children (HH2), largely due to the education and healthcare costs associated with children. This falls to about £25,000 per year for an older couple with financially independent children (HH3), then rises again to over £90,000 for a household consisting of two retirees (HH4), primarily due to rising healthcare and state pension costs.[4]

Fig. 2. Stylised fiscal 'break-even' analysis for specimen migrant households, 2016/17



Source: Oxford Economics

This highlights the fact that the static contribution of the UK's current migrant population is largely a result of their characteristics today. If the makeup of the migrant population changes, so will the associated fiscal costs. It is therefore important also to take a long-term view of the fiscal contribution of migrants.

[4] For households with more than one adult, we assume each adult is earning the same amount.

DYNAMIC ANALYSIS: KEY RESULTS

£78,000
Discounted lifetime net contribution of EEA migrants to UK public finances, per head

To properly assess the net fiscal contribution of migrants requires a lifecycle perspective. To do this, we focused on the group of migrants arriving in 2016, and projected forward their net fiscal contribution for as long as they are estimated to remain in the UK. The advantage of this approach is that it can inform policy-makers as to the lifetime net fiscal contribution of an additional migrant. Note: these estimates were calculated in net present value terms, a process that accounts for the fact that money received (or spent) today is more valuable (or costly) than the same amount received (or spent) tomorrow. Also, while our static analysis estimates the net fiscal contribution of *accountable adults*, the lifecycle analysis estimates the lifetime fiscal contribution of *individuals* (i.e. children are treated separately to adults).

We found evidence to suggest that the average 2016 migrant is a fiscal asset to the UK public finances. We estimated that each additional migrant from the EEA in 2016 will make a total discounted net fiscal contribution of approximately £78,000 over his or her lifetime, in 2017 prices. For non-EEA migrants, we estimated a positive net fiscal contribution of £28,000 per head over his or her lifetime.

The lifecycle contribution from migrants is highly positive for three reasons. First, migrants tend to arrive after the completion of their formal education in their home country, thus avoiding the significant education costs associated with natives. Second, as a group of predominantly young adults, the expected retirement costs associated with the later years of life are reduced by the fact that a large proportion tend to leave the UK again before reaching retirement. Finally, because the migrant population is younger, their positive contributions occur immediately, whereas their associated pension and health costs typically lie many years in the future, and therefore have less of an impact in today's terms.

5p
One-year increase in income tax rates required to match lifetime net contribution of all migrants who entered the UK in 2016

In total, the 2016 migrant cohort (EEA plus non-EEA) is estimated to be worth a lifetime net contribution of £26.9 billion to the UK's public finances—approximately equivalent to the additional revenue in one year from adding five pence to all three income tax rates. Over their lifecycle, we found that EEA and non-EEA migrants from the 2016 cohort make a net positive contribution of £19.3 billion and £7.5 billion respectively.

Our study is the first in the UK to quantitatively assess both the static and dynamic contributions of migrants. This report will illustrate that both are important perspectives from which to assess the fiscal contribution of migrants to the UK, and that both offer highly relevant contributions to policy design, as the UK considers how to use its new powers over immigration policy in the post-Brexit era.

1. INTRODUCTION

Migrants form part of the fabric of UK society, bringing an array of benefits and costs. For many people from differing viewpoints, the wider economic and social impacts of migration are salient in the debate about migration policy, with fiscal concerns being of secondary importance. We acknowledge those wider considerations, but they are not our focus. From the perspective of the government and taxpayers, migrants have both positive and negative implications for the public finances, and this study is focused exclusively on assessing the balance of these two factors.

We assessed the net fiscal contribution that migrants make to the UK from both a static and a dynamic perspective. The static perspective is a snapshot, telling us about the contribution made by today's migrant population. In contrast, the dynamic perspective tells us about the total contribution made by migrants over their entire time in the UK, from the day of arrival to the day they leave or the end of their life. Both approaches are important for establishing a rounded understanding of the impact that migrants have on UK public finances.

This report is structured in four parts. In Chapter Two, we provide a descriptive breakdown of the UK migrant population. Chapter Three sets out our methodological framework. In Chapter Four, we present the key findings from our static assessment: namely, the net fiscal contribution of the UK's migrant population in 2016/17. In Chapter Five, we quantify the total lifecycle contribution of the migrant cohort that arrived in the UK in 2016.

BOX 1: HOW DO WE CLASSIFY MIGRANTS?

In this report, a **migrant** refers to an individual who was born overseas but currently lives in the UK, while a "native" refers to someone born in the UK.

European Economic Area (EEA) migrants are those originating from the 28 European Union member states (excluding the UK and Croatia), plus Iceland, Liechtenstein and Norway. While Switzerland is not a member of the EEA, we include it in this group as it is part of the European Free Trade Association (EFTA).

Migrants from the Older Member States (OMS) are defined as those originating from EEA member states that joined prior to 2004, plus Switzerland. **Migrants from the New Member States (NMS)** are defined as those originating from EEA member states that have joined since 2004. While Croatia joined the EEA as a provisional member from 2004, we do not include it in this category as the UK has not yet ratified its membership.

Non-EEA migrants are those originating from any other country outside the UK and the EEA.

2. WHO ARE THE UK'S MIGRANTS?

Migrants are a very diverse group; they arrive at different times, for different reasons, and have different characteristics. Some migrants—defined here as people born outside the UK—come alone to work in the UK, then return home to start a family. Others come with families or start a family whilst in the UK. Some attain high levels of financial remuneration; others assume a lower pay trajectory, and require greater support from government and their local community. It is thus virtually impossible to define an archetypal migrant in a meaningful way, and this complicates policy design.

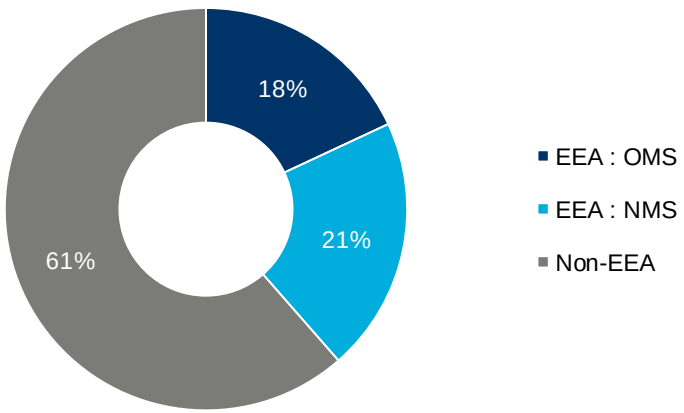
In this study, we estimate both the static and dynamic impacts of migration. While the static analysis focuses on the population of migrants currently in the UK, the dynamic analysis focuses on the lifetime contribution of the cohort of migrants who arrived in the UK in 2016. In each case, the composition of the migrant population is fundamental to the net fiscal contribution they make. In this chapter, we first set out the characteristics of the current population of migrants—relevant to the static analysis—before going on to describe the cohort of migrants that arrived in 2016, the basis of our lifecycle assessment.

2.1 WHERE DOES THE UK'S MIGRANT POPULATION COME FROM?

In 2016, there were just under nine million migrant adults in the UK, constituting around 18 percent of the adult population.[5] Around 60 percent of migrant adults originated from outside the EEA (Fig. 3). The EEA migrants in the current population are roughly evenly balanced between OMS migrants and NMS migrants, although the proportion of NMS migrants is slightly higher.

Fig. 3. Total adult migrant population by place of origin, 2016/17

Share of migrant population

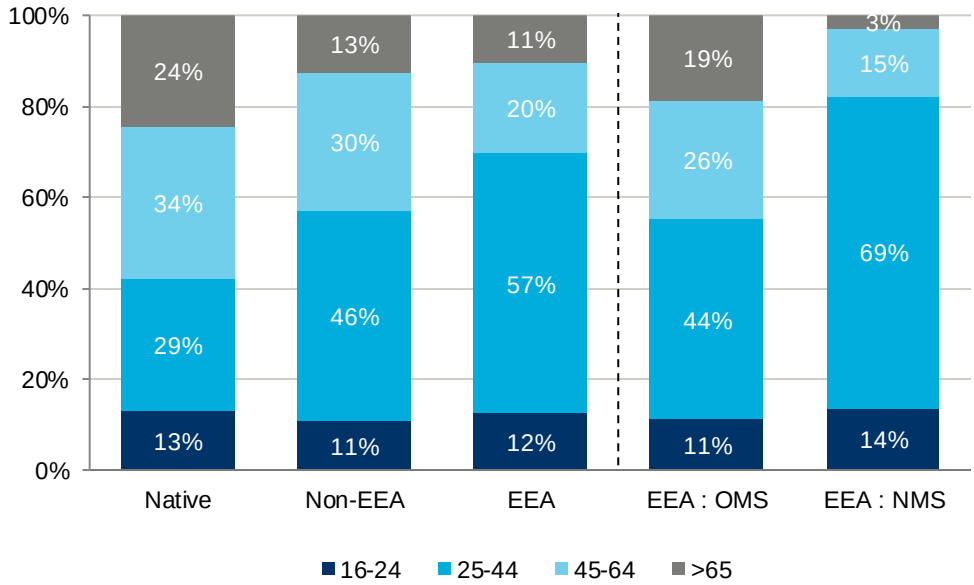


Source: LFS; HESA; Oxford Economics

[5] Adults are defined as the population aged 16+ who are no longer in secondary education. The population estimates are based on the Labour Force Survey (LFS), but given international students are underestimated in the dataset, we increased the population weights for full-time international students (both EEA and non-EEA) to be in line with the statistics published by the Higher Education Statistics Agency (HESA). See section 3.2 for more details.

The migrant population is relatively young compared to UK natives, and especially so for NMS migrants from the EEA. Migrants most commonly arrive at a young working age, and the recent increase in NMS migration means this population is particularly young in relative terms. As shown in Fig. 4, only three percent of the adult NMS migrant population is aged over 65, compared to 13 percent of the non-EEA migrant population, 19 percent of OMS migrants, and 24 percent of UK natives.

Fig. 4. Age profile by place of origin, 2016/17
(Share of adult population by age group and region of origin)

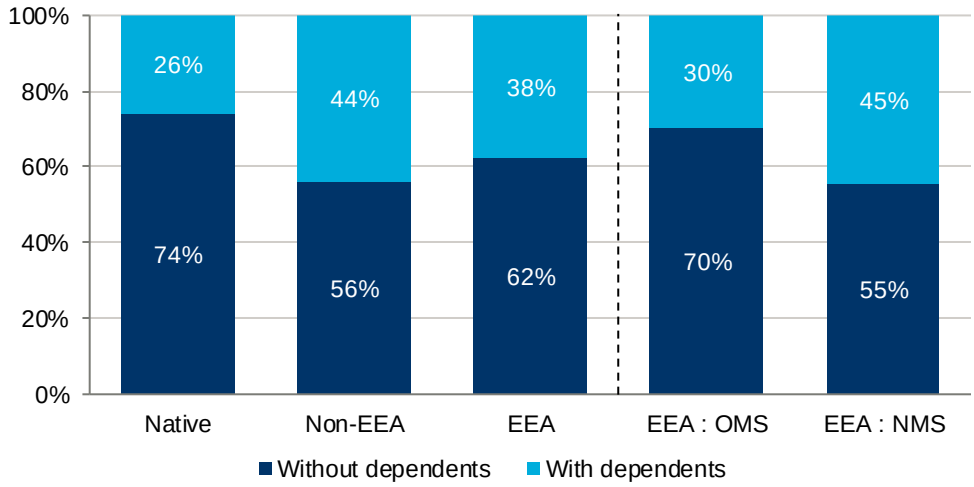


Source: LFS; HESA; Oxford Economics

The average migrant adult is more likely to have dependent children than a native adult. Just under half of NMS and non-EEA migrant adults are responsible for dependent children (defined as those under 16 or in full-time primary or secondary education), compared to less than a third of OMS migrants, and around a quarter of UK natives (see Fig. 5, overleaf). This is partly driven by the young age profile of migrants—in particular the NMS group, of whom the vast majority are of "parenting" age—as well as differences in fertility rates. (ONS data suggests that non-UK born women have a higher fertility rate than UK-born women in every age category apart from under 20s.[6])

[6] Office for Budget Responsibility, "Fiscal Sustainability Report: July 2013", Annex A.

Fig. 5. Incidence of dependent children by place of origin, 2016/17
(Share of "accountable adult" population with and without dependent children)

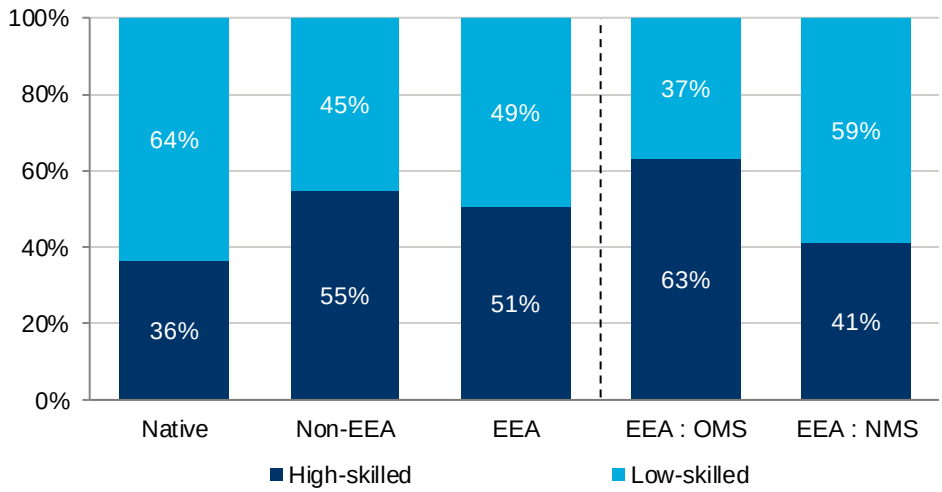


Source: LFS; HESA; Oxford Economics

The migrant population also has a higher level of educational attainment than UK natives. We estimated that 63 percent of adult migrants from the OMS of the EEA have completed a qualification in higher education or equivalent, while the proportion is 55 percent of those from non-EEA countries (Fig. 6). The level is significantly lower for adult migrants from NMS, at 41 percent, but still higher than that of UK natives, of whom only 36 percent of the adult population have a completed higher education or equivalent (see Fig. 6, overleaf).[7]

[7] In addition to those who report having a degree or other higher qualification in the LFS, we treat people who respond as having qualification 'other' as skilled if they finished full-time education after the age of 20. This attempts to control for the fact that some migrants may choose 'other' if they have a higher qualification inconsistent with the UK-recognised options provided in the survey.

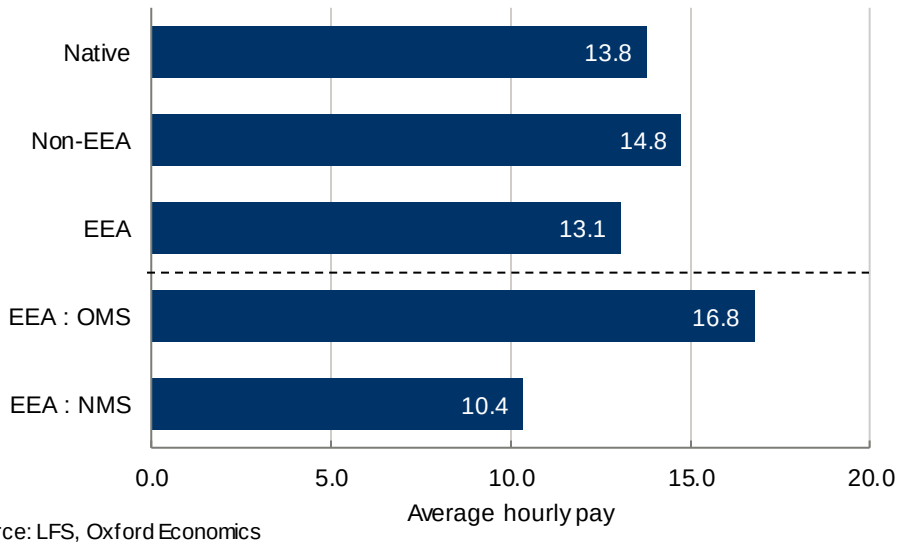
Fig. 6. Proportion of population by skill level, 2016/17*
(Population of migrants in the workforce with and without higher education)



Source: LFS; HESA; Oxford Economics
* Note that this only covers individuals who have left full-time education

Higher skill levels amongst migrants are reflected in their higher average wages. Migrants from OMS, the highest-skilled group, earn more per hour on average than the other groups (Fig. 7), while migrants from NMS, the least-skilled migrant group, earn the least per hour. Indeed, NMS workers, who are typically more highly skilled than UK natives, earn more than £3 per hour less, on average. This may be explained by the fact that NMS employees, while relatively well-qualified for the jobs they do, are typically younger and so may have less workplace experience, than equivalent native employees.

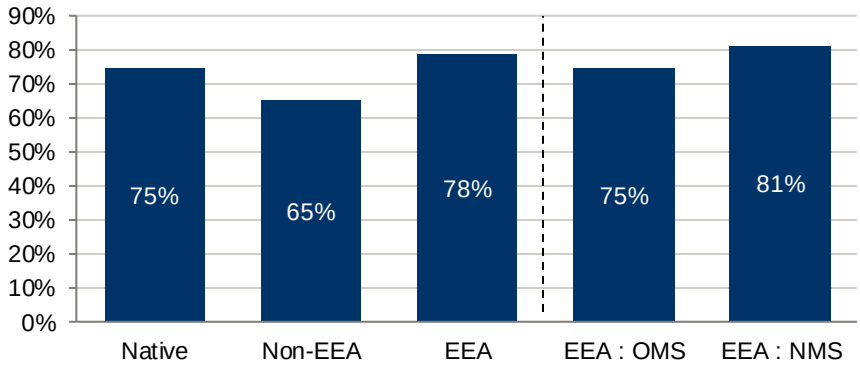
Fig. 7. Employee earnings by place of origin, 2016/17
(Average hourly pay)



Source: LFS, Oxford Economics

The migrant population overall has a lower employment rate than the native population. This is driven by the non-EEA migrant group, of whom 65 percent of working-age adults are in employment, compared to 75 percent of natives (Fig. 8). On the other hand, 75 percent of OMS migrants and 81 percent of NMS migrants are in paid employment, which bolsters their income tax and NICs contributions.

Fig. 8. Employment rates by place of origin, 2016/17
(Employment as a proportion of the working-age population)



Source: LFS; HESA; Oxford Economics

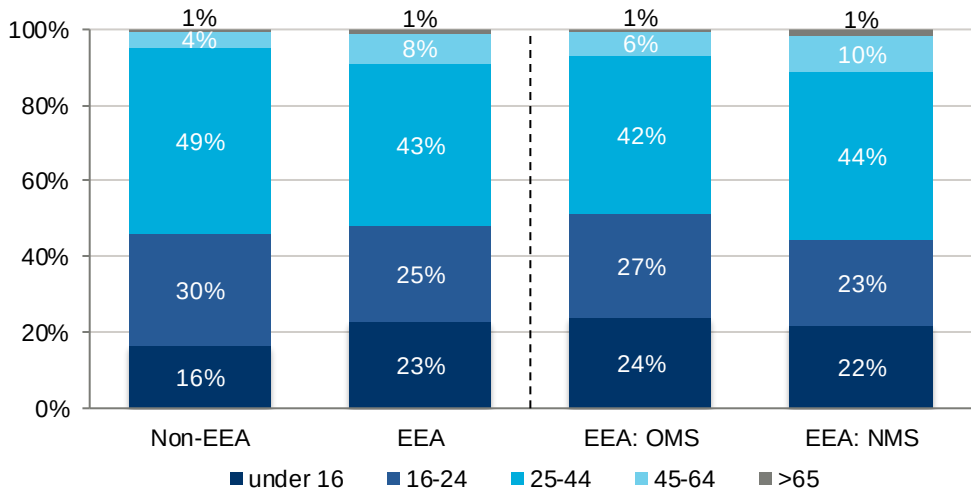
2.2 THE UK'S 2016 ARRIVAL COHORT

The 2016 arrival cohort looks slightly different to the UK's overall migrant population. Note that while the total population of migrants currently in the UK was estimated from the LFS, the flow of incoming migrants was generated by taking the 2016 arrivals from the 2017Q2 LFS data, then scaling these arrivals to match the flow from the ONS's *Provisional Long-Term International Migration estimates*[8], because the LFS is not designed to measure migrant flows. These ONS data are largely generated from the International Passenger Survey (IPS).

The IPS flow estimates suggest there were around 515,000 non-British migrants entering the UK in 2016, with a fairly even split between EEA and non-EEA migrants (249,000 and 265,000 respectively). Furthermore, the 2016 arrivals were younger than the existing migrant population in the UK (see Fig. 9) and included around 125,000 international students.

[8] Information available at https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/internationalmigration/datasets/migrationstatisticsquarterlyreportprovisionallongterminternationalmigrationltimestimates

Fig. 9. Age profile of 2016 migrant cohort by place of origin
(% of population by region of origin in each age group)



Source: LFS; Provisional Long-Term International Migration estimates; Oxford Economics

The differences between migrant and native populations are critical to the net fiscal contribution they make. The descriptive statistics above provide useful context for understanding why different migrant groups have different impacts on the UK's fiscal position. In the next chapter, we set out our methodological approach to making these assessments.

3. HOW DO WE ASSESS MIGRANTS' NET FISCAL CONTRIBUTIONS?

Estimating the migrant population's contribution to the UK public finances poses many conceptual and practical challenges. In this study, we faced the same data constraints and theoretical dilemmas that characterise the existing literature as set out below. How should data gaps be dealt with? How should the cost of providing public services be shared out across different groups? How should we treat the children of migrants born in the UK, and the children of mixed households?

We approached our calculations differently to previous UK studies, by constructing our assessment from the "bottom up". This way, we were able to make maximum use of official survey data, and to limit the number of assumptions that had been necessary in previous studies. We begin this chapter by outlining some of those previous studies, before describing our own approach in more detail.

3.1 SUMMARY OF PREVIOUS STUDIES

Existing studies on the fiscal impact of migration on the UK most often find a small, positive net fiscal contribution—but the results are mixed. Calculating the revenue received and public goods and services consumed from such a diverse subset of the population is complex, and the results vary based on the assumptions made and methodologies used.

Earlier efforts, from Gott and Johnston (2002)[9] and Sriskandarajah et al (2005),[10] found migrants to have a positive impact on the UK's public finances––and to a greater extent than the native population. However, Rowthorn (2008)[11] highlighted how sensitive these findings were to their underlying assumptions. Preston (2014) looked at the methodological challenges to estimating the fiscal impact of immigration, both from a static and a dynamic perspective, and discussed the benefits and limitations of different approaches.[12] Finally, Nyman and Ahlskog (2018) recently conducted a study estimating the fiscal impact of intra-EEA migration, concluding that the effect was positive but small in the UK (around 0.3 percent of GDP).[13]

[9] Gott, C. and Johnston, K. (2002), 'The migrant population in the UK: fiscal effects', Home Office Research, Development and Statistics Directorate Occasional Paper No.77, London.

[10] Sriskandarajah, D., Cooley, L. and Reed, H. (2005). 'Paying their way: the fiscal contribution of immigrants in the UK', research report, Institute for Public Policy Research, London.

[11] Rowthorn, R. (2008). 'The fiscal impact of immigration on the advanced economies', Oxford Review of Economic Policy, vol. 24(3), pp. 560–80.

[12] Preston, I. (2014), 'The effect of immigration on public finances', The Economic Journal, vol. 124, pp. F569–F592, November 2014

[13] Nyman and Ahlskog (2018), "Fiscal Effects of Intra-EEA Migration", Working Paper, Uppsala University

Dustmann and Frattini (2014) provided the most comprehensive static assessment to date, using the Labour Force Survey (LFS).[14] Their approach provided a starting point from which our own methodology evolved for assessing the static impact of migrants on the public finances. At around the same time, the Office for Budget Responsibility (OBR) demonstrated the value of taking a more dynamic perspective, by modelling the long-term fiscal impacts of migration. It found a substantial saving to the UK taxpayer from migration over a 50-year forecast period, and this too served to inspire our approach.[15]

Other studies, such as Auerbach and Oreopoulos (2000), Collado et al (2004), and Chojnicki (2013), have used a generational accounting approach to estimate the dynamic impact of migration.[16] This involves estimating the discounted net fiscal contribution of the current migrant population over the rest of their lives. Finally, some studies, such as Chojnicki and Ragot (2011), used a general equilibrium model to estimate the long-term fiscal impact of migration. This was designed to capture the interdependencies between different markets, and the response of residents to an immigration shock.[17] Studies of the dynamic impact also generally tend to suggest a positive fiscal impact from immigration, although the magnitude of the impact varies.

Both the static and dynamic approaches pursued by previous studies are valid. A static perspective is based on historical data, but provides only a "snapshot" of a migrant population's contribution to the public finances at a moment in time. A dynamic perspective attempts to consider the impacts of migrants over their entire lifetime, but this assessment is consequently more heavily based on assumptions.

In contrast to some studies, the dynamic part of our analysis focused on estimating the contribution of the UK's 2016 migrant cohort *from the day of their arrival*. We believe this is of greater policy relevance than "generational accounting" approaches that estimate the dynamic impact of all existing migrants from a point in time onwards. In our view, it is more valuable for policy-makers to understand the total contribution of *each additional migrant* from the first day of their arrival in the country.

We developed a detailed account of the net fiscal contributions that both migrant and native populations make, at the individual level. Previous studies have tended to take figures for total government expenditure and revenue, and estimate the top-down split between migrants and natives. To take our analysis further, we generated a nationally-representative dataset and estimated the revenue and spending implications, component by component,

[14] Dustmannn, C. and Frattini T. (2014) 'The Fiscal Impact of Immigration to the UK', The Economic Journal, vol. 124, pp. F593-F643, November 2014.

[15] Office for Budget Responsibility, "Fiscal Sustainability Report: July 2013", Annex A.

[16] Auerbach, A. and Oreopoulos, P., 2000, 'The Fiscal Effects of U.S. Immigration: A Generational-Accounting Perspective,' in J. Poterba, ed., Tax Policy and the Economy 14, 123-56., Chojnicki, X. 2013. The fiscal impact of immigration in France: A generational accounting approach. The World Economy, 36, 1065–1090. And Collado D., Iturbe-Ormaetxe I. I. and Valera G., 2003, 'Quantifying the Impact of Immigration in the Spanish Welfare State', International Tax and Public Finance, 11, 3, 335-353.

[17] Chojnicki, X., & Ragot, L. (2011). Impacts of immigration on an aging welfare state: An applied general equilibrium model of France. Fiscal Studies, 37, 258-284.

for *every individual* in that dataset. This enabled us to produce a more granular static assessment, avoiding some of the major assumptions necessary in previous studies. It also meant we could use our static assessment as a basis for examining the dynamic impact that the 2016 migrant cohort would have on the UK's public finances, basing our forward-looking projections on a solid empirical foundation.

3.2 THE COSTS AND REVENUES ASSOCIATED WITH EACH 'ACCOUNTABLE ADULT'

Neither a purely individual perspective, nor a purely household perspective, is adequate to assess a given migrant's net fiscal contribution. Some revenues and costs are incurred at an individual level, such as income tax and healthcare, while others are applied at the family level, such as tax credits and housing benefits. Consequently, we estimated both individual and household components of revenue and expenditure at their appropriate level, then divided receipts and expenditures at the household level equally between the individuals in that household.

For any given fiscal year, there is considerable debate about how the net fiscal costs of the children of migrants should be recognised. In line with previous studies, we classified the children of migrants born in the UK as migrants in our static analysis, given that they would not be in the country but for the decision of their parents. However, due to data limitations, we could not treat adult descendants of migrants as migrants, because the LFS does not contain information on parents' country of birth.

In our static assessment, we used the concept of the "accountable adult" as our unit of analysis. This simplified our interpretation of the costs associated with migrant children, particularly in the case of children with mixed parents. We identified children with one or two migrant parents in our dataset, and attached their net fiscal costs proportionately to the adult(s) responsible for their care. For consistency, we applied this concept to native as well as migrant adults; it was useful for capturing the net negative impact of children, in a given year, via education and family benefits expenditure, for example. In contrast, our lifecycle analysis was based on individual contributions, as migrants could be defined solely as those born in another country.

We used the LFS as the basis for our assessment. The LFS is a quarterly survey of individuals and households, run by the Office for National Statistics (ONS). It is calibrated to the census, and forms the basis of numerous official labour market figures, such as the unemployment rate. The survey captures detailed information on around 90,000 individuals each quarter. It includes information on earnings levels, which enabled us to estimate income tax payments, and age and number of children, which could be used in estimating health and education expenditure. It also provides other valuable details such as country of birth, which we used to compare the characteristics of migrants and natives.

We reweighted the LFS sample to account for pooling across quarters, and to address the underrepresentation of international students. We used quarterly data from 2016Q2 to 2017Q1, and waves one and five of each quarterly sample, as only these contain information on employee earnings (this

method also avoids double-counting the same respondents). Given we only used part of each quarterly LFS sample and pooled four quarters of data, we adjusted the population weights so they were representative of the UK population of private households in the 2016/17 fiscal year.

Furthermore, international students are underrepresented in the LFS, which, as a household survey, excludes people living in communal establishments such as student halls of residence. This is a pressing issue when analysing immigration, because student inflows represent a substantial proportion of the total arrivals each year. While UK students living in halls of residence are sampled in the LFS as part of their parents' households, international students in the same setting tend not to be captured because they do not belong to a UK household. While we estimated there to be around 54,000 full-time international students from the EEA and around 111,000 from outside the EEA in the LFS sample[18], the Higher Education Statistics Agency (HESA) suggests the actual numbers of international students enrolled on full-time courses are 123,000 and 289,000 respectively.[19] To address this issue, we increased the population weights for full-time international students (both EEA and non-EEA) to be in line with the statistics published by HESA.

We also used other data sources to fill in the LFS's gaps. For example, while it contains information on employee earnings and identifies whether a person is self-employed or receives benefits, it does not specify how much. We therefore also drew on the Department for Work and Pensions' (DWP) Family Resources Survey (FRS)—an annual household survey targeting around 24,000 private households—for additional information on benefits payments and self-employment income. In addition, we drew on various other sources, including HMRC estimates from the Survey of Personal Incomes (SPI) and the ONS Wealth and Assets Survey to estimate individual income from investment.

We took total government revenue and expenditure data from official sources. For revenues, we used statistics from the OBR's Economic and Fiscal Outlook, while for expenditure, we drew on HM Treasury's Public Expenditure Statistical Analyses (PESA) tables—see Box 2 and Appendix 1 for further details. We then used a variety of methods to distribute those revenues and expenditure totals across individuals in our sample.

There is considerable debate in the literature on how to allocate the cost of "public goods". Dustmann and Frattini (2014) considered two different types of public good: "pure" and "congestible". Pure public goods are those deemed to be "non-rival" in consumption (e.g. defence, international aid), whereas congestible public goods are those which are, at least to some degree, "rival" in that one person's use of them can reduce their availability to others (e.g. transport, water supply). While it could be argued that an additional migrant would have no impact on the former, he or she is likely to have an

[18] We define international students as individuals studying for a tertiary qualification, who have been in the UK for less than five years and are either the household reference person, a cohabitee or an 'other non-relative' within the household (using the *relhrp6* variable).

[19] Information available at https://www.hesa.ac.uk/data-and-analysis/students/where-from#. These statistics refer to students from the EU and outside the EU, rather than the EEA.

impact on the latter, as congestible public goods need to increase as the population increases. Therefore, Dustmann and Frattini (2014) considered a scenario whereby each additional migrant had an impact on congestible public goods expenditure, but no impact on pure public goods expenditure.

We acknowledge this is a reasonable scenario, but chose instead to distribute the cost of all public goods evenly across the entire population (as, indeed, did Dustmann and Frattini for their central scenario**)**. This is because, despite the demand for pure public goods being theoretically unchanged as the population increases, public spending on these items does not behave this way in practice. Even expenditure on items such as defence and international aid tends to be either explicitly or implicitly linked to GDP (consider, for example, the NATO commitment to defence spending as two percent of GDP, and the UN foreign aid target of 0.7 percent of GDP), which therefore depends on the size of the UK's population.

BOX 2: WHICH COMPONENTS OF EXPENDITURE AND REVENUE DO WE MEASURE?

We took data on government revenue from the OBR's Economic and Fiscal Outlook, and expenditure from HM Treasury's Public Expenditure Statistical Analyses (PESA) tables. Our analysis's major revenue and expenditure components are listed in the table overleaf.

Each component was either allocated to a set of individuals, or estimated at an individual level and then scaled such that the total expenditure/revenue component in our weighted sample was equal to the published total. The assumptions used to generate the individual contributions to each component are also summarised in the table. For a more detailed breakdown of each component and further information on methodology, see Appendix 1.

Major revenue components	% of Total Revenue	Allocated or Estimated	Method
Income tax	24.4%	Estimated	We used reported employee earnings in the LFS and estimate income from self-employment, investments and state and private pensions. We then applied the tax rates for the 2016/17 fiscal year to total taxable income for each individual in the LFS.
National insurance contributions	17.3%	Estimated	Applied NICs rates for the 2016/17 fiscal year to reported employee earnings and imputed self-employment earnings in the LFS.
Indirect taxes	27.7%	Estimated	Applied ONS effective tax rates by household income decile to disposable income estimates and then adjusted for migrant remittances.
Company taxes	7.2%	Allocated	Allocated based on an individual's share in total earnings from employment.
Business rates	4.1%	Allocated	Allocated based on an individual's share in total earnings from employment.
Council tax	4.2%	Allocated	Allocated evenly to households and make an adjustment for those receiving a council tax reduction.
Capital gains tax	1.2%	Allocated	Allocated based on an individual's contribution to total w ealth.
Inheritance tax	0.7%	Allocated	Allocated equally to homeow ners over the age of 70.
Gross operating surplus (GOS), interest and dividends	7.4%	Allocated	Allocated on a per capita basis. Note that housing development is also offset in this component.
All other taxes/income streams	5.8%	Allocated	Allocated on a per capita basis.

Major expenditure components	% of Total Expenditure	Allocated or Estimated	Method
Public goods	29.1%	Allocated	Allocated on a per capita basis.
Debt interest	5.1%	Allocated	Allocated on a per capita basis.
Housing development	0.7%	Allocated	Offset in GOS, given expenditure in this component appears broadly in line with income from social housing.
Health	18.5%	Estimated	Applied OBR near term projections on health spending by age.
Pre-primary education	0.4%	Allocated	Allocated evenly to 0-4 year-olds in the LFS sample.
Primary education and secondary	8.8%	Allocated	Allocated evenly to 5-18 year-olds in the LFS sample who are still in school.
Tertiary education	0.8%	Allocated	Allocated evenly to all those studying for a tertiary qualification (excluding international non-EEA students)
Social protection: Benefits	29.9%	Estimated	Imputed receipts for the following types of benefits using reported claimants in the LFS and data from the FRS: • Family and children • Unemployment • Housing • Social exclusion n.e.c • Survivor Old age benefits are allocated equally to those of retirement age
Social protection: Personal social services	3.9%	Allocated	Allocated each type of personal social services evenly to benefit claimants.
Police Services	2.1%	Allocated	Allocated most services on a per capita basis. Immigration-related services were allocated to immigrants only.
EU transactions	0.6%	Allocated	Allocated on a per capita basis.

3.3 USING OUR STATIC DATASET TO DERIVE A LIFECYCLE PERSPECTIVE

The OBR (2013) has identified three main stages of an individual's fiscal lifecycle.[20] Firstly, between birth and leaving full-time education, an individual typically poses a net fiscal cost. Secondly, throughout their working-age period, he or she will typically make a net fiscal contribution. Finally, in retirement, that individual will typically consume more public services and pay little tax, resulting in a net fiscal cost. Assuming the government runs a balanced budget over the long term, one would expect the average individual's transactions with the state to balance out over the course of their lifetime. The static perspective, based on the fiscal impact of a population at a single point of time, is blind to the stage of life at which the current population finds itself.

For a dynamic perspective, we therefore needed to treat each individual separately—whether child or adult. This is because adult migrants arrive as part of the UK workforce, after their formal education is complete, and are therefore likely to be positive contributors overall. Child migrants will pose a net cost in their childhood years, then a net benefit in their following stage of life, assuming they remain in the UK. We assumed that children born in the UK to

[20] Office of Budget Responsibility, "Fiscal Sustainability Report", July 2013

migrant parents (or mixed migrant-native parents) contribute the same, on average, as any native child born in the UK over their lifetime.

We used the dataset built in the static assessment to project forward the future net fiscal contributions of the cohort of migrants arriving in 2016. But while the static dataset recognised "accountable adults", for the dynamic assessment we identified net contributions on an individual basis—whether for children or adults. We used this dataset to calculate the average net contribution, by age and time, since a migrant's arrival in the country. This allowed us to trace the future path for the net fiscal contribution of migrants who arrived in 2016, on the assumption that those migrants who remain in the UK having arrived in earlier years are representative of the 2016 cohort in years to come.

Put differently, we estimated the 2016 cohort's net fiscal contribution in five years' time, based on what migrants who arrived five years ago are contributing today. Implicitly, we assumed a notional 2016/17 structure for wages, taxes and public spending over their lifetime. But this meant our assumptions about wage convergence, return migration and, more broadly, the evolution of an individual's net fiscal position, would be empirically founded.

We also estimated the "attrition rate" of the 2016 migrant cohort over time, by observing the trends of past migrant cohorts. The net contributions that migrants make depend on several factors, including their age, earnings, and how long they stay in the UK. The attrition rate—which captures the probability that a given migrant is no longer in the country due to either return migration or death, from one year to the next—depends, in any given year, on his or her age and the time he or she has spent in the country. We calculated the attrition rate using estimates on emigration by age and year of previous arrival from the International Passenger Survey (IPS).[21] For more detail, see Appendix 3.

In the next chapter, we present the results of our first, "static" phase of analysis, looking at the net contribution the migrant population made to UK public finances in 2016/17.

[21] This is a user requested dataset generated by the ONS

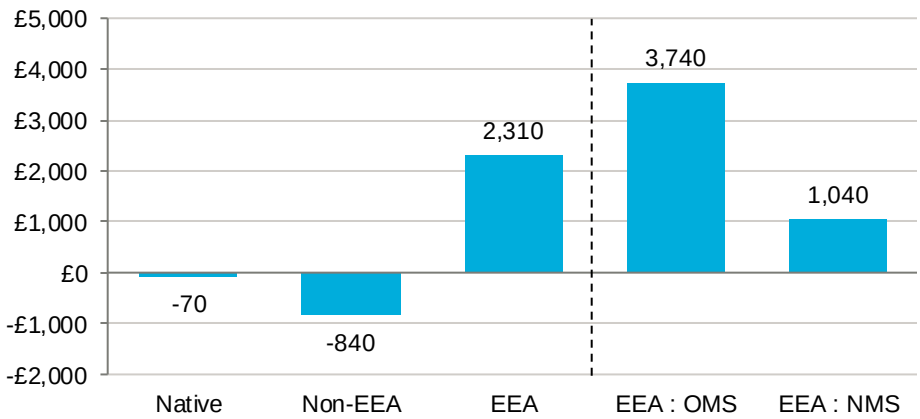
4. STATIC ANALYSIS: THE FISCAL CONTRIBUTION OF MIGRANTS TODAY

From a purely fiscal perspective, policy-makers are interested in whether migrants are likely to relieve or add to the tax burden on others in society. We first assessed this issue by looking at the net contribution the UK's total migrant population made to the public finances in 2016/17. In this chapter, we present the results of that "static" analysis, and explore the underlying drivers that determine whether additions to the UK migrant population would likely increase or reduce the UK's budget deficit.

4.1 WHAT WAS THE NET FISCAL CONTRIBUTION OF MIGRANTS IN 2016/17, RELATIVE TO THE UK AVERAGE?

EEA migrants[22] contributed around £2,300 per head more than the average UK adult, while non-EEA migrant adults contributed over £800 less. The average net fiscal contribution can be broken down further to identify differences across countries within the EEA. In fact, migrants from Original Member States made the lion's share of that contribution in 2016/17, with a net fiscal contribution £3,700 per head more than the average UK adult. NMS migrants also contributed more than the UK average (Fig. 10).

Fig. 10. Average net fiscal contribution of each migrant and native, relative to the average UK adult, 2016/17
(£ per accountable adults)



Source: Oxford Economics

On average, we estimate that migrants made a marginally more positive contribution than natives in 2016/17. With the net negative fiscal implications of non-EEA migrants being more than offset by the net positive implications of EEA migrants, we estimate their combined average net fiscal contribution to be around £440 more per year than their native counterparts.

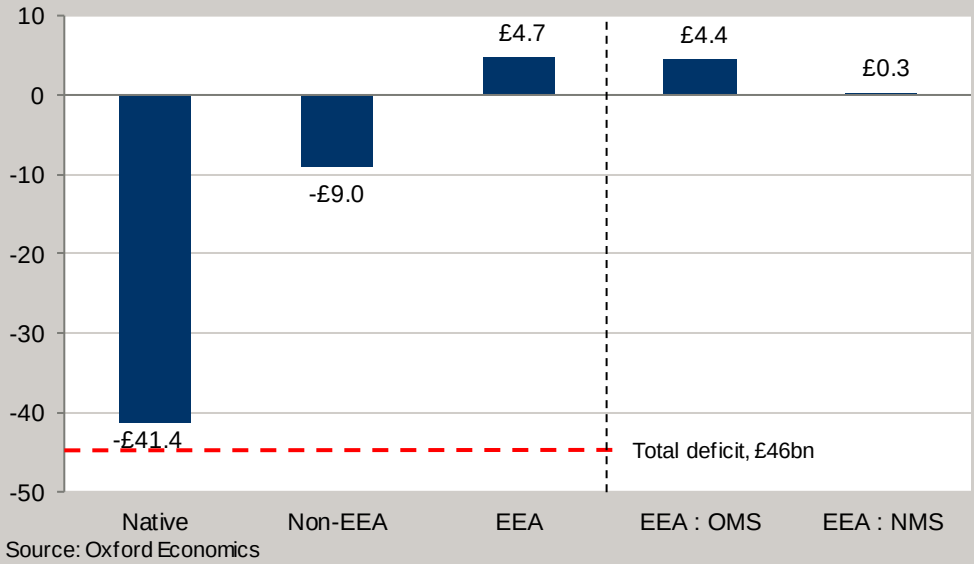
[22] In this chapter, migrants refers to "accountable adult" migrants, as defined in Chapter three.

BOX 3. WHY DO WE FOCUS ON THE RELATIVE FISCAL IMPACT OF MIGRANTS?

The total annual contribution of a population to a nation's public finances depends on whether the government runs a budget surplus or deficit for that year. That in turn depends on its revenue and spending policies, as well as the wider health of the economy.

Our static assessment of the fiscal impact of migrants is focused on the 2016/17 fiscal year. In that year, the government ran a budget deficit, spending around £46 billion more than it generated in revenue. In aggregate, we estimate that natives contributed £41.4 billion to public sector net borrowing in 2016/17, and that non-EEA migrants contributed £9 billion. Meanwhile, EEA migrants from both older member states and new member states actually reduced the government's borrowing requirements by around £4.4 billion and £0.3 billion respectively (Fig. 11).

Fig. 11. Contribution to public sector net borrowing, 2016/17
(Aggregate net fiscal contribution by origin)
£ billions



Source: Oxford Economics

This is important context for our analysis because in a year of deficit, the average individual will, by definition, make a net negative contribution to public finances. For that reason, we focus our analysis in relative terms, comparing the net fiscal contribution of migrants to the UK average, since this relative position tells us whether different groups are adding to or relieving the debt burden per head of population, regardless of government spending policies.

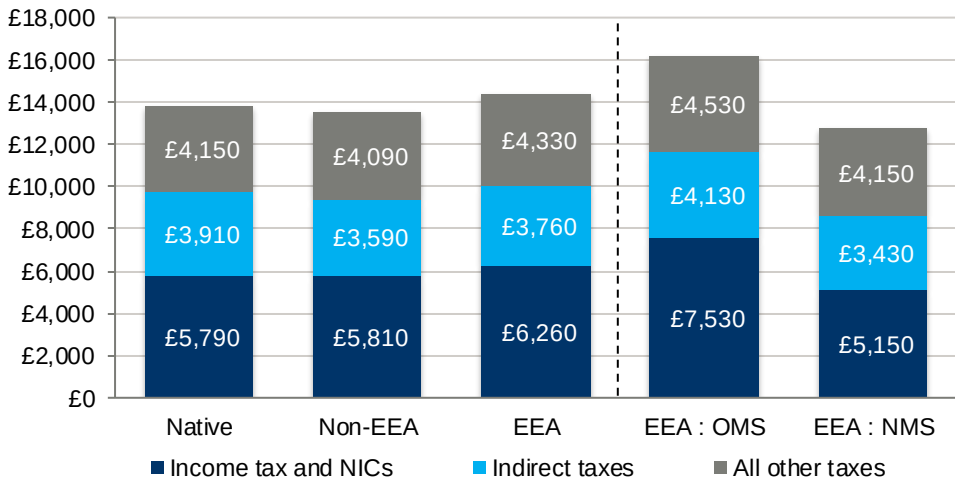
4.2 WHAT DRIVES THE DIFFERENCE IN NET FISCAL CONTRIBUTIONS BETWEEN DIFFERENT MIGRANT GROUPS?

Most of the difference in the net fiscal contributions of migrants and natives is explained by the major revenue and expenditure components. On the revenue side, income tax and national insurance contributions accounted for over 40 percent of total government revenues in 2016/17, and VAT a further 17 percent. On the spending side, health and education accounted for about 30 percent of the total, whilst pensions, family benefits and tax credits made up around 20 percent. We now explore the native and migrant contributions to these major revenue and spending components in turn.

4.2.1 How do the major revenue components compare for migrants and natives?

Looking at the absolute contributions to each revenue component, a major point of divergence between natives and migrants is income tax and national insurance contributions (NICs). The average EEA migrant from the OMS contributed around 30 percent more in income tax and NICs than his or her non-EEA migrant or native counterpart, and around 50 percent more than the average EEA migrant from the NMS. This is due to a combination of higher employment rates and higher average income levels for OMS migrants. Non-EEA migrants also have relatively high average earnings, but this is somewhat offset by their lower employment rate.

Fig. 12. Average contribution to government revenue components, 2016/17
(Average £ per accountable adult)



Source: Oxford Economics

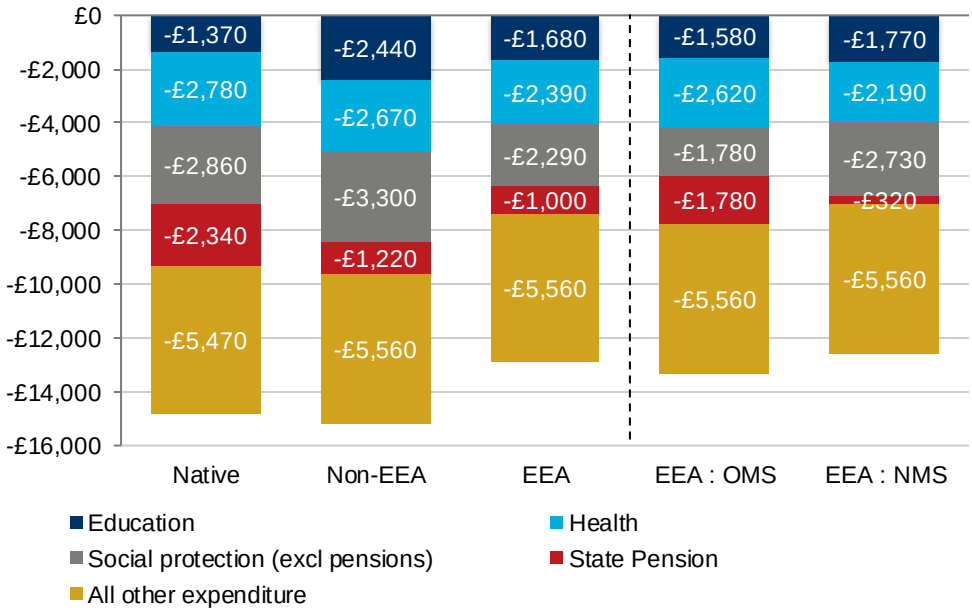
On the other hand, migrants contribute less in indirect taxes (such as VAT) than natives. OMS and non-EEA migrants tend to have higher earnings than natives, and therefore pay more in income taxes and NICs. However, their indirect tax contributions are smaller because, while disposable income (gross income and tax-free benefits less income tax and NICs) is similar across all groups, we account for a proportion of migrant earnings going on remittances out of the country. Therefore their spending, and hence their indirect tax contribution, is estimated to be slightly lower than that of their native counterparts with an equivalent gross income.

EEA migrants make the largest contributions to "all other taxes", with UK natives and non-EEA migrants contributing a similar amount. This category includes a number of taxes driven by varying factors. For example, the contributions to corporation tax and business rates are allocated based on labour earnings, and therefore EEA migrants (the highest average earners) make the largest contribution. But this is partly offset by contributions to capital gains tax and inheritance tax, which are higher for natives, as a greater proportion of these taxes are allocated to older individuals.

4.2.2 How do the major expenditure components compare for migrants and natives?

The government's largest expenditure components are health, education, pensions and tax credits. We found evidence of a greater divergence on these components between migrants and natives, than on the revenue components. Fig. 13 illustrates that breakdown by five major components.

Fig. 13. Average contribution to government expenditure components, 2016/17
(Average £ per accountable adult)



Source: Oxford Economics

We estimated that EEA and non-EEA migrants accounted for less health expenditure per head than UK natives in 2016/17. Both age and the number of dependent children affect the accountable adult's share of the health budget. On the one hand, migrants have a younger age profile, especially so for NMS migrants, meaning they impose fewer costs on the healthcare system themselves. But they also have more dependent children per adult, and children are estimated to have higher healthcare costs than young adults.

The average migrant adult accounts for a larger amount of education expenditure than his or her native counterpart. Education spending was around £80 billion in 2016/17. The difference in expenditure per accountable adult is once again a reflection of the fact that migrants are younger, with more children. While 38 percent of EEA migrant adults and 44 percent of non-EEA migrant adults have dependent children, the same applies to only around a quarter of UK native adults. Accordingly, the average annual cost of education expenditure is around £1,400 for UK natives, £1,700 for EEA migrants, and £2,400 for non-EEA migrants (Fig. 13).

In addition, the average non-EEA migrant receives more in benefit payments than UK natives. With more dependent children, our estimates suggest that migrants from outside the EEA receive more in family benefits and tax credits than natives. We also estimate that non-EEA migrants receive more than natives in housing benefits, but less in disability benefits. NMS migrants are also estimated to claim more in family benefits and tax credits than the average native, but less social protection spending overall, once again due in part to lower levels of disability benefits and services. OMS migrants claim considerably less in social protection payments, reflecting higher average incomes than the average UK native. Finally, the much higher levels of state pension payments going to natives—twice as high as that of migrants—is another reflection of their overall age difference.

All "other expenditure" is relatively equal across migrants and natives, by assumption. This component contains public goods (as explained in Section 3.2), debt interest, and police services. While the first two components were allocated on a per-capita basis, a subset of police services (those that are "immigration-related") were allocated to migrants only.

Methodological limitations mean that the contributions of recent non-EEA migrants may be understated. This is because we did not explicitly allocate the income from visa fees and charges (such as the NHS surcharge) that affect recent non-EEA arrivals, to these migrants. This is due to the difficulty in assigning the correct fees to individuals in different circumstances. A typical migrant on a Tier 2 (general) visa, entering in 2016, would have contributed just under £1,000 in fees and surcharges in their first year in the UK, with an NHS surcharge of £200 for each further year of their visa (see Appendix 5 for more details). This is similar in magnitude to the average net cost of non-EEA migrants relative to the average UK adult. However, given only recent arrivals are required to pay visa fees and surcharges, this is unlikely to have a large impact on the contribution of the current stock of non-EEA migrants. It is likely to be a larger issue for the lifecycle analysis (see Section 5.3).

BOX 4: THE STATIC IMPACT OF INTERNATIONAL STUDENTS

There has been an ongoing debate around whether international students should be included in the government's net migration target. Their net fiscal contribution is therefore of policy relevance in its own right. In our analysis, we estimated that full-time international students made a strong positive net fiscal contribution in 2016/17. This is because these individuals tend to be relatively young with no dependent children, so they account for very little expenditure on health and school-level education. They are also projected to spend a large proportion of their funds in the country, leading to a substantial indirect tax contribution.

We estimated the average net fiscal contribution of EEA students to be around £3,300 per year higher than the overall UK average, and the contribution of non-EEA students to be £5,100 per year higher.[23] The difference is largely due to the fact that non-EEA students who have been in the UK for less than three years do not qualify for student funding support, and therefore were not allocated tertiary education expenditure in our estimates.

[23] Accountable adult basis

4.3 AT WHAT INCOME LEVEL DO MIGRANT HOUSEHOLDS BECOME NET CONTRIBUTORS?

There is no definitive income level at which an additional migrant can be said to "break even" in their contribution to the UK's public finances. The fiscal contribution a household makes is determined by more than just their income level. Factors such as whether they have dependent children or a working partner, and their likelihood to claim any benefits to which they are entitled, also play an important role. Migrants from outside and inside the EEA, and from OMS and NMS, have different characteristics which affected their net contributions in 2016/17.

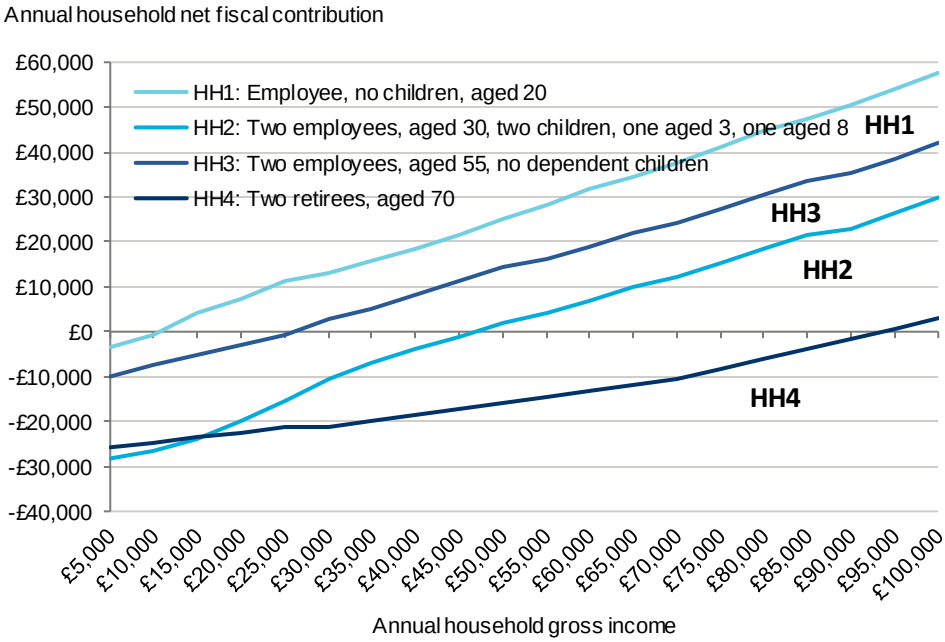
We conducted a specimen household analysis to explore the break-even level of household income (Fig. 14). We focused on four hypothetical migrant households, representing different stages in the lifecycle, to illustrate how the "starting point of positive contribution" to the UK's public finances moves around over the lifecycle, in terms of the annual household gross income required to reach this point.[24]

A single, working 20-year-old with no dependent children, for example, must earn a gross income between £10,000 and £15,000 per annum to become a net contributor to the public finances (HH1 in Fig. 14). But later in life, if this individual lives with a working partner and two dependent children, their "break-even" household income looks rather different: the fiscal implications of raising children mean the household needs to earn around £45,000 to contribute positively to public finances (HH2). Once those children are no longer financially dependent, the same two working parents, aged 55, would have a different relationship with the state again: they would require a combined gross income of around £25,000 per annum, on average, to make a positive net fiscal contribution that year (HH3). And once the pair have retired, aged 70, they would require a much higher household income of over £90,000 to support the level of annual public spending they would incur (HH4).[25] The very high break-even point for household four reflects large health and pension costs, as well as the loss of liability for National Insurance contributions for people over 65.

[24] The break-even points will differ slightly depending on the origin of the migrant households, given different assumptions around spending. The chart relates to NMS migrant households but the estimated break-even points for OMS and non-EEA households are very similar.

[25] Each specimen household receives the maximum entitlement of child and working tax credits, and state pension. They are not receiving any other benefits (i.e. disability, housing).

Fig. 14. Stylised fiscal "break-even" analysis for specimen migrant households, 2016/17*



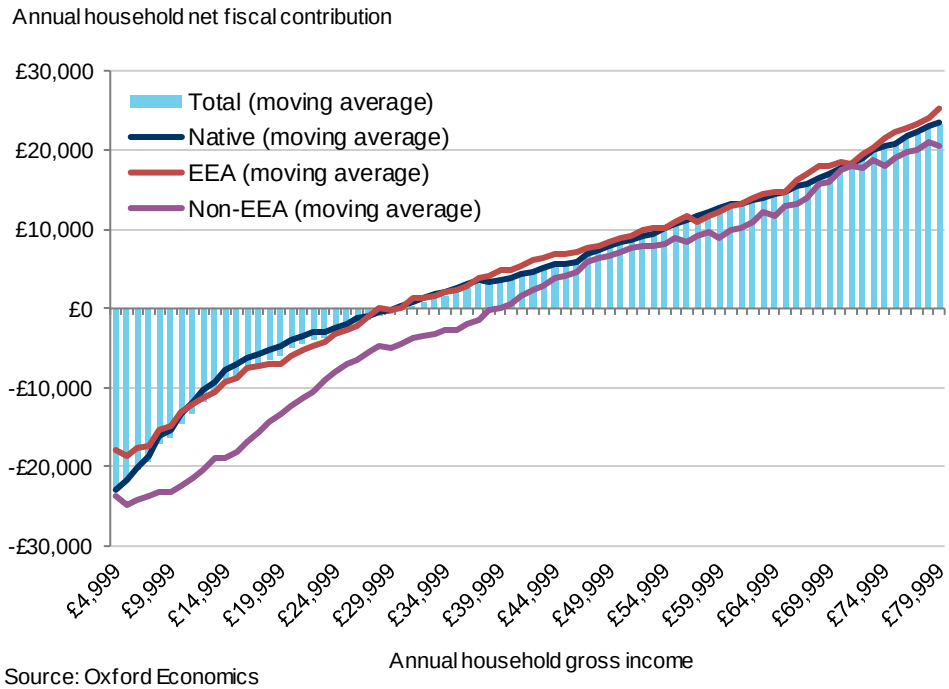
*The break-even points were calculated for NMS migrant households but the estimated break-even points for OMS and non-EEA households are very similar.
Source: Oxford Economics

For the migrant population as a whole, we estimate that the <u>average</u> net fiscal contribution becomes positive when household income is between £30,000 and £40,000 per annum (Fig. 15).[26] For this alternative analysis, we estimated the average break-even point for the entire population in 2016/17 (as opposed to in the hypothetical specimen analysis above). EEA-migrant households[27] were found to have roughly the same break-even level of household income as natives, whereas non-EEA migrant households in 2016/17 required a higher level of income for their net fiscal contribution to break even.

[26] When presenting the aggregate net fiscal contributions by population group, all estimated components at an individual level are scaled to ensure they are consistent with the budget balance. To generate household net fiscal contributions appropriate for a break-even analysis, all the estimated components (i.e. income tax, benefits) are unscaled.

[27] The groups in this chart are determined by the highest earner's country of birth.

Fig. 15. 'Break-even' income levels, 2016/17
(Household net fiscal contribution by household income level, where the household's highest earner is aged 16-64)



Source: Oxford Economics

In summary, our static analysis showed that in 2016/17, migrants contributed roughly the same as natives on average, but there are significant differences across migrant groups. OMS migrants paid more than average in taxes, due to their higher average earnings and higher employment rates, and consumed less than average in public spending, partly because of their younger age profile, compared with UK natives. NMS migrants made a smaller contribution in taxes, and made a larger claim on means-tested benefits such as tax credits, which are typical of a group that is, on average, younger and more likely to have children. Non-EEA migrants paid slightly less in taxes, compared with natives, and also required a greater slice of government expenditure, partly driven by a relatively large proportion of that population having children.

Over the longer term, the population's circumstances will change. Just as older working-age adults will retire, young adults will mature in the workplace and see their incomes rise, and parents with dependent children will see those children grow up and move into the workforce. As illustrated by our specimen household analysis in Fig. 14, just because a household is a net contributor to the UK's public finances today, does not mean they will be tomorrow, and vice versa. Their net fiscal contribution for a given level of income jumps around as they age and develop. For this reason, a lifecycle perspective is a valuable addition to our analysis.

In the next chapter, we explore the net fiscal contribution that migrants arriving in 2016 would be expected to make over the course of their lifecycle in the UK.

5. THE LIFECYCLE IMPACT OF MIGRANTS ARRIVING IN 2016

A single-year perspective of the fiscal impact of migrants is constrained by the characteristics of the migrant population in that year. It provides a useful lens on whether the migrant population made a net positive or negative impact on the government's fiscal balance, but this is only a snapshot in time. Over the years, that population will evolve, as will its tax contribution and consumption of public services. Given that immigration has long-run implications, what matters most to policy-makers is whether a migrant's contributions over his or her lifetime in the UK are likely to outweigh his or her costs.

The lifecycle perspective enables us to assess the long-term returns to migration for the UK tax payer. In this chapter, we consider whether migrants arriving in 2016 will ultimately increase or decrease the government's net debt. This is the metric by which one can assess whether the admission of an additional migrant to the UK provides a positive net return to the public finances.

5.1 HOW DO WE ESTIMATE THE FISCAL CONTRIBUTION MIGRANTS MAKE OVER THEIR LIFETIME?

Our lifecycle analysis focused on the 515,000 non-British migrants who arrived into the UK in 2016.[28] Upon arrival, this cohort was relatively young, with relatively low pay—but over time, the tax contributions and levels of consumption of public services of individuals within this cohort will evolve, as they pass through various stages of life.

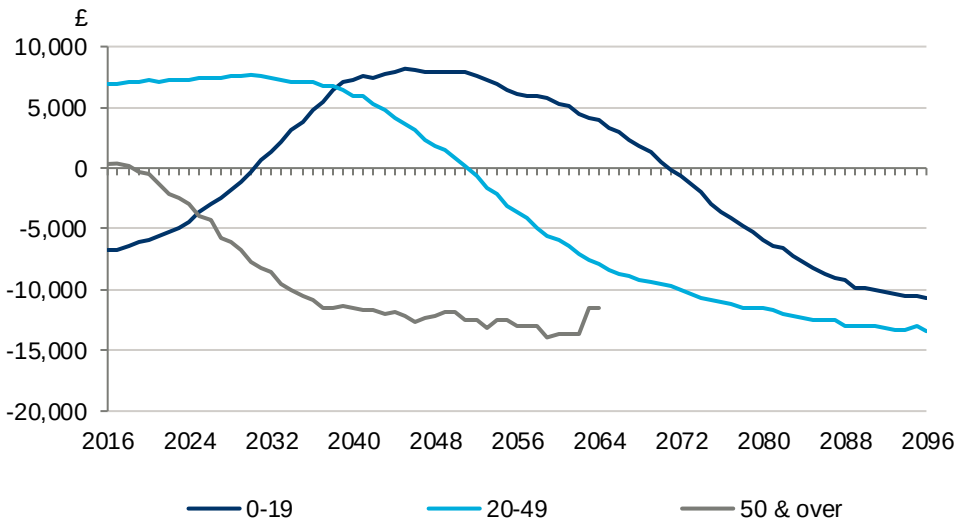
Note: any children subsequently born in the UK to these migrant parents were treated as UK natives for this lifecycle perspective, on the assumption that they would remain in the country and later contribute to the public finances in a similar way to other UK-born children. This is an important, and appropriate, difference to our static modelling approach, where the fiscal burden associated with all children of migrants, whether they were born in the UK or overseas, was ascribed to their parents.

To estimate the lifetime contribution, we began by taking the individual net fiscal contributions of migrants from our static analysis, and estimating the average net fiscal contribution of migrants by year of arrival and age. For example, the expected net fiscal contribution of the 2016 cohort after three years was approximated by the contribution in 2016 of those who arrived in 2013. We estimated this "contribution by year of arrival" for three age cohorts: zero-to-19, 20-to-49 and 50-and-over (see Fig. 16). We estimated the contributions separately for EEA and non-EEA migrants for each age

[28] The ONS' *Provisional Long-Term International Migration* reports an inflow of 589,000 migrants arriving in the UK in 2016, of which 515,000 were registered as non-British. See Table 1 of https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/internationalmigration/datasets/migrationstatisticsquarterlyreportprovisionallongterminternationalmigrationltimestimates

group, as well as for migrants who arrive as students. We then derived the average and total contributions for each age group, as made up by these underlying cohorts. Note: the contributions of the 2016 migrant cohort were adjusted to be consistent with zero net borrowing, under the assumption that the UK's budget is balanced over the long term.

Fig. 16. Annual average net fiscal contribution over the 2016 cohort's lifecycle
(Age cohorts, 2016 prices)

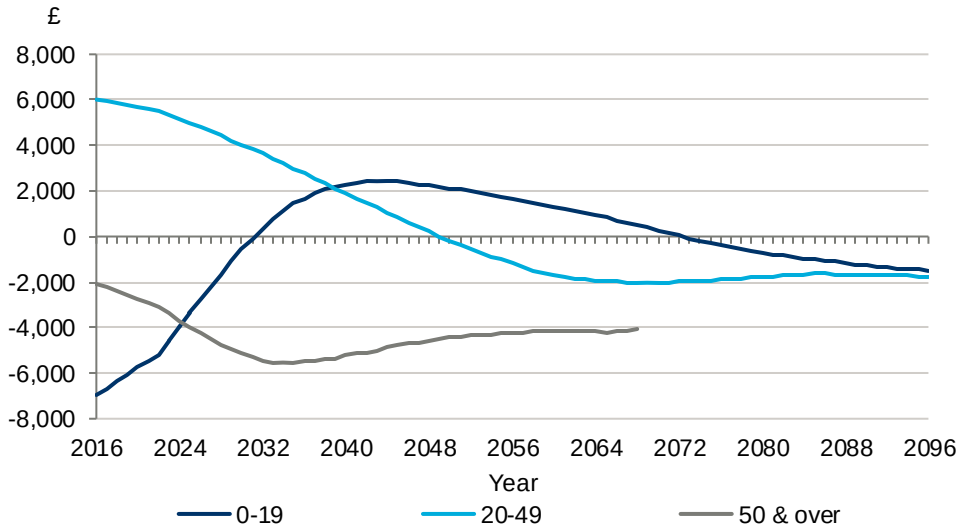


Source: Oxford Economics

We then adjusted the average contributions to be in "net present value" (NPV) terms (Fig. 17). The NPV estimation is a way of presenting future monetary values in today's terms. It reflects the fact that a given sum of money is worth more today than it is in 10 years' time—in part because the tax payer avoids having to pay interest on that amount of debt in the meantime. We estimate the NPV by discounting future net fiscal contributions at an annual discount rate of 3.5 percent, falling to 3 percent after 30 years, and 2.5 percent after 75 years, in line with Green Book guidelines.[29]

[29] The Green Book: Central government guidance on appraisal and evaluation, 2018

Fig. 17. Annual average net fiscal contribution over lifecycle of 2016 cohort, discounted and smoothed
(Age cohorts, 2016 prices)



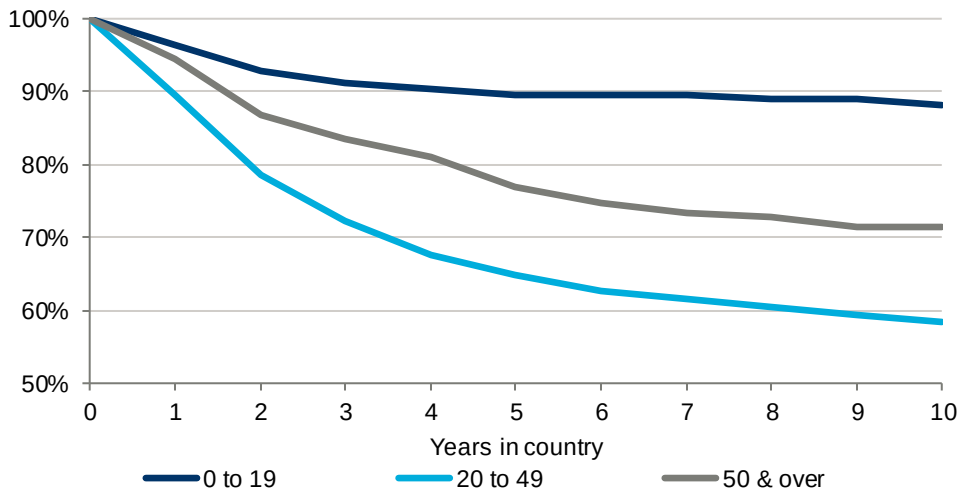
Source: Oxford Economics

With each passing year, a proportion of this migrant cohort will leave the UK, possibly to return to their country of origin. The cohort's "attrition rate" is fundamental to their lifecycle assessment. We estimated the attrition rate based on historical evidence of the length of time that migrant cohorts in the past have spent in the UK. Due to the strict visa requirements that apply to non-EEA international students, who comprised almost 20 percent of the 2016 inflow, we calculated a separate attrition rate for this group (see Appendix 3). The attrition rates were derived using estimates from the Higher Education Statistics Agency (HESA) and the International Passenger Survey (IPS), commissioned from the ONS, and are presented in Fig. 18.

According to our estimates generated from the IPS, about one third of migrants will have left the country 10 years after their arrival. But the attrition rates vary substantially by age group. Among those aged under 20 on arrival, some 90 percent still live in the UK after 10 years. The rate is lower for those aged 50 years and above. The most mobile group are working-age adults who came to the UK aged between 20 and 49, of which only 58 percent are estimated still to be in the UK 10 years later.

Note: once migrants have been in the UK for 10 years, we assumed they would stay in the country permanently, and hence their chances of dropping out of the sample become the same as for natives of the same age: determined by their life expectancy, given their age (see Appendix 3 for more details on this methodology).

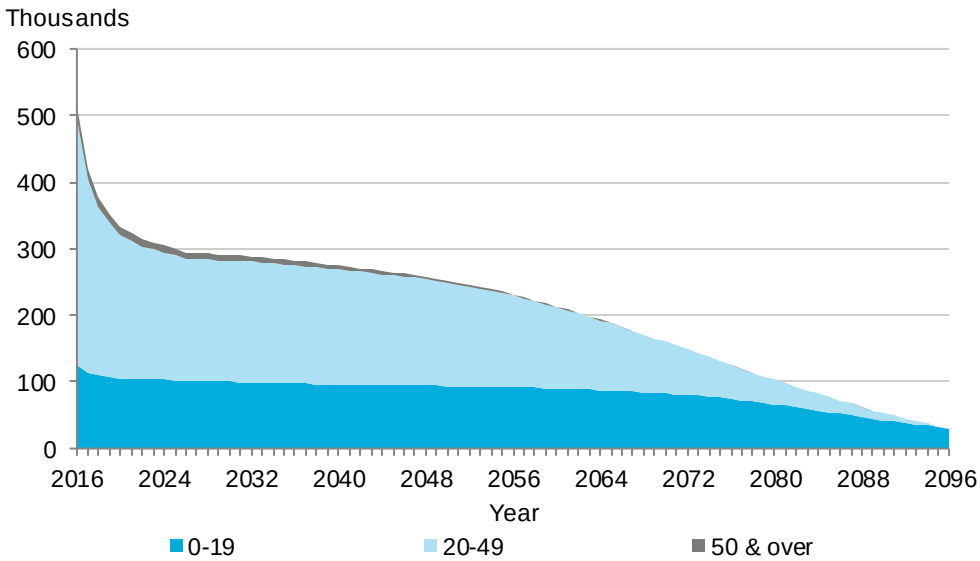
Fig. 18. Attrition of 2016 migrants by age at arrival*



Source: IPS; Oxford Economics
*Based on emigration by age and year of previous arrival in years 2005-2016

Next, we applied our estimated attrition rates and, when appropriate, the overall population survival rate (see Fig. 30 in Appendix 3) to the 2016 arrival cohort in each age group and student status, in order to forecast the rate of population decline for each group (Fig. 19) in the years after their arrival.

Fig. 19. Size of 2016 migrant cohort remaining in UK over time, by age at arrival



Source: Oxford Economics

Finally, we estimated the total discounted migrant contribution by age for each group. We did this by multiplying the discounted average contributions in Fig. 17 by our population projections. Our "bottom-up" methodology meant we could also observe the implications for EEA and non-EEA migrant groups, although to maintain a reasonable sample size, we did not disaggregate the cohort any further.

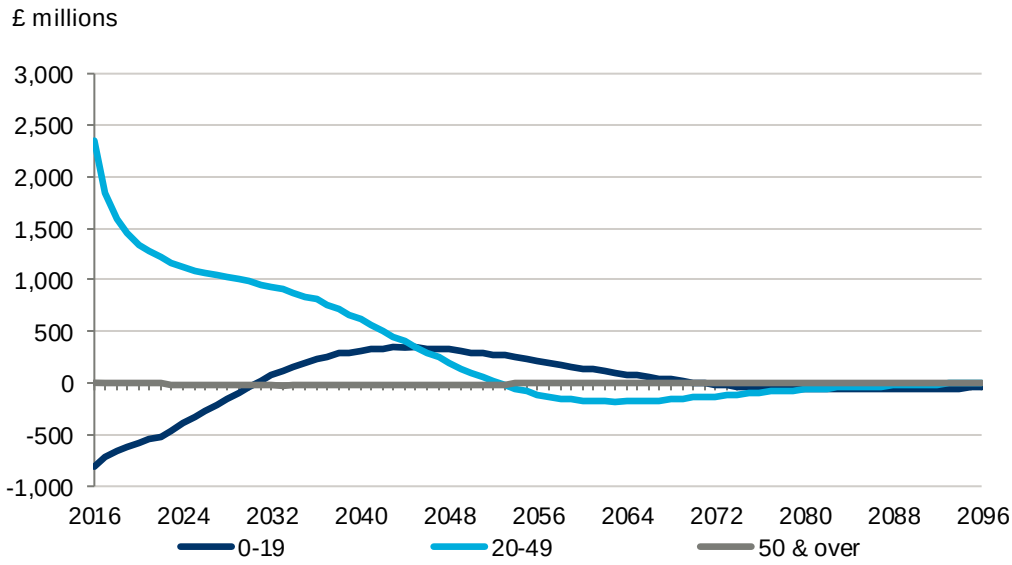
5.2 WILL THE 2016 COHORT LIKELY IMPROVE OR WORSEN THE UK'S DEBT POSITION OVER THE LONG TERM?

Our lifecycle analysis suggests that the 2016 migrant cohort will make a positive net fiscal contribution over their time in the UK. It therefore follows that the average additional migrant considering moving to the UK can be seen as a fiscal asset to the Exchequer. We estimate that the average EEA migrant arriving in 2016 will contribute a discounted total of around £78,000 to the UK public finances over his or her lifetime. For the average non-EEA migrant, we estimate a total discounted lifetime contribution of £28,000 per head.

The lifecycle contribution from migrants is strongly positive for three main reasons. First, migrants tend to arrive after the completion of their formal education in their home country, thus avoiding the significant education costs associated with UK natives. Second, as a group of predominantly young adults, the expected retirement costs associated with the later years of these migrants' lives are reduced by the fact that a large proportion tend to leave the UK again before reaching retirement. Finally, the youthful profile of this migrant cohort means that while their positive contributions occur immediately, their associated pension and health costs typically lie many years in the future, and therefore have less of an impact in today's terms.

Fig. 20 illustrates how the age composition of the 2016 migrant cohort heavily influences their lifecycle contributions.

Fig. 20. Trajectory of 2016 cohort's net fiscal contribution by age group
(Aggregate net fiscal contribution of 2016 cohort by age group, in years since arrival, discounted)

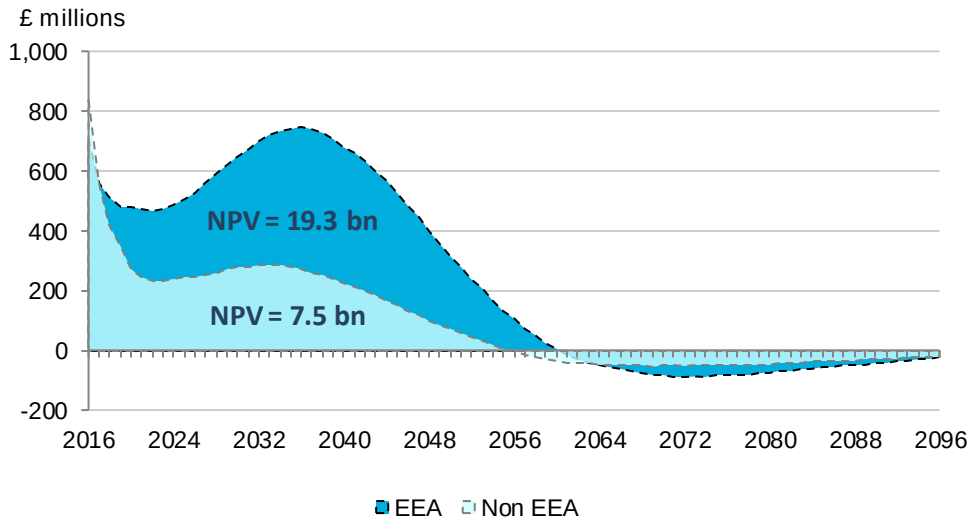


Source: Oxford Economics

In total, this means the 515,000 migrants who arrived in 2016 are expected to make a discounted net contribution of £26.9 billion to the Exchequer, over their time in the UK. This is approximately equivalent to one year's additional revenue from adding five pence to all income tax rates.[30]

Broken down further, we estimate that over the course of their time in the UK, EEA migrants arriving in 2016 will make a discounted net contribution of £19.3 billion to the public finances, whilst non-EEA migrants will make a net contribution of £7.5 billion (Fig. 21). The discounted contribution of the average UK resident over the rest of their lives should be approximately zero, assuming the budget is roughly balanced in the long-term. Therefore, a positive net fiscal contribution suggests that an additional migrant improves the country's fiscal position over the long-term.

Fig. 21. Lifetime discounted contribution of the UK's 2016 migrant cohort



Source: Oxford Economics

Our analysis shows how the aggregate fiscal contribution of the 2016 migrant cohort evolves over time. Both the EEA and non-EEA arrivals make a large positive contribution in their first year in the UK—but this total contribution is estimated to drop steeply after the first year, as a large proportion of the 20-to-49 year-old cohort leave within five years of arrival, and this groups makes up around 70 percent of the total inflow.

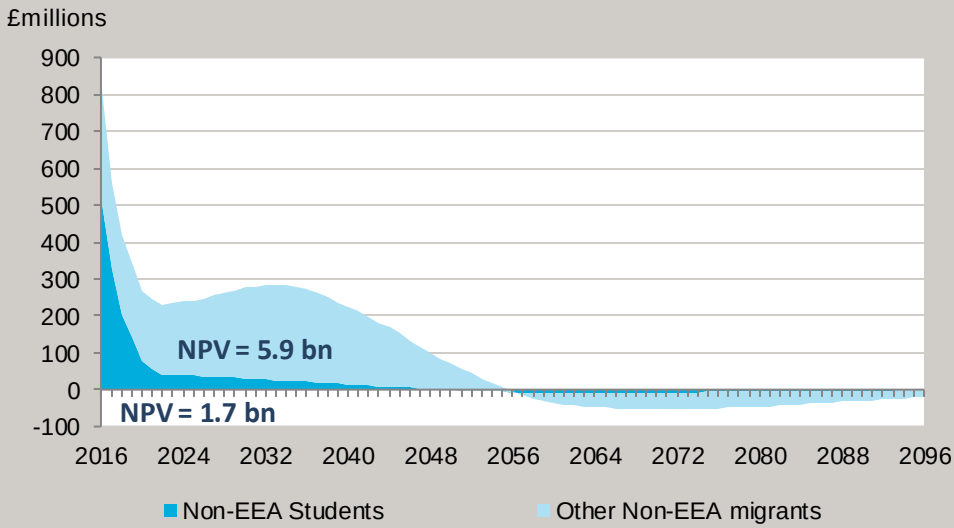
After about five years, the total contributions start rising again, as more of the zero-to-19 year-old migrant cohort enter the UK labour force, while the wages of the working-age migrants increase over time. Total contributions start declining again after 2035, as the remaining working-age adults begin to enter retirement, but it remains positive until 2055 for non-EEA and 2060 for EEA migrants, after which net fiscal contributions to the UK finances turn negative. The higher relative lifetime contribution for EEA migrants is due, in part, to higher employment rates among EEA migrants compared with non-EEA migrants.

[30] This was generated using HMRC estimates from the "Direct effects of illustrative tax changes", available at https://www.gov.uk/government/statistics/direct-effects-of-illustrative-tax-changes

BOX 5: THE DYNAMIC IMPACT OF NON-EEA STUDENTS

Non-EEA students, comprising parts of the 0-to-19 and 20-to-49 non-EEA inflow, are an important driver of the positive contribution from non-EEA migrants in their first five years. As explained above, non-EEA students comprise almost a fifth of the 2016 migrant inflow. They are estimated to make a large contribution to indirect taxes and require little spending on education and health. Furthermore, data published by the Home Office suggest that the majority of non-EEA international students return home after completing their study (see Appendix 3 for more details).[31] As a result, non-EEA students contribute £1.7 bn to the total non-EEA fiscal contribution (Fig. 22).

Fig. 22. Components of lifetime discounted contribution of the UK's 2016 non-EEA migrant cohort



Source: Oxford Economics

5.3 LIMITATIONS OF OUR APPROACH

In our lifecycle analysis, the appropriate definition for a migrant is someone born outside the UK. This means that children born subsequently to individuals within that migrant cohort were not part of the analysis. We therefore implicitly assumed that their lifetime contribution would be the same as that of the average UK native. To the extent that those UK-born children of migrant parents are more likely to leave the UK than native children, as a result of the origin of their parents, this could lead to an overestimate of the contributions in our analysis. However, we would expect the attrition rate for UK-born children of migrants to be quite low, since this is the case for migrants arriving in the UK under the age of 20, among whom the overwhelming majority stay more-or-less permanently.

[31] Home office, "Second report on statistics being collected under the exit checks programme", August 2017, available at https://www.gov.uk/government/statistics/second-report-on-statistics-being-collected-under-the-exit-checks-programme and Home Office, "Statistics on changes in migrants' visa and leave status: 2016", available at https://www.gov.uk/government/publications/statistics-on-changes-in-migrants-visa-and-leave-status-2016/statistics-on-changes-in-migrants-visa-and-leave-status-2016

Furthermore, our approach assumed that the structure of the migrant population would remain similar in the future. While we can account for changes in the age distribution, the contribution of migrants who arrived 10 years ago may not be a wholly accurate reflection of what the 2016 arrivals contribute in 10 years' time, due to changes in other characteristics, such as skill level. Therefore policy changes which affect the composition of the migrant inflow are not captured in this approach. However, there are few other alternatives to using past trends when forecasting migrant contributions.

Finally, we did not explicitly allocate visa fees and surcharges paid by recent non-EEA migrants, given the difficulty in assigning these to individuals under different circumstances. Also, since fees change each year, and new surcharges have recently been introduced at different stages, accounting for fees and charges would complicate the lifecycle analysis. Therefore, our estimates will understate the net fiscal contributions of recent non-EEA migrants for their first five years in the UK (see Appendix 5 for more details on visa fees).

6. CONCLUSION

Immigration is a central theme in the post-Brexit policy debate. In that context, it is important to understand the fiscal implications of migration—so in this study, we have attempted to add to the evidence base upon which such policy decisions might be taken. Estimating the fiscal impact of immigration is challenging for many reasons: the population of migrants is diverse, data are limited, and there are numerous theoretical dilemmas to overcome in order to assess fairly the relative fiscal contributions of different groups in society.

When looking at the static contribution made by the current migrant population in 2016/17, we estimated a larger contribution for EEA migrants compared with both non-EEA migrants and UK natives. This is true for EEA migrants from both older member states and the new member states that joined since 2004. The net positive contribution of the former is driven by higher wages and higher employment rates. For the latter, it is largely driven by higher employment rates and a lower age profile, resulting in a low burden on state pensions and health spending in the short term. Taking migrants as a single group, we find a net fiscal contribution that is marginally higher than that of UK natives.

Numerous attempts have been made to quantify the static contribution of migrants to the UK's public finances. While this is an important perspective from which to judge the fiscal impact of immigration, it is also somehow unsatisfying. For most migrants, the choice to come to the UK is, or ends up becoming, a permanent one. Those people will age, and their children will most likely enter the UK workforce.

For policy-makers and taxpayers, the lifecycle impact of migrants is therefore arguably of greater relevance. If the UK accepts an additional migrant, what is the overall fiscal impact of that decision? In answering this question for the first time, our study breaks new ground.

From a dynamic perspective, our analysis suggests migrants will make a positive net contribution to the public finances over their lifetime. Even for non-EEA migrants, who presented a net fiscal deficit in our static analysis, their age dynamics work in the favour of the Exchequer. A large share of the migrant cohort spends the first stage of its "fiscal lifecycle" overseas—the costly period of education and childhood. A large share of the group also returns to their country of origin before they enter the third and final stage of their fiscal lifecycle—the costly period of retirement and old age. Hence, on average, they represent a fiscal asset to the Exchequer upon arrival on UK soil, which will pay dividends for years into the future.

APPENDIX 1: STATIC ASSESSMENT

THE USE OF GOVERNMENT AGGREGATES IN CALCULATING INDIVIDUAL CONTRIBUTIONS

In addition to survey-based data from various sources (see Section 3.3), we used data on government revenue and expenditure to calculate all taxes, transfers, and the cost of public goods and services at an individual level. Revenues data come from the Office for Budget Responsibility's Economic and Fiscal Outlook,[32] and expenditure data come from HM Treasury's Public Expenditure Statistical Analyses (PESA).[33]

For a number of expenditure and revenue items, we began by calculating the individual expenditures/receipts according to a set of bespoke rules, then scaled the individual components so that the sum of the weighted expenditures/receipts across the sample equalled the published total for each component. For example, we calculated individuals' income tax contributions in the sample using the tax rules for the 2016/17 fiscal year and each respondent's income, then scaled these contributions so the sum of the weighted income tax payments equalled the total income tax receipt published by the OBR.

For other components, we allocated the total expenditure/revenue component according to a set of rules—for example, expenditure on primary and secondary education was allocated evenly to all children of school age. In this appendix, we outline each of the revenue and expenditure components measured in this analysis (see Fig. 23 and Fig. 24 respectively), and the assumptions used to calculate the individual contributions to each component.

Fig. 23. Revenue components included in our calculations

Government revenue component breakdown	
OBR component	OE grouping
• Income tax	Income tax
• National insurance contributions	National insurance contributions
• Value added tax • Fuel duties • Stamp duty land tax • Tobacco duties • Spirits duties • Wine duties • Beer and cider duties • Air passenger duty • Insurance premium tax • Vehicle excise duties	Indirect taxes
• Corporation tax Petroleum revenue tax	Company taxes
• Business rates	Business rates
• Council tax	Council tax

[32] 'March 2018 Economic and Fiscal Outlook – Charts and Tables: Fiscal', Table 4.6, available at http://obr.uk/efo/economic-fiscal-outlook-march-2018/

[33] Table 5.2, available at https://www.gov.uk/government/statistics/public-expenditure-statistical-analyses-2017 While the most recent estimates on government expenditure in PESA were published in July 2017, the most recent OBR estimates of government expenditure and revenue were published in March 2018 (using up-to-date data on revenues from the ONS). Therefore, we scaled the expenditure components in the PESA tables equally to ensure expenditure from the two sources were equal and as up-to-date as possible.

• Capital gains tax	Capital gains tax
• Inheritance tax	Inheritance tax
• Gross operating surplus • Interest and dividends	Gross operating surplus, and interest and dividends
• Climate change levy • Other HMRC taxes VAT refunds • Bank levy • Bank surcharge • Licence fee receipts • Environmental levies • EU ETS auction receipts • Scottish and Welsh taxes • Diverted profits tax • Stamp taxes on shares • Other taxes • EU contributions • Other receipts	All other taxes/income streams

NOTES ON CALCULATING INDIVIDUAL CONTRIBUTIONS TO EACH REVENUE COMPONENT

1. Income tax

Estimating taxable income from employee earnings:

Using the 2016/17 Labour Force Survey (LFS) sample of employee earnings, we began by imputing missing values of employee earnings for individuals who claim to be employed in the LFS and have reported an industry and occupation in which they work (see Appendix 2 for imputation method).[34] Without this adjustment, the number of employees (and therefore the total income tax liability) would be understated, as the size of the employee workforce calculated from aggregating the income weights in the LFS was notably higher than aggregating the adjusted population weights in waves one and five of the LFS.[35]

To estimate the taxable income from employee earnings, we followed Dustmann and Frattini (2014) and began by estimating the average payment into private pensions for each employee. We did this by taking the probability of paying into a private pension scheme, and multiplying it by the average contribution rate, calculated from the Occupational Pension Scheme Survey (OPSS).[36] However, given the General Lifestyle Survey has been discontinued, we used estimates from the *Pension Type by Industry and by Gross Weekly Earnings Bands (P2)* publication, from the Office for National

[34] While the imputation method in Appendix 2 relates to estimating missing values in the LFS using another survey, the FRS, the method for estimating missing employee earnings only used information from within the LFS.

[35] In the LFS, respondents are interviewed for five successive waves. Each quarter, one new wave enters, and one drops out. We only used waves one and five of each quarterly LFS sample, as only these contain information on employee earnings. This method also avoids double counting the same respondents. Given we only used part of each quarterly LFS sample and pool four quarters of data, we adjusted the population weights so they were representative of the UK population in the 2016/17 fiscal year.

[36] Available at https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/pensionssavingsandinvestments/bulletins/occupationalpensionschemessurvey/previousReleases

Statistics (ONS), to estimate the probability of paying into a pension scheme.[37] We subtracted our estimate of pension payments and the personal allowance (for the 2016/17 fiscal year) from gross employee earnings reported in the LFS, to calculate taxable income for each individual.

Estimating taxable income from pensions:

We used an estimate for total income from private pensions generated by HMRC using the Survey of Personal Incomes (SPI), and allocated this evenly across individuals of pension age.[38] We combined this with our estimate for state pension income, which was assumed to be received by each retired individual of pension age, in order to generate total income from pensions (see Appendix 2 for how state pension income was estimated).

Estimating taxable income from self-employment:

We imputed self-employed earnings for each individual identified in the LFS as being self-employed using the Family Resources Survey (FRS—see Appendix 2 for more details).

Estimating taxable income from investments:

We generated individual estimates of income from investments using an estimate of total income from property, interest, dividend and other income, generated by HMRC using the SPI.[39] This income was allocated to individuals based on their contribution to total wealth, using the *Total Wealth by Age Band* data generated by the ONS, based on the Wealth and Assets Survey (WAS).[40] This ensured older individuals are responsible for a larger share of this tax take than younger individuals.

Estimating income tax

We summed all of the income earned by an individual (whether it be from employee earnings, self-employment earnings, pension earnings or investment earnings), then applied the personal allowance and tax rates for the 2016/17 fiscal year to estimate the income tax paid by each individual. As described above, these liabilities were then scaled such that their weighted sum equalled the total income tax take.

2. National Insurance Contributions

We estimated each employed individual's National Insurance Contributions (NICs) by applying the NICs thresholds and rates for the 2016/17 fiscal year to individual earnings of employees and the self-employed.

[37] Available at https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/workplacepensions/datasets/annualsurveyofhoursandearningspensiontablespensiontypebyindustryandbygrossweeklyearningsbandsp2
[38] Available at https://www.gov.uk/government/statistics/earned-income-2010-to-2011. Given the latest estimate are for the 2015-16 fiscal year, we grew income forward by CPI so the income estimate was in 2016-17 terms.
[39] Available at https://www.gov.uk/government/statistics/investment-income-2010-to-2011
[40] Available at https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/incomeandwealth/adhocs/008028breakdownoftotalwealthbyagebandjuly2006tojune2016

3. Indirect taxes

3.1 Indirect taxes paid by earners

To estimate individual contributions to indirect taxes, we began by estimating effective tax rates, as a proportion of total expenditure, using ONS data on taxes paid by household disposable income decile.[41] We estimated effective tax rates for the following taxes and duties:

- Value-added tax (VAT)
- Tobacco duties
- Wine and spirits duties
- Beer and cider duties
- Fuel duties
- Air passenger duties
- Insurance premium tax
- Customs duties
- Betting taxes
- Vehicle excise duty
- Stamp duty on house purchases

We then applied these effective tax rates to the household disposable income estimates in our dataset, based on income decile. Next, we adjusted for differences in indirect taxes paid by migrants and natives according to their estimated differences in spending—using World Bank data on remittances[42] and an ONS estimate for total household disposable income.[43] We estimated the share that each group (native, non-EEA, OMS, NMS) contributes to total household income by applying income shares generated from the LFS to the total household disposable income estimate.

Finally, we estimated the proportion of gross remittances in household disposable income for each migrant group, then scaled down each individual's indirect taxes contributions by this magnitude. We estimated the proportion of remittances in total household disposable income to be about five percent for both OMS and NMS migrants, and around 11 percent for non-EEA migrants.

3.2 Indirect taxes paid by international students

We allocated an expenditure estimate to international students studying full time under the assumption that their parents' income has not been captured in the earnings sample (UK native students' expenditure should be captured in the sample through their parents' income). We assumed the income of international students to be the same as their expenditure, and allocated these income and expenditure estimates to both EEA and non-EEA tertiary students who have been in the UK for less than five years and are either the household reference person, a cohabitee or an 'other non-relative' within the household (using the *relhrp6* variable).[44]

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[41] "The Effects of Taxes and Benefits on Household Income", Table 28, available at https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/incomeandwealth/datasets/theeffectsoftaxesandbenefitsonhouseholdincomefinancialyearending2014

[42] Available at http://www.worldbank.org/en/topic/migrationremittancesdiasporaissues/brief/migration-remittances-data

[43] Available at https://www.ons.gov.uk/economy/grossdomesticproductgdp/timeseries/qwnd/ukea

[44] We identify these individuals using the *relhrp6* variable, and assign expenditure estimates if the individual is the household reference person, a cohabitee or an 'other non-relative'.

The expenditure estimates were derived from the Department for Education's most recent *Student Income and Expenditure Survey 2014 to 2015,* and adjusted for inflation.[45] Given international students are underestimated in the LFS—since many live in halls of residence, while the LFS is a household survey—we increased the population weights for full-time international students to be in line with the statistics published by the Higher Education Statistics Agency (HESA).

4 & 5. Company tax and business rates

We allocated company taxes (mainly corporation tax) and business rates to working individuals based on their proportion of total earnings, which was estimated using the reported and imputed earnings in the LFS. This was done on the assumption that capital taxes accrue in proportion to the human capital deployed. This allocation implies that additional migrant workers are complemented by additional investment, including in commercial premises; hence profits and the capital stock change with the size of the workforce.

6. Council tax

We allocated council tax evenly to each household in the LFS; however, we applied an estimated council tax reduction to those individuals claiming they have received one. The average reduction was estimated by taking the total council tax forgone from the ONS's *Local Authority Revenue Expenditure and Financing*[46] dataset, and dividing by the number of households subject to a discount using the ONS's *Council Tax Base*[47] dataset for England.

7. Capital gains tax

Since we did not have information on financial transactions, we used wealth as a proxy for taxes paid on capital gains. We allocated capital gains tax to the adult population in the LFS based on the individual's share of total wealth. This was estimated using the proportion of wealth held by age group, calculated using ONS estimates of the "Total Wealth by Age Band" data from the *Wealth and Assets Survey.*[48]

8. Inheritance tax

For inheritance tax, we followed Dustmann and Frattini (2014) and allocated this equally to homeowners over the age of 70 in the LFS sample.

9. Gross operating surplus, interest and dividends

This component reflects the "gross operating surplus", interest and dividends earned by the public sector. Gross operating surplus measures the profits of public corporations before tax, interest payments or depreciation.[49] For example, spending and receipts associated with housing associations are captured in this component. Given the difficultly in identifying the individuals who contribute to income earned by the government, we allocated these costs and revenues on a per-capita basis. It should be noted we also offset expenditure on social housing to this component, as there is evidence to suggest expenditure on social housing is broadly offset by the rental income received (see *Housing development* in the next section of this appendix for more details).

[45] Available at https://www.gov.uk/government/publications/student-income-and-expenditure-survey-2014-to-2015. We grow income forward by CPI so that the estimates are in 2016-17 terms

[46] Available at https://www.gov.uk/government/statistics/local-authority-revenue-expenditure-and-financing-england-2017-to-2018-budget

[47] Available at https://www.gov.uk/government/statistics/council-taxbase-2017-in-england

[48] Available at https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/incomeandwealth/adhocs/008028breakdownoftotalwealthbyagebandjuly2006tojune2016

[49] http://obr.uk/forecasts-in-depth/tax-by-tax-spend-by-spend/pcgos/

10. All other revenue streams

All other taxes and government revenue streams, such as landfill tax and the climate change levy, were assigned on a per-capita basis.

Fig. 24. Expenditure components included in our calculations

	Government Expenditure Component breakdown
HMT component	OE grouping
• Executive and legislative organs, financial and fiscal affairs, external affairs • Foreign economic aid • General services • Basic research • R&D general public services • General public services n.e.c. • Military defence • Civil defence • Foreign military aid • R&D defence • Defence n.e.c. • services • Fire-protection services • Law courts • Prisons • R&D public order and safety • Public order and safety n.e.c. • General economic, commercial and labour affairs • Agriculture, forestry, fishing and hunting • Fuel and energy • Mining, manufacturing and construction • Transport • Communication • Other industries • R&D economic affairs • Economic affairs n.e.c • Waste management • Waste w ater management • Pollution abatement • Protection of biodiversity and landscape • R&D environment protection • Environment protection n.e.c. • Community development • Water supply • Street lighting • R&D housing and community amenities • Housing and community amenities n.e.c. • Medical research • Recreational and sporting services • Cultural services • Broadcasting and publishing services	Public goods

Fig. 24 continued	
• Religious and other community services • R&D recreation, culture and religion • Recreation, culture and religion n.e.c. • Education not definable by level • Subsidiary services to education • R&D education • R&D social protection • Accounting adjustments	Public goods (continued)
• Public debt transactions	Debt interest
• Housing development	Housing development
• Medical services • Central and other health services	Health
• Pre-primary and primary education (under-fives)	Pre-primary education
• Pre-primary and primary education (primary education) • Secondary education	Primary education and secondary
• Post-secondary non-tertiary education • Tertiary education	Tertiary education
• Old age • Survivor • Family and children (mainly child benefit) • Unemployment • Housing • Social exclusion n.e.c (mainly tax credits)	Social protection: benefits
• Sickness and disability: personal social services • Old age: personal social services • Family and children: personal social services • Unemployment: personal social services • Social exclusion n.e.c: personal social services	Social protection: personal social services
• Police services: immigration and citizenship • Police services: other police	Police services
• EU transactions	EU transactions

NOTES ON CALCULATING INDIVIDUAL CONTRIBUTIONS TO EACH EXPENDITURE COMPONENT

1. Public goods

We allocated both "pure" and "congestible" public goods on a per-capita basis (see Section 3.2 for further explanation). This is because even pure public goods and services (that are non-rival in consumption) are often explicitly linked to GDP (most importantly, defence spending and foreign aid), and are therefore liable to increase as the population grows.

2. Debt interest

The allocation of interest on the stock of government debt is problematic. From an economic perspective, it would make sense to allocate this cost to the current users of the public assets that are financed by the debt. However, identifying those assets (and hence the users of those services) is a complex task. For simplicity, we therefore allocated the costs on a per-capita basis.

3. Housing development

This component covers all spending on the building and maintenance of social housing. Previous studies have allocated expenditure on social housing on a "user pays" basis, allocating the cost to those who rent from local authorities or housing associations. However, there is evidence to suggest that such expenditure is broadly offset by the rental income received. Data published by the *Ministry of Housing, Communities & Local Government* suggest that local authority expenditure and revenue in England were both roughly £8.4 bn in 2016/17.[50] We therefore assumed that expenditure on social housing is offset in the government's gross operating surplus.

4. Health

Wadsworth (2013) finds evidence to suggest that age is the key determinant of health spending in the UK, and after controlling for this, there is little difference in the use of health services between migrants and natives.[51] We therefore assigned health expenditure to individuals according to their age level, using near-term projections on public health spending by age from the OBR's *Fiscal Sustainability Report—January 2017*.[52]

5. Education

We allocated expenditure *on pre-primary education* equally to children aged zero-to-four years in the LFS sample, and allocated *primary* and *secondary* expenditure to five-to-18 year-olds who report they are still in school. For *tertiary level education*, we assigned costs equally to the population who report they are studying for a tertiary qualification. However, we assumed that non-EEA students who have been in the UK for less than three years do not receive student funding support, and therefore these students were not allocated tertiary education costs.

6. Social protection: benefits

Around 88 percent of expenditure on social protection is in the form of *cash benefits*, while the remainder is for *personal social services*. The PESA tables report expenditure on the following benefits:

- Unemployment
- Old age: mainly state pension
- Housing
- Sickness and disability
- Family: mainly child benefit and income support
- Social exclusion: mainly personal tax credits, universal credit, and carer's allowance
- Survivor: mainly bereavement benefits

We began by imputing the level of benefits payments for each individual who reports that they claim a particular benefit in the LFS. To do this, we used information on benefits from the FRS (see Appendix 2 for methodology). We then scaled all benefits receipts, such that the weighted sum of all benefits was equal to the total published by HM Treasury. The scaling factors are reported overleaf, in Fig. 25:

[50] Information available at https://www.gov.uk/government/statistics/local-authority-revenue-expenditure-and-financing-england-2016-to-2017-budget-individual-local-authority-data

[51] Wadsworth, J. (2013). 'Musn't grumble: immigration, health and health service use in the UK and Germany', Fiscal Studies, vol. 34(1), pp. 55–82.

[52] Chapter 3, Chart 3.7, available at http://obr.uk/fsr/fiscal-sustainability-report-january-2017/

Fig. 25. Scaling factors applied to benefit estimates

Benefit	Scaling factor
Unemployment	1.2
Old age	3.7
Survivor	1.4
Disability	2.9
Housing	2.1
Family	1.3
Social exclusion	1.6

This process revealed the problems with imputing some benefits. For example, the scaling factor is very large for old age benefits, and this appears to be driven by under-reporting, as the number of claimants of state pensions is much lower in the LFS compared to DWP statistics. Given that in practice, state pensions are allocated according to a simple rule (based on age), rather than using the imputations generated from the FRS, we instead allocated expenditure on old-age pensions to all individuals over the state pension age in the LFS.

The scaling factors for some other components are also quite large, which is consistent with the number of claimants in the LFS being lower compared with those reported in DWP statistics.[53] However, there is no clear solution to addressing underreporting with other types of benefits. Therefore, when conducting individual analysis (i.e. average break-even points), we used unscaled estimates of benefits to avoid the scaling distorting our results.

7. Social protection: personal social services

Expenditure on personal social services (or benefits in kind) includes services such as free school dinners and home care.[54] While we could not directly identify who uses these services, we had spending estimates for these by the following categories: old age, sickness and disability, family, and social exclusion. We therefore allocated each of these expenditures equally to those claiming cash benefits in these categories (as assumed by Dustmann and Frattini, 2014).

8. EU transaction

We allocated this component on a per-capita basis, as the UK's contribution to the EU budget is "predominantly based on the size of the UK's economy, relative to those of other EU member states, plus contributions based on tax and levy revenues",[55] which will likely increase as the population rises.

9. Police services

We followed Dustmann and Frattini (2014) for this allocation. While most police services were allocated on a per-capita basis, immigration-related police services were allocated to migrants only.

[53] Information available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/637845/dwp-quarterly-benefit-stats-summary-august-2017.pdf

[54] Information available at https://backup.ons.gov.uk/wp-content/uploads/sites/3/2015/12/social-protection-dcp171766_426958.pdf

[55] http://webarchive.nationalarchives.gov.uk/20160105160709/http://www.ons.gov.uk/ons/guide-method/method-quality/specific/economy/national-accounts/changes-to-national-accounts/blue-book-and-pink-book-2015-changes/gdp--gni-and-the-uk-s-contribution-to-the-eu-budget.pdf

APPENDIX 2: IMPUTATION METHODOLOGY

While the LFS includes information on an individual's country of origin, whether they are receiving benefits, and whether they are self-employed, it does not provide any information on the amount of benefits and self-employment income received. The FRS, on the other hand, provides information on the amount of benefits and self-employment income received by individuals, but less detail on their country of origin (while we could determine whether or not an individual was born in the UK in the FRS, we could not consider more granular breakdowns, such as whether a migrant is from inside or outside the EEA).

We therefore combined the merits of both surveys and used the FRS to impute the amounts of benefits and self-employment earnings received by individuals and households in the LFS. We computed values for the following benefit categories: unemployment, old age, housing, sickness and disability, family, social exclusion (mainly tax credits), and survivor benefits.

GROUPING AND MATCHING INDIVIDUALS

Imputing the missing amounts in the LFS using information on similar individuals in the FRS involves, firstly, grouping individuals in both surveys according to the one or more of the following variables:

- Age: 16-20; 21-30; 31-40; 41-50; 51-60; 61-70; and over-70s.
- Place of origin: UK and non-UK.
- Education: Degree or equivalent; Higher education below degree level; A-Levels or equivalent; GCSE (A-C) or equivalent; and other qualifications.
- Industry: Agriculture; Mining; Manufacturing; Utilities; Construction; Trade (wholesale and retail); Transport and logistics; Information and communication services; Financial services and insurance; Real estate; Professional and scientific activities; Public services; Arts and entertainment; Others.
- Household income: No income; Income more than zero but less than £100 per week; Income more than £100 but less than £500 per week; Income more than £500 per week.
- Number of children.
- Region of residence: London, and the rest of the UK.[56]
- Gender
- Cohabiting status: Whether the couple is cohabiting (including married) or not.

[56] We limited the regions to these two broad regions to avoid making the groups too small. In particular, we chose these two broad regions as the average rents and wages in London are significantly higher than the rest of the UK. See the ONS *Index of Private Housing Rental Prices* (https://www.ons.gov.uk/economy/inflationandpriceindices/datasets/indexofprivatehousingrentalpricesreferencetables) and the ONS Annual Survey of Hours and Earnings (2017) (https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/bulletins/annualsurveyofhoursandearnings/2017provisionaland2016revisedresults#regional-earnings).

Fig. 26 shows the variables used for each component to group individuals in our imputation process. For example, to impute self-employment income, individuals were grouped on the basis of age, place of origin, region of residence, education, and industry. Our choice of attributes to define the categories was based on information available both in the LFS and the FRS, and criteria that could have an influence on the amount of benefits or self-employment income.

Fig. 26. Groups used for matching in imputation process

	Age	Place of Origin (UK, Non-UK)	Region of residence	Education	Industry	Household income	Number of children	Cohabiting	Gender
Self-employment earnings	✓	✓	✓	✓	✓				
Unemployment benefits	✓	✓	✓					✓	
Pension benefits	✓	✓							✓
Housing benefits	✓	✓	✓			✓	✓	✓	
Survivor benefits	✓	✓							✓
Sickness and disability benefits	✓	✓				✓			
Family Benefits	✓	✓				✓	✓	✓	✓
Social Exclusion	✓	✓				✓	✓	✓	✓

POTENTIAL IMPUTATION TECHNIQUES

Regression

A regression model could be estimated to predict observed values of a variable based on other variables; the model could then be used to impute values in cases where that variable is missing. The problem with this approach is that in our survey, we did not have a number of characteristics that influence the amount of benefits received or self-employment earnings. As these variables would not be included in the regression, the fitted values from the regression were likely to be biased.

Further, these variables would influence the distribution of benefits. In other words, the fitted values would not have the peaks and drop-offs around certain thresholds. For example, Jobseekers' Allowance is up to £57.90 for individuals aged 24 or below; £73.10 for those aged 25 or over; and £114.85 for couples aged over 18, so we would expect a well-imputed frequency distribution to exhibit bunching around these discrete points. Fitted values generated using a regression with omitted explanatory variables are not likely to mimic these distributional aspects, instead producing simple means conditional on a set of characteristics. Hence, we needed a different approach.

Hot-deck imputation

This involves imputing a missing value from a randomly selected similar record from the same dataset. This approach preserves the distributional quirks of the underlying data, as it does not involve averaging. Our approach was very similar to this: we selected a similar record based on the individual's attributes (as discussed above), *but from a different dataset*.

IMPUTATION METHODOLOGY

Our imputation approach for benefits was as follows:

1. For each individual/household claiming a particular benefit in the LFS dataset, we found the group of individuals/households with matching attributes in the FRS dataset.
2. We then randomly drew an individual/household from the matching group in the FRS dataset; the benefits amount corresponding to this individual was attributed to the individual in the LFS dataset.
3. We then repeated steps (1) and (2) for each individual in the LFS dataset.
4. For LFS individuals or households where we did not find a group with matching attributes, we drew randomly from the whole population.

We conducted the same process for each self-employed individual in the LFS to impute self-employment earnings. We also removed outliers from the sample of self-employment earnings estimates, to reduce the impact of randomness on the results.

Fig. 27 illustrates the similarities in the FRS distribution, and the composite distribution imputed in the LFS (generated using our preferred method, outlined above), for several key benefits and self-employment income. The figures below show that the distribution and means of the imputed values are close to the corresponding values in the FRS. This gave us confidence that the technique was faithfully simulating benefit claims and self-employment income across the sample.

Fig. 27. Distribution comparisons: FRS vs Composite

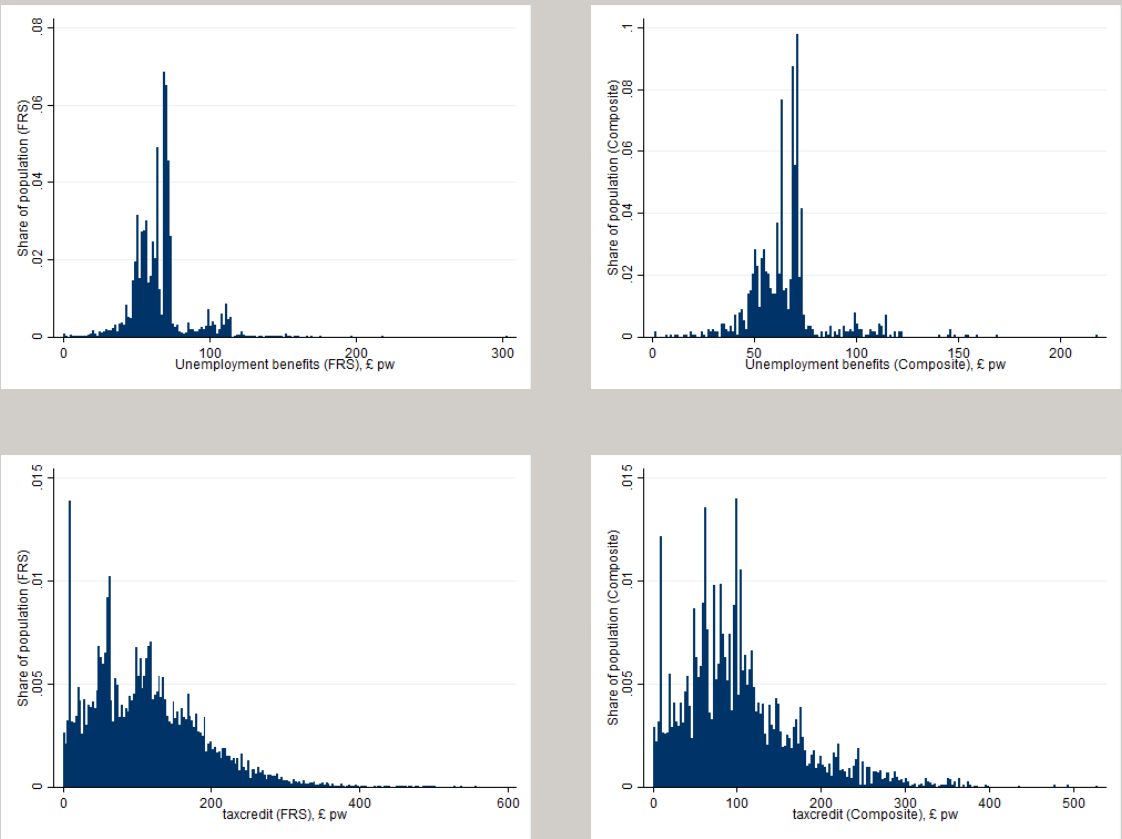
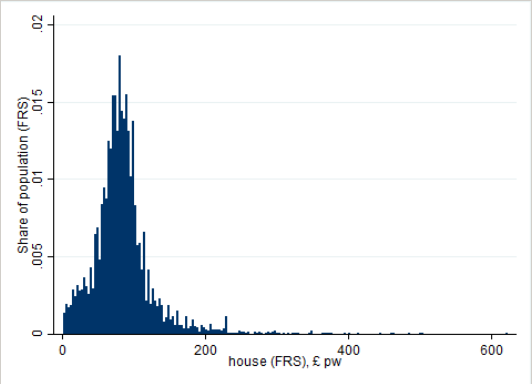
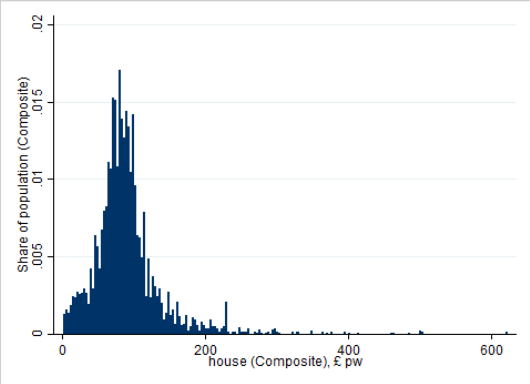
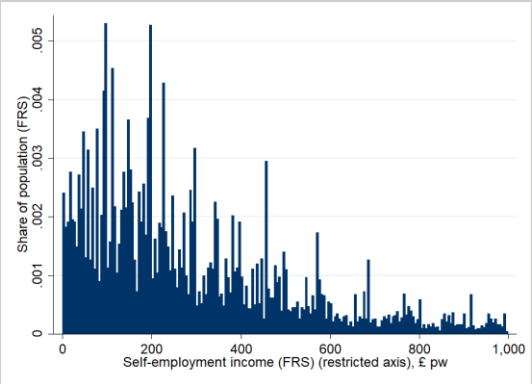
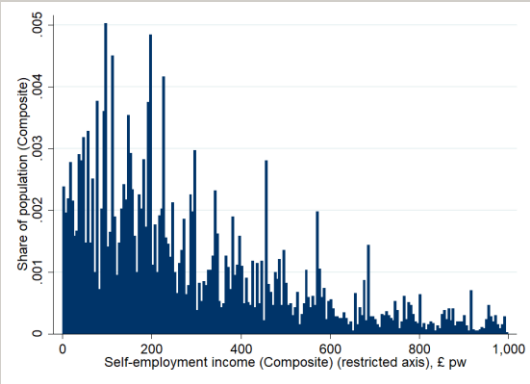


Fig. 27 (continued)









APPENDIX 3: LIFECYCLE ASSESSMENT

For the lifecycle element of this report, we set out to estimate the total fiscal contribution to the UK of migrants arriving in the UK in 2016, from the first day in the country to their last. This meant taking into account how their net contribution would evolve as:

- their wages rise with experience;
- their reliance on public services changes with age;
- their probability of leaving the UK increases;
- their life expectancy changes with age.

We based our analysis in the 2016 context by holding 2016/17 fiscal policy constant for all future years, then calculating the net present value (NPV) of all future costs and benefits. Establishing the 2016 migrant cohort's total lifecycle fiscal contribution required the following calculations:

- The "attrition rate" of the 2016 migrant cohort (i.e. how long each migrant is projected to stay in the UK, before either leaving the country again or death). This in turn gave us a population forecast for the 2016 migrant cohort.
- The average migrant's fiscal contribution for each year spent in the UK, which we calculated using the individual fiscal contributions from the static analysis in Chapter 4.

ESTIMATING THE ATTRITION RATE OF THE UK'S 2016 MIGRANT COHORT

A key determinant of the total lifetime net fiscal contribution is how long migrants stay in the UK: do they settle indefinitely, or return home before retirement?

We adjusted the population of the 2016 cohort with an "attrition rate" reflecting the probability that a migrant might leave the UK or die in the UK, given his or her age. The individual attrition rate depends on the migrant's age on arrival, and the number of years they have spent in the country. We assumed that migrants stay indefinitely after 10 years in the country. Therefore, after the first 10 years, the population decline of the 2016 inflow depends only on their life expectancy, given age.

The attrition rate was calculated using 2005-2016 ONS data[57] from the International Passenger Survey (IPS) on migrant inflows and outflows by age and year, weighted by their population equivalents.

[57] Office for National Statistics, International Passenger Survey estimates of long-term international immigration by age, and emigration of former immigrants by age and year of previous arrival in the UK, 2005 to 2016, available at: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/internationalmigration/adhocs/008421internationalpassengersurveyestimatesoflongterminternationalimmigrationbyageandemigrationofformerimmigrantsbyageandyearofpreviousarrivalintheuk2005to2016

For example:

$$3\ year\ attrition\ rate\ of\ 2013\ inflow = \frac{Emigration\ population\ of\ 2016\ with\ year\ of\ arrival\ 2013}{Inflow\ of\ migrants\ in\ 2013}$$

$$3\ year\ attrition\ rate\ of\ 2012\ inflow = \frac{Emigration\ population\ of\ 2015\ with\ year\ of\ arrival\ 2012}{Inflow\ of\ migrants\ in\ 2012}$$

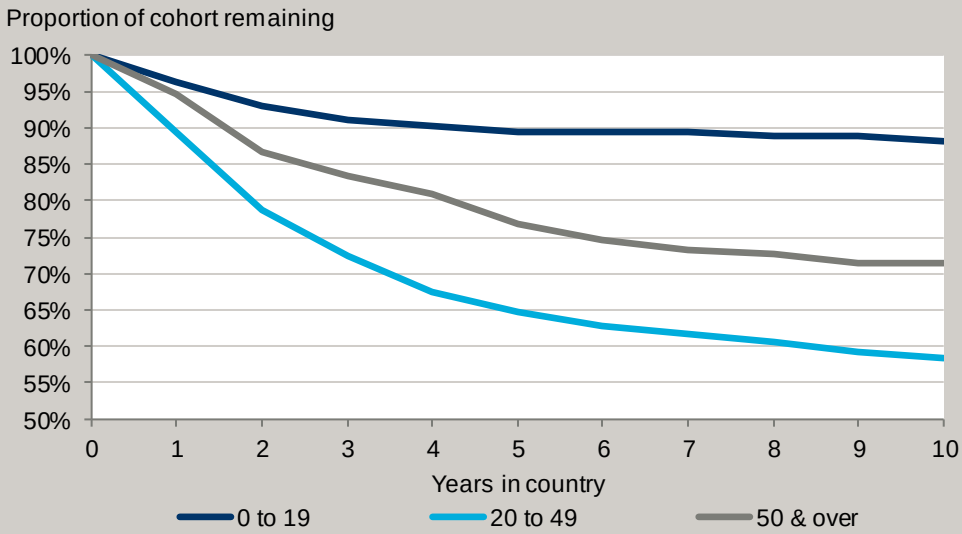
$$3\ year\ attrition\ rate\ of\ 2011\ inflow = \frac{Emigration\ population\ of\ 2014\ with\ year\ of\ arrival\ 2011}{Inflow\ of\ migrants\ in\ 2011}$$

Assuming there is an underlying fixed probability of leaving for each additional year in the country (which is, however, measured subject to idiosyncratic error in the different IPS samples), we averaged the attrition rates calculated in the 2005-2016 IPS samples. For the three-year example, we have a final attrition rate as follows[58]:

$$3\ year\ attrition = \frac{1}{6}\sum_{t=2008}^{2016} 3\ year\ attrition\ in\ the\ IPS\ in\ year\ t$$

We calculated the attrition rates for 10 years since entry into the UK using 2005-2016 IPS data for three age groups: zero-to-19; 20-to-49 and 50-and-over. Aggregation to these three groups was necessary to ensure reliable estimates. We assumed that no emigration takes place within the year of arrival. The attrition for each age group is presented below:

Fig. 28. Attrition by age group at time of arrival



Source: IPS; Oxford Economics
*Based on emgiration by age and year of previous arrival in years 2005-2016

The sharp attrition in the first five years, which flattens out towards the 10-year mark, is consistent with naturalisation criteria in the UK. The shape of the curves is also consistent with Dustman and Weiss (2007), who estimated attrition rates of migrants using the LFS for the years 1992 to 2002.

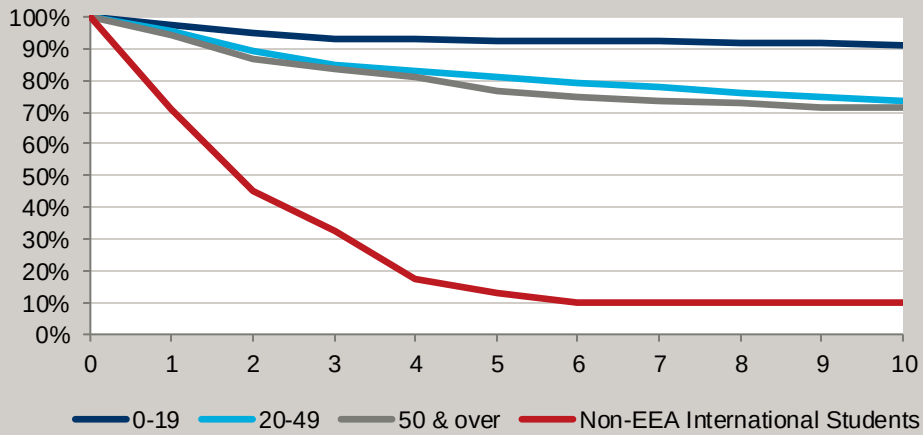
[58] The three-year attrition calculations start from 2008 as in the 2005-2016 survey, 2008 is the first year we have people in the sample who came three years earlier (in the 2005 inflow).

We used the IPS data rather than the LFS as the latter is not designed to measure migrant flows, and there are also issues with response rates, which would reduce the reliability in capturing international migration flows. [59]

According to the ONS's *Provisional Long-Term International Migration* estimates, 20% of the 2016 inflow are international students and are therefore subject to much stricter visa requirements. According to the latest *Statistics on changes in migrants' visa and leave status*, published by the Home Office, of those granted a student visa in 2011, around 14 percent had valid leave to remain after five years, with around 7 percent still studying. Given the uncertainty around the length of stay of the remaining students after five years, and for simplicity, we assume that 90 percent of non-EEA international students return home after five years.[60] This results in a much sharper decline in the student population compared to other migrants.

To avoid the differential residency criteria biasing the 0-19 and 20-49 attrition curves, we used HESA statistics on non-EEA international students to separate the aggregate attrition curves in Fig. 29, between the student attrition and the attrition of other migrants. We calculated the expected length of stay using the proportion of international student inflow coming for undergraduate, postgraduate taught and research qualifications (according to HESA). We assumed that the entire inflow would have left the UK after five years. The resulting attrition curves are show in Fig. 29.

Fig. 29. Attrition rates of international students and all else



Source: Oxford Economics

[59] Office for National Statistics, Note on the Differences Between Long-Term International Migration Flows, Derived from the International Passenger Survey and Estimates of the Population Obtained from the Annual Population Survey: December 2016, available at: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/internationalmigration/articles/noteonthedifferencesbetweenlongterminternationalmigrationflowsderivedfromtheinternationalpassengersurveyandestimatesofthepopulationobtainedfromtheannualpopulationsurvey/december2016

[60] Home Office, "Statistics on changes in migrants' visa and leave status: 2016", available at https://www.gov.uk/government/publications/statistics-on-changes-in-migrants-visa-and-leave-status-2016/statistics-on-changes-in-migrants-visa-and-leave-status-2016

CALCULATING THE MIGRANT POPULATION BEYOND 10 YEARS

We assumed that after 10 years in the country, migrants stay in the UK indefinitely, as we did not have any information to inform the attrition rate further out. Beyond 10 years, all further changes in the proportion of the 2016 cohort remaining therefore depend only on life expectancy, given age. In other words, the attrition rate for the cohort becomes the "survival rate" of the individuals in it.

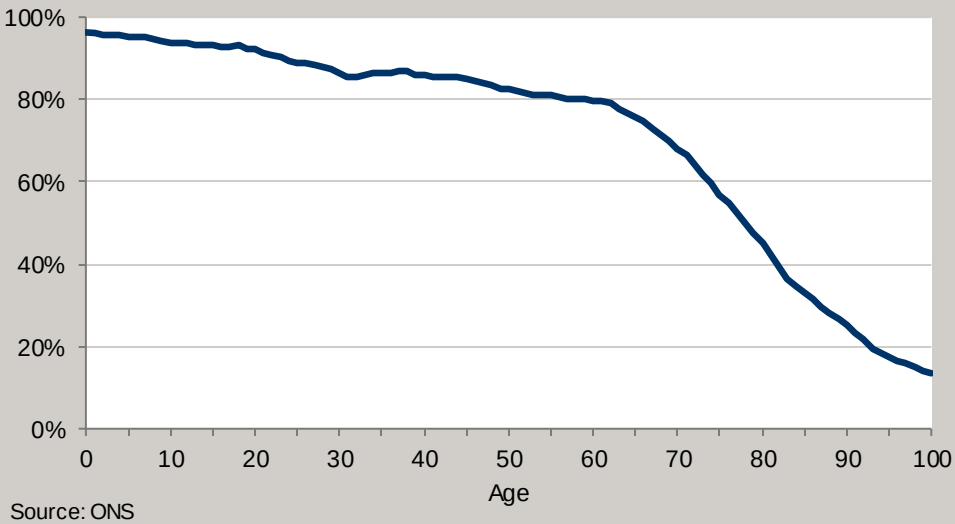
CALCULATING THE SURVIVAL RATE BY AGE

We calculated a "survival rate curve" using data on births from the ONS's *Births in England and Wales*, as well as the data on population by age group from the ONS's *Overview of the UK Population*.[61] For example, to calculate the survival rate of the average 50 year-old in 2015, we divided the total population of 50-year-olds in 2015 by the number of births in the UK in 1965. Note that prior to doing this, we also had to deflate our population estimate by the migrant share in the population, so that it reflected the population of UK natives alone (otherwise, we would be capturing migrant emigration in the calculation).

$$Survival\ rate\,(if\ age\ is\ 50) = \frac{ONS\ population\ of\ native\ 50\ years\ old\ in\ 2015}{ONS\ births\ in\ the\ UK\ in\ 1965}$$

This gave the following curve:

Fig. 30. Survival rate for all ages.



Source: ONS

[61] Office for National Statistics, Live births in England and Wales, available at https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/livebirths/bulletins/birthsummarytablesenglandandwales/2016 , National Records of Scotland, Births Time Series Data, available at https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/births/births-time-series-data, Northern Ireland Statistics and Research agency, Births, source: https://www.nisra.gov.uk/statistics/births-deaths-and-marriages/births and Office for National Statistics, Figure 4: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/articles/overviewoftheukpopulation/july2017

POPULATION FORECAST FOR THE UK'S 2016 MIGRANT COHORT

We use the 2017Q2 LFS to capture the 2016 inflow of migrants. We then rescale the population so that the total EEA and non-EEA inflow, and the student and non-student inflow match the 2016 migrant inflows reported in the *Provisional Long-Term International Migration estimates*. We applied the attrition rates shown in Fig. 29 and the survival rate shown in Fig. 30 to the 2016 migrant arrivals, in order to forecast the population of migrants from the 2016 cohort at different ages over the next 80 years. Our population forecasts for each cohort are shown in Fig. 19.

AVERAGE NET FISCAL CONTRIBUTION OF A MIGRANT ARRIVING IN 2016

To establish an estimate of the average migrant's contribution for each year spent in the UK, we took the 2016/17 stock of UK migrants and calculated the average contribution by year of arrival age at arrival and residency status. We assumed the contribution of migrants in the LFS of the same age at arrival who have lived in the UK for t years would be the same as the contribution of those who arrived in 2016 of that same age in t years' time. We separated age at arrival into three groups: zero-to-19, 20-to-49 and 50-and-above for students and non-students. This was done to match the IPS emigration and inflow age bands provided by the ONS, but also to agree broadly with different stages over one's working life that drive one's fiscal contribution. We calculated the average net fiscal contribution for each year of arrival and age group by taking the net fiscal contribution of the entire stock of migrants in 2016/17 for different ages and years of arrival, and dividing by the total population of migrants in the relevant year of arrival, age and student status. For example, the average net fiscal contribution for a 2016 cohort 15-year-old EEA migrant, who is not a tertiary education student after two years in the country is:

$$AvC_{age\ 0-19;\ EEA;\ non-student;\ after\ 2\ years} = AvC_{age\ 0-19;\ EEA;\ non-student;\ year\ of\ arrival\ 2014} =$$

$$= \frac{\sum Individual\ Contributions\ if\ EEA\ non-student\ \&\ year\ of\ arrival\ 2014\ \&\ age\ at\ arrival\ 0-19}{\sum population\ weights\ if\ EEA\ non-student\ \&\ year\ of\ arrival\ 2014\ \&\ age\ at\ arrival\ 0-19}$$

For EEA students, that are not assumed to leave after their studies, we assume their average contribution to be that of working EEA migrants with the same number of years in the country.

We discounted the resulting 10 different future contribution bands[62] for each of the three age groups, EEA/non-EEA and student status using a decreasing profile of discount rates, as recommended by the Green Book, shown in Fig. 31.[63]

Fig. 31. Declining long-term discount rate

Period of years	Discount rate
0-30	3.5%
31-75	3.0%
76-125	2.5%

[62] The 10 contribution bands we estimate in detail are: 0-19 non-EEA, non student, 0-19 EEA non-student, 0-19 EEA student, 0-19 non-EEA student, 20-49 non-EEA, non student, 20-49 EEA non-student, 20-49 EEA student, 20-49 non-EEA student, 50 and over EEA non-student, 50 and over non-EEA, non-student

[63] HM Treasury, The Green Book - Appraisal and Evaluation in Central Government, Annex 6, pg. 103

3. Total net fiscal contribution of UK's 2016 migrant cohort

We were now able to calculate the total net fiscal contribution of the 2016 migrant cohort as:

$$\sum_{t=1}^{80} \frac{1}{(1+r)^t} \left(AvC_{t;contr\ band\ j} * Pop_{t;contr\ band\ j} \right)$$

where:

- AvC_t denotes the average net fiscal contribution per migrant after t number of years in the country.
- Pop_t denotes immigrant population of 2016 arrivals after t number of years in the country.
- r is the discount rate.
- $contribution\ band_j$ denotes the relevant contribution band by EEA non-EEA and student status as well as age group: 0-19, 20-49 and over 50, (as detailed in footnote 60) that the calculation is done for.

We multiplied the population forecast of each one of the age groups by the respective average net fiscal contribution for each year, to get the total net fiscal contribution from 2016 onwards. We summed across all years in the future and the different contribution bands to arrive at a total migrant contribution of £26.9 billion, illustrated in Fig. 21.

APPENDIX 4: COMPARISON TO PREVIOUS STUDIES

HOW DO OUR RESULTS COMPARE TO DUSTMANN AND FRATTINI (2014)?

Dustmann and Frattini's assessment of the net fiscal impact of migrants in the UK presented results in the form of revenue-to-expenditure ratios for different population groups. We reproduce these metrics below, for the purpose of comparison with our own findings. It must be noted that our estimates were based in the 2016/17 fiscal year, whereas Dustmann and Frattini based their estimates on an average from the 1995-to-2011 period.

One further factor to consider in interpreting the results is that the nature of migration has changed significantly in recent years. Much of the Dustmann and Frattini period pre-dates the expansion of the EU, and since the 2008 financial crisis, the UK has seen larger numbers of migrants from OMS member states than was the norm in the past. These factors are likely to create differences in our results compared to those of the earlier study. Nevertheless, there is a high degree of consistency between the studies in the relative contributions of different groups.

Fig. 32. Revenue-expenditure ratio for different population groups

	Native	EEA	Non-EEA
Dustmann & Frattini (2014) (Period of analysis: 1995/96-2011/12 average)	0.940	1.020	0.854
Oxford Economics (2018) (Period of analysis: 2016/17)	0.936	1.110	0.886

APPENDIX 5: VISA FEES

THE COST OF ENTRY INTO THE UK

In 2016/17, all migrants entering on a Tier-2 (general) visa were required to pay a visa fee of £575, with visas for their dependent relatives being much higher.[64] A certificate of sponsorship, which costs £199, is also required when employers hire a non-EEA employee on a Tier-2 visa.[65] In addition, from 2016/17, new non-EEA migrants were required to pay an NHS surcharge of £200 for each year of their visa.[66]

Since 2017/18, firms have also been required to pay an immigration skills surcharge for each non-EEA employee, with £1,000 for each year of the visa the cost for large companies.[67] Furthermore, the government has announced plans to increase the NHS surcharge from £200 to £400 per year, taking effect later this year.[68] For a non-EEA migrant to gain permanent residency, they would face these fees and surcharges in the first five years of their stay. Assuming the visa needs to be renewed after three years, a non-EEA migrant entering in 2018/19 on a Tier-2 visa and working for a large company would be contributing (either directly or indirectly) around £8,600 in fees and surcharges.

[64] 'Home Office Immigration & Nationality Charges 2016' https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/510922/Fees_Table_for_website_2016-17_v0.2.pdf, 2016
[65] 'UK visa sponsorship for employers: Sponsorship certificates', https://www.gov.uk/uk-visa-sponsorship-employers/sponsorship-certificates
[66] 'UK introduces new Health Surcharge', https://www.gov.uk/government/news/uk-introduces-new-health-surcharge, 2015
[67] 'UK visa sponsorship for employers: Immigration Skills Charge, https://www.gov.uk/uk-visa-sponsorship-employers/immigration-skills-charge', https://www.gov.uk/uk-visa-sponsorship-employers/immigration-skills-charge
[68] 'Health charge for temporary migrants will increase to £400 a year', https://www.gov.uk/government/news/health-charge-for-temporary-migrants-will-increase-to-400-a-year, 2018

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