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## **The fiscal impact of immigration in OECD countries**

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## Chapter 3

# The fiscal impact of immigration in OECD countries<sup>1</sup>

*Whether immigrants make the fiscal challenges faced by OECD countries more difficult or whether they aid in addressing them is a topical question in many OECD countries. This chapter provides a first-time comparative analysis of the fiscal impact of immigration in OECD countries, using data for all European OECD countries, as well as Australia, Canada and the United States. It also includes a comprehensive overview of the literature and the methodological issues involved in estimating the fiscal impact of migration. Depending on the assumptions made and the methodology used, estimates of the fiscal impact of immigration vary, although in most countries it tends to be small in terms of GDP and is around zero on average across OECD countries.*

*Immigrants tend to have a less favourable net fiscal position than the native-born, but this is almost exclusively driven by the fact that immigrant households contribute on average less in terms of taxes and social security contributions than the native-born and not by a higher dependence on benefits. Employment is the single most important determinant of migrants' net fiscal balance, particularly in countries with comprehensive social protection systems. More generally, differences in the composition of the migrant population by migration category (labour, family, humanitarian) account for a large part of the cross-country variation of migrants' fiscal position relative to that of the native-born. There is also a strong impact of the age of immigrants on their net fiscal position.*

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

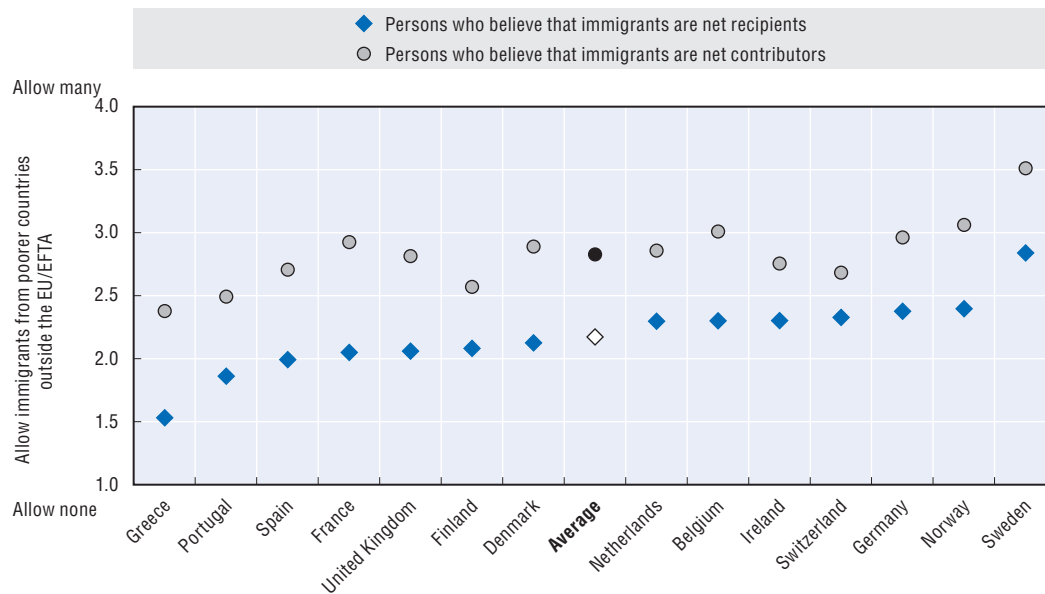
## Introduction

Whether immigrants are net contributors to or a net drain on public finances is a topical issue in many countries for several reasons. First, immigrants, defined as the *foreign-born*, account for a significant and growing part of the population in many OECD countries. On average in the OECD in 2010, about 13% of the population was composed of immigrants, with a growth of more than 2 percentage points since 2000. At the same time, immigrants' fiscal position can be expected to differ from that of the native-born. Immigrants have different socio-demographic characteristics, and their labour market outcomes are often less favourable than those of the native-born – even after accounting for these characteristics (OECD, 2012). In addition, immigrants generally do not spend their entire life in the host country. Most arrive as adults, and some will return eventually to their origin countries or migrate elsewhere. As a result, immigrants are overrepresented among the working-age population in virtually all OECD countries. This is likely to have an impact on the fiscal balance, as per capita social expenditure is lowest among those in the working-age population.<sup>2</sup>

The second reason why the fiscal impact of immigration has gained importance in the policy debate is the often sharp deterioration in the fiscal balance of most OECD countries since the onset of the global financial crisis in 2008/09. In 2011, gross financial liabilities of general government in the OECD area exceeded total GDP for the first time, and governments' net borrowing amounted to more than 6% of GDP on average. These large fiscal imbalances resulting from the Great Recession are coupled with the fiscal impact of ageing. By 2020, in the absence of migration, on average across the OECD, the number of individuals entering into the working-age population will be about 30% lower than the number of those exiting it. In parallel, life expectancy is increasing. Over the past two decades, average life expectancy at the age of 65 has increased by about three years. As a result, population ageing will be accompanied by significant increases in expenditures on pensions, health and long-term care, while the number of contributors of working-age declines. Along with ageing, labour shortages may well tend to increase. Many OECD countries are looking for migration to help fill skills and overall labour shortages. Migrants' fiscal impact is one element in public policy decisions about the scale and composition of discretionary labour migration flows. The key question is therefore: will immigrants aggravate the fiscal challenges associated with the recent crisis and population ageing, or can they play a role in addressing them?


Finally, in many countries, there is widespread public concern over immigrants' use of the welfare system. Opinion surveys show a strong association between the public's view about the desirability of further migration and their perceptions of immigrants' fiscal contribution. In European OECD countries, people who believe that the fiscal impact of immigration is positive are also more inclined to welcome additional migration (Figure 3.1). Although this association does not necessarily mean that the fiscal impact is the main determinant of views on migration, there clearly is a link between the perceptions of the fiscal impact and public acceptance of additional migration.

Figure 3.1. **The association between views on migration and the perception of migrants' fiscal impact, selected European OECD**



Notes: In the survey, respondents were asked to provide their views on the net fiscal position of migrants on a scale from 0 ("immigrants receive more than they contribute") to 10 ("immigrants contribute more than they receive"); respondents with a score of up to 3 were categorised as having the view that immigrants are net recipients, and respondents with a score of 7 or more as having the view that immigrants are net contributors. The y-axis shows the average score (on a scale 1-4) for openness to additional immigration from poorer countries outside of the EU/EFTA.

Source: European Social Survey.

StatLink  <http://dx.doi.org/10.1787/888932822921>

Given these challenges, and the availability of better data, there has been an increasing amount of research on the fiscal impact of immigration in recent years.<sup>3</sup> Yet, the question of how to reliably evaluate the fiscal impact of immigrants is complex. Should one simply compare immigrants' *current* tax/benefit balance (including social security contributions), or are forward-looking projections of *future* cash flows the approach that should be taken to account for a potential demographic impact and economic assimilation over time? If so, how sure can one be about the assumptions and forecasts underlying these approaches? And what about the descendents of immigrants and the indirect effects of immigration on the public finances through the labour and capital markets?

The first section addresses these questions and discusses, on the basis of an overview of the literature, the key issues to be considered in the analysis of the fiscal impact of immigration, including measurement. The second section provides a first-time internationally-comparative overview of immigrants' fiscal impact, based on household survey data from all European OECD countries, as well as Australia, Canada and the United States. The final section draws some conclusions.

### Main findings

- The fiscal impact of immigration cannot be pinned down to a single and undisputable figure, as its measurement depends on a number of key assumptions, including the degree to which the cost for the public purse of certain public services and the public capital stock (such as for infrastructure and public administration) and non-personal taxes (such as the corporate income tax) is attributed to the immigrant population. Inclusion or exclusion of these items often changes the sign of the impact.

- There are three basic sets of approaches used in the literature to measuring the fiscal impact of immigration. The first is an *accounting approach* that estimates the fiscal contributions of immigrants to the public purse minus public expenditures related to immigrants in a given year. The accounting approach thus looks at the fiscal contribution of the *resident* immigrant population, many of whom may have arrived decades ago, and should thus not be used to assess the success or fiscal impact of *current* immigration and integration policies. The second relies on *dynamic models*, which analyse the impact of immigration in the long run, generally by modelling the impact of *additional* migration on future public budget balances. For analysing the long-term fiscal impact of immigration, assumptions regarding intertemporal budget constraints and the labour market integration of immigrants' offspring are often crucial. The third, and closely related, are *macroeconomic models* which assess the overall impact of immigration on the economy and the implications which this entails, generally by simulating the impact of additional immigration flows.
- Depending on the assumptions made and the methodology used, estimates of the fiscal impact of immigration vary, although in most countries it tends to be very small in terms of GDP and is around zero on average across the OECD countries considered. The impact, whether positive or negative, rarely exceeds 0.5% of GDP in a given year. It is highest in Switzerland and Luxembourg, where immigrants provide an estimated benefit of about 2% of GDP to the public purse.
- In most countries, immigrants have a less favourable *net* fiscal position than the native-born. This is driven by immigrants' lower taxes and social security contributions and not by higher dependence on social benefits. However, because unemployed migrants tend to be less likely to obtain unemployment benefits than their unemployed native peers, they are more likely to find themselves among the recipients of social assistance than the native-born. Households with low-educated migrants have higher net fiscal contributions than comparable native-born households in almost all OECD countries. In contrast, high-educated migrant households have on average a lower net fiscal contribution than high-educated native-born.
- Cross-country differences in the fiscal position of immigrant households are shaped both by the design of the tax and benefit system and by differences in the composition of the migrant population in terms of age and migrant-entry category. In countries where recent labour migrants make up for a large part of the immigrant population, immigrants have a much more favourable fiscal position than in countries where humanitarian migration accounts for a significant part. Countries with longstanding immigrant populations and little recent labour immigration generally have a less favourable fiscal position of immigrants. Labour migrants thus tend to have a much more favourable impact than other migrant groups, although there is some convergence over time. Labour migration is also generally the only *direct* policy lever with respect to migration management, since governments have generally little influence on the size and composition of other forms of migration. Yet, few studies look explicitly at labour migration, partly because few countries have information on immigrant-entry category for the immigrant population. The limited available evidence suggests that the impact of labour migrants is positive, particularly for migrants with secondary and post-secondary education.
- Immigrants' *age* profile is a main factor in explaining cross-country differences in immigrants' net fiscal position, since countries with a favourable fiscal impact, measured in terms of current net contributions to the budget, tend to have relatively

young immigrant populations, whereas the reverse is the case for countries where a negative impact is observed. Likewise, age at arrival is an important element in determining the net present value of immigrants' discounted future net direct fiscal contributions. Immigrants who arrive as young adults provide a positive pay-off to the public purse over their life-cycle in most countries. The net present value of future payments then declines and generally turns negative somewhere between the age of 40 and 45, depending on the country. Despite this, in most migration systems, age plays a relatively minor role in the selection of labour migrants compared with other selection factors such as work experience, language and education.

- *Employment* is the single most important determinant of migrants' net fiscal contribution, particularly in countries with generous welfare states. Raising immigrants' employment rate to that of the native-born would entail substantial fiscal gains in many European OECD countries, in particular in Belgium, France and Sweden where this would have a budget impact of more than 0.5% of GDP. It is thus not surprising that the labour market integration of immigrants and their children has become a key policy issue. Indeed, the available evidence indicates that the potential fiscal gains from better labour market integration of resident immigrants – in particular of immigrant women and of highly-educated immigrants – will tend to exceed the potential fiscal gains from additional labour migration in many European OECD countries with large and longstanding immigrant populations.
- Immigrants' fiscal position also seems to vary more strongly with the business cycle than that of the native-born. This is less visible in the current crisis where on average, immigrants' net fiscal contribution declined on average just about as much as that of the native-born, because the benefit payments to immigrants increased less than those to the native-born. This seems to be due in part to the fact that immigrants do not always have full access to the social protection system, for example because of their status as foreigners or because they have not yet sufficiently paid into systems which are contributory, notably for recently-arrived immigrants.

### Measuring the fiscal impact of immigration – an overview

Measuring the fiscal impact of immigration is not a straightforward exercise and can be done in several different ways which will be discussed below. This section first defines the target group for the purposes of the exercise. It then discusses the revenue and expenditure items to be considered in the measurement. The section ends with a discussion of alternative methodological approaches to measuring the fiscal impact, both in the short-term and in the long-run.

#### **The target population**

Before studying the fiscal impact of immigration, the target group needs to be defined. This relates mainly to whether to focus on the foreigners or on the foreign-born, and whether or not to include the children of immigrants and immigrants in an irregular situation.

Some empirical studies look at foreign nationals rather than the foreign-born (e.g. Boeri, 2010). However, a person's nationality can change over time, and the conditions under which nationality is granted vary widely across the OECD (see OECD, 2011a). As a result, in countries with longstanding liberal citizenship laws, such as Australia, Canada and Sweden, foreign nationals are essentially recent arrivals, whereas in countries with

more stringent citizenship laws, such as in Austria, Germany and Switzerland, many foreign nationals are native-born. For international comparisons, the OECD has taken the view that the foreign-born are the appropriate target group.

As will be discussed below, some studies also include the native-born children of immigrants. This is appropriate when one wishes to look at the long-term fiscal implications of immigration. Occasionally, however, the children of immigrants are also considered in studies that look at contributions and expenditures in a given year (see below and Wadensjö, 2000). This is also partly driven by data considerations – revenues and expenditures generally refer to the household level.<sup>4</sup> Household-based data also include the native-born children of immigrants living with their parents in the same household.

Regarding immigrants in an irregular situation, these are included to the degree that the dataset used for the analysis covers them. Many surveys, such as the Current Population Survey in the United States, cover at least part of such immigrants. The fiscal position of immigrants in an irregular situation – and also their inclusion in administrative datasets on taxes and benefits – will mainly depend on whether or not they are in regular employment and thus pay taxes and social security contributions. At least in the United States where this issue has been well researched, this seems to be the case for the majority of immigrants in an irregular situation (CBO, 2007). A second major determinant of the fiscal position of such immigrants is their access to certain social benefits and services.<sup>5</sup> Orrenius and Zavodny (2012) argue that *regularisation* of immigrants' status would lead to higher tax revenue as some workers would move onto the books and beneficiaries' incomes would tend to increase. But there might also be a higher take-up of certain benefits, including some to which immigrants and their children have already access but low take-up because of fears about revealing their undocumented status.

### **Revenue and expenditure items to be considered**

The most straightforward items to include in an assessment of the budget implications of migration are the direct financial transfers involving immigrants, that is, the taxes and social security contributions paid and the financial transfers received via unemployment and social assistance benefits, disability payments, family allowances, financial housing support, and the like.<sup>6</sup> Specific issues arise with the pension system, where the time-lag between contributions and benefit payments is particularly long.<sup>7</sup> Given the magnitude of the sums involved, inclusion or exclusion of the pension system can considerably alter the balance, as immigrants are largely underrepresented among the elderly in most countries – especially in countries where a large share of immigrants arrived only recently. On the one hand, the pensions received generally have a direct link with previous payments into the pension system, which is an argument for exclusion of pension contributions and payments. On the other hand, few pension systems are actuarially fair, which means that pensions are, at least to some degree, transfers between generations and tax payers. In the empirical analysis below, the estimates are thus provided both with and without consideration of the pension system.

The fiscal impact may also differ between levels of government. In many cases, the contributions tend to be mainly towards the central government level, whereas the expenditures tend to occur at the local level. For example, social assistance and housing support is often paid at the local level, whereas pensions are paid out at the national level.<sup>8</sup> As will be seen in the empirical analysis below, immigrant households obtain on average 70% more in social assistance and 50% more in housing allowances than the



native-born, but about 50% less in pensions. In a review of the literature for the United States, Kandel (2011) concludes that the relatively young age distribution of the foreign-born accentuates the degree to which state and local governments incur greater fiscal costs from the foreign-born than the federal government.<sup>9</sup>

Clearly, direct fiscal transfers are not the only component that should be considered in assessing the fiscal impact of immigration. First, one should take account of the indirect taxes and consumption of social goods such as education and health by immigrants. These are revenues and expenditures that increase with each individual immigrant, at least in principle. Second, one should also consider public goods, some of which may partly depend upon the size and composition of the population.<sup>10</sup> Finally, there are indirect budget implications arising from migrant's broader impact on the economy.

Regarding the first category, on the revenue side, these are the indirect taxes paid by immigrants through their expenditure (namely value-added tax and excise taxes). From income and expenditure surveys, such information can often be obtained, at least on an approximate basis. On the expenditure side, this includes, in particular, public education and public health expenditure, as well as expenditure for active labour market policies. The expense attributable to migrants is generally not directly available. For those in education, estimates of public education expenditure by education level are available for a majority of OECD countries. Likewise, there is information on overall spending on active labour market policy programmes (which is generally targeted on the unemployed) and on the labour market status of the respondents, from which estimates of expenditure can be obtained. The individual public expenditure for health care is more difficult to assess. It varies widely by age, and only few OECD countries have estimates in this respect.

It is also questionable whether such age-specific public expenditures (where available) apply to the same degree to immigrants as to the native-born. For example, immigrants tend to cause some additional education expenditure, namely through language training. Yet, at the same time, in most countries children of immigrants tend to be underrepresented in the initial years of early childhood education and in post-secondary education in most countries (Liebig and Widmaier, 2010).<sup>11</sup> Likewise, whereas adult immigrants can receive targeted and publicly-subsidised language training upon arrival in many cases, unemployed migrants are often underrepresented among the beneficiaries of some of the more expensive active labour market policy programmes (see OECD, 2007, 2008, 2012).

Language training – both for children in school and for adult migrants – is generally the single most important budget item that is directly integration-related and not included in the general consumption of social services. Such expenditures for language training and introduction courses can be a major item for new arrivals in per capita terms and are included in most country-specific studies where they are sizeable, notably in the Nordic countries. However, since these expenditures essentially occur in the first few years after arrival, they are generally not large when expressed in per capita terms of the total immigrant population.<sup>12</sup>

Regarding health care expenditure, although little direct information is available, there are a number of indications suggesting that immigrants are on average less costly for the public purse than the native-born. As already mentioned, immigrants are underrepresented among the elderly, where health expenditures tend to be highest (see Hagist and Kotlikoff, 2009). In addition, immigrants tend to have less access to, and make lower use of, the health

care system due to formal and informal barriers such as legal restrictions, language barriers, socio-cultural factors, and migrants' lack of information about their rights and the health system of the host country (Norredam and Krasnik, 2011).<sup>13</sup>

The situation becomes even more complex with respect to the second category, that is, revenue and expenditure items on the government budget that do not vary on a person-by-person basis. On the revenue side, this includes, for example, the corporate income tax which is an important source of tax revenue in many countries. Although immigrants are slightly overrepresented among entrepreneurs, their companies are also more often small and there are some indications that they are less productive on average (see OECD, 2011b). They are thus either not subject to this tax at all or they may contribute only little. On the expenditure side, this concerns in particular publicly-provided goods that depend only partly upon the size and composition of the population, such as public infrastructure, public administration and police forces.<sup>14</sup> These are often referred to as “congestible public goods” (e.g. Wadensjö, 2000). In order to do a proper accounting of such congestible goods, one needs assumptions about how the consumption and provision of these goods changes with variations in the (immigrant) population size. Most studies which account for this tend to attribute the costs of such goods equally across the whole population (i.e. an assignment *pro rata*). They thus assume that the cost of provision is proportional to the number of recipients (Rowthorn, 2008).<sup>15</sup>

There are also a number of “pure” public goods which tend to be unaffected by population size. Defence, which accounted on average for 4% of government expenditure of OECD countries in 2008, is a classic example. The marginal increase in these costs due to immigration should, within certain limits, therefore be zero and immigrants will thus lower the per capita cost for the native-born (see Loeffelholz et al., 2004). Nevertheless, defence spending tends to grow proportionally with GDP, which challenges the pure public good classification; and indeed, a number of studies assign the cost of defence proportionally.

This chapter will refer to proportional (per capita) – cost assignment as *pro rata* and to fixed-cost assignment as *zero marginal cost*. For substantial budget items such as defence, a change in this classification can change the sign of the impact, and it does so in many cases where the fiscal effect is not large either way.

Finally, as a third category, there are the indirect implications which migrants exert on the budget through their overall economic impact on the wages and employment of natives, on the capital stock and on productivity, all of which have fiscal implications as well, for example through the corporate income tax and the taxes paid by the native-born. This indirect impact is considered in general equilibrium models, which will be discussed in more detail below.<sup>16</sup>

### **Specific groups**

Many empirical studies do not look at the overall immigrant population, but only at a part thereof. For example, in the Nordic countries and the Netherlands (e.g. Roodenburg et al., 2003), there is often a focus on so-called “non-Western” immigrants, a term that essentially refers to immigrants from lower-income countries. This distinction is motivated by the fact that immigrants from such countries tend to have poorer labour market outcomes and are more often dependent on benefits than the native-born and immigrants from high-income countries. In the European OECD countries, most migrants from high-income countries are from EU/EFTA countries, and nationals of these countries enjoy freedom of movement and access to all government services like the native-born.<sup>17</sup>

Ideally one should analyse immigrants' fiscal contribution by category of entry. This is the single key determinant in explaining cross-country differences in immigrants' labour market performance (see OECD, 2007, 2008, 2012). In all countries, labour migrants have much more favourable labour market outcomes than family and humanitarian migrants. The composition of the migrant population by entry category can thus be expected to have a strong impact on migrants' fiscal position as well.<sup>18</sup>

However, only a few countries have information on immigrants' entry category, and only Australia – where a specific fiscal impact model has been developed as a tool for migration management – provides estimates of the fiscal impact by migration category (see Box 3.1).<sup>19</sup> This model demonstrates the key role played by migration category. The insights are used for both migration management and budgetary planning. Comparisons of the results over time show the impact of shifts in migration policy on the budget. Overall, estimations on the basis of the fiscal impact show that the net fiscal surplus during the first three years after arrival per migrant has increased by more than 50% between 2006 and 2008, along with a stronger selection for skills. The model is also used to assess the impact of different economic scenarios, e.g. in 2009 in the context of the economic downturn.

Closely related to immigrants' entry category is their access to social services. While immigrants generally have access to most contributory benefits, this is less clear for non-contributory benefits such as family support and welfare payments, which may depend on immigrant category or citizenship status.<sup>20</sup> Fiscal implications may also arise from the limited international transferability of social benefits (see Holzmann and Koettl, 2011, for a comprehensive discussion).<sup>21</sup>

An alternative way to looking at entry groups is to analyse specific migrant groups who share common characteristics. In the United Kingdom, there has been an assessment of the fiscal impact of immigration from the Central and Eastern European Countries that entered the European Union in 2004. Most of these arrived as migrants for employment. Not surprisingly, Dustmann et al. (2010) found that these migrants provided a net contribution to the public purse, regardless of the accounting model used.

## **Methodological approaches**

### **Static accounting (cash-flow) models**

The most straightforward and direct approach of measuring the fiscal impact of immigration is by directly comparing immigrants' taxes and social security contributions and government expenditures attributable to them. By means of an accounting exercise, the fiscal impact of immigration can thus be calculated as the residual between the credit side, namely the taxes and contributions paid by immigrants, and the debit side, i.e. fiscal transfers from which migrants benefit. Usually, the studies calculate this balance for a fiscal year.

A large number of this type of accounting studies exist for the OECD countries. A landmark for the early analysis of the fiscal impact of immigration on this basis was the "New Americans" study by the US National Research Council in the late 1990s. Although not providing analyses at the nation-wide level, it compared the results of two studies on the fiscal impact of immigration at the state level, for New Jersey (Garvey and Espenshade, 1998) and California (Clune, 1998). In this analysis, all publicly-provided goods, with the exception of defence, are assumed to be *pro rata*. The study found an overall negative impact in both states. Whereas in both cases there was a net contribution at the federal level, it did not suffice to compensate for the loss at the state level. In addition, the negative

### Box 3.1. The Australian Fiscal Impact Model

For many years, the Australian Department of Immigration and Citizenship has operated, with the support of a private consulting firm, a Migrants' Fiscal Impact Model (see Access Economics, 2008, for a detailed description). The model allows for a detailed analysis of the effect of new arrivals on the Australian Government Budget. The model provides separate analyses for the eight main visa categories for permanent migration, and the main temporary labour migration visa.

The model uses estimates of income, employment and expenditure for the different categories of migrants to model income tax and revenue from indirect taxes, such as the goods and service tax. The model also assesses the indirect contribution of migration through other revenue streams such as the corporate income tax.

The model also includes comprehensive estimates of government expenditure on health, education, social security and settlement services for migrants, taking into account migrants' age profile and the propensity of different migrant groups to use government services. The data are derived from administrative data and other sources, in particular the Longitudinal Survey of Immigrants in Australia (LSIA).


The fiscal impact is modelled over a 20-year period and accounts for return migration. The model only examines immigrants *themselves* – the impact on the Australian Government Budget from any children born after arrival in Australia is not considered.

Humanitarian migrants have a negative fiscal impact during the first 10-15 years, whereas labour migrants provide a strongly positive contribution (see Table 3.1). The model highlights the importance of *duration of residence*, as immigrants' outcomes tend to converge to those of the native-born over time. This convergence process results in a positive impact for humanitarian migrants at later stages, although these are generally not large enough to turn the net fiscal impact positive if considered from a life-time perspective. Not considering accompanying family, labour migrants tend to have a highly positive fiscal position initially which then tends to decline over time. In contrast, humanitarian migrants have a highly negative fiscal position initially which then tends to improve over time (see also Sarvimäki, 2011, who finds evidence of such convergence for Finland).

Table 3.1. **Estimated net impact of immigration on the Australian Government Budget, by visa category, 2010-11**

Entry category	Visa grants in 2010-11	Net fiscal impact (AUD million)				
		Period of settlement in Australia (years)				
		1	2	3	10	20
Family	54 543	212	60	43	201	146
Labour (including accompanying family)	113 725	747	839	915	1 033	1 154
Humanitarian	13 799	-247	-69	-62	-12	48
<b>Total permanent</b>	<b>182 067</b>	<b>712</b>	<b>829</b>	<b>896</b>	<b>1 221</b>	<b>1 349</b>
<b>Temporary Labour (business long stay)</b>	<b>90 120</b>	<b>889</b>	<b>955</b>	<b>383</b>	<b>441</b>	<b>586</b>

Source: Adapted from Cully (2011).

StatLink  <http://dx.doi.org/10.1787/888932823529>

net fiscal impact of a migrant-headed household in California was more than three times as large as for an average migrant-headed household in New Jersey. The authors argued that the main reason for the large differences between New Jersey and California came from differences in their respective immigrant populations. Immigrant households in California tended to be less skilled and to have lower income and more children compared with their New Jersey counterparts.

The negative impact has not primarily been driven by higher welfare dependency but by lower tax contributions of immigrant households. Likewise, most studies for European OECD countries which looked at welfare dependency found only a modest overrepresentation of immigrants, if any – in contrast to public opinion which often assumed a much stronger overrepresentation (see e.g. Fertig and Schmidt, 2001 on Germany; and Sheldon, 2007 on Switzerland).

The “New Americans” study also stressed that the results differed with respect to the region of origin, with positive contributions by European and Canadian households, and a negative impact by Latin American households. A latter study by Garvey, Espenshade and Scully (2002), based on the previous estimates and data for New Jersey, challenged these results and demonstrated that the discrepancies were due to different socio-economic characteristics rather than country-of-origin effects.

Whereas the studies for the United States tend to show a negative fiscal impact, the analyses for Australia, and New Zealand generally suggest a positive impact. For New Zealand, Slack et al. (2007) found that the resident foreign-born population provided a positive net fiscal contribution of NZD 3 288 million for the fiscal year 2005/06, based on the difference between direct fiscal revenues (income taxes, VAT, and excise duties) and direct fiscal expenditures for transfer payments (education, health, benefits, etc.). The net contribution of migrants was positive regardless of length of stay, region of residence and region of origin.

For Canada, Grubel (2005) found for the immigrant cohort that entered in 1990 a negative net fiscal contribution of CAD 6 294 in 2000 for each immigrant; a later study by Grubel and Grady (2011) arrived at similar results for the migrants who entered between 1987 and 2004 (a net burden of CAD 6 051; or about 1.5% of GDP in the fiscal year 2005/06). However, Javdani and Pendakur (2011) challenged these findings, demonstrating that with a more precise accounting and somewhat more realistic assumptions one can drastically alter the results by Grubel and Grady (2011). Their estimate is a negative net contribution of about CAD 450 per migrant.<sup>22</sup>

In Europe, specific attention has been paid to the fiscal impact in the Nordic welfare states. For Denmark, Wadensjö (2000) estimates a total net negative fiscal impact of immigrants and their children of 0.7% of GDP, with important differences in terms of impact per capita by country of origin (immigrants from higher-income countries provide a positive contribution) and generation (the impact of the children of immigrants is slightly positive). More recent studies on Denmark (Gerdes and Wadensjö, 2006; Wadensjö, 2007) obtained similar results.

Ekberg (1999) analysed the situation in Sweden, applying a *pro rata* approach to all untargeted government expenditures and attributing also part of the costs for defence, public administration and the rural road system to immigrants. Using 1994 as reference year – a year that just followed a severe recession which hit immigrants’ labour market outcomes particularly hard – he estimates that there was a negative net fiscal impact in the order of 2% of GDP.

This relatively large impact suggests that the reference year may matter a lot. Indeed, studies in the United Kingdom have shown a strong impact of the business cycle on immigrants' net fiscal impact. Gott and Johnston (2002) found that in 1999/2000, in a favourable economic environment, immigrant households were net contributors to the public purse, adding a net of 0.3% of GDP. A latter study by Sriskandarajah et al. (2005) estimated a small negative net fiscal contribution of GBP -0.4 billion for 2003/04, when economic conditions were somewhat less favourable. More generally, they found that immigrants tend to be net contributors in upturns but net beneficiaries during downturns. It thus seems that the fiscal impact of immigrants is more sensitive to the business cycle than that of the native-born, which is undoubtedly linked with the observed higher variation of immigrants' employment with economic conditions (see also the following section and OECD, 2009). Rowthorn (2008) provided a full range of alternative estimates, including cyclical adjustments, and found that the fiscal impact varied between -0.7% and +0.7% of GDP, depending on the assumptions made and the business cycle.

There have also been a number of studies for the Southern European countries which had significant labour migration prior to the recent crisis. As part of an extensive study on the broader economic impact of immigration in Spain, the Economic Bureau of the President (Oficina Economica, 2006) estimated that in 2005, immigrants provided a net fiscal benefit of 0.5% of GDP.

Table 3.2 summarises the main findings of those accounting studies from OECD countries that cover the entire immigrant population and thus allow providing estimates in terms of GDP impact.

Accounting-type methods can, in principle, also be applied to a study of the fiscal impact of emigration on origin countries. However, in addition to a study of the impact in destination countries, counterfactual assumptions on the labour market outcomes of emigrants, had they not migrated, are also needed. Box 3.2 provides an overview of the issues involved in measuring the fiscal impact of emigration on origin countries.


A number of studies have not looked at the fiscal impact of immigration *per se*, but rather into immigrants' use of social benefits. Most studies, such as Barrett and Maître (2011) for the EU countries, find little evidence that immigrants are more dependent on social benefits, if all components (social assistance, unemployment, disability, etc.) are considered (see also Boeri, 2010). Nevertheless, there are significant differences across countries. In the Scandinavian countries, which have longstanding immigrant populations, many of whom arrived on humanitarian grounds, most studies found that immigrants are more likely to take up social benefits (e.g. Ekberg, 2006). In the Southern European countries with a more recent migration history and large-scale labour migration, such as Spain and Italy, most studies find that immigrants are less likely to take-up welfare services (e.g. Muñoz de Bustillo and Antón, 2009 for Spain and Rizza and Romanelli, 2010 on Italy) – at least prior to the crisis. A similar result was found in a recent in-depth study for Portugal (Peixoto, Marçalo and Tolentino, 2011). For Germany, Fertig and Schmidt (2001) confront actual differences in benefit take-up with public perceptions of the take-up and find that the latter largely overestimates actual take-up. Boeri (2010) reaches a similar conclusion in his comparative study for foreigners in a number of European OECD countries.

The accounting exercises summarised above provide estimates for the direct fiscal impact in a given year. This approach neither accounts for the longer-term fiscal consequences of immigration, nor for the indirect effects arising from the impact of immigration on the

Table 3.2. Comparison of selected static accounting exercises

	Reference year	Authors	Definition of "Immigrants"	Non-direct government spending and revenue	Net fiscal impact as % of GDP
Denmark	1997	Wadensjö (2000)	Foreign-born and native-born offspring with at least one immigrant parent	Partial attribution, except defence and some small items	-0.7
France	2005	Chojnicki et al. (2010)	Foreign-born	Not considered	+0.8
Germany	1997	Loeffelholz et al. (2004)	Foreign-born and native-born offspring (excluding ethnic migrants)	Not considered	+1.0
New Zealand	2005/06	Slack et al. (2007)	Foreign-born	Not considered	+2.1
Spain	2005	Oficina Economica (2006)	Foreign-born	Most expenditure attributed <i>pro rata</i>	+0.5
Sweden	1994	Ekberg (1999)	Foreign-born	Partial attribution, including defence	-2.0
United Kingdom	1999/2000	Gott and Johnson (2002)	Foreign-born households	<i>Pro rata</i> , including corporate taxes	+0.3
United Kingdom	2003/04	Sriskandarajah et al. (2005)	Foreign-born households	<i>Pro rata</i> , corporate taxes estimated	0
United Kingdom	2003/04	Rowthorn (2008), <i>unfavourable scenario</i>	Foreign-born and native-born children with two immigrant parents	All government spending <i>pro rata</i> , integration-related expenditures exclusively attributed to migrants; assumption of additional burden on health system	-0.7
United Kingdom	2003/04	Rowthorn (2008), <i>favourable scenario</i>	Foreign-born and dependent offspring	Defence not attributed; favourable economic situation	+0.7

Note: The table includes only accounting studies which are methodologically similar and which do not focus on specific sub-groups.

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economy at large. The first shortcoming is addressed by dynamic studies, which can be broadly classified into two groups, net transfer profile-based projections and Generational Accounting.<sup>23</sup> Indirect effects are studied through macroeconomic models. These different approaches are now discussed in turn.

### Dynamic modelling

**Net-transfer profiles.** The general idea of so-called lifecycle *net-transfer profiles* is to expand the static accounting exercise over time by projecting the net fiscal impact of immigrants and their descendents in the coming years and decades. The studies are based on projections of the evolution of annual net fiscal balances and generally aim at calculating the *net present value* (NPV), in terms of the net fiscal contribution of an additional immigrant.

For that purpose, in a first step, the net fiscal contribution is calculated for each immigrant group under consideration, depending on age and other variables of interest, such as gender, educational attainment, and country of origin. The underlying estimations and attributions of contributions and receipts are akin to the static accounting exercises. Based on these estimates, so-called *net-transfer profiles* are constructed for the various immigrant groups over their lifecycle that provide for every age the respective net fiscal impact.

### Box 3.2. The fiscal impact of emigration on origin countries

While measuring the fiscal impact of immigration on destination countries is already far from straightforward, measuring the fiscal impact of emigration on origin countries poses a number of additional challenges. First, the fiscal impact greatly depends on the size and use of remittances, part of which is through informal channels and thus not officially recorded. Second, one needs information on the size and composition of the emigrant population, which requires data from destination countries. Although basic information on the characteristics of the emigrant population is available through the OECD's database on immigrants in OECD and non-OECD countries (DIOC-E) for most destination countries for up to 2005/06, these data are not compiled at the household level. It is thus not possible to have an idea of the family composition of the emigrant population, although this will greatly influence the assessment of the fiscal impact. Third, to get an appropriate picture of the fiscal impact, one has to make a large number of counterfactual assumptions about the income and expenditure pattern, as well as social transfers, if the migrants had stayed in the origin country. Finally, information on the tax and benefit system is often only partially available for origin countries.

Given these challenges, the few available studies on origin countries either focus only on specific groups of emigrants for whom more detailed information is available or do not aim at estimating the fiscal impact through accounting-type exercises and instead base them on general-equilibrium models that model first the impact of emigration on the labour and capital markets of the origin country and use, in a second step, additional information on income, tax revenues and household expenditure. Using the latter technique, Campos-Vazquez and Sobarzo (2012) provide alternative scenarios for the fiscal impact of emigration from Mexico. The estimates have a very large range, from a decline in net tax revenues by 3 percentage points to an increase by more than 7 percentage points. The latter would imply a positive net fiscal impact in terms of GDP of about 1.3 percentage points (the difference between the impact measurement in terms of revenue and GDP tends to be larger in lower-income countries due to generally smaller tax revenue as a percentage of GDP). A crucial element in the estimates is the use of remittances, which make up about 2.5% of GDP in Mexico. The latter scenario assumes that all remittances are invested. The results thus provide an indication of the rough magnitude of the possible effect rather than answering the question of whether or not the impact is positive.

The most precise study to date is probably the one by Desai et al. (2009) who estimated the fiscal impact of Indian emigration to the United States. They used census data from the United States on the characteristics of the Indian emigrant population and linked this with survey data on earnings from India and a comprehensive model of the Indian fiscal system. The authors find that the emigration of Indians to the United States, a large part of whom are highly educated, has resulted in a net fiscal loss of up to 0.5% of India's GDP.

The only internationally comparative empirical work on the fiscal impact on origin countries is a recent study by Gibson and McKenzie (2012). The authors use survey data on a sample of top achievers in upper secondary education from five countries with significant emigration (Ghana, Micronesia, New Zealand, Papua New Guinea and Tonga), who are followed over time and space. They estimate that, for this selective group of students, there is an annual fiscal loss for origin countries which ranges from about USD 500 in Micronesia to USD 17 000 in Papua New Guinea. These large differences are mainly driven by the different progressiveness of the tax systems and the scale and scope of government expenditure.



In a second step, based on these profiles as well as demographic and economic projections for a specific time horizon in the long term (generally 2050 or 2100), the net fiscal balances of the immigrant group under consideration is estimated. Generally, the future cash flows are discounted back to the base year using a selected discount rate so as to obtain an NPV for each immigrant.

A key element in the projections is age-expenditure profiles, which can be grouped into three broad phases. A *childhood phase* characterised by the receipt of transfers (predominately education and some social security expenses) and the absence of contributions; a *working-age phase* in which, depending on labour market performance, people generally contribute far more (personal taxes and social security contributions) than they receive in government spending and social security benefits; and a *retirement phase* during which contributions are limited (no labour income and payroll taxes, only taxes on wealth and excise duties), but benefits are significant (pensions and, especially towards the end of the life-cycle, health care costs).

Comprehensive studies of this kind require extensive data and a careful handling of assumptions and projections. Lee and Miller (1997) did pioneering work in this area within the “New Americans” study. In their estimates, the fiscal impact is highly dependent on the educational attainment of immigrants. Taking the expected fiscal profile of the new entrants of the mid-1990s, only the tertiary-educated immigrants had a positive NPV by themselves. On average, a typical immigrant caused a net fiscal loss of USD 3 000.<sup>24</sup> However, including also the descendents of immigrants, the picture changes dramatically. Based on estimates of the integration outcomes of the native-born offspring of immigrants, the authors find that regardless of the parents’ educational attainment, the descendents will tend to provide a strongly positive fiscal contribution. As a result, the average new arrival does not cause a small fiscal burden but rather a significant fiscal gain of USD 80 000 in present value terms.<sup>25</sup>

The results depend not only on educational attainment but also on age of arrival. For a 21-year old with a high-school diploma, the NPV is USD 126 000. This value then gradually declines and, for those arriving after their mid-thirties, turns negative. For immigrants with low education at age 21, the NPV is only USD 9 000 and turns soon negative for elder ages of arrival. Cully (2012) contrasts the example of a 15-year old refugee and a forty year old skilled migrant worker. Under a direct accounting approach, the skilled migrant worker clearly yields the larger fiscal benefit. The answer is less clear-cut in terms of the net present value of the fiscal contribution over their expected life cycle. Refugees tend to be younger and tend to have a full working life ahead, while many skilled workers are already half way through their working life.

Ekberg (2011) uses dynamic projections and baseline scenarios for population forecasts to obtain estimates for the net impact of the predicted future immigration to Sweden. He simulates two different labour market scenarios. In the first case, newly arriving immigrants have the same age-specific employment rates as the overall Swedish population. In the second case, he assumes age-specific employment rates equal to those of the Swedish foreign-born population. He also provides estimates separately for full and partial *pro rata* attribution of general public expenditure, thus resulting in four different scenarios in total. By 2050, the fiscal impact of future immigration would vary from -1.6% to +1.3% of GDP, depending on the scenario.

Roodenburg et al. (2003) apply net-transfer profile-based inference techniques for the Netherlands. They find that an immigrant child from a lower-income country arriving just after birth has a negative lifetime fiscal impact of EUR 96 000; this value is reduced by about half if the age at arrival is 25. These unfavourable results are largely driven by the attribution of non-direct expenditures. The authors attribute all expenditures that cannot be attributed on an individual basis, including defence, *pro rata*. Assuming such expenditures to be zero, one would instead obtain for the latter group a positive NPV of about EUR 45 000. For Germany, Bonin, Raffelhüschen and Walliser (2000), who only look at the net direct fiscal impact, arrive at much more favourable figures. In their estimates, contributions are positive for all immigrants arriving between the age of 12 and 46, with a maximum reached for an age of arrival of 30.

An important factor in the analysis of the life-cycle contribution of immigrants is return migration. Not all social benefits are fully transferable, making return beneficial for the host country. However, for those benefits which are, consumption abroad will limit the fiscal impact via foregone consumption taxes, etc. for the host country. Kirdar (2010) adjusts for this and contrasts a model of selective return migration with one of a *pro rata* return. He finds, in a study for Germany, that a precise modelling of return migration leads to a more positive lifetime contribution of immigrants; the magnitude of the effect varies, however, strongly with age at entry and country-of-origin.

**Generational accounting.** Generational Accounting (GA) focuses on the *intertemporal distribution* of public debt, that is, to which degree different generations contribute to finance government expenditure and thus subsidise each other (Auerbach, Gokhale and Kotlikoff, 1991, 1994). Generational Accounting is intrinsically a measurement of fiscal sustainability that assesses not only the actual level of debt but also includes implicit payment obligations, such as pensions (see Box 3.3).

A fundamental assumption of GA is that every deficit needs ultimately to be paid for by resident taxpayers. The burden imposed on future generations is the difference between the projected present value of all government expenditure and the present value of the tax payments of all living generations. Not surprisingly, most generational accounts yield an imbalance with a higher burden on future generations.<sup>26</sup>

Generational Accounting rests on numerous assumptions and projections, including demographic projections, tax and transfer profiles for different demographic groups and cohorts over their life-cycle, projections for economic growth and government consumption and assumptions about the government's discount rate. In addition, assumptions have to be made on how spending on publicly provided goods such as defence grows with population. It is thus a complex endeavour to deduce the fiscal impact of additional migration using GA methods that, in addition, are very dependent on the scenario of fiscal adjustment, i.e. how the generational imbalance will be addressed.<sup>27</sup>

In the context of the fiscal impact of immigration, this technique is used to study the effect of migration on the future tax payments of the native-born population and how the effect of immigration on the public budget changes with different scenarios of fiscal adjustment. The first major study in this context was by Auerbach and Oreopoulos (1999).<sup>28</sup> They set up different generational accounts for native- and foreign-born populations and simulate a scenario in which no additional immigration takes place after 2000. The authors find that the impact of immigration on intergenerational accounts is not large. Both the size and the sign of the effect depends on the extent to which the fiscal imbalance will be

### Box 3.3. Immigration and the pension system

Intergenerational imbalances are largely driven by the implicit debt arising from payment obligations inside the social security system; and pensions are a major source of expected future increases in expenditure in most OECD countries (see e.g. Roseveare et al., 1996; OECD, 2011b).

Sinn (1997), in a discussion about a possible transition from the current pay-as-you-go to a partially funded pension system in Germany, calculates the net present value of contributions of additional members, such as more children or more immigrants, inside the current system, departing from an overlapping generations model, considering also the impact of immigrant offspring. For every additional native-born child, he finds a positive net present value of EUR 35 000. For immigrants, there are two important differences. First, new arrivals tend to be in working age and thus could, at least in principle, contribute immediately, leading to a lower discount of their contributions. Moreover, immigrants tend to have a higher fertility rate. Sinn accounts for these factors and models convergence of immigrants' labour market outcomes. He then arrives at a net present value in terms of pension contributions of about EUR 175 000 for immigrants arriving during working age.

Munz and Werding (2003) provide simulations for the United States, the United Kingdom, Italy and Germany in a pension model. They incorporate information on immigrant characteristics and focus on the differences between the German defined-benefit and the Italian notionally-defined-contribution\* model compared with the Beveridgean approach with flat-rate pensions in the United Kingdom and the United States. They assume that the initial skill composition of arrivals only matters for immigrants themselves and that immigrant offspring share the characteristics of the native-born. They find, for an additional immigrant, net present values arising from contributions to the pension system of EUR 152 000 (Germany), EUR 140 000 (Italy); EUR 139 000 (United Kingdom) and EUR 109 000 (United States). They simulate the effect of 50% higher migration on pension expenditure and find, not surprisingly, that the potential gains from immigration tend to be higher in a defined-benefit system. For Germany, for instance, this would translate into a reduction in public expenditure for pensions (net of contributions) in the vicinity of 1% of GDP by 2050 (Italy: 0.3%; United States: 0.5%).

Using the example of Spain, Grenno (2009) shows that although large-scale immigration – such as the one experienced by Spain prior to the economic crisis – does not provide a long-term solution to the pension problem, it tends to delay its emergence if immigrants are well integrated into the labour market. In his model, a combination of selective migration policy, an increase in the statutory age of retirement and slower growth of pensions will be needed to guarantee long-term sustainability of the current pension system.

\* In a defined-benefit system, the pension level is determined by the employee's working history, age and years of contribution; in a notionally-defined-contribution system, the contributions are accumulated on a "fictional" interest-paying account which later determines the pension claim (see e.g. Börsch-Supan, 2005).


passed on to the future generations.<sup>29</sup> The key, albeit not surprising, finding is that the fiscal impact of immigration – be it positive or negative – is exacerbated by unsustainable fiscal regimes.

In contrast to the approach above, most GA studies for European OECD countries simulate, as a first step, a baseline case with the current demographic and economic projections and "business-as-usual" assumptions concerning the influx of new immigrants (Table 3.3). They then calculate, extrapolating the current fiscal setting, the required tax

Table 3.3. **Changes in taxes required for fiscal sustainability and the estimated impact of immigration in European countries**

	All burden on future generations	Taxes raised immediately
<b>EU (Fehr et al., 2004)</b>		
Base case	+27.0 percentage points	
Double immigration	+24.6 percentage points	
<b>Italy (Moscarola, 2001)</b>		
Zero immigration (%)	24.8	
50 000 immigrants p.a. (%)	20.2	
<b>Germany (Bonin et al., 2000)</b>		
Zero immigration	+ USD 203 200 lifetime tax bill	
200 000 immigrants p.a.	+ USD 135 000 lifetime tax bill	
<b>Spain (Collado et al., 2004)</b>		
Zero immigration (%)	47.8	8.8
60 000 immigrants p.a. (%)	34.5	7.9
<b>Austria (Mayr, 2004)</b>		
Base case (%)	71.2	14.5
Additional 10 000 immigrants p.a. (%)	65.6	13.8

Source: Adapted from Rowthorn (2008).

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increases for future generations or, assuming a shift towards sustainable fiscal policy, the necessary tax increases if the tax reform is conducted immediately. In order to assess potential gains from immigration, these steps are repeated for different migration inflow scenarios.

Bonin, Raffelhüschen and Walliser (2000) find for Germany that an annual net influx of 200 000 immigrants reduces the present value of lifetime taxes on the native-born by more than USD 68 000 per capita. Studies for Spain (Collado et al., 2004) and Austria (Mayr, 2005) computed Generational Accounts under the scenario of an immediate tax increase and found that the positive fiscal effect is mainly driven by distributing the previously accumulated debt among a larger future population.<sup>30</sup>

Most GA studies thus find a more positive impact of migration on public finances than other techniques (see also Razin and Sadka, 2004). Chojnicki et al. (2010) apply a GA technique for France under different immigration scenarios and contrast the findings with other methods. They find that the average life-cycle contribution of the immigrant population resident in France in 2005 is negative (about EUR -8 700) and much lower than that of the native-born (which is about EUR 28 210). However, because of the age structure of immigrant population, immigrants' net contribution is positive in 2005. The global impact of immigration on public finances in the GA framework is also slightly positive in the long term due to the arrival of individuals of working age and the net contribution of the descendants of these immigrants. Nevertheless, the impact of immigration on re-balancing public finances is small.

The assumption that the entire burden can be shifted on to future generations is increasingly challenged. Rowthorn (2008), for example, considers the extreme scenario of unchanged fiscal policies and shifting the entire burden to the future generations – government debt would increase drastically and interest rates would escalate. In his model, financial markets set limits to debt accumulation and thus also limit the possibilities of shifting the burden to future generations. If the positive effect of immigration primarily comes from decreasing the average per capita debt burden for

members of future generations, then of course boundaries to debt accumulation also limit the positive fiscal impact of immigration in generational accounts.

### **Macroeconomic models**

As mentioned before, immigration leads to many possible effects on the economy which in turn have implications for the government budget. These effects are generally studied through Computable General Equilibrium (CGE) models. CGE models are standard tools used in economics in order to estimate how an economy might react to policy changes or to any other shock, such as immigration flows. Estimates of the fiscal effect are often a by-product of these studies. Regarding the fiscal effect, such models are generally used to estimate the expected impact of an additional inflow of immigrants on the budget in the future.

Chojnicki et al. (2011) look at the post-war immigration to the United States (1945-2000) and use a CGE model to analyse the impact of immigration on social expenditure and the public budget. They find that immigration had a large and positive impact on public finances. Although immigrants tended to be less skilled than the native-born and had higher welfare dependence, they also had a younger age structure and higher fertility rates. These demographic effects helped to reduce transfer payments that in the no-immigration scenario were caused by higher old-age dependency ratios. The authors estimate that the actual migration compared to the no-migration scenario helped to reduce the share of transfers in GDP by 0.3 percentage points.

A comprehensive CGE model has also been used to estimate the effect of various immigration scenarios on the New Zealand economy (Nana et al., 2009). Concerning the fiscal aspect, the authors estimate, in a scenario with doubling the immigrant intake, a net improvement in the government fiscal balance equivalent to 0.2% of the GDP.

In Denmark and Norway, the impact of immigration has been studied through general equilibrium models, in the framework of extensive studies on the future of the welfare state (Box 3.4).

Storesletten (2000) employs a general equilibrium model with overlapping generations for the United States that explicitly models differences between immigrants and native-born in terms of labour productivity and fertility. He focuses on the intergenerational distribution of debt, but in contrast to the GA studies discussed above, he does not assume that future generations have to pay for the current debt. His model assumes instead that the present value of all future government spending and transfers will equal the present value of all future taxes and contributions. Under this scenario, without any changes in migration, an immediate tax increase of 4.4 percentage points would be required. The same effect would be achieved by admitting an additional 1.6 million high-educated migrants aged 40-44. These provide a NPV of USD 177 000 each.<sup>31</sup> In contrast, the average high-, medium-, and low-skilled (legal) immigrants exhibit NPVs of USD +96 000, -2 000, and -36 000, respectively.

Using a similar approach for Sweden, Storesletten (2003) finds a less favourable impact for that country. The average negative NPV arising from a typical immigrant and his family is about USD -20 500. In various sensitivity analyses, he finds that the lower labour market integration and economic assimilation of immigrants' offspring explain most of the difference between the NPVs obtained for Sweden and his earlier results for the United States.

Monso (2008) adapts Storesletten's Swedish study to the case of France and finds that the current composition of *new* entrants in France results in a net fiscal loss of about EUR 7 400 (USD 9 500) per immigrant, which would place France between Sweden and the

### Box 3.4. Immigrants' fiscal impact and its implications for the future of the welfare state


Table 3.4 shows the results of alternative scenarios for Norway, on the basis of estimates by Holmøy and Strøm (2012). The impact of an additional migrant intake of 0.1% of the population per year is either positive or negative, depending on the region of origin. Region of origin is a proxy for migration category. Immigrants from high-income OECD countries, who generate a positive impact, have generally arrived for employment (plus family to labour migrants). In contrast, immigrants from lower-income countries have often arrived for humanitarian reasons (plus family to humanitarian migrants). In both cases, however, the effects on the public purse are modest. Potentially more important are deviations from the assumption that children of immigrants will be well integrated into the labour market.

Table 3.4. **Estimated effect of alternative population and integration scenarios on the primary government surplus in Norway, by year, in % of GDP**

	2020	2030	2040	2050	2070	2100
Children of immigrants from lower-income countries adopt the economic behaviour of their parents (rather than that of natives)	-0.1	-0.3	-0.5	-0.8	-1.0	-0.9
Births by native-born increased by 5 000 every year 2015-2100	-0.3	-0.7	-0.8	-0.4	0.7	0.3
Immigration from lower-income countries increased by 5 000 in every year 2015-2100	-0.2	-0.4	-0.4	-0.4	-0.4	-0.3

Note: High-income OECD countries refer to EU15, the United States, Canada, Australia and New Zealand.

Source: Data provided by Statistics Norway (see Holmøy and Strøm, 2012).

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Schou (2006) and Pedersen and Riishøj (2008), which are based on virtually the same scenarios, obtain similar results for Denmark. Even what the latter call hypothetical “super migrants” (participation rate of 100%, only working-age migrants who leave Denmark again before reaching retirement age) would only lead to a positive net contribution of less than +0.4% per year. In contrast, bringing the employment rate of the resident immigrant population up to the level of the native-born would result in a net fiscal gain of about 1.3% of GDP. The studies for both Denmark and Norway thus conclude that improving the labour market integration of already resident immigrants offers potentially higher fiscal gains than increasing the influx of new immigrants, even if the latter have favourable characteristics.

Ekberg (2011), in a study on the impact of future migration on the Swedish welfare system for the Swedish Ministry of Finance, also used population forecasts from Statistics Sweden as a baseline scenario. Although he does not use a general equilibrium model, his findings are quantitatively similar to those of the studies for Denmark and Norway – that is, under most scenarios and for most years, the impact is between +1% and -1% of GDP.

United States. However, the results are not directly comparable since unlike Storesletten, Monso neither assumes a sustainable fiscal regime nor does he add the contribution of immigrants' descendents to their parents.

In contrast to the above studies which are based on CGE, Dungan, Fang and Gunderson (2012) use a macroeconomic forecasting model to simulate the impact of additional migration flows on the Canadian economy. They find a positive impact on overall government balances. 100 000 additional immigrants would generate a total net fiscal benefit of about CAD 14 billion.<sup>32</sup>


### Summary of the results from the literature

To summarise the review of the literature, there are many different ways to measure the fiscal impact of immigration and all methods and approaches rely heavily on debatable assumptions and modelling choices that can significantly change the results.

Nevertheless, some general tendencies from the literature seem to hold across most OECD countries (see Table 3.5).<sup>33</sup> The fiscal effect is generally rather small. Depending on the method used, the assumptions made – in particular regarding immigrants’ impact on budget items such as defence and public infrastructure – as well the economic and fiscal context and the characteristics of the immigrant population, the impact generally fluctuates around  $\pm 1\%$  of GDP in most studies that look at the fiscal impact of the resident population in any given year. The labour market situation for immigrants matters a lot, and countries with significant intakes of skilled labour migrants such as New Zealand or Australia enjoy larger fiscal gains from immigration than countries where immigration has largely consisted of family and humanitarian migration.

Table 3.5. **Overview of the empirical literature**

Static accounting calculations	Dynamic models		Macroeconomic models	Use of social security
	Net Present Value	Generational Accounting		
CAN, CHE, DEU, DNK, ESP, FRA, GBR, NZL, SWE, USA, EU	AUS, DNK, FRA, SWE, USA, EU	AUT, AUS, DEU, ESP, FRA, GBR, ITA, NLD, USA	CAN, DNK, FRA, NOR, NZL, USA, EU	AUT, AUS, CHE, DEU, DNK, ESP, FRA, GBR, ISR, IRL, ITA, NLD, NZL, SWE, USA, EU
<i>Sign of immigrants' net contribution varies, but generally the net contribution is small</i>			<i>Immigrants tend to be somewhat overrepresented among recipients</i>	

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Equally important is the age at arrival; generally, the more potential working, and thus contributing, years are still to come, the higher is the net fiscal impact. Positive effects of working-age immigrants generally result from host-country savings in education expenditure. Immigrants’ higher fertility also helps to reduce the impact of population ageing, which can have an important impact in the long run, particularly in generous pay-as-you-go pension systems. The fiscal impact of the children of immigrants largely depends on assumptions regarding their labour market integration.

Assumptions about the sustainability of the current fiscal regime are also important. If the current government debt is entirely passed on to the next generation, additional taxpayers can potentially reduce the inherited burden on a per capita basis if immigrants are net contributors; or enhance it further if immigrants are a net burden. Immigrant’s offspring, in turn, will always reduce if they are akin to other native-born.

Apart from Australia, which uses a developed fiscal impact model as a support for decision-making in migration issues, there has been little study of the impact of specific categories of migrants (i.e. labour, family, humanitarian). This is particularly unfortunate in simulation studies that look at the impact of admitting a certain number of additional migrants. The scarce direct and generally indirect (through country-of-origin) evidence on the fiscal impact by migration category suggests that labour migrants tend to have a positive fiscal impact, particularly those who have post-secondary education.

## Comparative analysis of the fiscal impact of immigration in OECD countries

### ***Measuring the fiscal impact of immigration in international comparison***

This section aims at analysing the fiscal impact of immigration in an international comparison. This involves a number of challenges. The first is the large heterogeneity of migrant populations across countries, notably regarding the different composition in terms of migrant entry category (labour, family humanitarian) and immigrants' socio-demographic characteristics. The second is the diversity of tax and benefit systems in OECD countries, which makes an exact modelling of the direct fiscal impact for many countries a challenging task, in particular for those items not included in standard household income and expenditure surveys. Annex 3.A3 to this document provides a detailed description of the information used and the assumptions and adjustments made.

These challenges make it evident that international comparisons in this domain can only supplement in-depth country studies. Nevertheless, by highlighting cross-country differences and commonalities in a common analytical framework, some additional light can be shed on the drivers of the fiscal impact and ballpark estimates made of its likely magnitude.

### ***Data and approach***

The fiscal impact of immigration is estimated by comparing immigrants' tax and social security contributions, on the one hand, and immigrants' receipt of social transfers and use of government services, on the other, at a specific point of time, through a static accounting (cash-flow) model. Hence, the analysis below does not look at the long-term fiscal implications and also neglects the indirect implications resulting from migrants' broader impact on the economy. It is important to keep in mind that this approach – as with any accounting-type exercise on immigrants' current fiscal impact – measures the impact of the immigrant population that has emerged over the past few decades and thus not of current immigration flows.

The comparative analytical work in this section builds on household surveys in OECD countries which have data on fiscal transfers at the household level, as well as data on the surveyed persons' country of birth. Such surveys obtain information for all European OECD countries, as well as Australia, Canada and the United States. For the European OECD countries, except Switzerland, the EU Survey of Living and Income Conditions (EU-SILC) has rich information on the socio-demographic characteristics of the household members, including country of birth, as well as on income taxes, social security contributions (including from employers), and social benefits received at the household level. Comparable national datasets have been used for Australia (Household, Income and Labour Dynamics Australia Survey, HILDA), Canada (Survey of Labour and Income Dynamics, SLID), Switzerland (Swiss Household Panel, SHP) and the United States (Current Population Survey, CPS). Altogether, the analysis includes 27 OECD countries which, taken together, host about 92% of all immigrants in the OECD.

Data were pooled over the years 2007–09, and generally refer to reported income and expenditure in the previous year. The results thus relate to a rather favourable economic environment, with the exception of Ireland which saw a decline in GDP of 3% already in 2008 (see Box 3.6 on the impact of the crisis). To ensure cross-country comparability of the results, all estimates are expressed into a single currency (EUR) and adjusted for purchasing power parity (PPP).



The household surveys cover the resident population. They thus exclude migrants who have returned to their origin countries and may, for example, have received pensions from the host country. They also do not generally include immigrants with less than a year of residence, since they cannot report on the previous year's income and taxes in the host country.<sup>34</sup> Therefore, many temporary labour migrants tend to be excluded, and this is a group who will generally have a favourable fiscal position as they are in employment.

The degree to which these surveys cover immigrants in an irregular situation varies. Most European OECD countries draw their sample from population registers; immigrants in an irregular situation will thus only be included in as far as they are included in these registers, which in turn varies across countries. In the United States, where the irregular immigrant population is large, the CPS is designed so as to include irregular migrants.<sup>35</sup>

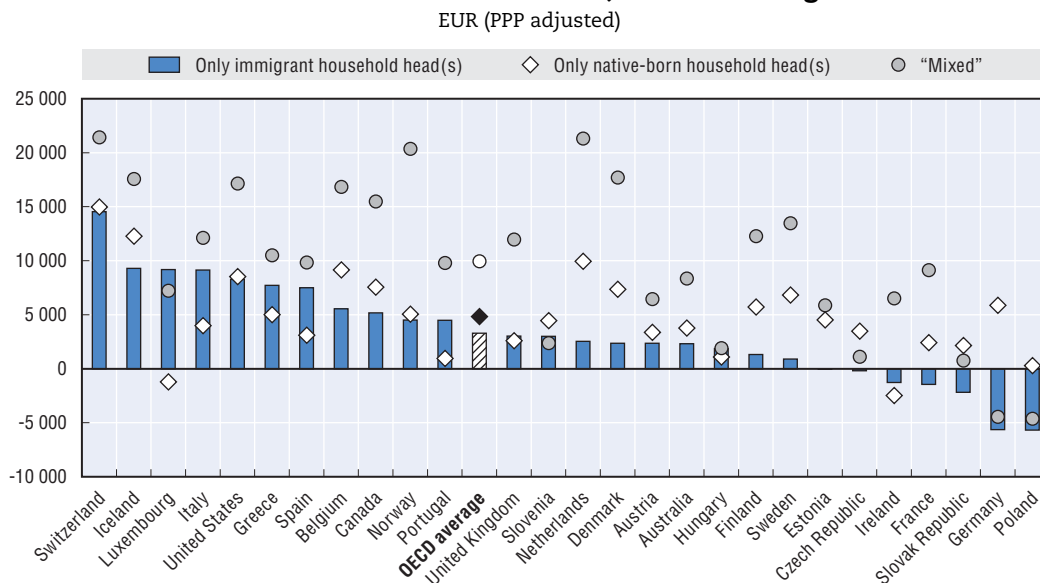
In these surveys, two household heads are identified – except of course for single-person or single-parent households. Households in which both household heads are foreign-born are referred to below as “households with only immigrant household heads”. There is also a significant number of households in which only one of the two household heads is foreign-born. On average, about one out of four immigrants in working-age live in such households, which are referred to below as “mixed” households.

## Results

### Net (direct) fiscal position of immigrant households

Looking at the net direct fiscal position of immigrant households – that is, their taxes and social security contributions minus the social transfers they receive – several observations can be made (Figure 3.2).<sup>36</sup> First, there is wide variation in migrants' fiscal position, but in most countries it is positive. Net contributions are only negative in a number of eastern European countries with small immigrant populations, as well as in Germany,

Figure 3.2. **Average net direct fiscal contribution of households by migration status of the household head, 2007-09 average**



Source: See Annex 3.A3.

StatLink <http://dx.doi.org/10.1787/888932822940>

France and Ireland. In these latter countries, with the exception of Ireland, immigrant populations are relatively old and thus overrepresented among the population receiving pensions (see below). In Ireland, the negative net contribution holds for both immigrant and native-born households and is partly driven by the early impact of the crisis.<sup>37</sup>

A second observation is that in most OECD countries, the net fiscal position of immigrant households is below that of the native-born. Nevertheless, the reverse holds in a number of countries, in particular in the Southern European countries of Italy, Greece, Spain and Portugal, as well as in Ireland. In all of these countries, a large part of the resident migrant population consists of recent labour migrants. Immigrant households also have a better fiscal position than the native-born in Luxembourg, the United Kingdom and Hungary. In all of these countries, with the exception of the United Kingdom, immigrants have an employment rate that is above that of the native-born.

Finally, in virtually all countries, the “mixed” households have a highly positive net fiscal position, which in most cases is also well above that of the native-born. This result is at first sight surprising but is mainly due to the fact that, by definition, these households have at least two adults in the household. In addition, most of these households are working-age couples, which is the age at which individuals contribute most to the tax system. In order to account for these “mixed households” in the analysis below, they are attributed half to immigrant and half to native-born households.<sup>38</sup>

The above findings on the net fiscal position relate to the foreign-born. Much of the research to date has instead been based on foreign nationals. However, the main results also broadly hold when looking at foreign nationals – rather than foreign-born – as household heads (Box 3.5).

As already mentioned, the data essentially refer to the pre-crisis period. Some data are already available for the early crisis period. On the basis of these results, Box 3.6 discusses how the global economic crisis affected immigrants’ fiscal contributions. In its early stage, and on average across the countries for which data are available, the crisis resulted in a 20% reduction of immigrants’ net contribution, about the same as for the native-born.

### ***Explaining the differential net direct fiscal position of immigrant and native-born households***

Figure 3.5 shows, for households in which at least one member is of working age, to which degree the differences in the net direct fiscal position between immigrant and native-born households is due to key characteristics that differ between both groups; Figure 3.A1.2 shows the full results for all observable characteristics and the difference after accounting for all these characteristics taken together. The technique used decomposes the observed difference by isolating the impact of specific control variables, namely age, education, family characteristics and labour market status.

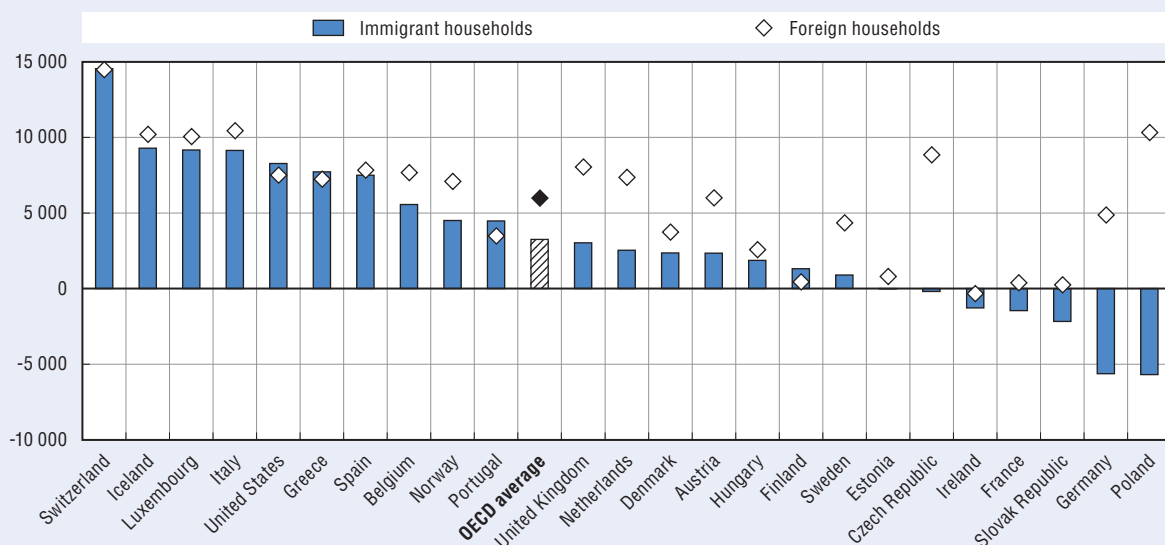
The explanatory power of differences in age and educational attainment of the household head tends to be small in most countries.<sup>39</sup> Among the exceptions are the United States and France, where a higher proportion of immigrants is low-educated, as well as some Central and Eastern European Countries with rather small immigrant populations, such as Poland and Hungary. In France, half of the unfavourable gap for immigrant households is explained by age and educational attainment of the household head. In the United States, the unfavourable differences in net contributions would virtually disappear if both groups had the same age and education. In contrast, the positive fiscal position of

### Box 3.5. Comparing the fiscal impact of the foreign-born and foreign nationals

As mentioned above, given the strong cross-country differences in citizenship legislation, for international comparisons it is better to use the *country of birth* instead of *citizenship* as the basis for the analysis of the fiscal impact of migrants. Indeed, for Australia and Canada, data on foreign nationals are not available.

That notwithstanding, much of the public debate in many European OECD countries focuses on foreigners rather than the foreign-born. In addition, some rights are linked with citizenship, and this may affect the fiscal position. How does the fiscal impact of foreigners compare with that of the foreign-born in international comparison? In most countries, there are few differences between these two groups, but on average foreign households have higher net direct contributions than foreign-born households (Figure 3.3). This also holds for foreign-born households from lower-income countries versus households with foreign nationality from the same type of countries. Likewise, when comparing the outcomes of naturalised versus non-naturalised foreign-born (see Figure 3.A1.1), one observes that in virtually all countries non-naturalised immigrant households have a more favourable fiscal position. These findings are at first surprising given the fact that access to citizenship tends to be selective – that is, immigrants who have taken up host-country citizenship generally have higher education and employment rates than their counterparts who remained foreigners. However, the most disfavoured migrants are most likely to take up host-country citizenship, as this is the group that has most to gain from naturalisation (Liebig and von Haaren, 2011).

Figure 3.3. **Net direct fiscal contribution of foreign and immigrant (foreign-born) households, 2007-09 average**  
EUR (PPP adjusted)



Source: See Annex 3.A3.

StatLink <http://dx.doi.org/10.1787/888932822959>

Another possible explanation is that citizenship take-up takes some time. Indeed, foreign households tend to be younger and are less often in pension age than foreign-born households. This is particularly the case in the three countries in which the differences between the two groups are particularly large – Poland, the Czech Republic and Germany. In Germany, the unfavorable position of foreign-born naturalised is undoubtedly linked with the ethnic Germans [(Spät-)Aussiedler], many of whom are already in pension age. In addition, access to certain social benefits may be restricted for some groups of foreigners; indeed, the average amount of benefits paid to foreign households is about 25% lower than that paid to foreign-born households. Finally, data from the 2008 special migration module in the Labour Force Survey for the European OECD countries show that naturalised immigrants are more likely to be family migrants, and these in turn tend to have a less favourable fiscal position.

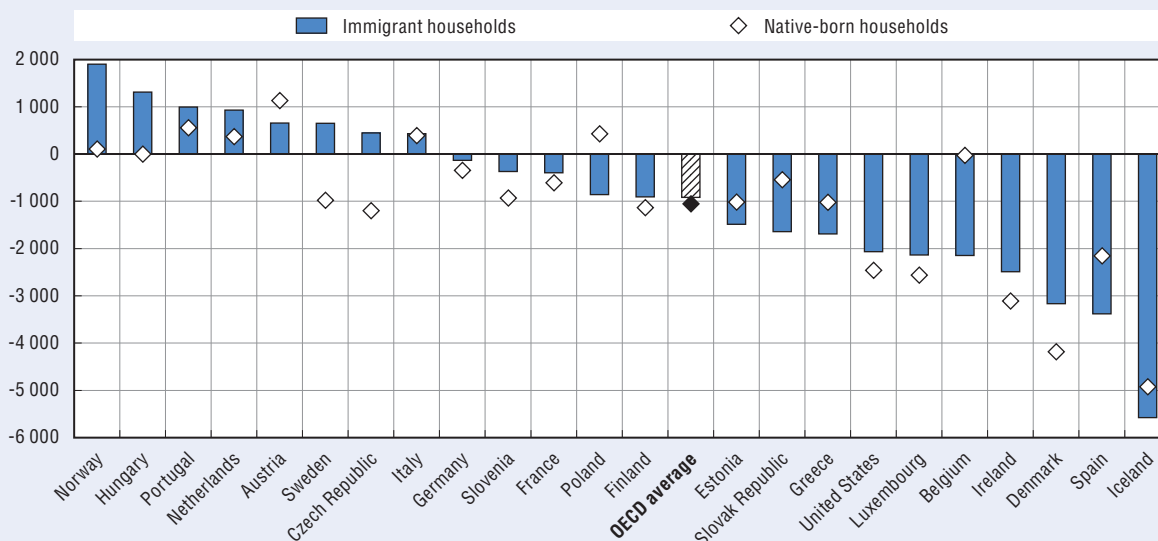
### Box 3.6. The impact of the global economic crisis on immigrants' fiscal contribution

With the global economic crisis, millions of people lost their jobs and several of the hardest-hit countries had experienced large-scale migration flows prior to the crisis. Immigrants' were among the population groups that were hardest hit by the decline in employment.

How did the crisis affect immigrants' net fiscal contribution? Since the data in the surveys refer to the fiscal year preceding the survey year, the Figure 3.4 shows in effect the change between the fiscal contribution in 2006/7 and 2009. On average, the fiscal position of both immigrant and native-born households declined by about EUR 1 000, about 20% of the pre-crisis net contribution for both groups. This figure hides, however, significant cross-country differences. In Spain, Iceland and Greece – three countries which had experienced particularly large immigration flows prior to the crisis, and where immigrants were disproportionately hard hit in terms of loss of employment – immigrants' average net fiscal contribution also declined more strongly than it did among the native-born. The fiscal contribution of immigrants also declined a lot with the crisis in Belgium and Denmark, two countries with a strong social protection system. In some countries, immigrants' net contribution even increased with the crisis, and in Norway, Hungary, Austria and Sweden it increased much more than among the native-born. This somewhat surprising result depends on several factors, including an “added-worker effect” – that is, other family members of immigrants entering the labour market to compensate for the actual or potential loss of income of the main breadwinner. This effect is particularly visible in Austria, where the employment of immigrant women increased with the crisis. In addition, immigrants may not always have full access to the social protection system, for example because of their foreign nationality or because they have not (yet) paid sufficiently into the systems that are contributory. Indeed, a disaggregation into contributions and benefits shows that on average, immigrants' contributions developed unfavourably compared with the native-born over the period, whereas the reverse is the case for benefits.

Figure 3.4. Change in the net contribution for native-born and immigrant households, 2007/8 compared with 2010

EUR (PPP adjusted)

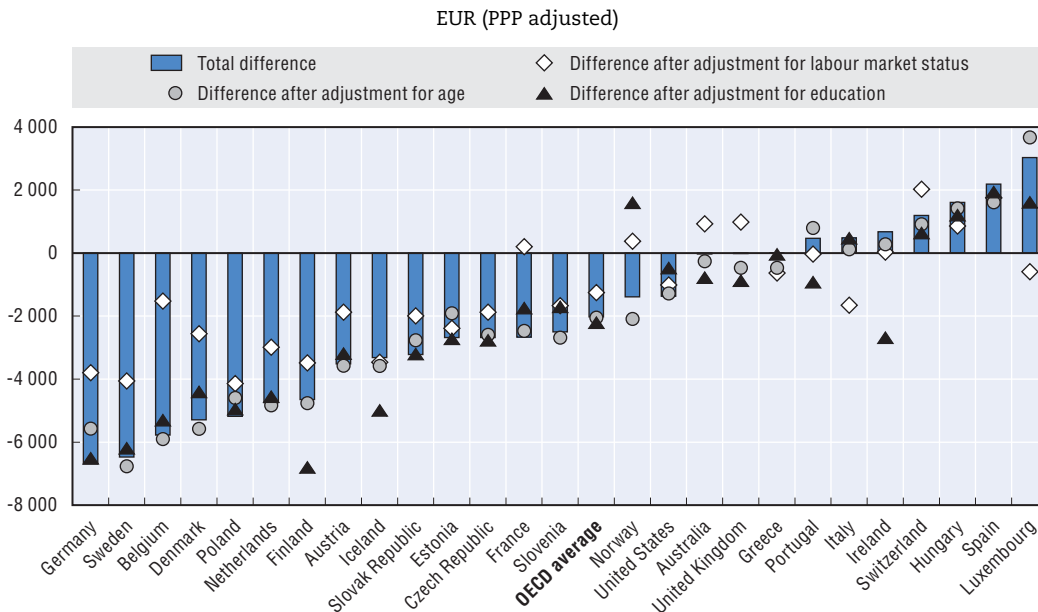


Note: For Ireland, the comparison is between 2009 and 2007-08 average.

Source: See Annex 3.A3.

StatLink  <http://dx.doi.org/10.1787/888932822978>

Figure 3.5. **Differences in the net direct fiscal contribution of immigrant and native-born households and the role of different characteristics, 2007-09**



Notes: Age and education refer to the household head; labour market status (employed versus not employed) to all household members in working age (15-64 years old). The analysis is restricted to households in which at least one member is of working age. The results have been obtained using the Blinder-Oaxaca decomposition (Blinder, 1973; Oaxaca, 1973); the regression also included controls for family characteristics. The full results are shown in Figure 3.A1.2. This technique decomposes the differentials in the net fiscal position into two components: i) a portion that arises because immigrant and native-born households have different characteristics on average (explained component); and ii) a portion that arises because one of the two groups has a more favourable net fiscal position than the other given the same individual characteristics and/or because differing characteristics (e.g. higher educational attainment) have a different impact on both groups (unexplained component).

Source: See Annex 3.A3.

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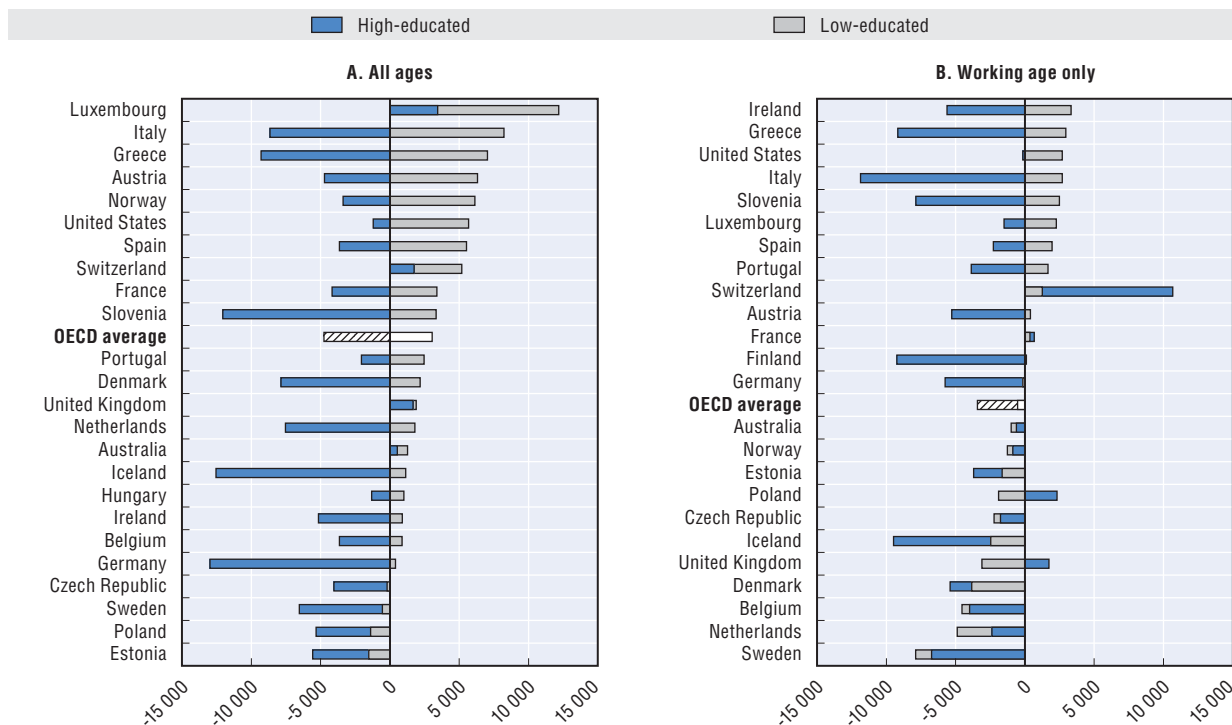
immigrant households would decrease significantly in Ireland, Portugal and Luxembourg, primarily because immigrants have a higher educational attainment on average than the native-born in these three countries. This is also the case in Australia and the United Kingdom. Finally, in established welfare states, such as Finland, Norway and Iceland, relatively minor differences in the educational composition between immigrant and native-born population can already have a rather significant effect in terms of net contributions.

By themselves, differences in age and education of the household head thus explain relatively little of the differences between the contributions of immigrant and native-born households in most countries, in spite of the fact that immigrants tend to have a lower educational attainment on average. In all countries except the United Kingdom, net contributions compare more favourably for the low-educated than for the high-educated immigrant households (see Figure 3.6). This is not surprising since the employment rates and wages of immigrants generally also increase less with educational attainment than among the native-born (see Figure 3.A1.3 and OECD, 2012).

Indeed, households with low-educated migrants have higher net contributions than comparable native-born households in the majority of countries. This is particularly the case in the countries which experienced significant recent inflows of low-educated labour migrants (Italy, Greece, Spain and the United States), and in Austria, Norway and Luxembourg. Indeed, the favourable position of low-educated immigrant households

Figure 3.6. **Difference in the net direct fiscal contribution between immigrant and native-born households, by education status of the household head, 2007-09 average**

EUR (PPP adjusted)



Note: "High-educated" refers to ISCED-Level 5 and above; "low-educated" to ISCED-Level 2 and below.

Source: See Annex 3.A3.

StatLink  <http://dx.doi.org/10.1787/888932823016>

diminishes when restricting the analysis to the working-age population. On average, there is no difference between the fiscal position of low-educated immigrant and native-born households of working-age. In contrast, except in the United Kingdom, Luxembourg and Switzerland, high-educated migrant households have a lower net direct fiscal contribution than the high-educated native-born. This picture also holds broadly when restricting the analysis to the working-age population.

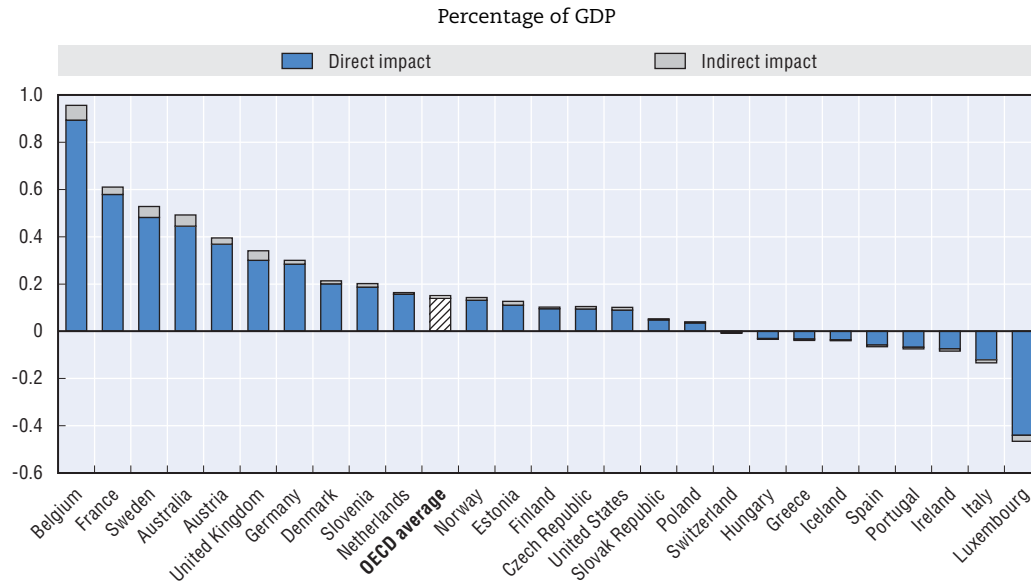
Note that this finding does not imply that immigrants' fiscal contribution does not increase with the education level. Indeed, as Figure 3.A1.4 shows, in all countries immigrants' net contribution increases with educational attainment. However, the increases are much smaller than those of the native-born in all countries – with the exceptions of Australia and the United Kingdom. The differences between immigrants and the native-born are particularly large in the countries which had a lot of recent labour migration for low-skilled jobs (Greece, Iceland, Italy, Spain) – many of which were filled by migrants with high formal education levels – and in countries where most highly-educated migrants come for other reasons than employment, such as humanitarian migrants in Austria, Denmark and Norway and ethnic migrants in Germany.

The most important explanatory factor in Figure 3.5 above is *employment* and indeed, this captures the effect that age would otherwise exert through the pension transfer system (see below on the age-transfer profiles and Tables 3.A1.1 and 3.A1.2). Immigrant/native differences in the likelihood to be employed explain about half of the less favourable fiscal

position of immigrant households compared with the native-born households. In France and Norway, immigrant households would even have a higher net contribution than native-born households if immigrants had the same probability to be in employment (in contrast to a lower relative position without considering this factor).<sup>40</sup> Employment also explains more than three quarters of the differences between immigrant and native-born households in Belgium, and up to half in Denmark and Austria.

This suggests that fiscal gains of raising immigrants' employment to that of the native-born, in countries where this is an issue, are potentially large. Figure 3.7 shows the estimated budget impact, in % of GDP, if immigrants had the same employment rate as the native-born.<sup>41</sup> The estimated impact is particularly large in Belgium, where it reaches almost 1% of GDP, as well as in France and Sweden, where it is more than 0.5% of GDP.<sup>42</sup> The budget implications are negative in countries where immigrants have higher employment rates than the native-born, such as in Luxembourg and – prior to the crisis – the Southern European countries and Ireland.

Figure 3.7. **Estimated net budget impact if immigrants had the same employment rate as the native-born, 2007-09 average**



Note: Indirect impact arises from estimated indirect tax payments.

Source: See Annex 3.A3.

StatLink  <http://dx.doi.org/10.1787/888932823035>

In addition to the net direct fiscal impact of employment in terms of lower expenditure on social benefits and higher taxes and social security contributions, there is also an indirect effect arising from estimated higher indirect tax payments (that is, value-added tax). Nevertheless, this indirect impact is small in most countries.

Figure 3.A1.5A shows the simulation results if immigrant women had the same employment rates as native-born women. Differences in employment rates between immigrants and the native-born are larger for women than for men. As a result, on average, about two-thirds of the fiscal gain of bringing immigrants' employment levels to par with that of the native-born would come from immigrant women. The expected gains would be particularly large in Australia, the United States and a number of European OECD countries

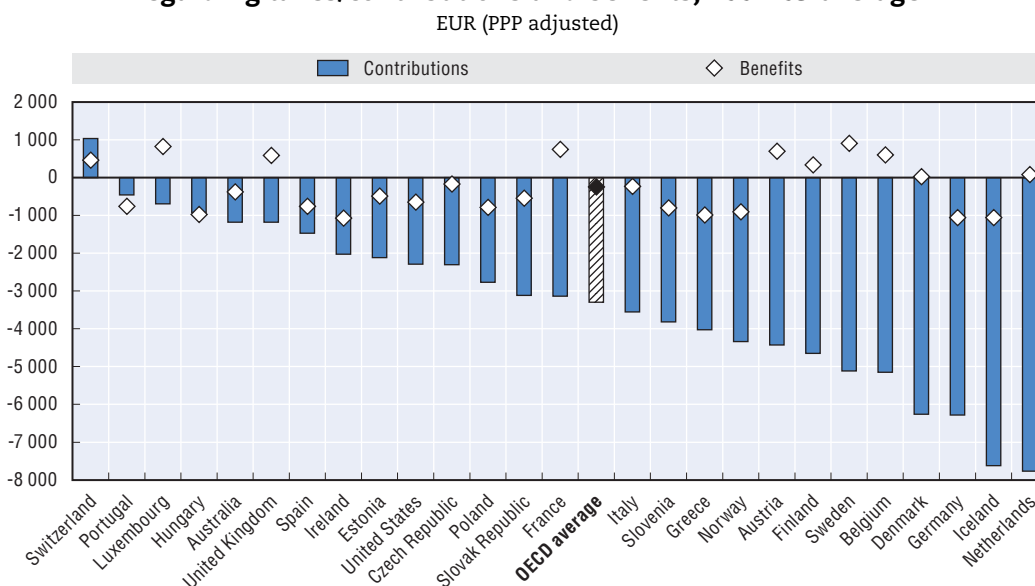
with large and longstanding immigrant populations such as Belgium, France, Sweden, the United Kingdom and Germany. In all of these countries, family migration – including the accompanying family of labour migrants – is the largest component of migration flows, and this mainly concerns immigrant women.

As stressed in Figure 3.6 above, differences in net contribution levels between immigrants and the native-born are particularly large for the high-educated. This is partly attributable to the fact that immigrants have lower returns to their qualifications in terms of wages and partly because they are less likely to be employed when highly-educated than their native-born counterparts with the same education level. Figure 3.A1.5B indicates that the estimated fiscal loss associated with this latter factor may be already quite sizeable in many OECD countries. The expected gains from a convergence of the employment rates of the high-educated immigration to those of their native-born peers are large in Austria, Belgium, Germany and Sweden – all of which have hosted many humanitarian migrants who often have low employment rates despite having a tertiary degree (generally from their origin country). The gains would also be large in Australia, because a significant part of its population consists of highly-educated migrants.

### Contributions and benefits compared

Looking separately at the contributions that migrants provide to the public purse and the transfers that they receive, one finds that differences in the net direct fiscal position of immigrant versus native-born households are driven by lower contributions (in form of taxes and social security contributions) rather than by higher benefit receipts (Figure 3.8).<sup>43</sup> Indeed, the differences in the benefits are negative on average – that is, immigrant households receive lower overall transfers than native-born households.<sup>44</sup> Note that this is

Figure 3.8. **Average differences between immigrant and native-born households regarding taxes/contributions and benefits, 2007-09 average**



Note: Pension contributions and expenditures have been excluded from the calculations.

Source: See Annex 3.A3.

StatLink <http://dx.doi.org/10.1787/888932823054>



not driven by lower pension payments to immigrant households, as pension contributions and payments have been excluded from the analysis. Including the pension system does not alter the results fundamentally.<sup>45</sup>

### Take-up of social benefits

Overall, there seem to be few differences between the benefit receipt of immigrant and native-born households. Table 3.6 shows the take-up of social transfers by immigrant households relative to their share in the population. As can be seen, with the exception of social assistance and housing allowances (which are often linked with social assistance), the receipt of social benefits generally does not vary a lot between immigrant and native-born households. However, on average, immigrant households are twice as likely to receive social assistance in the Nordic countries and more than three times in Belgium. Note though that, as Table 3.A1.5 shows, the sums involved in social assistance are relatively small overall. All of these countries have significant populations of humanitarian migrants and the incidence of unemployment among immigrants is more than twice as

Table 3.6. **Take-up of social benefits by immigrant relative to native-born households, 2007-09 average**

	Social assistance	Unemployment benefits	Pensions	Family allowances	Housing allowances
Australia	0.9	0.9	1.1	0.9	..
Austria	1.5	1.4	0.7	1.3	1.8
Belgium	8.7	1.5	0.6	1.3	1.5
Canada	1.2	1.0	1.0	1.2	..
Czech Republic	2.3	0.9	1.2	0.5	2.2
Denmark	..	1.3	0.4	1.7	1.5
Estonia	0.8	2.3	1.6	0.6	0.8
Finland	3.3	1.8	0.4	2.0	2.5
France	1.7	1.4	1.1	1.3	1.5
Germany	1.3	0.7	1.6	0.7	1.2
Greece	0.5	1.4	0.3	1.3	2.4
Hungary	-	0.8	1.0	1.0	0.4
Iceland	-	1.5	0.4	1.0	1.1
Ireland	1.5	1.2	0.3	1.3	0.7
Italy	2.2	1.3	0.2	1.1	3.1
Luxembourg	2.4	0.9	0.6	1.2	1.1
Netherlands	1.9	1.7	0.7	1.1	1.7
Norway	3.8	1.8	0.4	1.2	2.5
Poland	1.3	1.0	1.9	0.2	0.8
Portugal	-	0.9	0.3	1.1	0.6
Slovak Republic	0.9	-	1.4	0.6	-
Slovenia	1.4	1.3	0.9	1.0	2.4
Spain	1.1	1.2	0.3	1.4	1.1
Sweden	5.6	1.3	0.9	1.3	1.7
Switzerland	2.5	1.8	1.1	1.1	..
United Kingdom	1.3	1.1	0.7	1.1	1.4
United States	1.6	1.1	0.7	1.3	0.9
<b>OECD average</b>	<b>2.0</b>	<b>1.3</b>	<b>0.8</b>	<b>1.1</b>	<b>1.5</b>

Notes: The OECD average is the average of all countries in the table. Canada's social assistance includes the old-age security pension.

..: Means that the respective benefit does not exist or no data are available.

-: Means that the sample size is below the publication threshold.

Source: See Annex 3.A3.

StatLink  <http://dx.doi.org/10.1787/888932823624>

high as among the native-born. Indeed, in most countries, unemployed immigrant households are less likely to receive unemployment benefits than unemployed native-born households, but more likely to receive social assistance.<sup>46</sup>

There are a few exceptions to the overrepresentation of immigrant households among the recipients of social-assistance, namely the Southern European countries (except Italy and to a lesser degree Spain), where migration is rather recent and has mostly been for employment, and Australia.

Table 3.A1.3 shows the ratio of benefits paid to immigrant and native-born households. This can be compared with the take-up ratios in Table 3.6. As can be seen, the average sums paid out to recipient immigrant households in terms of social assistance, unemployment aid and pensions are below those paid to recipient native-born households. However, due to the higher take-up rates of immigrant households, on average over *all* households (i.e. including non-recipient households), immigrant households still tend to receive more in terms of social assistance and housing allowances (and, albeit only marginally, also in terms of unemployment benefits and family allowances) than the native-born.

### ***The pension system***

There are two social benefits among which immigrant households are underrepresented on average, namely disability and public pensions.<sup>47</sup> The latter are of particular relevance since they tend to be the single largest item of government expenditure, accounting for 17% of total government spending in OECD countries (OECD, 2011b).

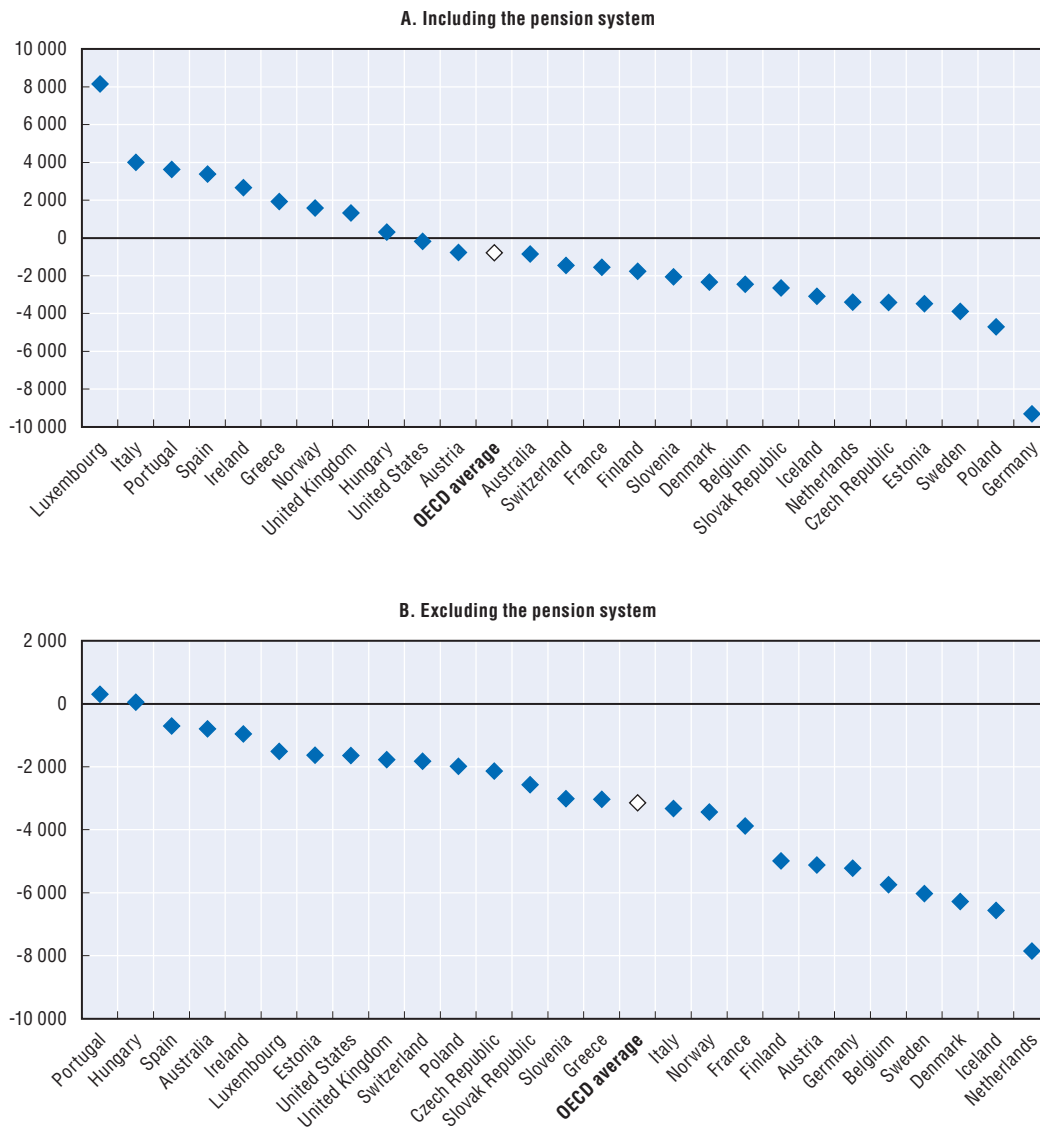
Since in most countries immigrant households are less likely to receive pensions because they tend to be younger, excluding the pension system (that is, public pension contributions and expenditure) generally provides a less favourable picture in terms of differences between immigrant and native-born households (Figure 3.9). The positive differential impact of including the pension system on the fiscal position of immigrant versus native-born households is particularly large in the countries which had significant recent labour migration, such as the Southern European countries. It is also large in several other countries, including Luxembourg (where immigrants have a much higher employment rate than the native-born) and Austria (where pension expenditure is particularly high). In contrast, in Germany and in several Central and Eastern European OECD Countries, immigrant households are significantly overrepresented among the pension recipients. As a result, the fiscal position of immigrant versus native-born households improves in these countries when *excluding* the pension system.

### ***Age-transfer profiles of immigrants and native-born***


Although an internationally comparative analysis of the dynamic and long-term fiscal impact of immigration is beyond the scope of this chapter, the net direct fiscal impact by age of the household head can provide a rough idea of the expected net present value of future net direct fiscal contributions for given entry ages of newly arriving households.<sup>48</sup>

Figure 3.A1.7 shows the results for a number of OECD countries. The estimated lifetime net present value of the direct fiscal impact of immigrant households varies a lot across countries, more than among the native-born. In general, the curve tends to be flatter than that of the native-born; immigrants' lower contributions during working-age are associated with lower pension payments during retirement. Note that these results do not

Figure 3.9. Differences in the average net direct contributions between immigrant and native-born households, 2007-09 average



Source: See Annex 3.A3.

StatLink  <http://dx.doi.org/10.1787/888932823073>

take into account return migration, which tends to underestimate immigrants' life-cycle net contributions since immigrants who ultimately return to their origin countries do not necessarily pose the same burden on the public purse upon retirement as residents do.

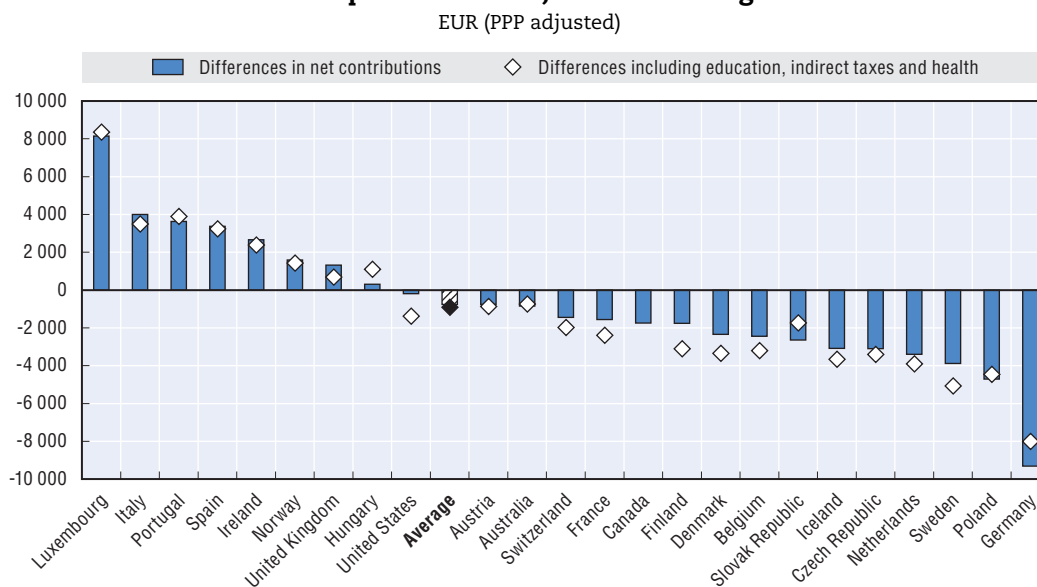
In countries such as Australia, Italy, Spain, the United Kingdom and the United States, where a large proportion of migrants have come for employment, there are little differences in the estimated net present values of the age-specific transfer profiles between immigrant and native-born households. In contrast, in countries such as Austria, Belgium, France, Germany, the Netherlands and Sweden, which have large proportions of non-labour migrants, the differences between the two groups are large. Nevertheless, in all countries the estimated net present value of future net direct contributions is positive for migrants aged over 15 and stays positive until about the age of 40, in some countries even at higher ages.

### Measuring the overall fiscal impact

The surveys on which this section's analysis is based provide only information on the direct monetary transfers from and to households; they do not contain any direct information on other budget components that will generally also vary on a person-by-person basis, such as expenditure on education, health and active labour market policy on the expenditure side and indirect taxes on the revenue side (see previous section). The omitted major items can be obtained, however, on an approximate basis from other sources. Differences in characteristics between immigrant and native-born households can be used to study a differential impact in these.<sup>49</sup>

Figure 3.10 shows to which degree adjustments for indirect taxes, health and education expenditures will likely impact on the differences in the net fiscal position between immigrants and the native-born. In most countries, these adjustments make the fiscal position of immigrant households less favourable compared with native-born households but the effect is generally small. On the one hand, immigrants have on average a more favourable age-structure which results in a more favourable picture for health expenditures (on the basis of estimated age-specific public health expenditure profiles, see Annex 3.A3). This is more than offset, however, by higher estimated expenditures on education – due to the fact that they have more school-age children – and lower estimated payments of indirect tax due to lower disposable income.

**Figure 3.10. Differences in the average net fiscal contribution of immigrant versus native-born households, before and after adjustments for indirect taxes and public services, 2007-09 average**



Source: See Annex 3.A3.

StatLink <http://dx.doi.org/10.1787/888932823092>

Considering all of these items, as well as accounting for estimated expenditure on active labour market policy, gives an overall fiscal impact in terms of GDP that is positive but small for most OECD countries (Table 3.7).<sup>50</sup>

**Table 3.7. Estimated net fiscal impact of immigrants, with and without the pension system and per capita allocation of collectively accrued revenue and expenditure items, 2007-09 average**

Percentage of the GDP

	Baseline	Baseline excluding pension system	Baseline plus per capita allocation of collectively-accrued items (excluding defence and debt services)	Baseline plus per capita allocation of collectively-accrued items (excluding defence)
Australia	0.00	0.82	..	..
Austria	0.12	0.89	-0.37	-0.80
Belgium	0.76	0.96	0.06	-0.43
Canada	-0.06	-0.06	..	..
Czech Republic	-0.01	0.07	-0.28	-0.31
Denmark	0.11	0.23	-0.31	-0.39
Estonia	0.49	1.15	..	..
Finland	0.16	0.02	-0.08	-0.13
France	-0.52	0.30	-0.52	-0.84
Germany	-1.13	0.21	-1.93	-2.32
Greece	0.98	0.86	..	..
Hungary	0.08	0.12	-0.11	-0.18
Iceland	0.90	0.96	..	..
Ireland	-0.23	-0.39	-1.23	-1.41
Italy	0.98	0.91	0.97	0.61
Luxembourg	2.02	2.20	0.37	0.24
Netherlands	0.40	0.74	-0.01	-0.14
Norway	0.42	0.50	0.60	0.49
Poland	-0.32	0.01	-0.42	-0.45
Portugal	0.52	0.56	0.27	0.13
Slovak Republic	-0.06	0.04	-0.16	-0.18
Slovenia	0.76	1.00	..	..
Spain	0.54	0.21	0.07	-0.05
Sweden	0.20	0.62	-0.37	-0.57
Switzerland	1.95	2.00	1.42	1.16
United Kingdom	0.46	1.02	-0.01	-0.26
United States	0.03	-0.51	-0.64	-1.00
<b>Average</b>	<b>0.35</b>	<b>0.57</b>	<b>..</b>	<b>..</b>
<b>Average (2)</b>	<b>0.30</b>	<b>0.49</b>	<b>-0.12</b>	<b>-0.31</b>

Notes: Average (2) includes only countries for which per capita allocation of collectively-accrued items was available. See Figure 3.A1.8 for the classification of the items.

Source: See Annex 3.A3.

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Indeed, only in ten OECD countries does the overall impact exceed + or – 0.5% of GDP in this baseline scenario. The impact is most positive in Luxemburg and Switzerland, with +2.0% and +1.9% of GDP, respectively. In both of these countries, immigrant populations are large, overrepresented among the working-age population, predominantly from high-income countries and have high employment rates. At the other end of the spectrum is Germany, where the share of immigrants receiving pensions is particularly large and the estimated net fiscal impact is -1.1% of GDP. Indeed, as Table 3.A1.1 shows, the age-distribution is much more unfavourable in Germany, France and Poland – the three countries with the largest negative estimated impacts – than on average over the OECD, and in particular compared with the countries where the impact is highly positive.

In most countries, including the pension system has a considerable negative impact on the net fiscal position of immigrants (albeit, as stressed above, to a lesser degree than on the native-born). This is due to the fact that a significant part of pensions in many countries is tax-financed.

Not considering pension contributions and payments provides a more favourable picture for most countries, in particular for Germany, France and Austria – three countries with relatively large and longstanding immigrant populations and where public expenditure on pensions is particularly high. The reverse is the case in the United States and Spain, where few immigrants receive pensions.

Excluding the pension system changes little for the top-placed countries (in terms of fiscal impact) – Luxembourg and Switzerland – but shifts the United States from a slightly below-average position to the bottom of the impact scale. This is driven by the weight of health expenditure which is the single largest expenditure item in the United States (in contrast to all other countries included in this overview, where social transfers are more important). However, it is important to note that estimates for the United States (Goldman, Smith and Sod, 2006) suggest that the average public per capita health care spending for non-elderly immigrants is only 62% of the level of the native-born population, partly because not all immigrants have the same access to the full range of health care services that citizens enjoy.

These baseline estimates miss out on a number of major items, both on the revenue and the expenditure side of the budget. Table 3.7 also provides alternative calculations to test the robustness of the findings, which are discussed in more detail in Figure 3.A1.8. Attributing, on a per capita basis, all omitted revenue and expenditure items, except defence, would result in a GDP impact that would be slightly negative (-0.3% of GDP in 2008) on average. Considering that most countries had a fiscal deficit, the overall impact of immigrants, on the basis of an accounting of current contributions and expenditures, thus seems to be on average broadly at par with the native-born.

## Conclusion

Measuring the fiscal impact of immigration is a challenging task, and any estimate of the budget implications is largely dependent on the measurement approach and the assumptions made. In international comparison, an additional complexity is added through the diversity of tax and benefit systems across countries. The only approach that limits the assumptions to be made for international comparisons to manageable proportions is an accounting method, which computes immigrants' contributions and cost to the public purse in a given year. These results are based on the current immigrant population and their outcomes. These, in turn, represent the results of several decades of immigration and integration policies, with all of their successes and failures. In this context, they cannot be taken as indicative of what current immigration policies and outcomes will yield over time.

Countries that had considerable “guestworker” migration in the past, for example, and then heavily restricted migration – such as Germany and France – tend to experience negative fiscal impacts of immigration using accounting methods, as these are measured after most guestworkers have retired, at a moment when their pension receipts will more than offset the social security contributions of the smaller cohorts of immigrants currently working. On the other hand, countries which have had extensive labour migration recently tend to show a positive impact since this is measured a short time after the large migration waves have occurred. These contrasting situations are useful in showing what affects the

fiscal impact, pointing to policies that can enhance the favourable dimension of immigration, but should not be taken as absolute or definitive statements about the appropriateness or not of current migration and integration policies.

Indeed, this is a shortcoming common to all accounting-type studies, including country-specific ones. Given the large importance of assumptions and measurement approaches to country-specific estimates, international comparisons have the advantage of highlighting common drivers of immigrants' fiscal impact across countries. Notwithstanding the limits of the exercise, a number of general observations can be made which tend to be in line with previous findings from in-depth country studies.

Overall, the fiscal impact of immigration tends to be *small* in most countries. Nevertheless, immigrants tend to have a less favourable net fiscal position than the native-born. This is mainly driven by the fact that immigrant households contribute on average less in terms of taxes and social security contributions than the native-born. Although there is a higher dependency by immigrants on some benefits, notably social assistance, such differences do not seem to have large budgetary implications on the aggregate. Relative to unemployed native-born, unemployed migrants are more likely to receive social assistance, but less likely to receive generally more generous unemployment benefits. Since the latter is often linked with access to active labour market policy measures, immigrants' lack of access to such integration measures could thus be an issue in a number of countries.

*Employment* is the most important factor that weighs on migrants' net fiscal contribution, particularly in the European OECD countries with relatively generous welfare systems. These are also often countries which have significant numbers of humanitarian and family migrants who tend to have lower employment rates, at least initially. As a result, potential gains in these countries from better labour market integration – in particular of immigrant women and of highly-educated migrants – tend to be large. It is thus not surprising that labour market integration has become a key concern for policy in these countries – also from a fiscal perspective.

Strongly linked with labour market status, the analysis demonstrated the strong impact of the *age* of immigrants on their net fiscal position. The age-structure of migrants is also a major factor in explaining cross-country differences because of the weight of pension contributions and payments. Yet, age is generally not a major factor in labour migration management systems in the OECD, with some exceptions.<sup>51</sup> In the Australian point system, for example, age has a strong weight – up to 38% of the pass mark – where, in addition, maximum-age thresholds for admission apply as well.<sup>52</sup>

These and other findings suggest that differences in the composition of the migrant population by migration category account for a large part of the cross-country variation of migrants' fiscal position relative to that of the native-born. Unfortunately, information on migrant entry category is not available for many countries and where it is, it is rarely used in fiscal impact analyses. Where possible, this shortcoming should be addressed, since most of the interest in the subject in terms of the implications for migration policy will relate to labour migration – that is, the migrant entry category over which there is the largest policy leverage. The available evidence suggests that labour migrants will generate a larger net fiscal contribution than other migrant groups – and thus their net contribution generally tends to be positive, at least in the short run.<sup>53</sup> Nevertheless, in the long run for most countries the overall conclusion probably holds for labour migration as well: it is neither a major burden nor a major panacea for the public purse.

**Notes**

1. This chapter has been prepared by Thomas Liebig (OECD Secretariat) and Jeffrey Mo. It includes contributions from Laura Castell and Sebastian Schmitz. Statistical assistance was provided by Véronique Gindrey (OECD Secretariat).
2. The foreign-born are overrepresented in the working-age population in all OECD countries except Estonia, Poland and the Slovak Republic. Data from the OECD social expenditure database suggest that, compared with the working-age population, the annual per capita social expenditure is more than twice as high for children and almost six times higher for persons above the age of 65. Note, however, that a significant part of the latter concerns pensions, which are generally transferable to other countries.
3. Nevertheless, the issue is not a new one. In 1997, the OECD's *Trends in International Migration* (the predecessor of the *International Migration Outlook*) analysed the impact of migration on social transfers and discussed methods to measure it. However, it focused essentially on empirical studies for Australia, Canada and the United States. The literature discussed in this chapter will mainly build on research that has been conducted after the 1997 publication.
4. Including the data used for the empirical analysis in the second section.
5. As a complement to this report, a survey among OECD countries on migrants' access to such benefits and services has been conducted. The results will be published under [www.oecd.org/migration](http://www.oecd.org/migration).
6. Boeri and Monti (2007) refer to this as the "net fiscal position". This report will use this term synonymously with *net direct impact* and *net direct contribution*.
7. This holds for both defined-benefit and defined-contribution systems. The impact of the pension system is discussed in more detail in the second section. There is also the issue of *return migration* to be considered which often coincides with retirement. Often, the pension is transferred abroad but many accounting-type studies of the fiscal impact do not account for this. As a complement to this chapter, the OECD has collected data on pension transfers abroad which will be published under [www.oecd.org/migration](http://www.oecd.org/migration).
8. There can also be important variation in the provision of welfare services at the local level. This is, for example, the case in Italy, where welfare services tend to be more generous in the North, which is also the part of the country where most migrants have settled because of more favourable labour market conditions. Pellizzari (2011) finds that the observed higher welfare use of immigrants in Italy is largely attributable to this geographical concentration.
9. A similar conclusion was reached by the Congressional Budget Office (CBO, 2007) regarding the impact of irregular migration on state and local budgets in the United States. The surveys summarised in the report suggest that a majority of immigrants in an irregular situation pay taxes and social security contributions. However, as most of the public expenditure to which immigrants in an irregular situation have access, namely education and emergency health services, is paid for at the local and state level, most surveys suggest a negative fiscal impact at that level, whereas the impact at the federal level tends to be positive. This may have implications with respect to the view that different government levels have on immigration issues, which is particularly relevant in federal countries where sub-national entities exert a stronger influence on policy making.
10. In addition, there is also the issue of the claims on the *public capital stock*.
11. However, there are some exceptions, e.g. Canada (see McMullen, 2011).
12. The situation would be different for countries where recent arrivals account for the bulk of the immigrant population. However, in the countries where this is the case, integration offers are less developed and most recent migration consists of labour migrants, for whom only very limited integration offers tend to be available.
13. The National Institute of Economic and Social Research in the United Kingdom (NIESR, 2011) estimated the consumption of education, health and personal social services for migrants in the United Kingdom. It found that the per capita cost of health and personal social services is lower than that of the native-born, but the reverse is the case for education. However, recent migrants have lower costs for all three types of services.
14. This group also includes spending on sector-specific policies such as agriculture, environment, regional policies, innovation and industrial policies, etc. Interest payments are generally not specifically mentioned in empirical studies, in spite of their large and growing importance – in 2008, they accounted for almost 6% of expenditure in OECD countries. The national accounts statistics include them in "general public services"; they thus tend to be treated like public administration expenditure.



15. Note that this assumption neglects the negative impact which immigrants have on natives as the former will also acquire claims on the public capital stock in the destination country, diminishing the amount available per capita for natives (see Usher, 1977).
16. For a recent discussion of the overall economic effects of immigration and their budget implications, see, for example, the Migration Advisory Council (2012).
17. Indeed, country of origin is essentially a proxy for migrant entry category, since immigrants from lower-income countries have more often come for humanitarian or family reasons – at least in most European OECD countries.
18. In addition, only labour migration (outside of free movement) is fully discretionary, whereas most other forms of migration are essentially non-discretionary, that is, whatever their fiscal impact, there is little that governments can do to limit (or increase) them. This concerns family migration (except accompanying family of labour migrants), free movements and humanitarian migration, control over which is governed largely by international obligations and/or human rights considerations. Together, these three categories account for the majority of permanent migration to OECD countries.
19. “Migration category” and “entry category” are used synonymously in this chapter.
20. In the United States, for example, in 1996 two major reforms were passed that had a strong impact on non-citizens’ access to welfare programmes. The first was the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA), which restricted legal immigrants’ access to cash-transfer programs such as welfare and social safety-net programmes, such as food stamps and health insurance. The second, the Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA), required that sponsors’ incomes be included in benefit-eligibility calculations, allowing states to hold sponsors liable for the value of any benefits that sponsored immigrants received.
21. As a complement to this chapter, the OECD Secretariat has conducted a survey among member countries regarding fiscal transfers abroad and immigrants’ access to social benefits. The results are published under [www.oecd.org/migration](http://www.oecd.org/migration).
22. In European OECD countries, conflicting results are also common but often due to different target populations. In Germany, for example, Loeffelholz et al. (2004) exclude a large part of ethnic Germans (Spätaussiedler) and estimate a per capita positive net contribution of EUR 990; whereas Gerdes (2007) finds a negative fiscal contribution per immigrant household of EUR -4 422 by excluding so-called “Western” migrants.
23. As will be seen, the chosen categorisation is more a tool for orientation than a stringent division. For example, generational accounting may be based on net transfer profiles. This is also sometimes the case in macroeconomic models, in particular of the general equilibrium type, which will be discussed further below.
24. Access Economics (2003) gives an estimate for Australia of AUD +250 000. The differences between the two countries are large and can only partly be explained by differences in the immigrant intake and the tax and benefits system; a key difference is the shorter time horizon of Access Economics (2003) – most new arrivals will still be in working age at the end of the time horizon under consideration. Such discrepancies across studies underline the primarily *ordinal* character of the results of most dynamic fiscal impact studies, particular in international comparison. The estimates are only meaningful compared with other figures that are estimated with exactly the same approach, i.e. in their ordinal dimension.
25. This result is largely driven by the assumption that there will be a shift towards a sustainable fiscal policy framework. Lee and Miller (1997) also conducted a range of robustness tests (e.g. varying the discount rate between 2 and 8%) and simulated various other scenarios. The results remained rather robust and no changes of signs occurred.
26. General accounting demonstrates the amount of intergenerational redistribution by examining the impact of the current fiscal regime on a set of representative agents that differ with respect to their age in the base year and represent the different generations. Every agent has his/her generational account which sums the present value of all taxes and benefits that he/she will contribute and receive over the rest of life. Because of the *no-default* assumption, the intertemporal budget constraint needs to hold; thus, the sum of all generational accounts of current and future generations together with the government net wealth must balance each other. In other words, there will always be someone to pay for the government’s expenses. The original study by Auerbach, Gokhale and Kotlikoff (1991), for instance, found for the United States that the net fiscal burden on future generations compared with the generation born in the base year 1989 will be 17 to 24% higher.

27. One also has to disentangle the direct fiscal effect of additional immigrants from the beneficial role of additional shoulders for the distribution of the additional burden. In any case, comparisons of the direct fiscal effect and net transfer profile-based estimates remain difficult, since GA models do not provide this net fiscal impact directly, but only indirectly via the reduced tax requirements for the representative agents of future generations.
28. The authors built on the GA framework by Gokhale et al. (1999) and used the tax and transfer profiles from Lee and Miller (1997); their study is a GA application of the net present value calculations by the latter.
29. In contrast, Ablett (1999) calculates Generational Accounts for Australia and finds that immigration unambiguously reduces the fiscal burden on future generations.
30. Borgmann and Raffelhüschen (2004) look at the impact of a number of factors, including immigration, on the evolution of the Generational Accounts for Switzerland between 1995 and 2001. They suggest that the facilitations of immigration following the gradual introduction of free mobility with the EU member countries will also result in a more favourable age-structure of the immigration flows and thus improvements in the Generational Accounts. Their estimates, however, are not directly comparable with those included in Table 3.3.
31. The NPV peaks at around the age of 40 because Storesletten's model generates a trade-off between fertility (which peaks around the age of 30 but implies education costs for the children), and more working years ahead.
32. It is interesting to contrast these findings with the accounting-type studies for Canada (e.g. Grubel and Grady, 2011; Javdani and Pendakur, 2011) that have been discussed earlier and which generally find negative effects. This seems to be due to two factors. First, the accounting studies refer to earlier migrant cohorts and a time where immigration policy was less linked with the labour market. Second, the macroeconomic model by Dungan, Fang and Gunderson (2012) considers the fiscal implications arising from the overall impact of migration on the economy, which is positive in their model.
33. For other recent reviews of the literature, see for example Leibfritz, O'Brien and Dumont (2003); Rowthorn (2008) and Kerr and Kerr (2009).
34. In addition, all of these surveys have a panel design, which means that there is some underrepresentation of recent arrivals. The EU-SILC, the CPS and the SLID are rotating panels; in the case of SLID the panel is renewed every six years, in the EU-SILC every four years; and in the CPS every two years. The samples are cross-sectionally representative only for the first wave of a new panel; only newly arriving immigrants who join a resident household, e.g. through family reunification and formation, are captured afterwards. In addition, even in the first year, in most surveys there tends to be some undercoverage of recent arrivals. Indeed, in Spain – which had a lot of recent labour migrants – immigrants are largely underrepresented compared with Labour Force Survey estimates. In all other countries covered by EU-SILC, with the exception of the Netherlands (where immigrants are also largely underrepresented), differences are minor. Nevertheless, the sample size of EU-SILC is much smaller than that of the Labour Force Survey (EU-LFS) which, however, does not contain the same richness of information. As will be seen below, the main determinant of the fiscal impact is employment. The employment rates of immigrants and native-born in the EU-LFS are broadly similar to those obtained in the Labour Force Survey, suggesting that possible biases arising from this should be limited. In both the HILDA and the SHP, however, new arrivals after 1999 are only included if they moved to previously resident households (in the SHP, however, there has been a refreshment sample in 2004). Both of these countries had significant intakes of migrants between 1999 and 2009, in particular highly-skilled labour migrants who have particularly high net fiscal contributions in early years. The estimates for these two countries thus tend to be biased downwards.
35. Indeed, the estimates of the irregular immigrant population in the United States are based on the CPS (see Passel, 2007 for details).
36. Table 3.A1.4 shows the two components of the net fiscal impact – that is, contributions and benefits – separately.
37. However, the net contribution for the native-born in Ireland was already slightly negative prior to the crisis. This seems to be attributable to the relatively large weight of taxes not included in the calculations of the net direct contribution, such as corporate income and value-added taxes.
38. The alternative would have been to exclude them; however this would have excluded a significant part of the immigrant population from the calculations and – because of the generally more favourable net contributions for this group – introduced a downward bias.

39. As can be seen in Figure 3.A1.2, in most countries, family characteristics such as marital status and number of children explain only a small part of the observed differences in net contributions, except in the Netherlands and, to a lesser degree, in Denmark.
40. This also holds for Australia and the United Kingdom, where there is virtually no difference in net contributions without considering this factor.
41. Note that this calculation considers the overall immigrant population and not just, as previously, immigrant household heads.
42. This assumes no indirect effect of the higher employment of immigrants, for example on wages – otherwise the effect may be more limited as the increase in labour supply would put downward pressure on wages.
43. Table 3.A1.4 sheds some more light on this by showing the absolute values for contributions and benefits.
44. The pattern is similar with respect to country-of-origin differences within the immigrant households (Figure 3.A1.6). Households with immigrants from lower-income countries contribute less on average than immigrant households from high-income OECD countries. At the same time, households from lower-income countries also have a lower benefit take-up in terms of the amounts involved. As a result, there are virtually no differences between the two groups in net contributions.
45. These figures are not shown but available upon request.
46. Note that this has implications for migrants' access to active labour market programmes, as this is often conditional on the receipt of unemployment benefits.
47. The results for disability are not shown but are available upon request.
48. This is of course a very rough approximation, since it assumes that, for example, migrant families currently entering with household heads aged 35 will have the same net fiscal position in 20 years as the current migrant households whose head is aged 55 now. In other words, the figures will only be "correct" if tax-benefit systems, household composition, and the socio-economic characteristics of new arrivals do not change over time, and if there is no return migration – which is clearly not the case.
49. Regarding education, all surveys have information on whether or not persons in the household are in education, and, if so, their education level. This information has been combined with data from the OECD Education database which has public expenditure on education by education level, on a country-by-country basis. Public expenditure on active labour market policies is available from the OECD Employment database. This is attributed on a per capita basis among the unemployed. Regarding immigrants' contributions in the form of indirect taxes paid, the analyses below use the net post-tax income minus housing payments and attribute the overall net savings rate for private households. Public health expenditure is one of the main expenditures items overall, and differs strongly with age. However, comparable information for all countries is only available for overall per capita spending. For some countries, however, age-specific profiles are available and these have been used to make a rough approximation of the health expenditure by age for all countries (see Annex 3.A3). The adjustment that can be made for this important expenditure item is thus for most countries a rather crude one.
50. If expenditure for public order and safety were also attributed to the immigrant population on a per capita basis in the baseline, the impact would be virtually zero on average.
51. The Netherlands have, in their immigration system with salary thresholds for highly-skilled "knowledge workers", lower thresholds for persons under 30. In 2012, the minimum annual salary requirement was EUR 51 239 for employees 30 years of age or older, and EUR 37 575 for employees younger than 30 years of age. In addition, labour migration of persons above the age of 45 is generally not possible. The maximum age for immigrants under the general skilled migration category in Australia is 50.
52. It is interesting to note that Australia is also the OECD country which has the most developed accounting of the fiscal impact of immigration.
53. Indeed, it is important to keep in mind again that the picture as presented in the empirical analysis above refers to the current fiscal position of the resident immigrant population, many of whom having arrived several decades ago.

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## ANNEX 3.A1

*Supplementary tables and figures*Table 3.A1.1. **Distribution of immigrant households by age of the household head, 2007-09 average**

% of immigrant households in each age cohort

	15-24	25-34	35-44	45-54	55-64	64-75	75 and above	Total
Australia	4.4	16.2	18.3	21.7	18.1	12.2	9.0	100
Austria	4.9	18.8	25.5	18.9	16.5	8.7	6.7	100
Belgium	4.6	20.9	24.7	20.3	15.0	8.3	6.1	100
Czech Republic	1.5	11.3	15.2	20.2	20.3	19.2	12.3	100
Denmark	13.9	19.6	24.6	22.6	10.4	5.4	3.5	100
Estonia	0.9	4.0	10.6	22.3	20.6	25.4	16.2	100
Finland	13.4	25.5	22.9	19.0	10.2	5.8	3.2	100
France	2.3	12.3	19.8	18.8	21.2	13.1	12.5	100
Germany	3.1	12.2	11.4	9.8	17.7	33.5	12.3	100
Greece	6.7	24.6	30.0	21.6	8.8	4.0	4.4	100
Hungary	..	18.7	20.3	21.6	13.9	14.4	11.0	100
Iceland	11.8	26.4	26.2	19.5	7.5	4.7	4.0	100
Ireland	6.1	32.2	28.0	18.2	8.7	4.5	2.2	100
Italy	4.2	28.5	35.6	17.6	6.8	4.7	2.7	100
Luxembourg	2.5	21.9	27.6	22.1	14.1	8.5	3.3	100
Netherlands	6.6	20.0	23.4	19.7	14.7	9.3	6.4	100
Norway	12.9	25.1	29.9	17.6	8.5	2.7	3.3	100
Poland	..	2.7	2.4	3.8	19.0	40.0	32.2	100
Portugal	..	36.5	25.5	12.7	12.4	5.6	7.2	100
Slovak Republic	..	3.2	15.4	14.9	33.1	24.2	9.1	100
Slovenia	0.4	7.6	18.4	31.6	20.4	14.1	7.4	100
Spain	4.4	31.6	32.8	16.2	8.1	4.6	2.3	100
Sweden	7.6	17.2	19.1	19.3	16.9	10.3	9.5	100
Switzerland	2.2	14.2	26.8	22.7	14.3	13.7	6.1	100
United Kingdom	3.3	19.5	24.4	19.5	14.5	10.0	8.9	100
United States	6.7	22.2	25.0	20.0	12.7	7.6	5.9	100
<b>OECD average</b>	<b>5.0</b>	<b>18.7</b>	<b>22.5</b>	<b>18.9</b>	<b>14.8</b>	<b>12.1</b>	<b>8.0</b>	<b>100</b>

Note: Figures for the 25-34 year old in Hungary, Poland, Portugal and the Slovak Republic include the 15-24 year old.

Source: See Annex 3.A3.



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Table 3.A1.2. **Net contribution of immigrant households by age of the household head, 2007-09 average**

EUR (PPP adjusted)

	Net contribution by age						
	15-24	25-34	35-44	45-54	55-64	64-75	75 and above
Australia	751	5 715	7 197	8 383	5 096	-4 302	-7 600
Austria	4 003	7 351	11 006	12 660	-2 109	-19 858	-22 409
Belgium	5 324	17 200	16 426	14 261	614	-13 625	-14 837
Czech Republic	1 283	4 684	5 486	4 515	-1 657	-5 318	-5 625
Denmark	578	12 864	16 630	11 525	8 041	-15 547	-15 359
Estonia	3 833	5 316	4 560	4 762	1 159	-2 942	-3 350
Finland	2 288	7 561	10 792	11 464	3 667	-11 741	-11 842
France	4 530	11 359	11 416	15 056	-2 681	-18 196	-18 324
Germany	940	8 314	15 508	15 407	-3 469	-19 310	-20 631
Greece	3 041	8 319	8 529	12 062	6 165	-8 950	-11 281
Hungary	..	4 844	4 525	4 875	-1 088	-5 722	-5 790
Iceland	7 722	13 093	22 290	26 954	24 625	-1 258	-11 974
Ireland	2 293	2 923	4 910	3 249	-6 200	-21 872	-22 925
Italy	9 314	11 170	11 175	13 567	7 235	-8 175	-12 859
Luxembourg	8 369	15 401	19 038	18 768	5 875	-30 314	-39 001
Netherlands	-3 832	14 361	18 983	18 847	11 505	-20 617	-20 648
Norway	2 423	11 359	16 740	19 197	14 018	-18 042	-26 194
Poland	..	..	4 782	3 793	-2 777	-4 434	-4 512
Portugal	..	4 207	4 660	8 238	2 402	-4 489	-11 175
Slovak Republic	..	2 585	3 436	5 901	-2 337	-3 972	-3 624
Slovenia	3 144	7 667	8 070	8 493	-2 910	-9 459	-9 510
Spain	8 818	9 961	8 504	8 610	2 741	-12 469	-11 222
Sweden	2 663	8 894	12 439	10 293	3 266	-14 773	-10 778
Switzerland	8 006	28 072	26 464	34 771	20 619	-9 884	-13 020
United Kingdom	6 134	14 680	12 386	10 125	2 622	-13 921	-15 167
United States	5 862	10 196	12 189	14 788	10 127	-8 113	-11 787
<b>OECD average</b>	<b>3 915</b>	<b>9 895</b>	<b>11 467</b>	<b>12 329</b>	<b>4 021</b>	<b>-11 819</b>	<b>-13 902</b>

Source: See Annex 3.A3.

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**Table 3.A1.3. Amount of social benefits paid to immigrant households on average relative to the native-born, 2007-09 average**

	Social assistance	Unemployment benefits	Pensions	Family allowances	Housing allowances
Australia	1.0	1.1	1.0	0.8	..
Austria	2.7	1.7	0.5	1.4	2.3
Belgium	8.3	1.1	0.4	1.3	1.9
Canada	1.2	0.8	0.9	1.3	..
Czech Republic	2.4	0.5	0.9	0.6	2.2
Denmark	..	1.3	0.3	1.4	0.9
Estonia	0.7	1.2	1.5	0.3	0.8
Finland	4.4	1.4	0.2	1.4	2.4
France	1.5	1.2	0.7	1.3	1.8
Germany	1.2	0.7	1.4	0.6	1.4
Greece	0.4	1.3	0.2	0.9	2.4
Hungary	-	0.5	0.8	0.7	0.5
Iceland	-	1.3	0.3	0.9	0.8
Ireland	3.3	0.8	0.3	1.1	1.1
Italy	1.9	1.1	0.2	1.4	3.0
Luxembourg	2.6	1.3	0.3	1.5	1.9
Netherlands	1.9	1.0	0.5	0.9	1.2
Norway	5.0	1.7	0.3	1.2	2.7
Poland	0.9	0.4	1.6	0.2	0.7
Portugal	-	0.9	0.3	1.5	0.7
Slovak Republic	0.6	-	1.0	0.4	-
Slovenia	1.1	1.1	0.7	0.6	2.0
Spain	0.9	0.9	0.3	1.0	1.1
Sweden	10.2	1.2	0.6	1.0	2.1
Switzerland	1.6	2.3	0.8	1.0	..
United Kingdom	1.2	1.8	0.6	1.2	1.8
United States	1.4	0.8	0.6	1.2	1.0
<b>OECD average</b>	<b>1.7</b>	<b>1.1</b>	<b>0.5</b>	<b>1.1</b>	<b>1.5</b>

Notes: The OECD average is the average of all countries included in the table. Canada's social assistance includes the old-age security pension.

..: Means that the respective benefit does not exist or no data available.

-: Means that the sample size is below the publication threshold.

Source: See Annex 3.A3.


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Table 3.A1.4. **Contribution, benefits and net contribution by migration status, 2007-09 average**

EUR (PPP adjusted)

	Contribution			Benefits			Net contribution		
	Native	Mixed	Migrant	Native	Mixed	Migrant	Native	Mixed	Migrant
Switzerland	19 858	26 353	20 149	4 889	4 917	5 601	14 968	21 437	14 549
Iceland	18 972	23 117	12 380	6 701	5 559	3 087	12 272	17 558	9 292
Luxembourg	20 043	23 732	20 463	21 270	16 500	11 285	-1 228	7 232	9 178
Italy	15 346	19 552	12 310	11 366	7 426	3 162	3 980	12 126	9 148
United States	15 527	22 844	13 145	6 993	5 687	4 871	8 534	17 158	8 274
Greece	13 246	16 068	9 476	8 238	5 557	1 748	5 008	10 511	7 728
Spain	10 518	14 820	10 057	7 412	4 990	2 561	3 106	9 830	7 496
Belgium	18 856	25 611	13 707	9 697	8 781	8 147	9 159	16 830	5 560
Canada	12 959	21 160	11 518	5 407	5 666	6 351	7 552	15 494	5 167
Norway	17 382	31 613	12 368	12 327	11 246	7 863	5 055	20 366	4 505
Portugal	8 024	13 854	8 320	7 074	4 055	3 841	950	9 799	4 479
United Kingdom	11 503	20 990	10 803	8 899	9 036	7 774	2 604	11 954	3 029
Slovenia	13 316	14 096	10 491	8 866	11 728	7 485	4 450	2 368	3 006
Netherlands	21 175	32 576	12 415	11 236	11 273	9 871	9 940	21 303	2 544
Denmark	17 574	26 428	11 041	10 211	8 715	8 673	7 362	17 713	2 368
Austria	16 705	21 465	12 334	13 330	15 022	9 980	3 375	6 443	2 353
Australia	8 476	12 314	7 447	4 700	3 961	5 144	3 776	8 353	2 303
Hungary	6 531	8 466	6 643	5 450	6 551	4 779	1 081	1 915	1 864
Finland	15 188	19 970	8 942	9 482	7 706	7 628	5 706	12 265	1 314
Sweden	17 041	24 472	11 005	10 226	10 999	10 109	6 815	13 473	896
Estonia	7 528	9 378	3 990	3 014	3 501	3 992	4 514	5 877	-2
Czech Republic	8 465	8 095	4 914	4 990	6 965	5 100	3 474	1 116	-184
Ireland	9 527	16 574	7 309	12 014	10 063	8 583	-2 487	6 511	-1 274
France	13 359	21 324	9 961	10 952	12 193	11 412	2 407	9 131	-1 451
Slovak Republic	6 151	6 876	2 439	4 003	6 123	4 610	2 148	752	-2 171
Germany	15 373	14 176	8 094	9 498	18 629	13 727	5 875	-4 453	-5 633
Poland	5 470	5 853	2 319	5 178	10 483	8 009	291	-4 630	-5 691

Source: See Annex 3.A3.


StatLink  <http://dx.doi.org/10.1787/888932823719>

Table 3.A1.5. **Amount of benefits paid per household on average, 2007-09 average**  
EUR (PPP adjusted)

	Immigrant households					Native-born households				
	Social assistance	Unemployment benefits	Pensions	Family allowances	Housing allowances	Social assistance	Unemployment benefits	Pensions	Family allowances	Housing allowances
Australia	15	72	2 201	1 258	..	14	68	2 158	1 677	..
Austria	135	1 012	5 438	1 918	125	50	583	9 960	1 354	55
Belgium	392	1 805	2 434	1 257	22	47	1 615	5 854	1 002	11
Canada	2 471	557	1 471	712	..	2 042	729	1 607	546	..
Czech Republic	150	41	2 831	331	48	63	80	3 298	514	22
Denmark	..	2 173	1 371	751	343	..	1 677	4 759	533	375
Estonia	6	48	2 713	209	7	9	41	1 847	602	9
Finland	586	1 529	845	1 254	733	134	1 097	5 333	874	311
France	269	1 006	5 719	1 009	732	178	821	7 958	767	405
Germany	329	595	9 636	617	32	268	890	6 670	989	23
Greece	57	203	1 480	163	57	151	158	7 195	176	24
Hungary	-	86	2 902	629	15	34	188	3 500	852	30
Iceland	-	142	1 055	740	345	43	113	4 052	811	417
Ireland	87	1 308	1 439	2 928	448	26	1 609	5 278	2 581	395
Italy	71	794	1 850	383	69	37	699	9 620	265	23
Luxembourg	487	1 008	5 150	2 802	137	185	774	14 787	1 908	74
Netherlands	1 327	480	4 092	426	306	713	502	7 586	452	250
Norway	490	330	1 545	1 398	155	97	195	6 004	1 205	57
Poland	30	68	6 604	49	19	34	169	4 111	252	27
Portugal	-	380	1 777	368	31	61	407	5 611	244	43
Slovak Republic	40	-	3 078	151	-	71	64	3 019	336	-
Slovenia	208	162	3 900	554	13	183	146	5 469	948	7
Spain	17	578	1 517	104	30	19	631	5 710	103	28
Sweden	483	609	3 657	914	397	47	509	6 133	927	191
Switzerland	111	489	2 442	460	..	71	209	3 219	461	..
United Kingdom	516	156	3 459	987	872	426	89	6 193	793	475
United States	670	137	3 054	209	87	468	170	5 533	171	86
<b>OECD average</b>	<b>336</b>	<b>585</b>	<b>3 098</b>	<b>836</b>	<b>186</b>	<b>203</b>	<b>527</b>	<b>5 647</b>	<b>790</b>	<b>124</b>

Notes: The OECD average is the average of all countries included in the table. Canada's social assistance includes the old-age security pension.

...: Means that the respective benefit does not exist or no data available.

-: Means that the sample size is below the publication threshold.

Source: See Annex 3.A3.


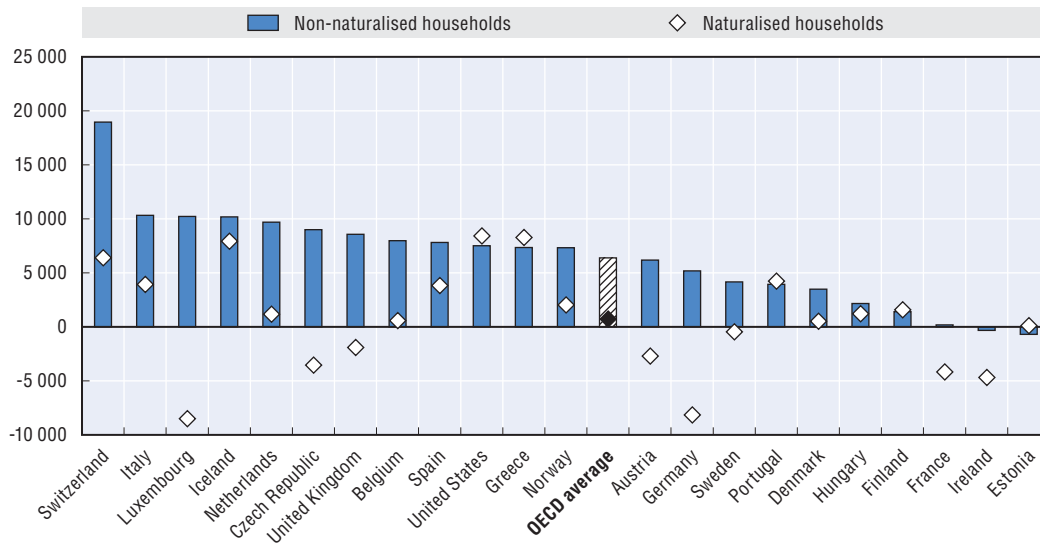
StatLink  <http://dx.doi.org/10.1787/888932823738>

Figure 3.A1.1. **Net contribution of immigrant households by citizenship of the head of household, 2007-09 average**

EUR (PPP adjusted)

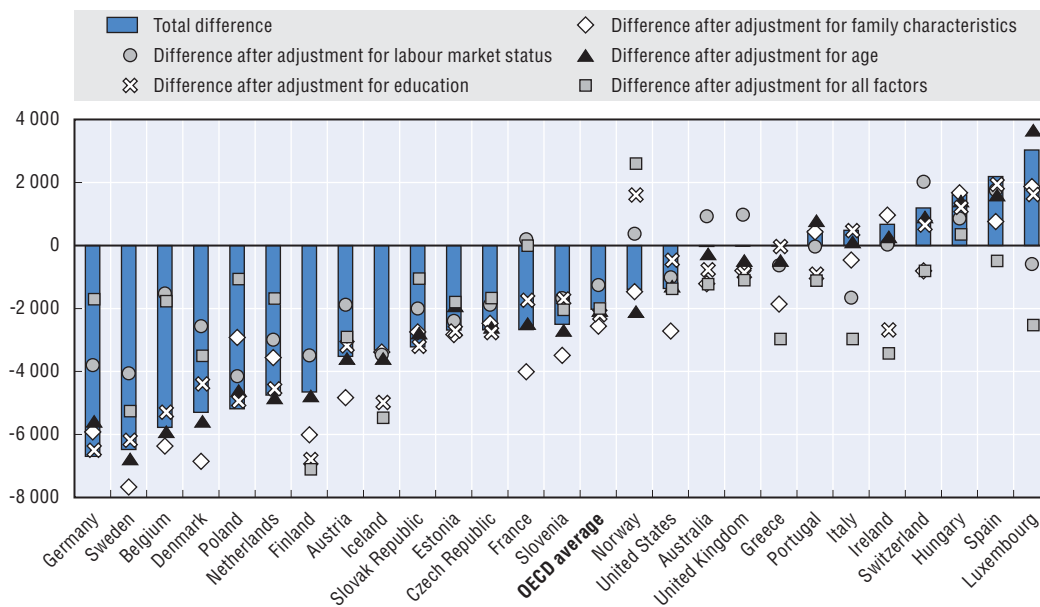


Source: See Annex 3.A3.

StatLink <http://dx.doi.org/10.1787/888932823111>

Figure 3.A1.2. **Differences in the net direct fiscal contribution of immigrant and native-born households and the role of different characteristics, 2007-09**

EUR (PPP adjusted)

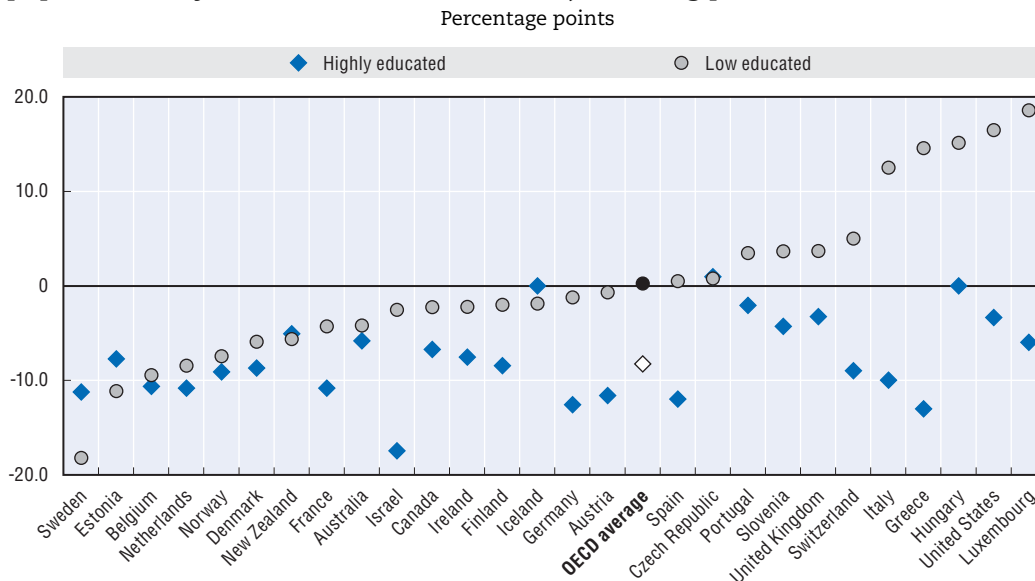


Notes: Age and education refer to the household head; labour market status (employed versus not employed) to all household members in working age (15-64 years old). The analysis is restricted to households in which at least one member is of working age. The results have been obtained using the Blinder-Oaxaca decomposition (Blinder, 1973; Oaxaca, 1973). This technique decomposes the differentials in the net fiscal position into two components: i) a portion that arises because immigrant and native-born households have different characteristics on average (explained component), and ii) a portion that arises because one of the two groups has a more favourable net fiscal position than the other given the same individual characteristics and/or because differing characteristics (e.g. higher educational attainment) have a different impact on both groups (unexplained component).

Source: See Annex 3.A3.

StatLink <http://dx.doi.org/10.1787/888932823130>

Figure 3.A1.3. **Difference in the employment rate of foreign- and native-born populations, by educational level, 2009-10 (excluding persons still in education)**

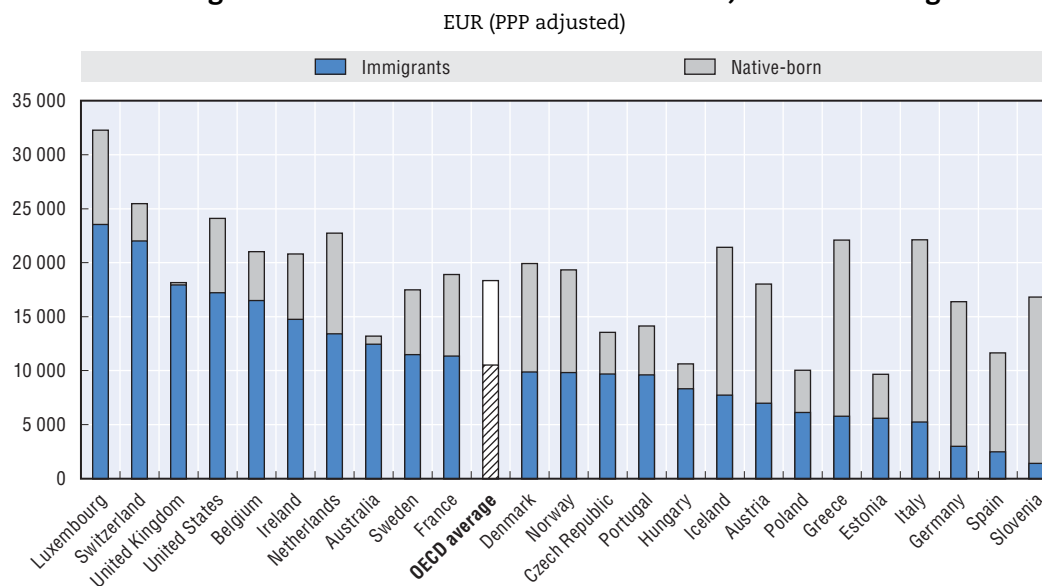


Notes: Data for New Zealand and Canada include persons still in education.

Source: OECD (2012), *Settling In: OECD Indicators of Immigrant Integration 2012*.

StatLink <http://dx.doi.org/10.1787/888932823149>

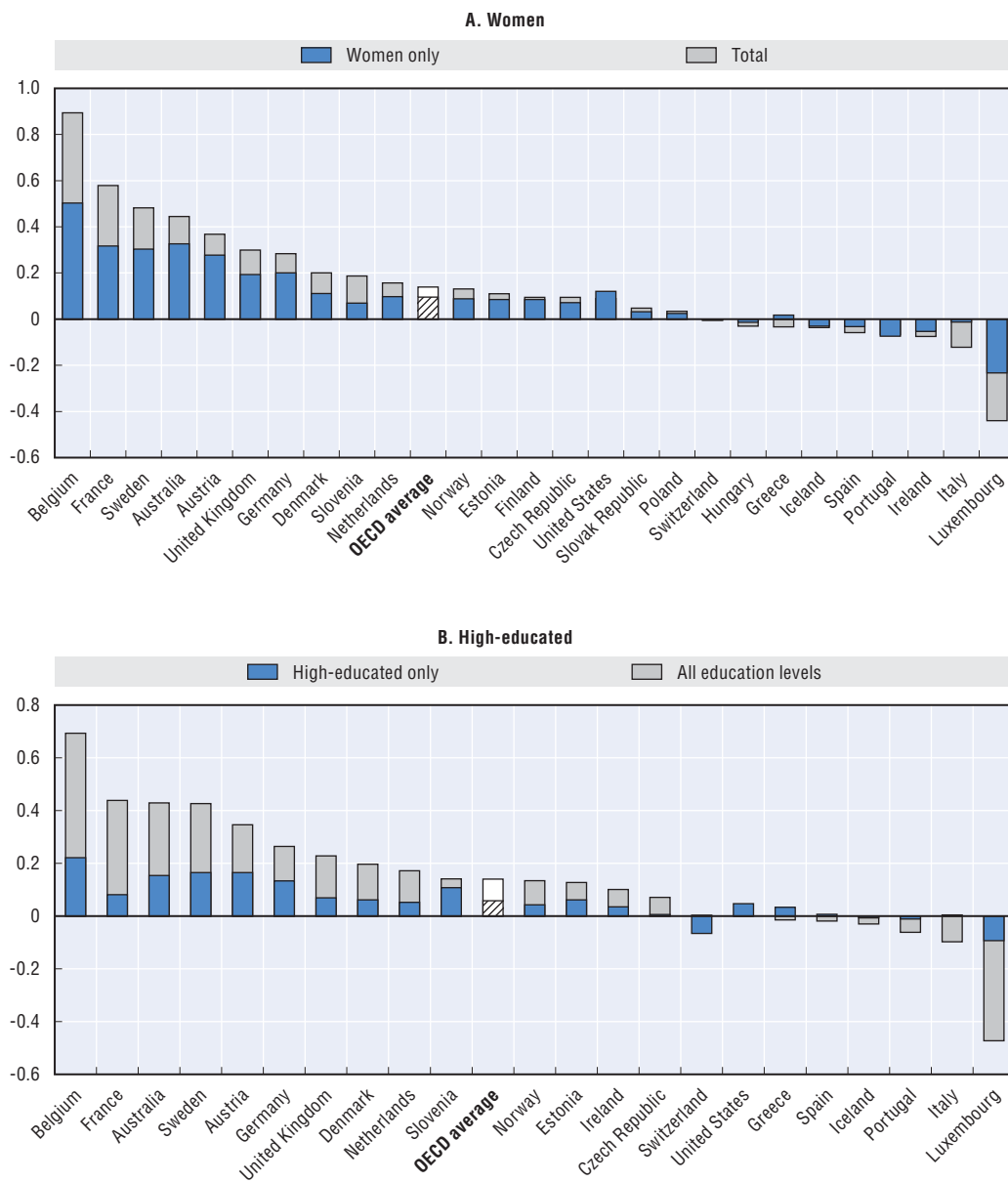
Figure 3.A1.4. **Differences in net contributions between households with high- and low-educated household heads, 2007-09 average**



Source: See Annex 3.A3.

StatLink <http://dx.doi.org/10.1787/888932823168>

Figure 3.A1.5. **Estimated budget impact if immigrants had the same employment rate as the native-born, in % of GDP, 2007-09 average**



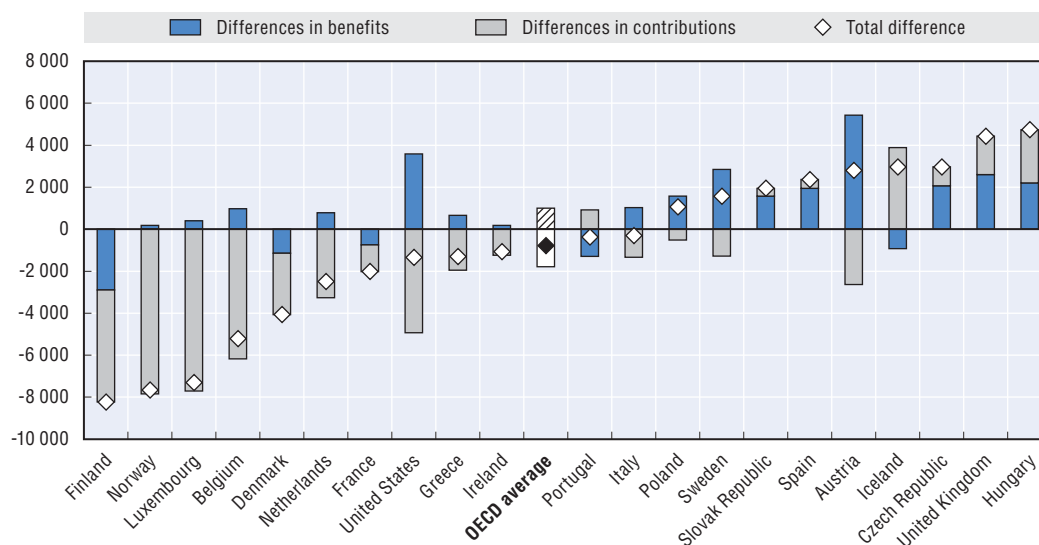
Source: See Annex 3.A3.

StatLink <http://dx.doi.org/10.1787/888932823187>



Figure 3.A1.6. **Difference in contributions, benefits and the net direct fiscal impact between immigrant households from lower-income countries and high-income countries, 2007-09 average**

EUR (PPP adjusted)



Notes: The graph shows the differences in contributions, benefits, and net contributions (contributions minus benefits) of households from lower-income countries minus households from high-income OECD countries. A positive difference in terms of benefits means that immigrant households from lower-income countries take up lower benefits on average. A positive difference in terms of contributions means that immigrant households from lower-income countries contribute more (in terms of taxes and social security contributions). "Mixed" households including either immigrants and non-immigrant household heads or immigrant household heads of different origin have been excluded. See also Annex 3.A3.

Source: See Annex 3.A3.


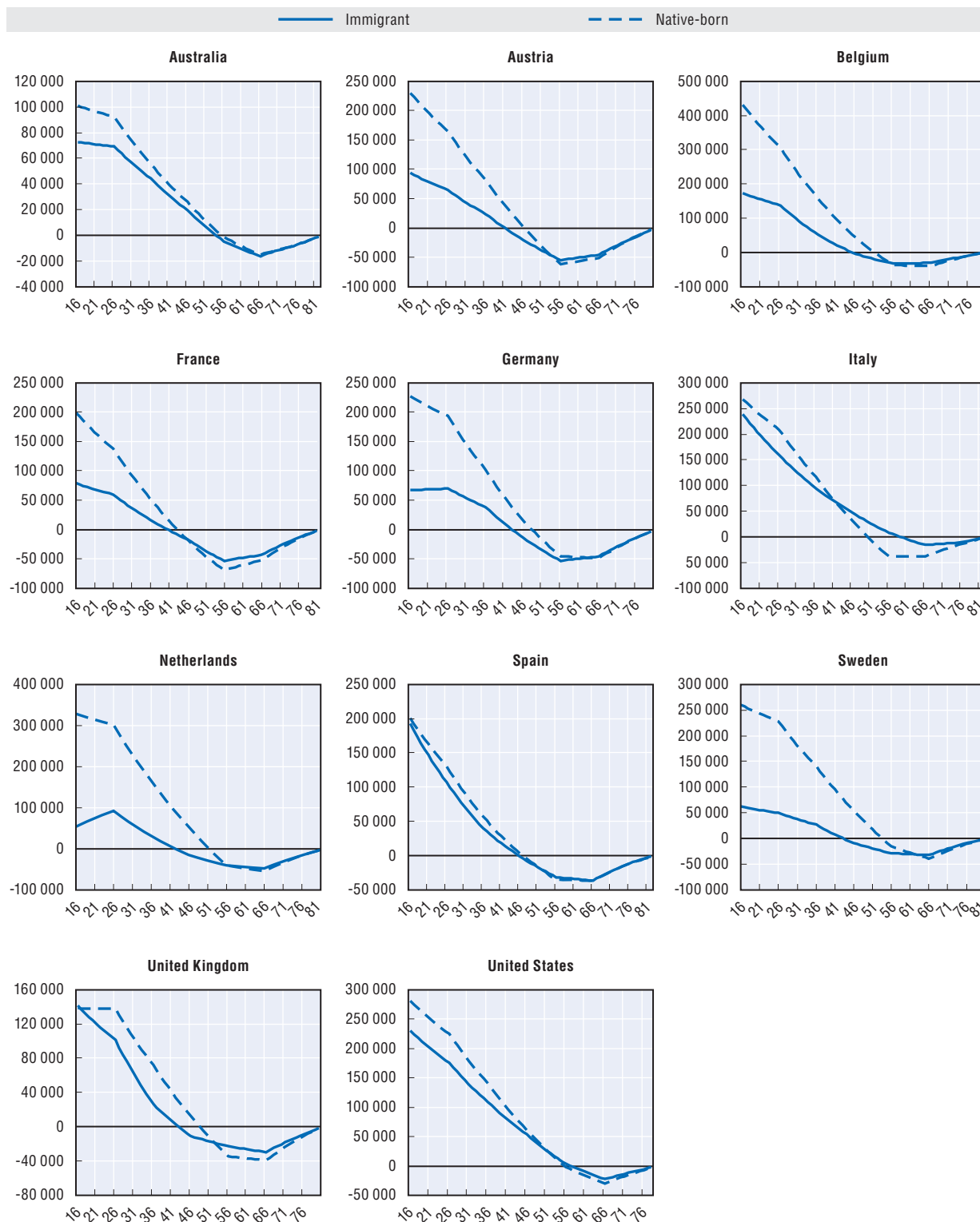
StatLink  <http://dx.doi.org/10.1787/888932823244>

Figure 3.A1.7. **Estimated net present values of the lifetime net direct fiscal contributions, by age of the household head**

EUR (PPP adjusted)



Note: Future payments have been discounted at a discount rate of 3% p.a.

Source: See Annex 3.A3.


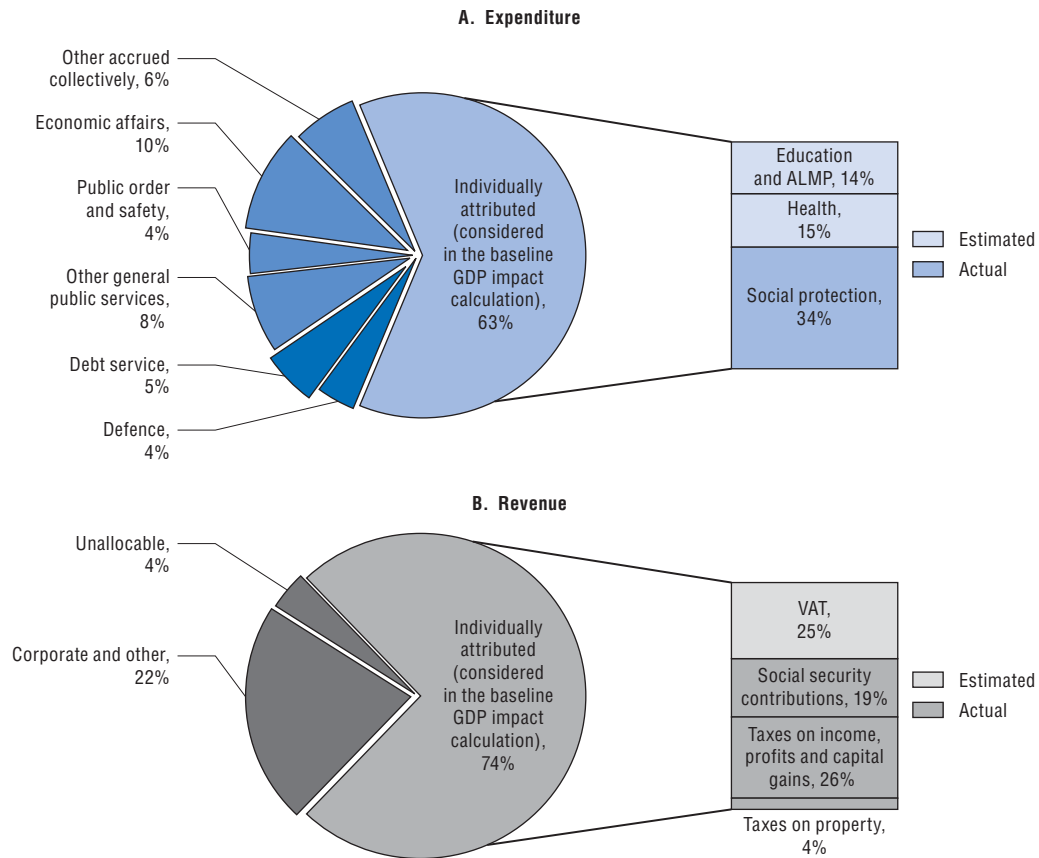
StatLink  <http://dx.doi.org/10.1787/888932823206>

Figure 3.A1.8. **Structure of general government revenue and expenditure and inclusion in the fiscal impact calculations, average over OECD countries, around 2008**



Sources: OECD Statistics on General Government Accounts and OECD Revenue Statistics.

StatLink  <http://dx.doi.org/10.1787/888932823225>

## ANNEX 3.A2

### *Sensitivity analysis*

Regarding the revenue side, the most important item that is missed is corporate tax revenues, which account for almost 4% of GDP, or 10% of all tax revenues (see Figure 3.A1.8). Another major revenue item not considered is taxes on specific goods and services. This category includes customs duties, revenue from fiscal monopolies and, most importantly, excise taxes, which alone account for almost 3% of GDP, or more than 7% of the tax revenues, on average over the OECD. Overall, however, the calculations on which the GDP impact is measured include about 74% of all revenues of OECD countries.

On the expenditure side, the major items that are not considered are public administration, infrastructure and defence. Payments on interest and reimbursement of public debt are also not included in the calculations; these account for about 5% of total expenditure on average. Overall, on average about 63% of general government expenditure in OECD countries is covered. The analysis above thus covers neither all expenditures nor revenues, but the part of revenues that is covered is larger.<sup>1</sup> In addition, a significant part is estimated, notably of expenditure (see Figure 3.7).

How confident can one be about the reliability and validity of the results? Spending on defence and payments of interest on past debt should *a priori* not vary with a growing population due to migration; excluding these items gives a roughly similar share of total expenditures and total revenues that are included in the above estimate. Most remaining neglected items on the expenditure side should tend to grow less than proportionally with population, such as public administration and infrastructure.<sup>2</sup> Similar arguments can be made on the revenue side, namely with respect to corporate taxes. Revenues from excise taxes, in contrast, can be expected to broadly grow proportionally with population.

A rough approximation of the impact of these omitted items can be obtained by attributing all revenue and expenditure items, except defence and interest payments, on a per capita basis to migrants. This would result in a less favourable picture for all countries except Norway and France, although the estimated budget impact would still be between +0.5 and -0.5% of GDP for most countries (see Table 3.A1.2). On average over the OECD, the fiscal impact would be marginally negative (-0.12% of GDP) under this assumption; if interest payments were also included the negative impact would be -0.31% of GDP. However, in the same year, on average the countries included in this calculation had a fiscal deficit of -0.6%; excluding Norway (which had a large surplus) the average deficit was -1.5% of GDP. Considering that immigrants account for about 10% of the population on average, it seems safe to say that the overall impact is broadly neutral on average over the OECD.

However, there is a final caveat to make. The baseline analysis does not account for specific integration-related expenses outside of mainstream active labour market policy measures, such as language training. In terms of GDP, however, public spending on these items generally tends to be small. Public expenditure for language training of (adult) migrants is generally the most important directly targeted integration expenditure not otherwise accounted for.<sup>3</sup> In spite of recent enhancements in integration efforts, the estimated expenditure on this in countries such as Austria and Germany, for example, is still below 0.2% of GDP. Yet, such items have to be weighed against the single most important item that is attributed (age-adjusted) on a per capita basis, namely health expenditures. As seen above, while there is little research on migrants' use of health services, the available evidence suggests that they tend to use health services less often than native-born of the same age. Everything considered, any remaining biases are thus not expected to alter the overall results fundamentally.

### Notes

1. Clearly, this leads *a priori* to a higher per capita net contribution for the total population (including both immigrants and the native-born) than if all expenditures and revenues were fully allocated. To which degree this affects immigrants' specific net contribution is, however, *a priori* unclear – particularly relative to the native-born.
2. Note that the fiscal implications of immigration in terms of infrastructure may also vary with the settlement pattern of immigrants. In densely-populated areas, large immigration flows could put greater pressure on infrastructures, as extending certain infrastructures can be more costly where land is scarcer.
3. The baseline analysis also does not account for expenditures in the asylum system, also because asylum seekers are not migrants but candidates for migration. Again, however, in terms of GDP, the sums involved tend to be small. In France, a report on the fiscal cost of the asylum system estimated EUR 900 million for 2004/05 (a peak period for the French asylum system), or about 0.05% of GDP (Assemblée nationale, 2005).

## ANNEX 3.A3

### *Technical annex*

Five surveys covering 27 OECD countries were used for the analysis: the Household, Income, and Labour Dynamics Australia survey (HILDA) for Australia; the Survey of Income and Labour Dynamics (SLID) for Canada; the Swiss Household Panel (SHP) for Switzerland; the March income supplement of the Current Population Survey (CPS) for the United States; and the European Union Survey of Income and Labour Conditions (EU-SILC) for all remaining European countries.

#### Definitions

- A *native-born* or a *non-immigrant* is a person born inside the current borders of the country in which they reside.
- An *immigrant* is a person born outside the current borders of the country in which they reside:
  - ❖ A separate analysis of immigrants born in high-income OECD countries (all OECD countries except for Mexico and Turkey) and of immigrants born in all other countries was also undertaken. The EU-SILC did not provide such a distinction; EU27 countries were thus taken as a proxy for high-income OECD countries.
- The *heads of household*, if not self-defined by the household in a national survey, are the persons in the household with the greatest income (primary head of household) and his/her partner (where applicable).
- A *native-born household* is one where the household head and his/her partner (where applicable) are both native-born.
- An *immigrant household* is one where the household head and his/her partner (where applicable) are both immigrants.
- The fiscal impact of households in which there are two household heads, of which one is native-born and the other is an immigrant (“mixed households”) is attributed half to native-born households and half to immigrant households.
- A *naturalised immigrant* is an immigrant who has acquired citizenship of the host country. Data on naturalisation are not available for Australia, Estonia, Germany, and Slovenia.
- *Benefits* are all government-funded transfers received by households, including:
  - ❖ Family- and children-related allowances.
  - ❖ Social assistance payments.
  - ❖ Housing allowances.

- ❖ Unemployment benefits.
- ❖ Old-age benefits, survivors' benefits, and pensions.
- ❖ Sickness benefits.
- ❖ Disability benefits.
- ❖ Education-related allowances and scholarships.
- Contributions are all transfers from households to the government, including:
  - ❖ Taxes.
  - ❖ Applicable tax credits.
  - ❖ Social security contributions from employers and employees:
    - Both employees' and employers' social security contributions were calculated according to the OECD *Tax and Benefits* database.
    - Employers' social security contributions are provided for most countries surveyed in EU-SILC; calculated employees' and employers' social security contributions are scaled to the value provided by the survey.
    - Employees' social security contributions were calculated as the difference between gross and net salary in the SHP.
- Net contributions are equal to contributions minus benefits.
- A person is considered to have a *low* educational attainment if he/she has not completed upper secondary education (i.e. if has attained at most ISCED Level 2).
- A person is considered to have a *high* educational attainment if he/she has completed tertiary education (ISCED Level 5 and above).

## Timeframe

The surveys cover the fiscal years of 2006, 2007, and 2008, except for Australia, where the fiscal year begins in July (and for which we took the fiscal years starting in July 2006 and ending in June 2009). Benefits, contributions, and net contributions were adjusted by purchasing power parity (as tabulated by the OECD) to the Eurozone standard; all numbers are reported in euros. Results – generally weighted averages of benefits, contributions, and net contributions – were averaged over the three years. Data for *Portugal* in 2008 were internally inconsistent and therefore not used.

## Benefits, expenditure and contributions included in the analysis

A variety of budget items that comprise benefits and contributions differ in implementation, importance, and data availability from country to country.

- Pensions were considered both in terms of benefits received by households and as contributions provided by household members. Either both pension benefits and pension contributions were included or were excluded:
  - ❖ Contributions include both employees' and employers' contributions to the public pension system and were calculated according to data from the OECD *Tax and Benefit* database.
  - ❖ The following (2007) values, allocated to both employees' and employers' contributions, were taken for Switzerland: 4.2% of personal gross income, with a minimum contribution of CHF 370 and a maximum contribution of CHF 8 400.

- Public expenditure on *education* (separate from publicly-funded scholarships) was calculated on a per capita basis from OECD data on the total public expenditure at each level of education (primary, lower secondary, upper secondary, and post-secondary, where available) and the number of students at each level of education in a given fiscal year. Such costs were assigned to individuals according to their level of schooling currently attended.
- Public expenditure on *health* was obtained from OECD data on the total current expenditure on health care, including services of curative and rehabilitative care; long-term nursing care; ancillary services to health care; medical goods dispensed to out-patients; prevention and public health services; and health administration and health insurance. Capital formation of health care provider institutions was excluded:
  - ❖ Hagist and Kotlikoff (2009) provide per capita public health care expenditures in 2002 in Australia, Canada, the United States, and six European OECD countries (Austria, Germany, Norway, Spain, Sweden, and the United Kingdom) in 2002, by age group (0-14, 15-19, 20-49, 50-64, 65-69, 70-74, 75-79, and 80+). These data were used as a proxy for age-specific health care expenditures in the respective country. In each of the countries listed above, the data was combined with the population in each age cohort and the total public health care expenditure in each country (from the *OECD Health Database*) in order to derive an estimate of the health care expenditure by age in those countries.
  - ❖ For European OECD countries not covered by Hagist and Kotlikoff (2009), an average European relative per capita public health care expenditure by age was created by determining the average ratio of the per capita expenditure for each cohort to the average per capita expenditure for the entire population, over the six European countries for which data was available. This average was then used for the remaining European OECD countries.
- *Value-added taxes* (VAT) were calculated from OECD data on countries' value-added tax rates applied on estimated household expenditures. Such expenditures were calculated by subtracting the costs of housing/utilities and the estimated household savings (which itself was calculated from OECD country data on the average savings rate per household applied on the disposable income) from disposable income. Disposable income was calculated by subtracting taxes and transfers to other households from net household income. For Canada, the combined rate of Federal and Ontario rates were taken and for the United States, the average combined sales tax.
- Public expenditure on *active labour market policies* is taken from the *OECD Employment database*. This is attributed on a per capita basis among the unemployed. This data was unavailable for Estonia, Greece, Iceland, and Slovenia, which leads to a slight upward bias in the estimations for these countries.



### Blinder-Oaxaca decomposition of native and immigrant household differences

- The Blinder-Oaxaca decomposition allows differences between two groups – in this case, the difference in benefits, contributions, net fiscal contributions, and social benefits received between native households and immigrant households – to be broken down into *endowments* and *contributions*:
  - ❖ Endowments are differences in (socio-demographic/economic) characteristics between the two groups. These can be interpreted as the “explained” part of the difference between native and immigrant households, i.e. the part of the difference that is due to differences in, for example, educational attainment of the heads of household.
  - ❖ Contributions in this context are differences due to the different impact of each characteristic on the dependent fiscal variables. These are the “unexplained” part of the difference.
- Independent variables were categorised into three clusters. The decomposition calculated the endowments and contributions attributed to each of the following seven variables; the endowments and contributions attributed to each cluster were calculated from a sum of these items on the individual variables.
  - ❖ Characteristics of the head of household:
    - Age.
    - Educational attainment.
  - ❖ Household composition:
    - Number of children aged 0 to 14 as a discrete variable (0, 1, 2, or 3+).
    - Number of working-age adults aged 15 to 64 as a continuous variable.
    - Number of senior citizens aged 65 and above as a continuous variable.
    - Marital status of the head of household.
  - ❖ Employment status:
    - Employment rate of the household (number of working-age adults in employment divided by the number of working-age adults).
- Native-born household regression coefficients were taken as reference.

### Calculation of the overall fiscal impact of immigration as a percentage of GDP

- The numbers of native-born, mixed, and immigrant households in each country were scaled to take into account the (often not insignificant) number of households for which an immigration status could not be determined.
- The overall fiscal impact of immigration was calculated as the sum of *half* of the overall net fiscal contribution (impact) of mixed households and *all* of the overall net fiscal impact of immigrant households. The overall net fiscal impact of each type of household is equal to the average net fiscal impact of that type multiplied by the number of households of that type:
  - ❖ This assumes that the fiscal impact of mixed households can be half attributed to immigrants and half attributed to natives.
  - ❖ This further assumes that the fiscal impact of immigrants in native-born households is balanced by the fiscal impact of the native-born in immigrant households.

- The fiscal impact as a percentage of GDP was calculated for each year; this percentage was averaged over the three years to calculate the final estimate:
  - ❖ Active labour market policy expenditure, targeted at reducing unemployment, were also attributed to immigrants on a per capita-unemployed basis and subtracted from the overall fiscal impact calculated above.

### Employment rate simulation

- A regression of net fiscal household contribution over the single independent variable household employment rate (as defined above) was performed for all combinations of native-born, mixed, and immigrant households, with 1, 2, 3, etc., adults in working age (between 15 and 64).

### Take-up of social benefits

- Social benefits were categorised into:
  - ❖ Social assistance:
    - Government allowances and non-income support payments in Australia.
    - Social exclusion allowance in the EU-SILC.
    - Social exclusion/assistance in Switzerland.
    - Public assistance and Medicaid in the United States.
  - ❖ Unemployment benefits.
  - ❖ Pension benefits:
    - Government pensions in Australia.
    - Canada/Quebec pension plan in Canada.
    - Old age benefits and survivors' benefits in the EU-SILC.
    - Old age, widow(er)'s, and orphan's pensions in Switzerland.
    - Social security payments, supplementary security income, and Medicare in the United States.
  - ❖ Family and child benefits:
    - Government parenting payments, estimated family payments, and child care benefits in Australia.
    - Universal child care benefit, child tax benefits/credits in Canada.
    - Family/child allowances in the EU-SILC.
    - Family/child allowances in Switzerland.
    - School lunch benefits and food stamp benefits in the United States.
  - ❖ Housing benefits:
    - Housing allowance in the EU-SILC.
    - Housing subsidy in the United States.
    - Not available for Australia, Canada and Switzerland.

- ❖ Injury benefits:
  - Workers' compensation for Canada.
  - Sickness benefits and disability benefits for the EU-SILC.
  - Disability benefits for Switzerland.
  - Workers' compensation for the United States.
- For Australia, government allowances and non-income support payments are classified as follows:
  - ❖ Social benefits:
    - Special benefit.
    - Partner allowance.
    - Telephone allowance.
    - Maternity immunisation allowance.
    - Seniors' concession allowance.
  - ❖ Unemployment benefits:
    - Newstart allowance.
  - ❖ Pension benefits:
    - Mature age allowance.
  - ❖ Family benefits:
    - Double orphan pension.
  - ❖ Injury benefits:
    - Sickness allowance.
    - Mobility allowance.
  - ❖ The following components are ignored:
    - Widow allowance.
    - Youth allowance.
    - ABstudy.
    - AUstudy.
    - CDEP.
    - Carer allowance.