A Note on Dustmann and Frattini's Estimates of the Fiscal Impact of UK Immigration

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In a widely quoted working paper Dustmann and Frattini (2013a), henceforth D&F, estimate the fiscal impact of UK immigration. They distinguish between migrants born in countries of the European Area (EEA)[1] and those born elsewhere. They also distinguish between migrants who arrived after 2000 and those who arrived previously[2]. Their main conclusion is that recent migrants from the EEA have generated, and continue to generate. a large fiscal surplus. The taxes they pay far exceed the amount they receive from the government in the form of cash benefits and public services. Recent migrants from outside the EEA also generate a fiscal surplus. The picture is much less favourable for migrants who arrived before 2001.

Table 1 summarises the data on population and employment used by D&F. The authors do not give separate series for pre-2001 migrants, so these have been derived by subtracting the series for post-2000 migrants from the corresponding series for all migrants. By 2011, approximately half of all migrants living in the UK had arrived since 2000. Almost two thirds of all EEA migrants who were in employment and over half of all non-EEA migrants in employment had also arrived since 2000. Thus, recent arrivals account for a large and growing fraction of the total migrant stock.   Since most migrants are young when they first arrive, the recent surge in immigration explains why the average age of the migrant stock is now so low.

Figures 1 and 2 show in detail how employment has changed since the relevant base year. Total employment grew strongly until 2007, then fell in the wake of the financial crisis and later recovered, so that by 2012 it was somewhat higher than its previous peak. The study of

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[1] The EEA consists of the 27 countries of the European Union plus Iceland, Liechtenstein and Norway.
[2] Children under 16 years of age who are born in the UK to immigrant parents are classified as immigrants. On reaching 16 they are reclassified as UK natives. This helps to explain why there is a sharp fall in later years in the population of pre-2001 Non-EEA migrants.

D&F finishes in 2011 before total employment had fully recovered. The most striking feature of the graphs is the sustained growth of migrant employment, which hardly faltered during the recession. By 2011, native employment was still slightly below its 2000 level whereas over the same period more than 2.2 million recent migrants had found employment in the UK.

Methodology

To estimate the fiscal consequences of migration is not easy[3]. There are several basic methods available and there are many choices to be made concerning such issues as the treatment of public goods, and the treatment of the locally-born children of immigrants. One issue largely ignored in the fiscal literature is that of labour displacement. If immigrants displace native workers, the latter will pay fewer taxes and receive more benefits. This effect should be taken into account when assessing the overall impact of immigration on government finances. Despite some evidence to the contrary it is conventonally assumed that immigration has no impact on the employment level of natives. There are two basic methods for assessing the fiscal implications of migration: "static" and "dynamic". The static method takes a snapshot of the economy at a particular moment in time, estimating the amount of government revenue (taxes etc) generated by a particular group of migrants in a given year and also the amount they receive from the government in the form of cash benefits and public services. The dynamic method looks forward and examines the entire future stream of revenues and expenditures resulting from a given inflow of migrants. This takes into account the future life course of migrants who remain in the country, and also what happens to their descendants. The dynamic method is superior from a theoretical point of view, but is difficult to apply in practice. The method of D&F is a compromise. They compute the static revenues and expenditures for each of a number of years and then examine the trajectory of these items through time to get some idea of the dynamics involved.

Any assessment of the fiscal impact of immigration must decide what proportion of government expenditure on goods and services should be to ascribed to migrants and what proportion to natives. In most cases, D&F allocate such items on a pro-rata basis. For example, expenditure on compulsory primary education is ascribed to immigrants in accordance with their share in the population of 5 to 15 year old children. There are also cases where this procedure may not be appropriate. D&F estimate that 23 percent of

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[3] For a longer discussion of the issues involved see Rowthorn (2008).

government expenditure goes on "pure public goods" whose cost is not significantly affected by population growth due to immigration. External defence is the classic example. In 2011, army of 110,000 performed its role just as well for a UK with a population of 61 million, including immigrants, as it would have done with a smaller population of only 52 million natives, and at no extra cost. Since the presence of immigrants imposes no extra demands on the armed forces, defence expenditure should be ascribed entirely to natives.

A thorny issue concerns the treatment of interest on the national debt. The national debt is often classified as a pure public good on the grounds that it would exist anyway in the absence of immigration, This is misleading since immigration may alter the rate at which the national debt accumulates and hence the scale of future interest payments. If migrants generate a fiscal surplus in a given year, the national debt will accumulate more slowly and the resulting reduction in future interest payments should be credited to the migrant population. Conversely, if migrants generate a fiscal deficit in a given year, the national debt will increase faster and the resulting increase in future interest payments should be recorded as a debit on the migrant account.

Given the uncertainties involved in allocating government expenditure, D&F consider two extreme scenarios. Under the "average cost" scenario, all government expenditure on goods and services is allocated on a pro rata basis.   Each item is ascribed to migrants in line with their share in the relevant population or sub-population (share of children aged 5-15, share of adult populaton, etc...). In particular, pure public goods are allocated in proportion to migrants' share in the 16+ population. Under the "marginal cost" scenario, all government expenditure on pure public goods is ascribed to natives and none is ascribed to migrants. From a theoretical point of view, the "marginal cost" scenario is superior, since it is based on the idea that only the extra government expenditure which is due to the presence or arrival of migrants should be ascribed to migrants. However, as we shall see below, D&Fs' application of this principle may be biased in favour of migrants because of their choice of what counts as a pure public good.

D&F Estimates[4]

Figure 3a plots the estimated ratio of government revenue to government expenditure for UK natives and for all migrants from a particular area, irrespective of their arrival date in this

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[4] These calculations in this section are based on D &F tables 4a and 4b.

country. Expenditure on pure public goods is evaluated at average cost. Figure 3b does the same with pure public goods evaluated at zero marginal cost. According to both measures, the revenue/expenditure ratio for EEA migrants has exceeded unity for most of the time, indicating that tax payments to the government exceeded what these migrants and their dependants received in the form of cash benefits and public services. For migrants from outside the EEA the picture is less favourable.

It is informative to distinguish between recent and more established migrants. Figures 4a and 4b plot the estimated ratio of government revenue to government expenditure for pre-2001 migrants only. The same exercise is repeated in Figures 5a and 5b for migrants who arrived after 2000. Table 2 gives information on the amounts of money involved.

The following points are of particular importance:

- *Pure Public Goods.* Government expenditure on migrants is higher under the average cost scenario because the expenditure ascribed to migrants includes certain items which are excluded under the marginal cost approach. As a result, the estimated revenue/expenditure ratios for migrants are lower under the average cost scenario than with the marginal cost scenario.

- *Pre-2001 Migrants.* Under the average cost scenario, pre-2001 EEA migrants and UK natives have very similar revenue/expenditure ratios over the whole period 1995-2001(figure 4a). Most of the time expenditure exceeds revenue for both groups. Expenditure always exceeds revenue for pre-2001 non-EEA migrants, often by a wide margin. The picture is more favourable to migrants under the marginal cost scenario (Figure 4b).

- *Recent Migrants.* Revenue/expenditure ratios for post-2000 migrants are much higher than those for earlier migrants. This is partly because recent migrants are younger and make fewer claims on government expenditure than established migrants. Recent EEA migrants also have very high employment rates so they mostly pay income tax and national insurance. The revenue/expenditure ratio for these migrants has been falling but as estimated by D&F it remains larger than unity however it is measured (Figures 5a and 5b). Employment rates are lower for recent non-EEA migrants and their estimated fiscal contribution is therefore lower.

- *Percentage of GDP.* Although sometimes large in absolute term, the surplus of revenue over cost is typically small as a percentage of GDP (Table 2). Depending on

how expenditure is measured, post-2000 EEA migrants generated a total fiscal surplus over the period 2001-2011 of between £22 billion (+0.13% GDP) and £36 billion (+0.22% GDP) [5]. In no single year did this surplus exceed 0.40% of GDP. The surplus for post-2000 non-EEA migrants was smaller. The fiscal contribution of pre-2001 migrants over the period 2001-2011 was negative. The total fiscal contribution of all migrants over this period was between -£77 billion (-0.47% GDP) and +£27 billion (+0.17% GDP), depending on how it is measured.

- *Geographical breakdown.* The non-EEA group includes widely different countries. It would have been useful to create a separate subgroup of rich countries, such as Australia, Canada, the USA, Singapore, Korea, and Japan. Migrants from these countries have high employment rates and their revenue to expenditure ratio must on average be similar to that of migrants from the EEA. Migrants from poorer countries mostly have low employment rates and their revenue to expenditure ratios must also be low. Migrants from India are an exception since they have relatively high earnings and a high employment rate. These observations suggest that the data for the non-EEA countries are too heterogeneous to be usefully aggregated.

Critique

D&F's estimates have been criticised by the organisation Migration Watch (2014), mainly on the grounds that government revenue from recent migrants has been seriously overestimated. D&F also fail to explore the possible fiscal consequences of native job loss due to competition from migrants.

Migration Watch

Migration Watch claims that D&F exaggerate the earnings and wealth of recent migrants and take inadequate account of their demographic and economic characteristics. As a result, D&F overestimate the amount of revenue that the government receives from these migrants in the form of income tax, national insurance, VAT and other indirect taxes, company taxes and business rates, council tax and inheritance tax. Migration Watch also claims that D&F underestimate the amount of tax credits and housing benefit that recent migrants receive.

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[5] Some of the figures shown in Table 2 are very slightly different from those given by D&F. This is because I have used a slightly different price deflator to convert them to constant prices. The differences are trivial.

Dustmann and Frattini (2014) have responded to these claims by saying that Migration Watch has misunderstood their method for allocating income tax and national insurance. Elsewhere, they tacitly concede (Dustmann and Frattini 2013b) that they may have overestimated the amount of tax paid by recent migrants in the form of corporation tax, capital gains tax and business rates. They make no mention of other items, such as council tax, inheritance tax, tax credits and housing benefit. This may be because D&F have run out of energy, or perhaps they think that Migration Watch is correct.

Migration Watch quantifies the effect of these supposed errors in the D&F paper and suggests various adjustments to their average cost estimates (Table 3, col (1)). Over the period 2001-2011 as a whole, these adjustments come to an estimated £52 billion total in current prices. If we exclude the disputed adjustment for personal taxes (income tax and national insurance) the total is still £41 billion (Table 3, col (2)). This is a large amount and its accuracy is difficult to judge. However, it is sufficiently large and the supporting evidence is sufficiently strong to believe that Migration Watch is on to something.

Public Goods under the Marginal Cost Scenario

In an appendix to its critique, Migration Watch criticises the marginal cost scenario of D&F for its treatment of public goods. D&F classify interest on the national debt and also expenditure on "economic affairs" (transport, energy, communication and construction etc.) as pure public goods which are ascribed entirely to the native population under the marginal cost scenario. Migration Watch argues that such expenditures are significantly larger because of immigration and should be ascribed to migrants in proportion to their population share, even under the marginal cost scenario. This argument is defensible in the case of economic affairs, but not for debt interest. Government interest payments should only be ascribed to migrants for debt incurred as a result of their arrival or presence in the UK. As Williams (2013) points out, recent migrants were not responsible for the government debt that was outstanding when they began to arrive in 2001, nor were they responsible for the subsequent interest payments arising from this debt.

During their initial years in the UK, recent migrants generated a small fiscal surplus. This is true even after the adjustments advocated by Migration Watch are taken into account. As a result, the national debt and government interest payments grew more slowly than would otherwise have been the case. This should be registered as a credit on the migrant account. It was only after the financial crisis that the government borrowed a significant amount on

behalf of recent migrants. Simulations described in an appendix suggest that the resulting interest flows were relatively small and their inclusion would not materially affect the outcome. A correct allocation of government interest payments improves the fiscal balance of recent migrants by a total of £2.7 billion in current prices over the period 2001-2011. This is recorded as negative government expenditure in the final column of Table 3. The conclusion is that D&F were broadly correct to exclude debt interest payments under their marginal cost scenario.

Labour Displacement

It is conventional in the literature on the fiscal impact of migration to assume that competition from migrants has no effect at all on the level of native employment. This would be true if labour markets were perfect and wages adjusted instantly to price all workers into employment. However, recent experience indicates that this is not the situation in the UK. In the wake of the financial crisis, real wages have fallen but this has not prevented a reduction in native employment. Between 2007 and 2011, the number of UK natives in employment fell by 700 thousand or nearly 3%. Given that wages did not adjust fast enough to price native workers back into a job, it is reasonable to assume that immigration had at a least a temporary impact on the level of native employment. D&F recognise this possibility in a footnote, but they do not explore its potential fiscal implications.

Robust evidence on the topic of labour displacement in the UK is hard to come by. Dustmann et al (2003) use census data to analyse the impact of immigration on unemployment. They estimate that a one percentage point increase in the proportion of immigrants in a local population will raise the unemployment rate by 0.23 to 0.6 percentage points.[6] This may overstate the impact on natives, since the additional unemployment includes immigrants. Using a different data source the same study finds smaller and less statistically significant effects. Most subsequent studies by these and other authors, such as Lucchino et al (2012), find that the impact of immigration on native UK employment or unemployment is either small or statistically insignificant[7].

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[6] These numbers are derived from the coefficients given in the last two columns of Table 4.1 of Dustmann et al (2003).

[7] For a good survey of the evidence see MAC (2012), chapter 4.

On exception is Nathan (2011) who finds a negative and statistically significant relationship between migrant shares and native employment rates, with the impacts strongest amongst the intermediate and low skilled[8].

An analysis by the UK Migration Advisory Committee (MAC, 2012) finds that immigration has adversely affected native employment. The authors "estimate that an increase of 100 foreign-born working-age migrants in the UK was associated with a reduction of 23 natives in employment for the period 1995 to 2010"[9]. Using the output gap as an indicator of the demand for labour, they estimate that an inflow of 100 foreign-born working-age migrants was associated with a reduction in native employment of approximately 30 in the same year when the output gap is zero or negative. The estimated association is statistically insignificant when the output gap is positive. The authors comment that these results seem "sensible, since migrants are more likely to compete with natives for jobs during an economic downturn when native unemployment is high and job vacancies are low." [10]

The authors of the MAC report also examine whether immigration from the EU has had a different impact from other types of immigration. Their estimated coefficients for the two types of migration are very similar in magnitude and sign, but of different statistical significance: the non-EU coefficient is significant, but the EU coefficient is not. These findings are summarised in the text as follows: "Our results suggest that a one-off increase of 100 in the inflow of working-age non-EU born migrants is associated with a reduction in native employment of 23 over the period 1995 to 2010. Our results indicate that inflows of working-age EU migrants did not have a statistically significant association with native employment"[11]. Whilst strictly correct, this summary fails to mention that the estimated coefficients on EU and non-EU migration are in fact very similar. The casual reader might interpret this summary to mean that non-EU migration and EU migration have in reality had radically different effects. This is implausible as the authors themselves concede elsewhere in the report. In an appendix discussing their results in detail they point out that they "cannot

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[8] Nathan does not directly use the immigrant share in his regressions. Instead he uses a measure of diversity. Although correlated with the share of immigrants in an area, this measure is also influenced by inter-area and inter-temporal variations in the local composition of the immigrant population.
[9] MAC (2012), paragraph. 4.36.
[10] MAC (2012), paragraph. 4.33
[11] MAC (2012), paragraph. 4.31

reject the possibility that the association between non-EU migrants and native employment rates was the same as that for EU migrants"[12].

The MAC analysis has been extended in a recent government report by Devlin et al. (2014). This report provides support for the MAC suggestion that immigration had more impact on native employment during the recession than during the preceding boom. The MAC analysis ends in 2010. When this analysis is extended to 2012, the estimates are virtually unchanged. As before, the coefficients for EU and non-EU migrants are virtually identical, although the former is not statistically significant. This finding is consistent with the hypothesis that EU and non-EU migration had identical effects on native employment, at least during the recession.

An illustration

To illustrate the potential fiscal impact of labour displacement I have done some simple calculations. These refer only to migrants who arrived after 2000. It must be stressed that they are not estimates in any scientific sense. They are designed merely to illustrate the possible orders of magnitude involved.

The following are the key assumptions:

- *Native job loss.* For each 100 extra jobs obtained by recent migrants during the pre-crisis years 2001-2007 there is a durable loss of 10 native jobs. For each 100 extra jobs obtained by recent migrants during the recession years 2008-2011 there is a durable loss of 20 native jobs. Thus, if a native job is lost in a particular year due to migrant competition this loss is not made up within the period covered by the estimates. As a result, native employment is approximately 290,000 or 1.2 percent less in 2011 than it would have been in the absence of recent migration. These assumptions have some support in the literature but many economists would dispute them.

- *Fiscal cost.* The loss of native jobs due to migration means that natives pay fewer taxes and receive more benefits than would otherwise be the case. The resulting cost to the exchequer is estimated by assuming that the average

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[12] MAC (2012), paragraph. A 44.

amount lost to the exchequer for each native job lost is equal to 40 percent of government revenue per native in employment in the given year. The following is an example. The amount of government revenue ascribed by D&F to natives in 2011 was £462 billion[13], and the number of natives in employment was 25.0 million. Dividing yields almost £18,500 for average revenue per UK native in employment. Forty percent of this figure is £7,400. This is the amount which is assumed to be lost to the exchequer for the average native worker without a job in 2011 due to competition from recent migrants. This is a crude approach but the order of magnitude is probably correct. For comparison, in 2013 the fiscal loss resulting from job loss by a single adult, without children and working a 40 hour week for the minimum wage was in the range £4,400-£9,900, depending on age and living arrangements[14]. A similar method of estimation was used for other years.

- *Reassignment.* The final step is to re-assign part of government net revenue (revenue *minus* expenditure) from recent migrants to the native population. The amount re-assigned from any particular migrant group depends on the assumed amount of native labour displaced by migrants from this group.

The effect of reassignment is to reduce the fiscal surplus generated by recent migrants. For the period 2001-2011 as a whole, the total amount re-assigned is approximately £13 billion (at 2011 prices).

The Final Picture

Figures 6a to 7b indicate the time profiles of the various adjustments described above[15]. The term "basic adjustment" in these diagrams refers to all Migration Watch adjustments excluding those for interest payments and personal taxes (income tax and National Insurance). Table 4 shows how these adjustments affect the estimated fiscal balance over the

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[13] The figure of £462 billion is from D&F table 4a. Table 4b gives a slightly higher figure of 464 billion. All labour displacement adjustments are based on table 4a.

[14] This range was derived from the benefit calculator on the website of the organisation "entitled to". It refers to a single adult without children and annual earnings of £13,125, who is living in a house with Council Tax band A in Coventry (post code CV5 6FG). The employer's national insurance payment is calculated using the rates given on the government website. For an adult over 25 in rented accommodation with shared facilities the exact fiscal loss is £9,194 excluding indirect taxes. For an adult of 23 living with parents the fiscal loss is £4,368 excluding indirect taxes.

[15] Under the marginal cost scenario, adjustments include the assignment to migrants of their pro rata share of government expenditure on economic affairs. The migrant share of interest on the national debt under this scenario is estimated as described in the appendix.

period 2001-2011 as a whole. In all cases, the illustrative adjustment for labour displacement is relatively small and does not greatly affect the results. The adjustment for interest payments is even smaller. Note that the interest adjustments under the marginal cost scenario are positive. This reflects the beneficial impact of recent migration on government finances during the pre-crisis period.

Figure 6a plots the fiscal balance for recent EEA migrants as estimated by D&F using the average cost method. It also plots this balance taking into account the various adjustments described above. The adjusted balance is small and positive up to 2007 and then plunges into serious deficit during the recession. Figure 6b repeats the same exercise with the balance estimated using the marginal cost method. In this case, the adjusted balance is positive and moderately large before the crisis and in moderate deficit for part of the ensuing recession. Over the period 2001-2011 as a whole, before adjustment, the balance for recent EEA migrants is +£22 billion (average cost method) and +£36 billion (marginal cost method). After adjustment these become -£0.5 billion and £9.0 billion respectively. The effect of adjustment in this case is striking. The large overall surplus which D&F find for recent EEA migrants, and about which there has been so much publicity, is either much smaller or non-existent..

Figures 7a and 7b repeat the above exercise for non-EEA migrants. With the average cost method, the adjusted balance for these migrants is in almost continuous deficit. This deficit increases sharply during the recession. With the marginal cost method, the adjusted balance is close to zero right up to 2007, after which it deteriorates sharply. Over the period 2001-2011 as a whole, before adjustment, the balance for recent non-EEA migrants is +£3 billion (average cost method) and £28 billion (marginal cost method). After adjustment these become -£30 billion and -£20 billion respectively.

Concluding Remarks

Depending on the method of estimation, after various downward adjustments, recent EEA migrants to the UK have either paid their way or generated a modest fiscal surplus. They may not have generated such a large fiscal surplus as D&F claim, but neither have they been a significant drain on the exchequer. Before the economic crisis their adjusted fiscal balance was always positive and the deterioration in this balance during the recession occurred alongside a general deterioration in government finances. The picture was less favourable for non-EEA migrants. However, the situation should improve for both types of migrant

provided the economic recovery continues and provided the government's deficit reduction strategy remains on track. Expenditure on everyone, including migrants, will be squeezed and revenue will increase. Moreover, to the extent they exist, labour displacement effects should start to fade as native workers get jobs in the more buoyant demand conditions. As a result, the fiscal contribution of recent EEA migrants, properly measured, may return to surplus, if it has not already done so. The fiscal balance of recent non-EEA migrants, properly measured, is likely to remain in deficit.

Over the longer term, other factors will come into play as those migrants who remain in the UK acquire more family responsibilities and eventually retire from the labour force. Judging by observed migration flows, many EEA immigrants will return home before either point is reached, whereas most immigrants from the poorer members of the non-EEA grouping will remain permanently in the UK. To obtain a complete picture would require an assessment of the future life trajectories of the migrants and their descendants. The outcome of such an exercise is uncertain. However, some indication is provided in a recent paper by Ruist (2013) who uses a dynamic life-cycle approach to estimate the future fiscal contribution of EU10 immigrants in Sweden. The EU10 consists mainly of former communist countries and includes Bulgaria and Romania whose citizens have enjoyed free access to the Swedish labour market since these countries joined the EU. The author finds that the discounted net fiscal contribution of immigrants from these countries may be positive or negative depending on their income assimilation rates and on future real interest rates. The situation is unlikely to be very different here.

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Figure 1: UK Employment Changes Since 1995 (thousands)
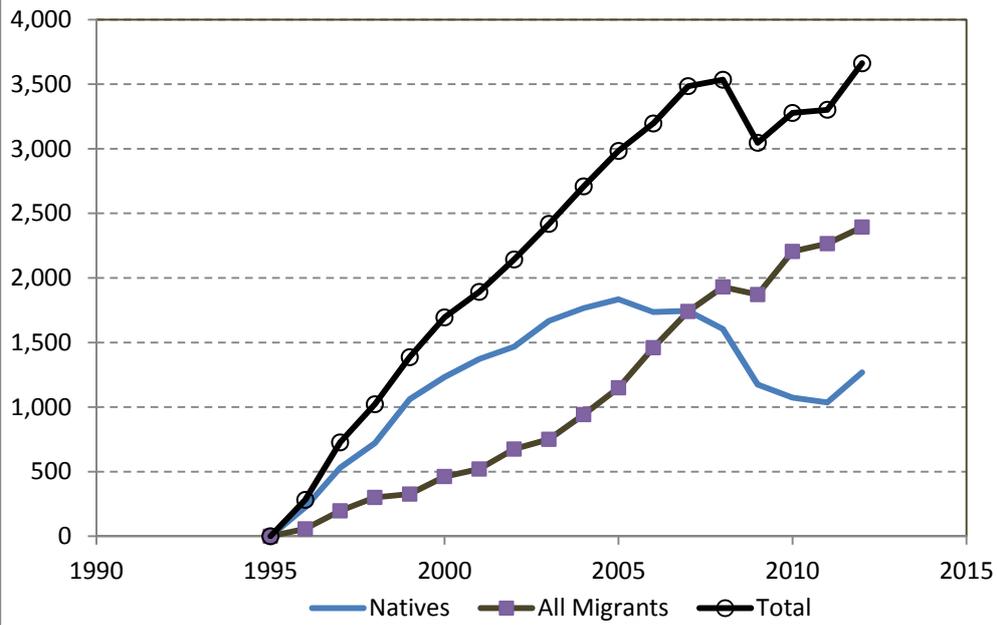

Figure 2: Employment Changes since 2000 (thousands)
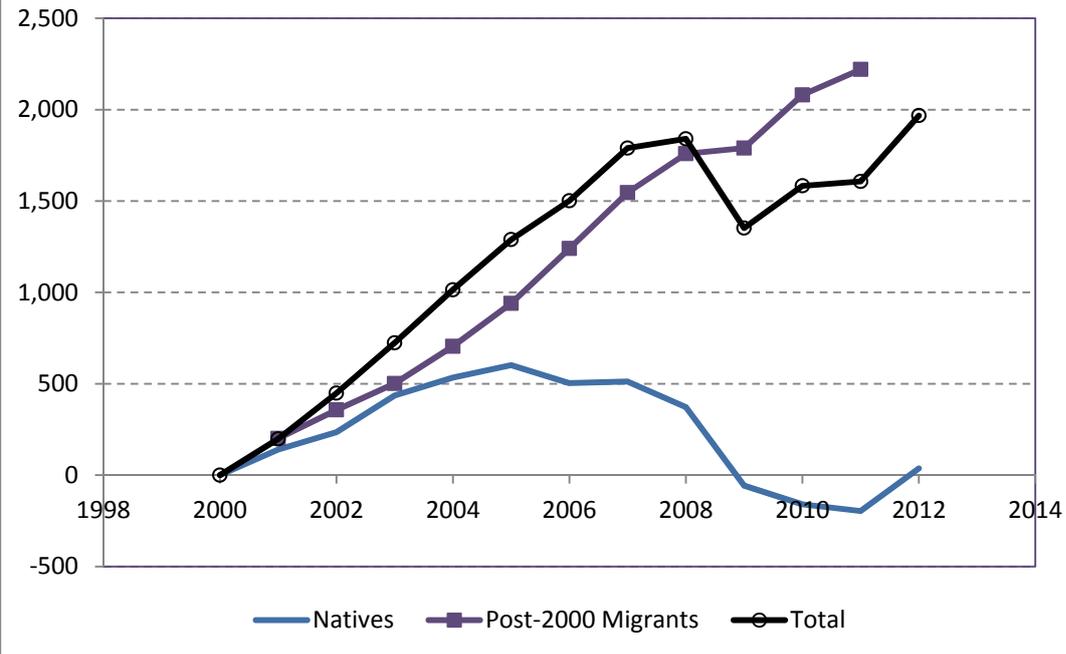
Figure 3a. Revenue/Expenditure Ratios for UK Natives and Migrants (Average Cost Method)
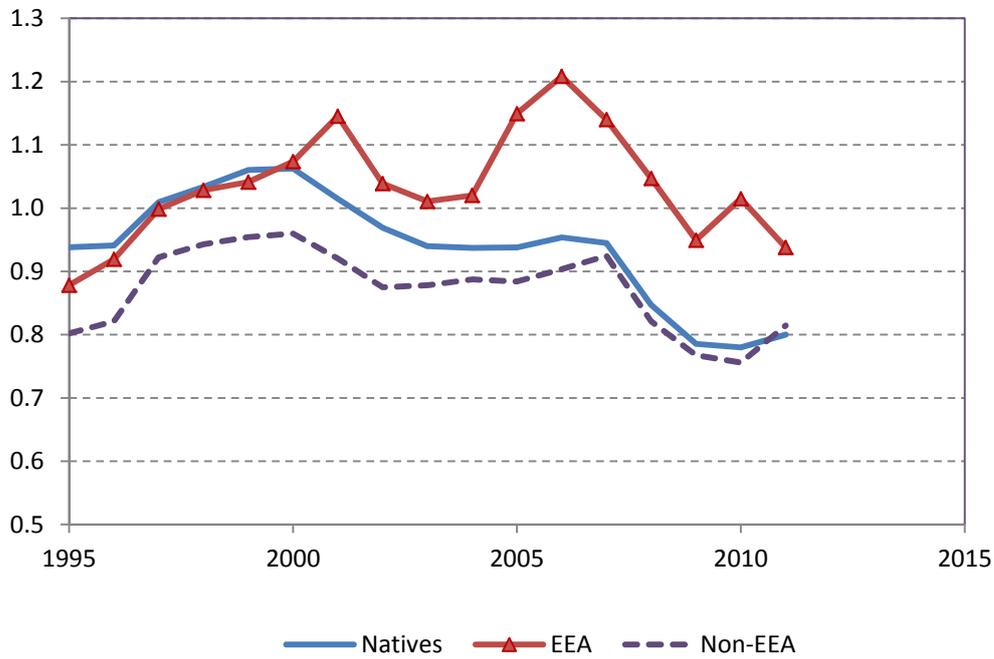
Figure 3b. Revenue/Expenditure Ratios for UK Natives and Migrants (Marginal Cost Method)
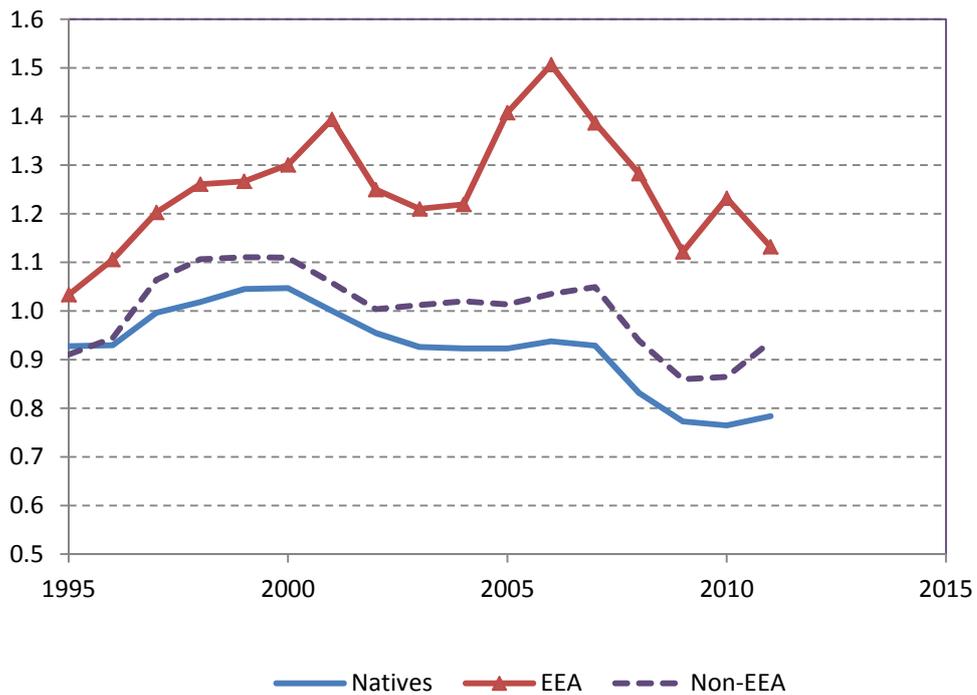
**Figure 4a. Revenue/Expenditure Ratios for UK Natives and Pre-2001 Migrants (Average Cost Method)**
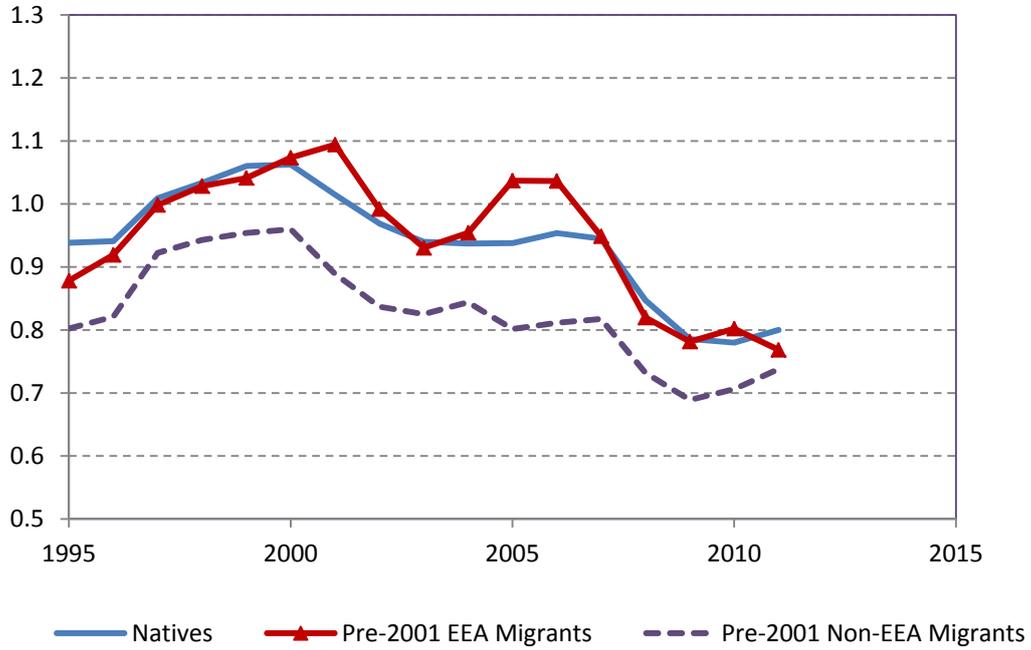
Figure 4b. Revenue/Expenditure Ratios for UK Natives and Pre-2001 Migrants (Marginal Cost Method)
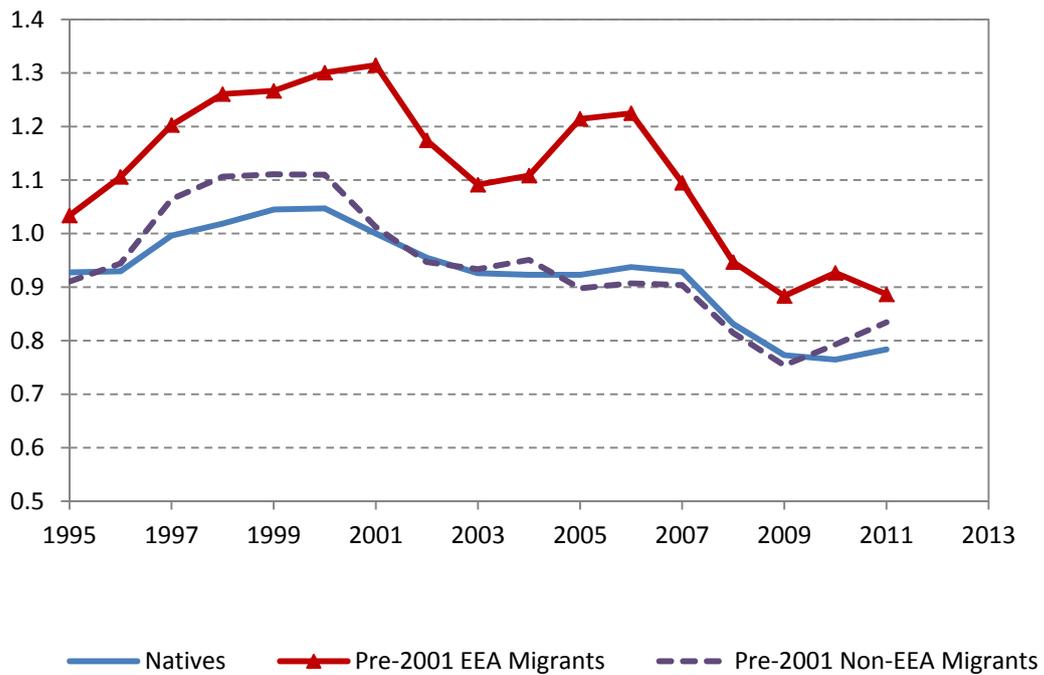
Figure 5a. Revenue/Expenditure Ratios For UK Natives and Post-2000 Migrants (Average Cost Method)

Legend: Natives — Post-2001 EEA Migrants — Post-2001 Non-EEA Migrants
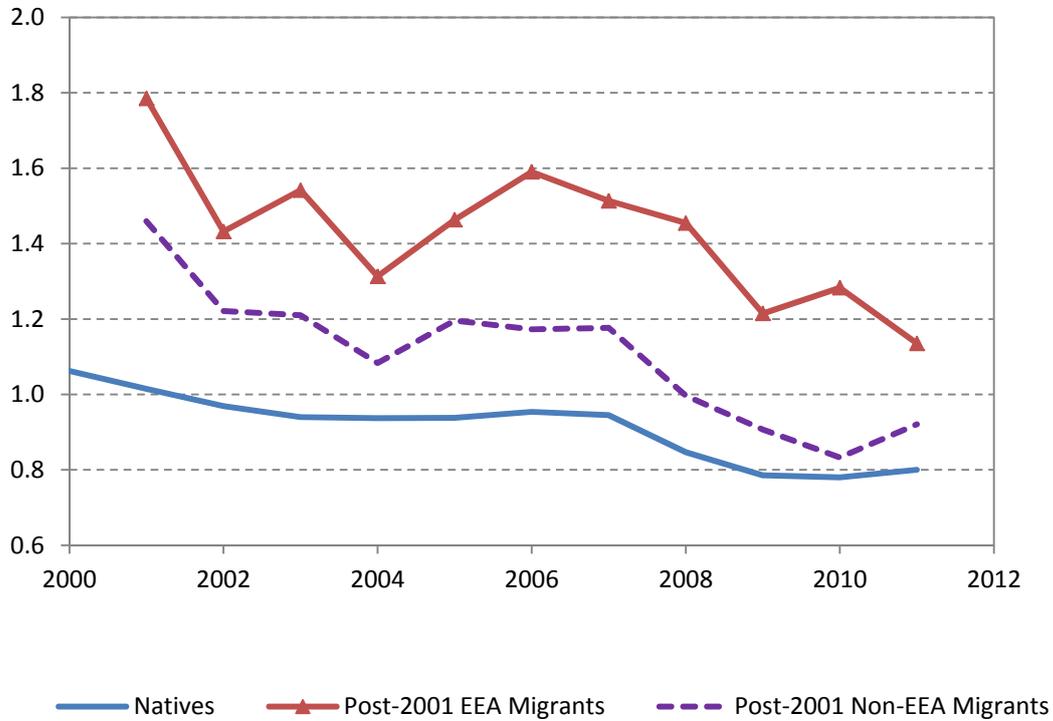
Figure 5b. Revenue/Expenditure Ratios For UK Natives and Post-2000 Migrants (Marginal Cost Method)

Legend: Natives — Post-2001 EEA Migrants — Post-2001 Non-EEA Migrants
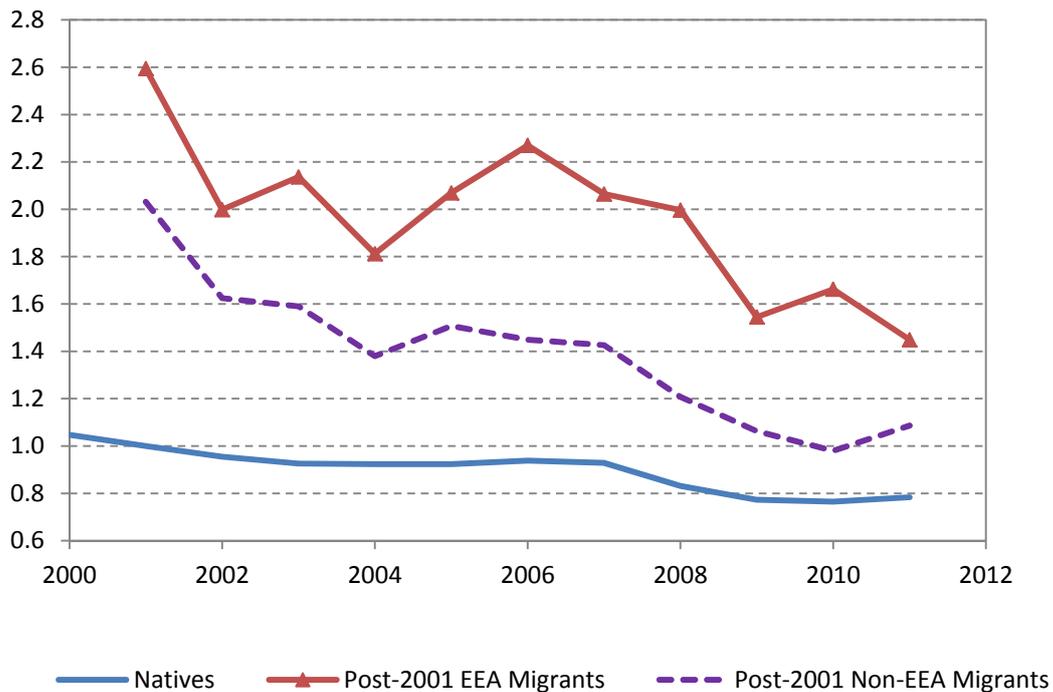
Figure 6a: Fiscal Balance of Recent EEA Migrants (Average Cost Method, £ billions at 2011 prices)

D & F   Basic adjustment   Incl. adj. for lab. displacement
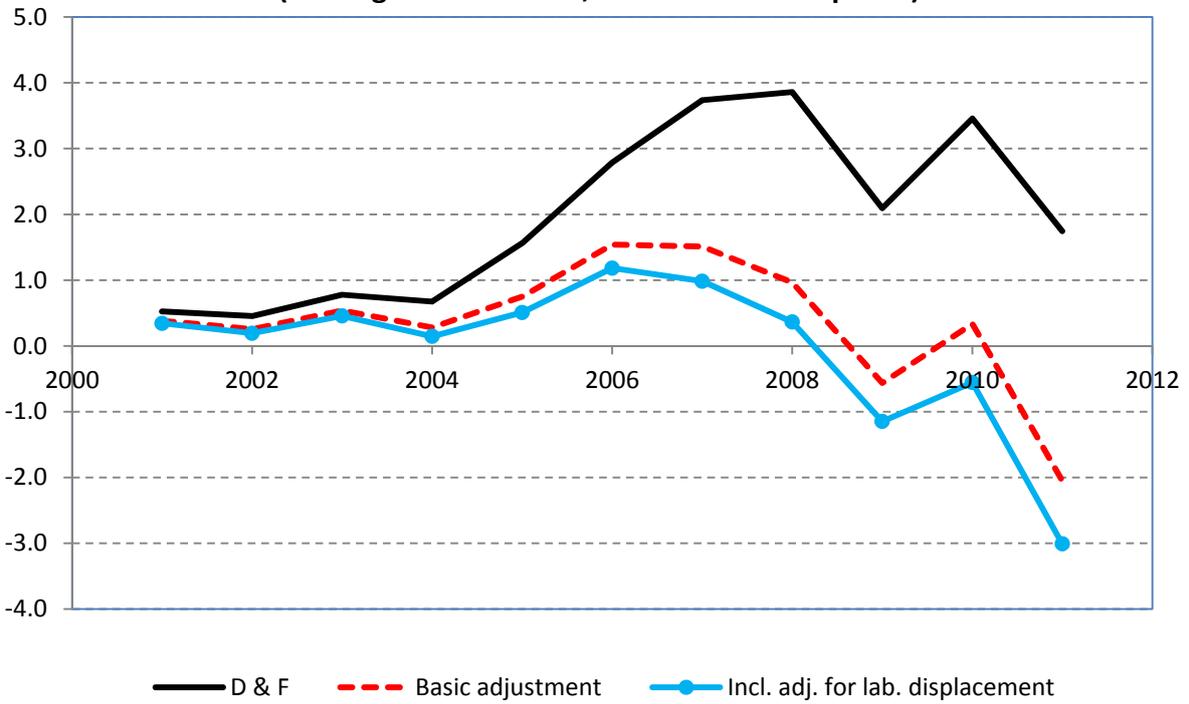
Figure 6b: Fiscal Balance of Recent EEA Migrants (Marginal Cost Method, £ billions at 2011 prices)

D & F   Basic adjustment   Incl. interest   Incl. interest and lab. displ.
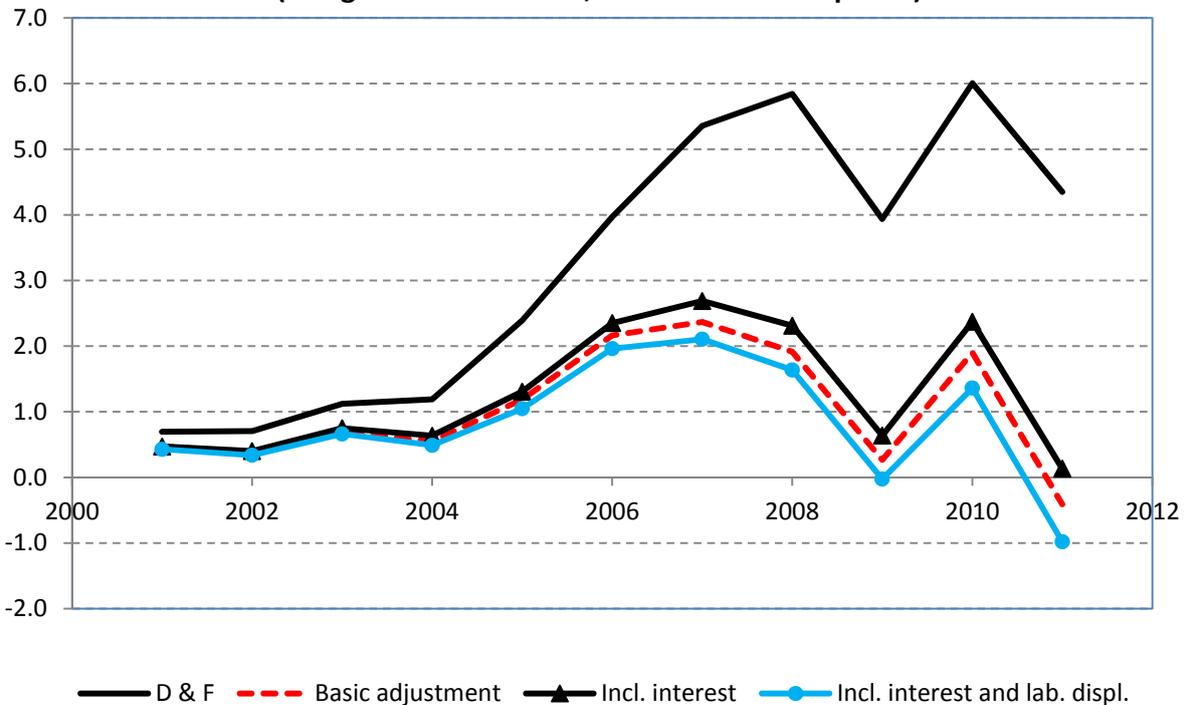
Figure 7a: Fiscal Balance of Recent non-EEA Migrants (Average Cost Method, £ billions at 2011 prices)
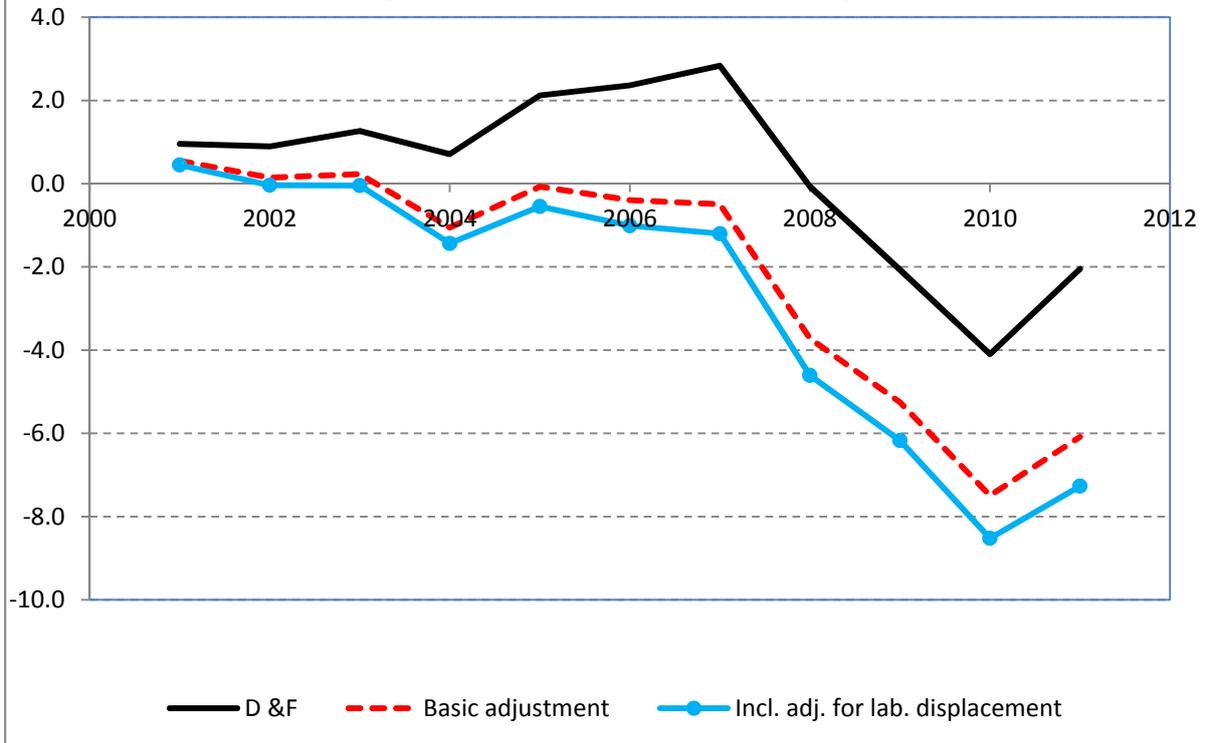
Figure 7b: Fiscal Balance of Recent Non-EEA migrants (Marginal Cost Method, £ billions at 2011 prices)
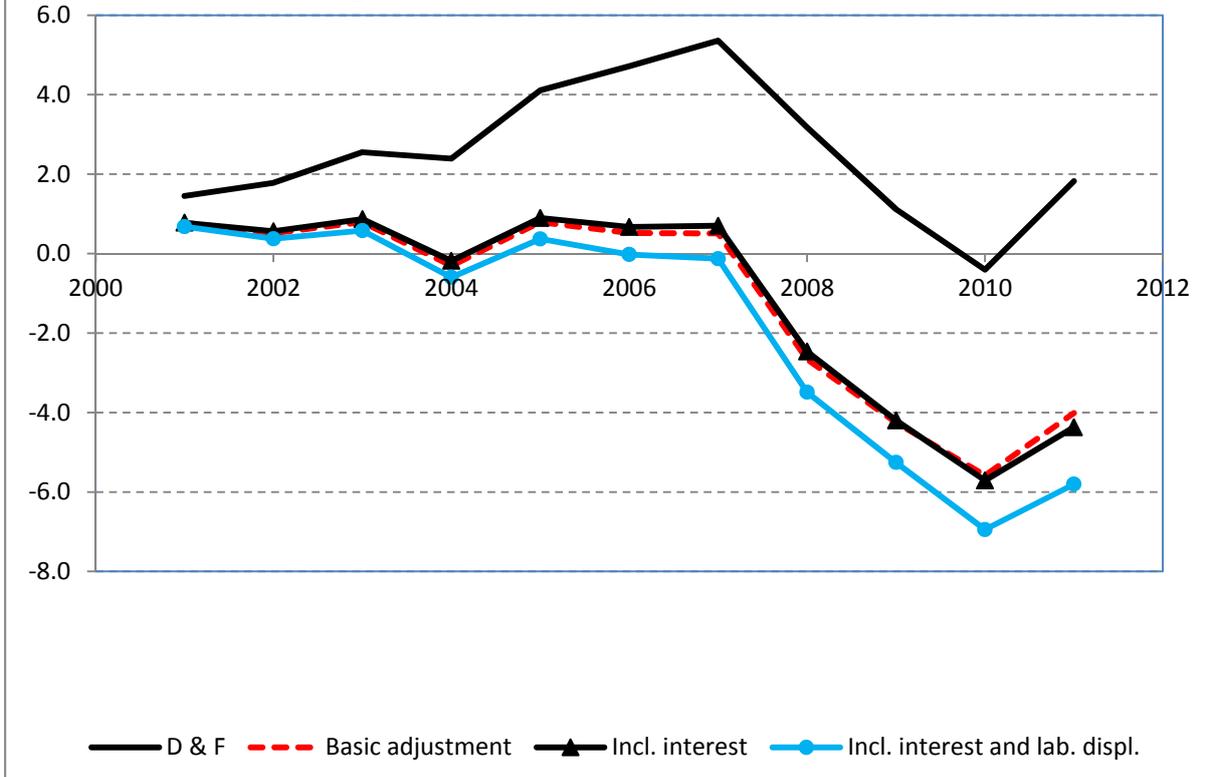
Table 1. UK Population and Employment: Migrants and Natives 1995-2011

|	Natives	Pre-2001 EEA Migrants	Pre-2001 Non-EEA Migrants	Post 2000 EEA Migrants	Post 2000 Non-EEA Migrants	Total
Population						
1995	52,172,016	885,367	3,920,502			56,977,885
2000	52,167,122	1,054,930	4,509,258	0	0	57,731,310
2007	52,054,165	1,301,657	3,507,721	969,502	1,928,921	59,761,966
2011	52,360,031	1,284,261	3,221,901	1,563,028	2,924,529	61,353,750
Change 1995-2000	-4,894	169,563	588,756			753,425
Change 2000-2007	-112,957	246,727	-1,001,537	969,502	1,928,921	2,030,656
Change 2007-2011	305,866	-17,396	-285,820	593,526	995,608	1,591,784
Change 2000-2011	192,909	229,331	-1,287,357	1,563,028	2,924,529	3,622,440
Employment						
1995	23,930,613	377,016	1,451,450			25,759,079
2000	25,162,998	496,210	1,794,328	0	0	27,453,536
2007	25,674,649	587,429	1,435,481	660,926	884,941	29,243,426
2011	24,966,418	540,952	1,333,210	977,164	1,242,846	29,060,590
Change 1995-2000	1,232,385	119,194	342,878			1,694,457
Change 2000-2007	511,651	91,219	-358,847	660,926	884,941	1,789,890
Change 2007-2011	-708,231	-46,477	-102,271	316,238	357,905	-182,836
Change 2000-2011	-196,580	44,742	-461,118	977,164	1,242,846	1,607,054

Source: Dustmann and Frattini (2013). Table 1a

Table 2: Balance of Revenue *minus* Expenditure
Total 2001-2011

	Average Cost Method		
	EEA	non-EEA	Total
	£ billions (at 2011 prices)		
Pre-2001 Migrants	-13.0	-88.2	-101.3
Post-2000 Migrants	+21.7	+2.9	+24.5
Total	+8.7	-85.4	-76.7
	% GDP		
Pre-2001	-0.1	-0.5	-0.6
Post-2000	+0.1	+0.0	+0.1
Total	0.0	-0.5	-0.5
	Marginal Cost Method		
	EEA	non-EEA	Total
	£ billions (at 2011 prices)		
Pre-2001 Migrants	+5.0	-41.1	-36.1
Post-2000 Migrants	+35.6	+28.1	+63.6
Total	+40.5	-13.0	+27.5
	% GDP		
Pre-2001 Migrants	+0.0	-0.3	-0.2
Post-2000 Migrants	+0.2	+0.2	+0.4
Total	+0.2	-0.1	+0.2

Notes: Monetary quantities are at constant 2011 prices. Totals may not add because of rounding errors.

Table 3. Migration Watch adjustments to D&F estimates: All Recent Migrants

Total 2001-2011, £billion at current prices

	Col (1) Average Cost Scenario MW Adjustment	Col (2) Average Cost Scenario Modified Adjustment	Col(3) Marginal Cost Scenario MW Adjustment	Col (4) Marginal Cost Scenario Modified Adjustment
Personal taxes (income tax and National Insurance)	*-11.4*	*0.0*	*-11.4*	*0,0*
Company Taxes	*-13.8*	*-13.8*	*-13.8*	*-13.8*
VAT and Indirect Taxes	*-8.7*	*-8.7*	*-8.7*	*-8.7*
Council Tax and IHT	*-3.8*	*-3.8*	*-3.8*	*-3.8*
Business Rates	*-7.2*	*-7.2*	*-7.2*	*-7.2*
Total Revenue	**-44.9**	**-33.5**	**-44.9**	**-33.5**
Tax Credits	*+5.3*	*+5.3*	*+5.3*	*+5.3*
Housing Benefit	*+2.1*	*+2.1*	*+2.1*	*+2.1*
Economic Affairs	*0.0*	*0.0*	*+19.1*	*+19.1*
Debt interest	*0.0*	*0.0*	*+16.1*	*-2.7*
Total Expenditure	**+7.4**	**+7.4**	**+42.6**	**+23.8**
Balance = Revenue *minus* **Expenditure**	**-52.3**	**-40.9**	**-87.5**	**-57.3**

Table 4. Balance of Revenue *minus* Expenditure for Recent Migrants: Total 2001-2011 with adjustments

	Pure public goods at average cost			Pure public goods at (zero) marginal cost		
	£ billions (at 2011 prices)			£ billions (at 2011 prices)		
	EEA	Non-EEA	Total	EEA	Non-EEA	Total
Original D& F balance	**+21.7**	**+2.9**	**+24.5**	**+35.6**	**+28.1**	**+63.6**
*Basic adjustment**	*-17.7*	*-26.5*	*-44.2*	*-24.1*	*-41.0*	*-65.0*
Interest adjustment	*n. a.*	*n. a.*	*n. a.*	*+2.6*	*+0.4*	*+3.0*
Labour displacement adjustment	*-4.5*	*-6.8*	*-11.2*	*-5.0*	*-7.8*	*-12.8*
Adjusted balance	**-0.5**	**--30.4**	**--30.9**	**+9.0**	**--20.2**	**-11.2**
	% GDP			% GDP		
	EEA	Non-EEA	Total	EEA	Non-EEA	Total
Original D& F balance	**+0.13**	**+0.02**	**+0.15**	**+0.22**	**+0.17**	**+0.39**
*Basic adjustment**	*-0.11*	*-0.16*	*-0.27*	*-0.15*	*-0.25*	*-0.40*
Interest adjustment	*n. a.*	*n. a.*	*n. a.*	*+0.02*	*+0.00*	*+0.02*
Labour displacement. adjustment	*-0.03*	*-0.04*	*-0.07*	*-0.03*	*-0.05*	*-0.08*
Adjusted balance	**-0.09**	**-0.19**	**-0.28**	**+0.06**	**-0.12**	**-0.07**

Note: totals may not add because of rounding errors.
*The basic adjustment includes all Migration Watch adjustments except those for personal taxes (income tax and National Insurance) and debt interest.

Appendix: The share of recent migrants in government interest payments

This appendix shows how the share of recent migrants in government interest payments should be derived. It is assumed that the fiscal balance of migrants is measured using the marginal cost method. Revenue and expenditure (excluding interest) incorporate all but one of the adjustments suggested by Migration Watch. The exception concerns personal taxation (income tax and national insurance) for which no adjustment is made to the original D&F series. The interest rates used in this table are derived by dividing total government interest payments by total national debt as given by the House of Commons Library (Webb and Bardens, 2013).

The mathematics

This section describes the mathematical relationships that determine the migrant portion of government interest payments.

The primary balance of a particular category of migrant in year t is equal to the government revenue ascribed to these migrants minus their portion of government expenditure (excluding interest). Mathematically, this is expressed as follows:

(1) $\qquad P_t = R_t - E_t$.

The current balance of these migrants is equal to their primary balance minus their portion of government interest payments. Mathematically:

(2) $\qquad C_t = P_r - I_t$.

The migrants' portion of government interest payments is equal to the rate of interest multiplied by their portion of the national debt which is inherited from the previous year. Mathematically:

(3) $\qquad I_t = r_r A_{t-1}$.

The migrants' portion national debt at the end of year t is equal to their portion of inherited national debt minus their current balance in year t. Mathematically,

(4) $\qquad A_t = A_{t-1} - C_t = (1 + r_t)A_{t-1} - P_t$.

Note that A_t measures the cumulative impact of the migrants in question on the national debt. It is negative if these migrants have on average generated a fiscal surplus in the past, thereby allowing the government to borrow less than it would otherwise have done.

To close the system we assume that the migrants' portion of national debt at the end of year 2000 (beginning of year 2001) is equal to zero.

Application

Table A1 shows how interest is calculated using the above formulae. To understand this table, let us consider recent non-EEA migrants. In 2001, these migrants have a primary balance equal to £0.61 billion. Since this is the first year they are in the UK, they inherit no national debt and hence no government interest payments are ascribed to them. Their current balance is therefore £0.61 billion. This surplus allows the government to borrow less, and the growth of national debt is therefore less than would otherwise have been the case. This is indicated by the entry -£0.61 billion in the column headed "Cumulative impact on national debt" is Table A1. Because of this reduction in the national debt (compared to what it would otherwise have been), the government has to pay less interest in 2002. The resulting change in interest payments is -£0.04 billion. The migrants' current balance in 2002 is derived by deducting this change in interest payments from their primary balance of £0.41 billion. Their current balance in 2002 is therefore £0.41 billion - (-£0.04 billion) = £0.45 billion.

Let us also consider non-EEA migrants in 2011. The total national debt at the end of 2010 is £8.25 billion larger than it would have been in the absence of these migrants. As a result, government interest payments in 2011are £0.36 billion larger. The primary balance of these migrants in 2011 is equal to - £4.01 billion. Their current balance in 2011 is therefore - £4.01 billion - £0.36 billion = -£4.37 billion.

The cumulative impact of such accounting is shown in the final line of Table A1. In the year 2011, government interest payments are £0.54 billion lower because of recent EEA migration and £0.36 billion higher because of recent non-EEA migration. The national debt at the end of 2011 is £12.63 billion smaller because of recent EEA migration and £12.62 billion larger because of recent non-EEA migration. Note that by the end of 2011 the combined impact of recent EEA and non-EEA migration on the national debt is virtually zero.

It is clear from table A1 that interest is a small item in comparison with the primary balance. When interest is taken into account, the resulting current balance is always somewhat better than the primary balance for recent EEA migrants and slightly worse towards the end of the period for recent non-EEA migrants.

Table A1. How government expenditure on interest payments should be ascribed under the marginal cost scenario.

£ billions

	Recent EEA migrants				Recent Non-EEA migrants				
year	Primary balance $P_t = R_t - E_t$	Impact on gov't interest payments $I_t = r_t A_{t-1}$	Current balance $C_t = P_t - I_t$	Cumulative impact on national debt $A_t = A_{t-1} - C_t$	Primary balance $P_t = R_t - E_t$	Impact on gov't interest payments $I_t = r_t A_{t-1}$	Current balance $C_t = P_t - I_t$	Cumulative impact on national debt $A_t = A_{t-1} - C_t$	Interest rate (% p.a.) r_t
2000	0	0	0	0	0	0	0	0	
2001	0.37	0.00	0.37	-0.37	0.61	0.00	0.61	-0.61	8.4
2002	0.30	-0.02	0.32	-0.69	0.41	-0.04	0.45	-1.06	7.0
2003	0.57	-0.04	0.61	-1.30	0.65	-0.06	0.71	-1.77	5.8
2004	0.46	-0.07	0.53	-1.83	-0.25	-0.10	-0.15	-1.61	5.7
2005	1.01	-0.10	1.12	-2.95	0.68	--0.09	0.76	-2.38	5.5
2006	1.90	-0.16	2.07	-5.02	0.46	-0.13	0.59	-2.97	5.6
2007	2.13	-0.29	2.42	-7.43	0.46	-0.17	0.63	-3.59	5.7
2008	1.78	-0.37	2.14	-9.57	-2.46	-0.18	-2.29	-1.31	4.9
2009	0.25	-0.35	0.60	-10.18	-4.03	-0.05	-3.98	2.67	3.7
2010	1.86	-0.46	2.32	-12.50	-5.46	0.12	-5.58	8.25	4.5
2011	-0.41	-0.54	0.13	-12.63	-4.01	0.36	-4.37	12.62	4.3

Note that totals may not add because of rounding errors.