CHOOSING FISCAL CONSOLIDATION INSTRUMENTS COMPATIBLE WITH GROWTH AND EQUITY

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Despite sustained efforts made in recent years to rein in budget deficits, a majority of OECD countries still face substantial public finance consolidation needs moving forward, owing to the legacy of debt accumulation before the crisis, and to the role played by fiscal policy in rescuing the banking system and supporting aggregate demand in the aftermath of the recession. Further budget consolidation is also needed over a much longer horizon to face long-term public spending pressures, in particular from pensions and health care.

Fiscal consolidation complicates the task of achieving other policy goals. In most cases, it weighs on demand in the short term. And, if too little attention is paid to the mix of instruments used to achieve consolidation, it can slow the process of global rebalancing, undermine long-term growth and exacerbate income inequality. It is therefore important for governments to adopt consolidation strategies that minimise these adverse side-effects. The analysis assesses the near and long-term consolidation needs for OECD countries and proposes consolidation strategies that take into account other policy goals as well as country-specific circumstances and preferences. To do so, increases in particular taxes and cuts in specific spending areas are assessed for their effects on short- and long-term growth, income distribution and external accounts. The results of detailed simulations indicate that a significant number of OECD countries may have to raise harmful taxes or cut valuable spending areas to deliver sufficient consolidation, underscoring the need for structural reforms to counteract these side-effects.

1 Introduction

Despite considerable progress in recent years, at the end of 2012 many OECD countries were still facing sizeable fiscal consolidation needs to bring back, or keep, public debt within manageable levels. Building on previous work by OECD and others, the present study presents a structured approach to the design of fiscal consolidation strategies to meet these needs while minimising adverse side-effects on growth and equity in the short and the long term, as well as on current-account balances. The paper subsequently goes on to provide some illustrative applications of the approach.

In a preliminary step, to serve as an input for the subsequent analysis of ways to minimise the side-effects of consolidation, the study provides estimates of consolidation needs in the short to medium term as well as the long term (Section 2). It then moves to its core subject and discusses the definition of growth, equity and current account objectives before presenting the list of potential consolidation instruments, evaluating their effects on these three objectives and proposing a generic illustrative hierarchy of instruments (Section 3). On that basis, Section 4 proposes a

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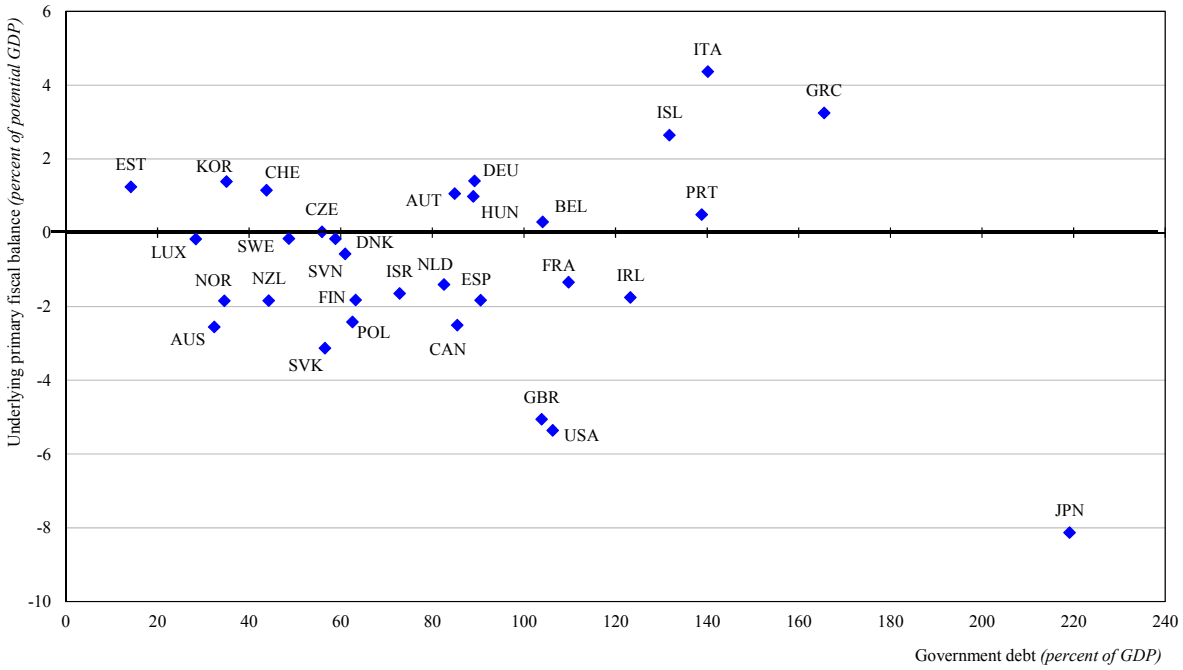
Figure 1

Debt and Underlying Primary Balances in 2012



method for developing differentiated hierarchies of instruments taking into account country specificities, in particular as regards vulnerabilities to the persistence of high unemployment. The study proceeds with an illustrative evaluation of how far down each country has to go on its list from more to less welcome instruments to meet its consolidation objectives without departing too much from its revealed preferences about government spending and revenue items and checks the robustness of the findings (Section 5). The results underscore the need for structural changes to be part of fiscal adjustment and for institutions to play a supportive role (Section 6). Section 7 concludes.

2 Estimated consolidation needs

The legacy of the financial crisis and earlier fiscal imbalances has burdened many OECD governments, with high debt levels, often accompanied by still significant structural deficits (Figure 1) which call for large consolidation efforts to reduce debt to more prudent levels. As a necessary preliminary step to permit a quantitative analysis of the composition of consolidation strategies, this section presents estimates of consolidation needs at the end of 2012 for both the short to medium term and the long term. The calculations assume a gradual consolidation effort, embodied in smooth time paths for the structural primary budget balance. The methodology is presented in full detail in Section 2 and Appendix 2 of Cournède, Goujard and Pina (2013). This approach ensures that the debt ratio is on a stable trajectory at the end of the consolidation horizon (2060). Second, in order to ensure that by 2060 the debt ratio not only stabilises but does so at the desired target level (set at 60 per cent of GDP), it differentiates short- from long-term consolidation needs, as explained in greater detail below. As developed in Box 1, this approach differs in purpose and methodology from the consolidation requirements reported in OECD's *Economic Outlook of May 2013* (OECD, 2013a).

BOX 1
SHORT- *VS.* LONG-TERM CONSOLIDATION NEEDS AND AVERAGE REQUIREMENTS

The estimated consolidation needs presented here differ from the average consolidation requirements reported in OECD (2013a) as they serve different purposes and therefore use different assumptions. The present set of consolidation needs forms a basis for the subsequent quantitative analysis of detailed consolidation packages that minimise side effects. The focus is firstly on how far these packages need to go in the short to medium term to bring debt under control and secondly on what has to be done to keep debt stable in the very long term, that is to say in 2060 and beyond. This differs from the objective of the requirements reported in OECD (2013a) which was to show how much effort beyond that already built into the near-term projection is needed *on average* from 2015 to 2030. From these different purposes and perspectives result different methodological choices with the main differences summarised as follows:

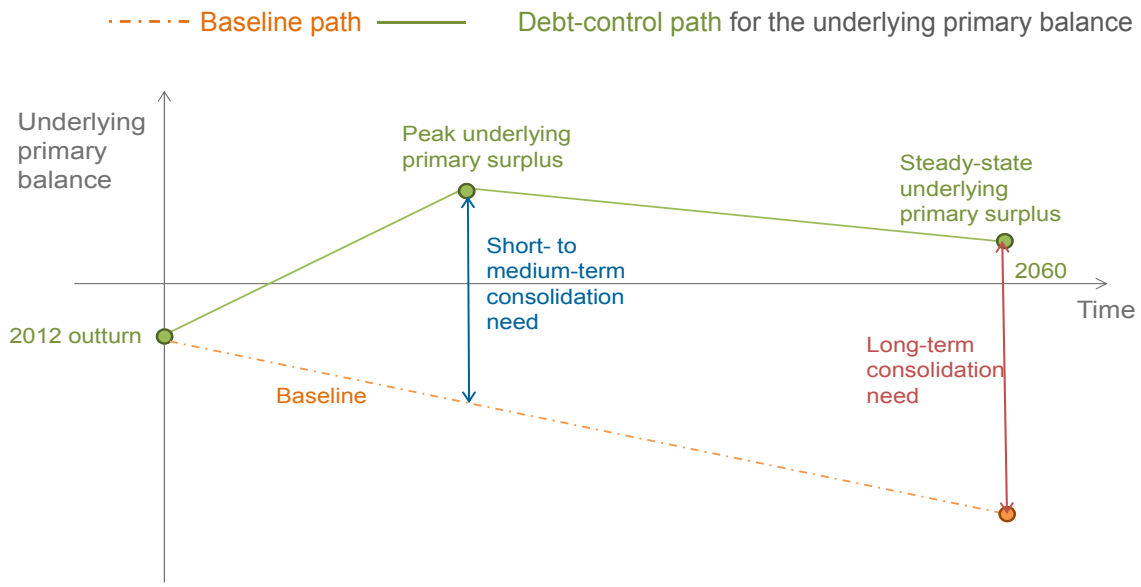
- The reference point for comparisons is 2012 in the current study, so that needed changes in individual areas of tax and spending can be compared to the latest historical point (or estimate). The reference point in OECD (2013a) is fiscal projections to 2014 to provide an idea of how much remains to be done in aggregate after the expected consolidation to 2014.
- The present estimates refer to the peak effort needed in the short- to medium-term and in 2060 whereas the requirements reported in OECD (2013a) relate to the average effort over 2015-2030. The former is needed for the present exercise as the point to assess how far, at the peak, instruments have to be used, and whether these instruments have to be maintained or can be partly reversed afterwards. To assess the size of aggregate consolidation efforts in an extended medium-term perspective as is the case in OECD (2013a), however, the average offers a more robust measure given that many different paths with many different peaks can be imagined for moving to debt stabilisation.
- In order to allow more realistic estimates of consolidation needs in the very long run (2060), the present estimated needs are calculated over a baseline where government expenditure on health and long-term care increases gradually over time. The baseline for comparisons in OECD (2013a) does not incorporate such cost pressures which have a lesser impact when looking at average effort over 2015-30.
- For the sake of comparability of consolidation packages and in line with the long-term focus of the study, the present set of estimates assumes that all countries reach 60 per cent gross debt-GDP ratios by 2060. In OECD (2013a), in line with the extended medium-term focus, the time horizon is 2030 but, to avoid too abrupt changes, some countries are allowed to reach their 60 per cent target after 2030.

Despite the differences of purposes and method, the cross-country correlation between the present set of short- to medium-term consolidation needs and the requirements presented in OECD (2013a) is very strong with a coefficient of 96 per cent.

Source: OECD (2013a), *OECD Economic Outlook*, May 2013.

Figure 2

Defining Short- to Medium-term and Long-term Consolidation Needs



The short- to medium-term consolidation need is defined as the difference between a baseline and the peak of a trajectory for the underlying primary balance that brings gross general government debt to 60 per cent of GDP by 2060. Evidently, different consolidation paths can be taken to attain the 60 per cent target, each leading to a different profile for the underlying primary balance (see Box 4.5 in OECD, 2013). For the purpose of this exercise, and although some countries have plans to adjust faster, the underlying primary balance is assumed to improve from its 2012 level at a rate of one per cent of potential GDP each year for as long as necessary to put debt on a trajectory toward the target. After that initial phase of consolidation, the length of which varies considerably across countries, the underlying primary balance is assumed to converge very gradually to the 2060 level which stabilises debt at 60 per cent of GDP (see Figure 1). With a starting point of high debt and deficit ratios, shared by many countries, initial improvement in the underlying primary balance at the annual pace of one per cent (1½ per cent in Japan) helps to ensure that debt is put on a downward path in a not-too-distant future (see Cournède, Goujard and Pina, 2013 for charts depicting all simulated trajectories).[1]

Both short- to medium-term and long-term consolidation needs compare the "debt-control" underlying primary balance with the baseline at the relevant point in projection period (Figure 2). The baseline corresponds to a policy scenario where sufficient reforms are introduced for public pension spending to remain constant relative to potential GDP and for government expenditure on health and long-term care to grow at a contained pace. Other tax and expenditure components are assumed to be unchanged from their 2012 levels relative to GDP except for cyclical effects associated with the projected closure of output gaps.

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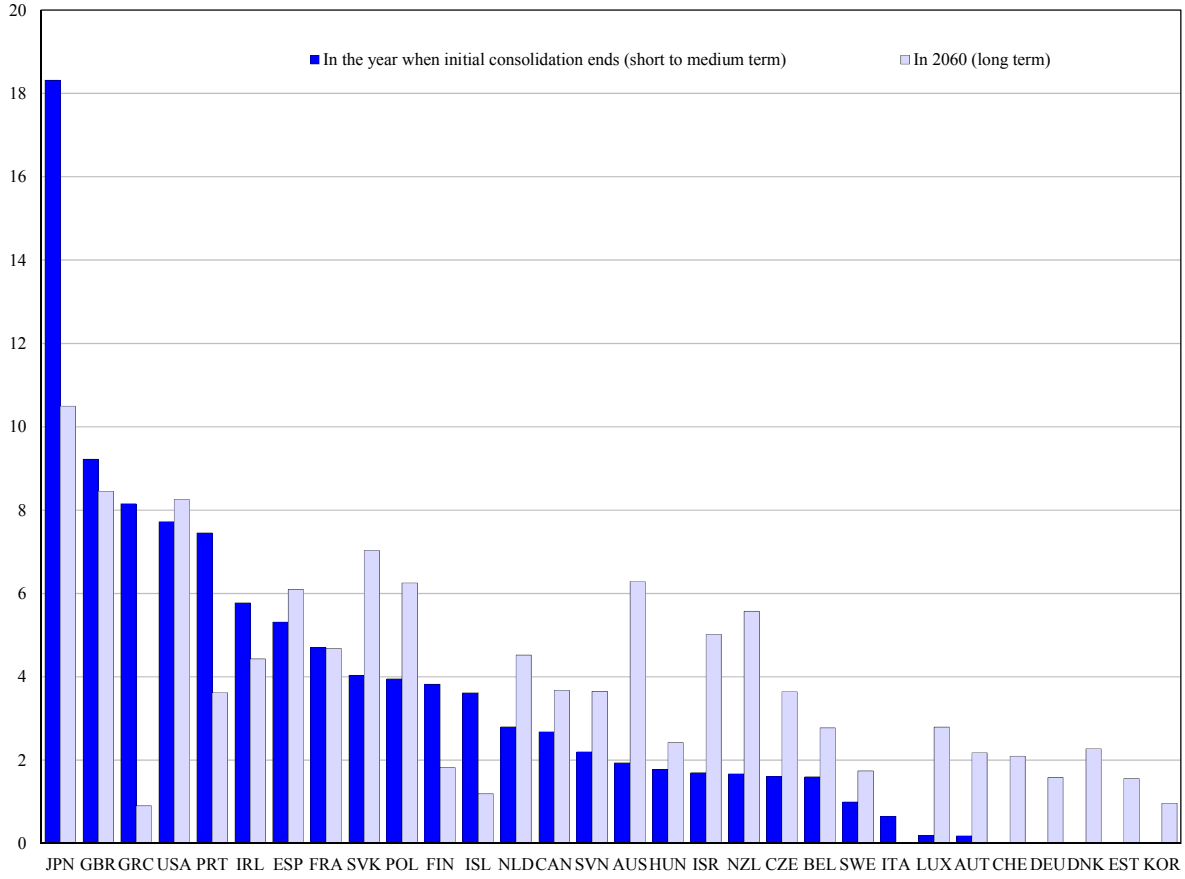
[1] This initial improvement at a fast pace, which generates a peak in the trajectory for the underlying primary balance, is needed in most but not all countries. Countries with a better starting fiscal position do not need such a peak. Nevertheless, the time path for the underlying primary balance always exhibits a kink (often, but not always, a peak), which provides the point where short- to medium-term consolidation needs are calculated.

Figure 3

Estimated Consolidation Needs at Different Time Horizons
(difference between debt-control and baseline underlying primary surplus, percent of potential GDP)



Source: *OECD Economic Outlook* of May 2013 long-term database and OECD calculations.

Estimates based on the approach described above suggest that in Greece, Japan, Portugal, Spain, United Kingdom and the United States, a short- to medium-term consolidation in excess of 5 per cent of potential GDP is required to reduce debt to 60 per cent of GDP by 2060 (Figure 3). This is the result of currently high debt levels (Greece, Ireland, Portugal, Spain) or their combination with large initial underlying primary deficits (Japan, United Kingdom, United States). To bring debt to the same level, another group needs short- to medium-term consolidation by more than 3 per cent of GDP — though less than 5 per cent — because of high debt levels (France, Iceland) or a significant underlying primary deficit (Finland, Poland, Slovak Republic). Other countries, including in particular Italy and Germany, face little or no short- to medium-term structural consolidation needs, though high debt in the former makes this conclusion vulnerable to interest rate changes. When needed, consolidation is in most cases relatively brief in the simulations: three out of four countries that require short- to medium-term consolidation complete it in four years or less. Many countries have made consolidation plans that go a long way toward meeting these consolidation needs (see OECD, 2013, for country-by-country projections of consolidation efforts in 2013 and 2014).

Consolidation needs are larger in the long than the short term for the majority of countries, with the difference particularly large in countries where short-term needs are limited thanks to low initial debt levels. The high estimated level of long-term consolidation needs reflects the large expected spending increases on health and long-term care. That said, since the cross-country variation in projected increases in government health spending is limited, it does not account for much of the differences in estimated long-term consolidation needs. The latter are primarily due to the starting point for the underlying primary surplus in 2012. Another significant source of differences is that the OECD long-term growth scenarios project interest rates rising well above nominal GDP growth rates by 2060, which leaves governments holding large amounts of financial assets with substantial capital income to service their debt. This effect reduces the estimated long-term consolidation needs of Canada, Finland, Japan, Korea and Norway by 2½ per cent of GDP or more compared with a situation where these countries' governments had no financial assets.

Estimates of consolidation needs are fraught with uncertainty and sensitive to the assumptions made and targets chosen. Cournède, Goujard and Pina (2013, Section 2) discuss sources of uncertainty and provide alternative estimates of consolidation needs, which can be summarised as follows:

- The estimated long-term consolidation needs are sensitive to the assumption that pension reforms keep government spending constant as a share of GDP in this area in the baseline. If instead public pension spending were assumed to increase in line with projections based on unchanged policies, long-term consolidation needs would be estimated to be much larger in many countries.
- Hypotheses regarding the use or not of government financial assets can influence estimated consolidation needs. A number of countries have large holdings of financial assets which can be sold to facilitate progress toward any gross debt targets, reducing estimated short- to medium-term consolidation needs. Asset draw-down strategies of this nature however come at the cost of increasing long-term consolidation needs as in the long run they leave governments with reduced recurring financial income.
- Estimates of consolidation needs are sensitive to the chosen level of the debt target. Aiming for instance at gross debt-GDP ratios of 100 per cent (instead of 60 per cent) by 2060 would reduce estimated to medium-term needs substantially. However, such a change in the debt target raises long-term consolidation needs significantly as governments would have to generate higher primary surpluses in order to ensure the stability of a larger stock of debt.

3 The effects of consolidation instruments on other policy objectives

3.1 Other policy objectives

While the point of fiscal consolidation is to reduce debt, it cannot ignore other policy objectives. The present study looks at the extent to which fiscal consolidation can proceed while minimising adverse effects on short-term growth, preserving long-term prosperity, avoiding exacerbating income inequality in the short and long term and contributing to global rebalancing. In addition to being an objective in its own right, equity may influence the sustainability of fiscal adjustment programmes. Consolidation strategies perceived as inequitable are more likely to be reversed and to fail to reduce debt.

The distinction made here between short- and long-term effects does not relate to specific time spans but to adjustment processes. Short-term effects correspond to the direct impact of measures as they are implemented. Long-term effects describe their consequences when cyclical adjustment has run its course and behaviour has responded fully to the measures.

Table 1

Instruments of Consolidation

Expenditure Cuts	Revenue Increases
Public consumption: education	Personal income taxes
Public consumption: health	Social security contributions
Public consumption: other (except family)	Corporate income taxes
Cash transfers: pensions	Environmental taxes
Cash transfers: unemployment benefits	Consumption taxes (non-environmental)
Cash transfers: sickness and disability	Recurrent taxes on immovable property
Public consumption and cash transfers: family	Other property taxes
Subsidies	Sales of goods and services
Public investment	

Source: Cournède, Goujard and Pina (2013).

3.2 Instruments

The instruments considered are policies that permanently affect government underlying primary spending and revenues. Government underlying primary spending is broken into ten categories, including four consumption items, three transfer items, subsidies, public investment (Table 1) and a residual item which is not considered as an instrument of consolidation. The expenditure breakdown broadly follows national accounts classifications with the difference that user charges are not netted out from government consumption. Instead, user charges are included among the eight consolidation instruments considered on the revenue side (Table 1). Cutting tax expenditures, a potentially large and attractive source of revenue, is nevertheless not included as an instrument because of the lack of sufficiently reliable and internationally comparable data across countries. Section 6 however discusses how reductions in tax expenditures can contribute to policy strategies that combine fiscal consolidation with structural reform.[2]

3.3 The effects of instruments on objectives

An attempt is made at evaluating the effect of revenue increases and expenditure cuts on growth, equity and global rebalancing objectives. The effects of instruments on the current account are also evaluated because consolidation strategies should take into account coordinated efforts in multilateral settings such as the G20 to achieve balanced growth at the global level. For the purpose of this exercise, the instruments are assessed on their own, without considering how their side-effects on long-term growth and equity could be minimised through structural reforms in the

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[2] In Section 2 of Appendix 2, Cournède, Goujard and Pina (2013) provide details on the definition of the categories, on the sources used and on the methods employed to gather data from different sources in a way that adds up to government primary spending as recorded in national accounts.

tax or spending area under consideration, other structural reforms, or redistributive policies. The distinction between purely fiscal changes and structural reform is obviously not so clear cut in practice.[3] Still, it is useful insofar as it allows for an assessment of the side-effects that some consolidation instruments can imply for other policy objectives (this section) before discussing the benefits of joint policy strategies that combine consolidation with structural reform (Section 6).

The present assessment builds on previous work by the OECD and the wider literature complemented by new estimates presented in Cournède and Barbiero (2013). Table 2 summarises this assessment, and the main points are discussed below while additional details about the evaluation of individual instruments are described in Cournède, Goujard and Pina (2013, Appendix 2, Section 3). Besides showing the estimated direction of the effect, some crude indications of the relative strength are also provided, based on empirical evidence.

3.3.1 Long-term growth effects

A number of fiscal consolidation instruments can enhance the long-term level of output. Evidence suggests that, in advanced economies in general, reducing the size of government up to a point increases long-term output although there is clearly no consensus on what constitutes the optimal size of the public sector even from a strict efficiency point of view. This output-enhancing effect of reducing government spending is likely to be stronger in areas such as subsidies[4] where public expenditure frequently distorts the allocation of resources in the economy. Similarly, cuts in public spending that can prompt a positive response of labour utilisation, such as in pensions, are likely to have a particularly favourable effect on the long-term level of output per capita. Reductions in public spending on unemployment benefits can also boost employment and output per capita insofar as they do not bring unemployment insurance down to a level prompting inefficient employee-job matches that could curb productivity. Cuts in disability payments can boost labour utilisation (Hagemann, 2012) although this effect will arise only insofar as workers with significant residual capacity are receiving disability assistance.

Some revenue measures can also contribute positively to long-term output when they promote more efficient use or allocation of services or resources that were previously inadequately priced. To the extent that their current levels correspond to under-pricing, higher user charges reduce the waste of economic resources, thereby boosting productivity and output (de Serres *et al.*, 2010). Better pricing the use of environmental services through taxation can also lead to welfare gains through improved environmental amenities that are not measured in GDP.

In contrast, other consolidation instruments can reduce the productive potential of economies. At a general level, raising the tax burden tends to reduce factor supply and long-term output (OECD, 2003; Bouis *et al.*, 2011). Evidence on the impact of the tax structure (Johansson *et al.*, 2008; Bouis *et al.*, 2011) indicates that taxes on mobile or adjustable production factors affect aggregate supply with particular severity. In the present classification of instruments, personal income taxes, social security contributions and corporate income taxes fall into this category. Other taxes such as value-added or consumption taxes have proven to exert still meaningful but less strong distortionary effects (Johansson *et al.*, 2008).

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[3] On the spending side, for instance, cuts in education spending achieved through reduced service provision can be described as pure budgetary measures whereas efficiency gains that can maintain a similar level of service for lower costs represents structural reform. On the revenue side, one example where the distinction is clear is indirect taxation where an increase in the standard VAT rate can be seen as a pure fiscal change while measures such as reducing the reliance on reduced rates and exemptions are part of structural tax reform. One example where the distinction is difficult to make is unemployment insurance where almost any form of reduction in benefits will amount to a change in structural policy settings.

[4] Some categories of subsidies, however, can work in the direction of raising growth potential. In particular, government subsidies can encourage business research and development activities where the social rate of return exceeds the private rate of return because of cross-company spillovers (Jaumotte and Pain, 2005).

Table 2

Summary Assessment of Growth and Equity Effects of Fiscal Consolidation Instruments

	Growth		Equity		Current Account[(a)]
	Short-term	**Long-term**	**Short-term**	**Long-term**	**Short- to Medium-term**
Spending cuts					
Education	--	--	-	--	+
Health services provided in kind	--	-	-	-	++
Other government consumption (excluding family policy)	--	+	-		+
Pensions		++			++
Sickness and disability payments	-	+	--	-	++
Unemployment benefits	-	+	-		++
Family	-	-	--	--	+
Subsidies	-	++	+	+	+
Public investment	--	--			++
Revenue increases					
Personal income taxes	-	--	+	+	+
Social security contributions	-	--	-	-	
Corporate income taxes	-	--	+	+	++
Environmental taxes	-	+[(b)]	-		+
Consumption taxes (other than environmental)	-	-	-		++
Recurrent taxes on immovable property	-				+
Other property taxes	-		++	+	+
Sales of goods and services	-	+	-	-	+

Note: (a) Current-account effects refer to a deficit country, and would switch sign in the case of a surplus country. (b) This + sign reflects positive welfare effects as the long-term impact on output narrowly defined as GDP may be ambiguous.
Source: see main text and Section 3 of Appendix 2 in Cournède, Goujard and Pina (2013).

Spending reductions can entail potentially large long-term losses in output when they cut into areas where governments provide particularly valuable public goods or growth-enhancing services that are insufficiently produced by market forces. Empirical evidence (OECD, 2003; Sutherland and Price, 2007) suggests that cuts in public investment or government spending on education broadly fall into this category. As developed in Section 6, cuts in government investment or education that respectively focus on low-externality projects or are accompanied by education reform can have more limited, or even favourable, growth effects. However, as mentioned earlier, the simple assessment summarised in Table 2 is concerned only with plain fiscal changes without structural reform, implying a lower provision of public goods and services. Cuts in health care can also reduce output per capita by reducing labour supply and productivity. When controlling for taxes, public health spending appears to have a positive, albeit moderate, effect on output per capita (Barbiero and Cournède, 2013).[5] Through its contribution to well-being, health spending is most likely to have additional positive welfare effects that are not measured in GDP.

Cuts in childcare can reduce output per capita primarily by depressing labour force participation (OECD, 2007). Reductions in family benefits have a more ambiguous effect on output per capita through two channels that work in opposite directions. Firstly, they can prompt greater labour market participation, boosting output per capita. Secondly, such cuts can increase child poverty (Whiteford and Adema, 2007), hampering the formation of human capital and resulting in durably lower long-term output per capita. Overall, the net effect of cuts in the aggregate of childcare and family benefits on long-term output per capita is likely to be negative. Some consolidation instruments are likely to have neutral or very weak long-run effects on output. Such is the case of taxes with relatively low distortive effects, such as property taxes (Johansson *et al.*, 2008).

3.3.2 Short-term growth effects

Most fiscal consolidation instruments are harmful for growth in the short run, but there are differences among them and a few exceptions. Although the vast literature on fiscal multipliers has not achieved consensus, international experience suggests by and large that they are highest for public investment and government consumption and substantial but smaller for transfers and taxes (Figure 4; OECD, 2009; Barrell *et al*, 2012). The main reason behind this difference is that changes in government investment and consumption affect activity directly while the effects of changes in taxes and transfers transit through the accounts of households and firms, offering greater possibilities for offset from saving behaviour. Consistent with this ranking, empirical evidence indicates that private-sector offsets from changes in government balances depend on their composition and are strongest for revenues, intermediate for spending and weakest for investment (Röhn, 2010).

The short-term output effects of instruments will depend on their design. In most cases, this design dependence does not preclude a broad assessment of their effect, but as far as cuts in pension spending are concerned, even the direction of the impact can change depending on how they are implemented. If cuts fall on current pensioners, they correspond to a reduction in transfers and are likely to affect output with a similar multiplier. In contrast, if pension spending is cut by raising the retirement age including for workers close to this age when the change is implemented, some positive demand effects are possible (Kerdrain *et al.*, 2010) at the same time as supply expands, with an ambiguous net effect on the degree of economic slack.

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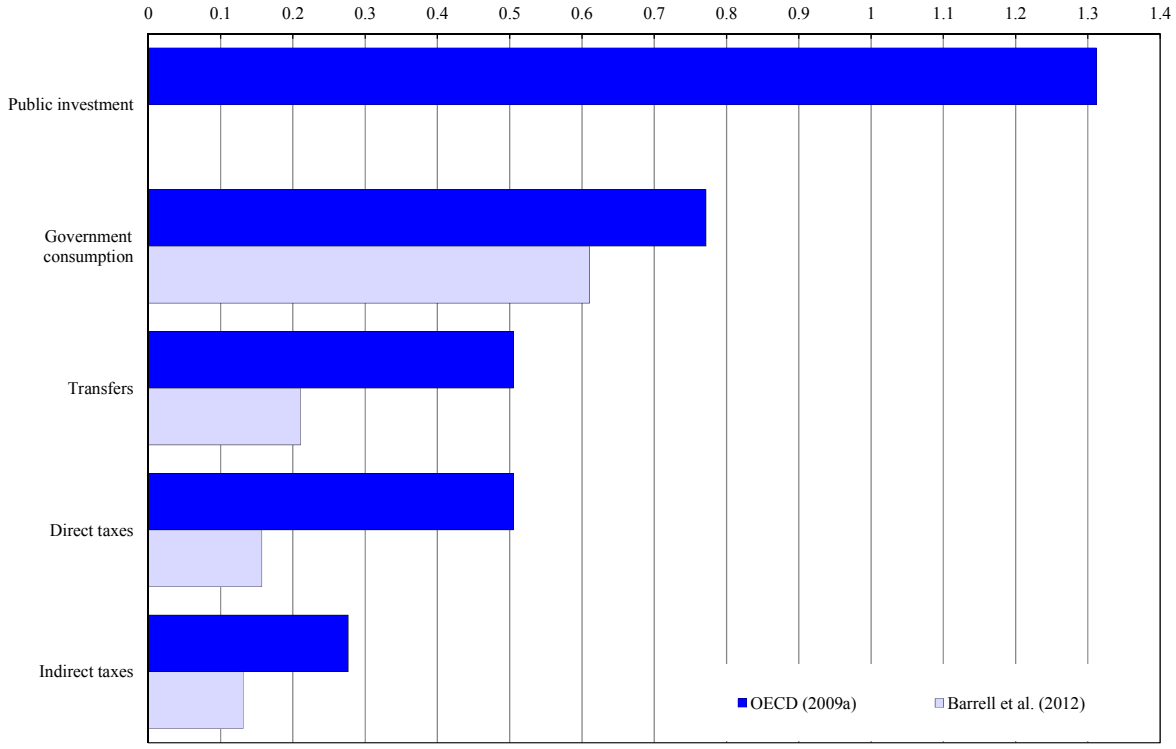
[5] Although part of the empirical literature finds a negative effect of public health spending on GDP per capita, this appears to be related to the output cost of the associated taxes which the present study considers separately (see for instance Box 6.1 in OECD, 2011a).

Figure 4

Estimates of Short-term Fiscal Multipliers for Different Consolidation Instruments

(GDP contraction from a permanent 1 percentage-point increase in the underlying primary balance, percent)



Note: the effects plotted in the chart are unweighted averages of country estimates reported in the quoted documents. The effect is averaged over the first and second years of consolidation for OECD(2009) estimates and refers to the first year for Barrell *et al*.'s (2012) estimates. The simulations underlying Barrell *et al*.'s (2012) multipliers assume unchanged monetary policy in the year of the fiscal shock, but they incorporate the positive output effect of a fall in long-term interest rates resulting from the anticipation of a more accommodative monetary-policy path in the years following the shock. No multiplier estimate is available for public investment in Barrell *et al.* (2012).

In countries that are experiencing confidence crises because of their fiscal positions, the estimated multipliers reported above, which are calculated as historical averages, may not apply to their current circumstances. In fiscal-crisis countries, the absence of consolidation could translate into a massive loss of confidence triggering economic collapse. If it helps avoiding such extreme counterfactual scenarios, consolidation may be highly expansionary. There is also a possibility that, in such circumstances, different instruments may have different expansionary effects, notably by signalling the degree of determination of public authorities and thereby the likelihood that consolidation may be maintained. In particular, cuts in spending areas that raise serious political-economy challenges, such as subsidies, has been found to increase the probability of large consolidations to be successful (Molnar, 2012). There is however no consensus on the existence of these potential expansionary effects of consolidation, on their strength, on measuring when they may apply and how they may differ across instruments at a disaggregated level. For these reasons, these potential expansionary effects are not integrated in the assessment but should be seen as caveats regarding the extent to which the summary assessment presented in Table 2 applies to actual or potential crisis countries.

3.3.3 *Effects on equity*[6]

Many consolidation instruments work in the direction of aggravating income inequality (Table 2). Transfers in particular have strong redistributive power so that cuts in benefits are generally regressive, perhaps with the exception of public pensions where the equity effect is likely to be muted in countries where they are based on earned income and close to actuarial neutrality. Reducing the provision of public services likewise contributes to increasing inequality in effective consumption (OECD, 2011b).[7] Also, a number of taxes fall more heavily on lower-income households, with the implication that increasing them would raise disposable income inequality.

Some fiscal consolidation instruments, on the other hand, can reduce income or wealth inequality. Such is particularly the case of hikes in inheritance and capital gains taxes, which the classification used in the present study includes among "other property taxes".[8] Increasing taxes that are typically designed to be progressive, such as personal income taxes, also goes in the direction of reducing disposable income inequality. The same holds for hikes in revenue instruments that are concentrated on capital income such as corporate income taxes (although some of their burden also falls on labour).

The equity implications of fiscal consolidation instruments can also evolve as behaviour responds to fiscal changes. Cuts in unemployment insurance payments, disability benefits or other social assistance programmes that are partly used as a way of withdrawing from the labour market can over time foster greater labour force participation. Since labour income tends to be greater than benefit payments, the supply response will work over time to reduce the regressive impact of cuts. On the tax side, environmental taxes, although they tend to be regressive in the short term, provide benefits that accrue in priority to low-income groups as those are more exposed to environmental degradation (Serret and Johnstone, 2006). Some of these effects, such as better health allowing greater labour supply, are reflected in higher measured income. Other often lagged effects such as improved well-being from better environmental conditions are not reflected in income distribution data. Consumption taxes, which are regressive in the short term because low-income households save a smaller share of their income than better-off ones, are neutral in a lifetime perspective taking into account the period when former savers spend what they previously accumulated. Finally, the redistributive benefits of some consolidation measures can wane over time as individuals put in place effective avoidance strategies as appears to be the case for inheritance taxes (Kopczuk, 2007).

3.3.4 *Short- to medium-term effects on the current account*

At a broad level fiscal consolidation works to push the current account towards a surplus over the short to medium term, but different instruments can have different effects depending on how they shape private saving and investment decisions. The impacts of individual consolidation instruments over and above the general macro-economic effect are assessed based on the results

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[6] The assessment of the effect of instruments on income inequality draws largely on OECD (2012) and Rawdanowicz *et al.* (2013). Supporting material for the broad assessment summarised here is provided in Appendix 2, Section 3 of Cournède, Goujard and Pina (2013).

[7] The study however incorporates no assessment of the impact of public investment on inequality. At a conceptual level, the effect is ambiguous. By providing the basis for public capital services that are consumed without relation to income, public investment should promote equality in effective consumption. On the other hand, inasmuch as public capital is complementary to private capital and boosts returns on capital, it could work in the direction of exacerbating income inequality because of the concentration of control over private capital. While there is evidence in favour of net equality-enhancing effects of public investment in developing countries, there are no comparable findings for OECD countries.

[8] No positive or negative assessment is included for real estate taxes because of a lack of clear evidence. In most OECD countries, lower-income households pay a higher share of their income in recurring property taxes than higher income taxes, so that on this count recurring property taxes might be described as regressive. However, this situation largely reflects larger home ownership among retirees, implying that recurring property taxation is not necessarily regressive in a dynamic perspective, and may even be progressive if adjusting income fully for the market value of owner-occupied housing services.

reported in Kerdrain *et al.* (2010). Reductions in health care spending and in unemployment or disability benefits are likely to strengthen the current account through increased precautionary saving, whereas cutting pension benefits should lead to higher saving by the working-age population to smooth consumption over the life cycle. An increase in corporate taxation could improve the current account through lower investment (Schwellnus and Arnold, 2008; Vartia, 2008). Higher consumption taxes tend to penalise imports relative to exports, and thus may temporarily strengthen the current account, while the opposite holds for social security contributions.

3.4 A generic hierarchy of instruments

Based on the estimated impacts reported above, a generic hierarchy of consolidation instruments can be established (Figure 5). This is done simply by putting the same weight on each objective, assigning numerical values to the pluses and minuses and using the resulting scores to rank the instruments. The generic hierarchy puts no weight on the current-account because the pursuit of global rebalancing operates in opposite ways depending on the sign of the imbalance and not at all in countries that have broadly balanced positions. Instead, current-account effects enter at a more country-specific level (see further below).

A long-term variant of the generic hierarchy can also be established for the purposes of looking solely at very long-term consolidation strategies by considering only to long-term growth and equity effects. In this long-term variant, the instruments follow this ranking: 1) Subsidies, 2) Pensions, 3) Other government consumption, Unemployment benefits, Environmental taxes and Other property taxes, 7) Sickness and disability payments, Recurrent taxes on immovable property and Sales of goods and services; 10) Consumption, Personal income and Corporate income taxes; 13) Public Investment, Health services; 15) Family policy and Social security contributions; 17) Education.

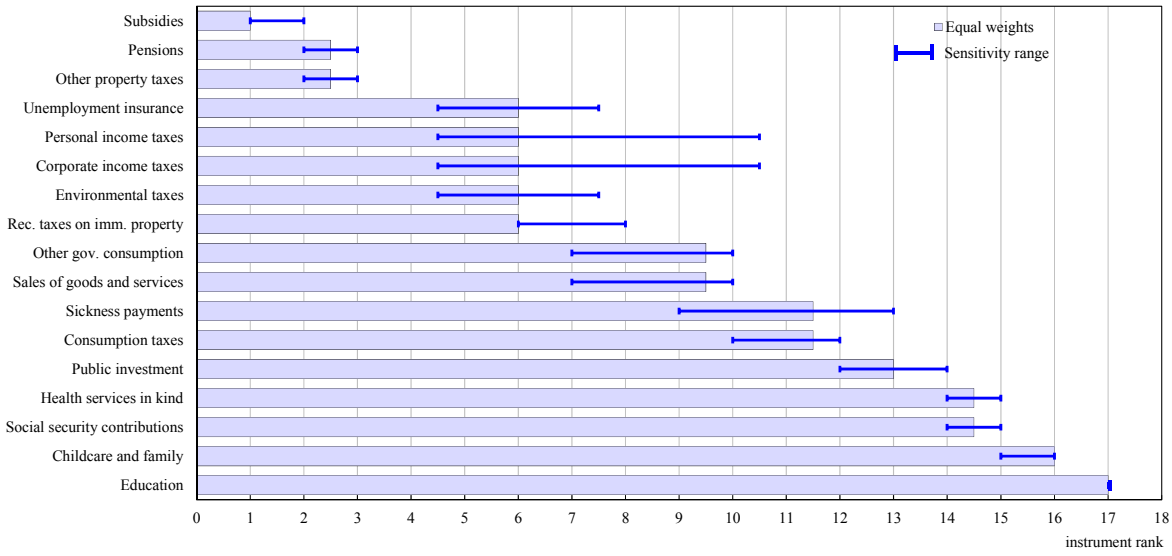
Figure 5 also illustrates the sensitivity of instrument rankings to different weighting schemes and to uncertainty about the assessment of effects. A certain degree of sensitivity is indeed observed as instruments score differently across objectives, but the ranking of most instruments remains broadly stable in particular at both ends of the spectrum (Figure 9). Reductions in subsidies and in pension spending as well as increases in other property taxes come out robustly as preferred consolidation instruments. At the lower end, spending cuts in the areas of education, health care and family policy, as well as hikes in social security contributions, appear as particularly unfavourable in terms of generating adverse side effects for growth and equity. In contrast, the middle part of the ranking is more fluid. Hikes in corporate and personal income taxes can take different places in the ranking depending on the weights given to objectives, reflecting that they raise severe trade-offs between output and equity considerations.

In addition to the arbitrary nature of the scoring and weighting scheme, considerable caveats surround the rankings above. They are based on an assessment of equity and growth effects of consolidation instruments which is drawn primarily from studies that estimate average effects in historical experience across countries. In practice, however, the growth and equity effects of instruments vary across countries: for instance, cutting investment in new roads in a country where highway density is already high should be less harmful to long-term growth than in a country with severe infrastructure gaps. Taking this cross-country variation into account is beyond the scope of this study, but it nonetheless goes beyond a pure one-size-fits-all approach. More specifically, the economic and social situation of countries in need of consolidation is taken into account by changing the weight of the different objectives, as is developed below. Also, the way in which the room for manoeuvre is evaluated for each instrument takes into account whether or not the level of taxation or spending in this area is particularly high in the country under consideration.

Figure 5

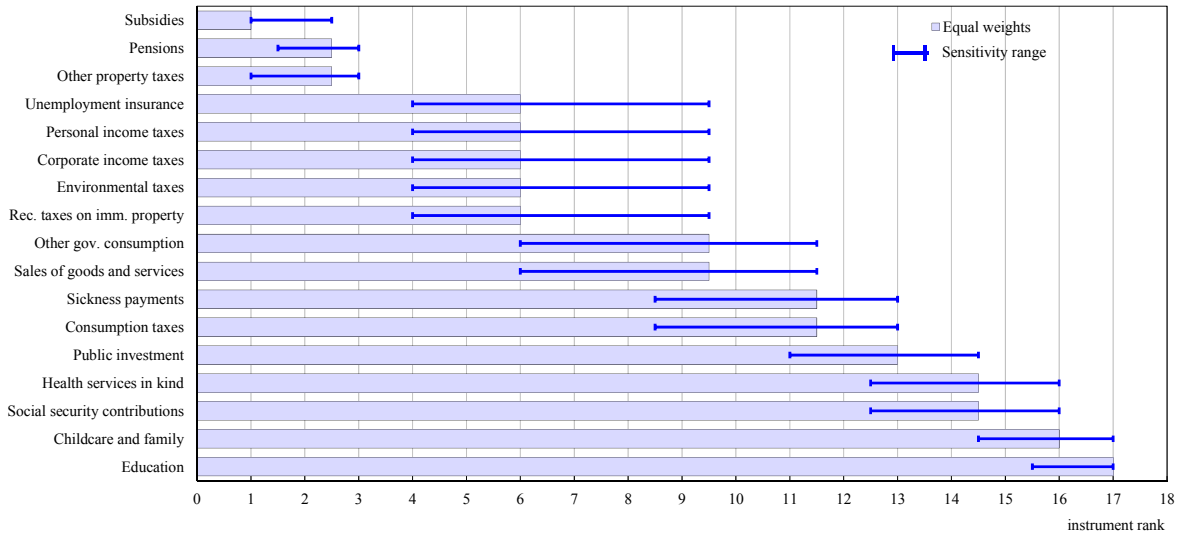
A Possible Generic Hierarchy of Consolidation Instruments and Its Sensitivity to Assumptions

A) Sensitivity to Uncertainty About the Weights Given to Objectives



Note: The rankings are based on the assessment in Table 2. Scores of +1 and -1 are given to each + and- signs respectively, each objective (except the current account) is given a weight, and the resulting indicator is used to rank instruments. For deriving ranges, weights ranging each from 0.15 to 0.55 and summing to unity have been given to each objective in 10,000 random draws. Weights have been restricted to no smaller than 0.15 because each objective is considered important. The sensitivity range displays the 10th and 90th percentiles of the instrument rankings.

B) Sensitivity to Uncertainty about the Assessment of Instruments (Pluses and Minuses) in Table 2



Note: The rankings are based on Table 2. Scores of +1 and -1 are given to each + and- signs respectively, each objective (except the current account) is given a weight of one quarter, and the resulting indicator is used to rank instruments. For deriving ranges, each individual instrument score along each objective shown in Table 2 is kept with a probability of ¾ or increased by +1 with a probability of ⅛ or reduced by -1 with a probability of ⅛ using in 10,000 random draws. The sensitivity range displays the 10th and 90th percentiles of the instrument rankings.

4 Adjusting instrument rankings for country-specific circumstances over the short to medium term

The generic hierarchy is adapted to country-specific circumstances by adjusting the weights put on growth, equity and global rebalancing objectives. Summary indicators are defined for each of the growth, equity and current account dimensions, and then used to compare country situations and form country groups. This makes it possible to derive a set of weights for each group and therefore a hierarchy of instruments for each group. While technically feasible, a country-specific ranking of instruments would give a false impression of accuracy with respect to country-specific instrument impacts and risk obscuring the substantial uncertainties and error margins of the exercise.

The group-specific rankings derived here will guide the choice of instruments for short- to medium-term consolidation in the illustrative simulations. In the long run, however, a single hierarchy of instruments (presented in Section 3) is assumed to apply. As further addressed below, this is because some of the dimensions taken on board to form country groups lose relevance as the time horizon expands (e.g., short-run growth and current account imbalances) while a solid basis is absent for giving differentiated weights to long-run growth impacts.

4.1 Characterising country circumstances

4.1.1 Short-run growth

This study attaches different weights to the short-run growth impacts of fiscal retrenchment depending on the degree of cyclical weakness faced by countries and their vulnerability to hysteresis.[9] A deeper negative output gap makes any short-run output losses from consolidation more painful, especially if fiscal multipliers of the Keynesian kind have become larger under such circumstances. Indeed, some recent studies find multipliers to be larger in recessions than expansions (Auerbach and Gorodnichenko, 2012; Baum *et al.*, 2012), particularly in a context of financial crisis with monetary policy constrained by the zero nominal interest rate bound (IMF, 2010; Christiano *et al.*, 2011; Corsetti *et al.*, 2012). In turn, hysteresis effects could translate short-run slack into permanently lower levels of potential output through channels such as higher structural unemployment and a smaller capital stock (Bouis *et al.*, 2012). The degree of trade openness influences multipliers and could be invoked as an argument for a lower weight on short-run activity in more open economies. However, this consideration is not allowed to affect rankings to avoid a beggar-thy-neighbour approach to consolidation, given that fiscal adjustment involves strong cross-country spillovers (Goujard, 2013).[10] Box 2 presents the indicator used to measure country circumstances.

4.1.2 Long-term growth

Assessing for which countries fiscal policy needs to be more supportive of long-run growth, with a concomitantly larger weight given to this objective, would be a hazardous task. Using weaker growth prospects as an argument for a larger weight runs into the difficulty that long-term growth projections are inevitably fraught with uncertainty and depend to a significant degree on policy assumptions in a wide range of areas, such as education, retirement age or product market

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[9] Besides affecting the choice of fiscal instruments, short-run growth impacts also have important implications for the optimal pace and timing of consolidation (Rawdanowicz, 2012), an issue from which this paper largely abstracts.

[10] Nevertheless, the generic ranking to some extent reflects whether activity impacts occur domestically or abroad because one of the reasons why multipliers vary across instruments is that they have different import propensities.

Box 2
Indicators Used to Characterise Country Circumstances

The following indicators are used to characterise country circumstances:

- Short-run growth: The average of two variables, the output gap in 2012 and the 2007-12 percentage point change in the long-term unemployment rate, is used as a synthetic indicator. The run-up in long-term unemployment is used as proxy of vulnerability to hysteresis, since it is a key variable in the transmission of short-run labour market slack to structural unemployment (Guichard and Rusticelli, 2010). While in principle levels would also provide an indication of the degree of hysteresis risk, the change is used in order to focus on impacts from the current crisis rather than pre-existing structural characteristics. The latter are better addressed through structural reforms in labour markets as well as in product markets and tax and welfare systems.
- The summary indicator used to capture inequality is the average of two statistics: the Gini coefficient and the relative poverty rate (defined as the share of the population with income below 60 per cent of the median). While the Gini coefficient encapsulates the whole income distribution, the relative poverty rate focuses on the lower tail. These two indicators are computed after taxes and cash transfers.
- External imbalances are assessed using Ollivaud and Schwellnus (2013) estimates of cyclically-adjusted current account balances, which correct headline balances for the difference in output gaps between countries: a country facing a deeper downturn than its trading partners will temporarily tend to post a headline current account stronger than the adjusted one, as imports become more depressed than exports. The summary indicator used is the average of two variables: the adjusted current account balance in 2012 as a percentage of both national GDP, and the same balance as a percentage of OECD GDP. The ratio of the cyclically adjusted current-account balance to OECD GDP, which captures the absolute size of imbalances, serves a proxy for their global implications which countries are assumed to internalise as part of the global rebalancing agenda.

To ensure comparability and avoid scale effects, the variables entering the indicators are normalised by subtracting their average and dividing the result by the standard deviation.

Source: Cournède, Goujard and Pina (2013).

and trade regulations (Johansson *et al.*, 2013). The long-term growth impacts of fiscal consolidation instruments are therefore deemed equally important for all countries.

4.1.3 Income distribution

The impacts of fiscal instruments on income distribution arguably gain increased prominence in more unequal countries. The links between inequality, growth and welfare are admittedly complex, and, to some extent, inequality differences across countries are rooted in social preferences, so that strong opposition to regressive changes might arise at comparatively low levels of inequality in strongly egalitarian societies. Still, beyond certain levels, inequality, and particularly poverty, may be bad for growth. Channels of transmission of inequality's detrimental effects include hampered investment in human capital, an area where inequalities can be self-perpetuating (Causa and Johansson, 2009; Hoeller *et al.*, 2012).

4.1.4 Current account balances

Addressing significant external imbalances is also a widely shared objective of economic policy (G20, 2009), which calls for taking account of the current account impacts of different budget items when designing consolidation strategies. Imbalances carry risks for the individual countries concerned (the prospect of a hard landing for debtors, or growing credit risk for surplus countries), all the more so when they are particularly large, but also for the global economy (OECD, 2012a).

4.2 Hierarchies of instruments for groups of countries

A cluster analysis has been performed to identify groups of countries that share similar characteristics regarding short-term growth, equity and external imbalances (see Box 3 in Cournède, Goujard and Pina, 2013 for details about the clustering technique employed). Based on the summary indicators discussed above, five clusters have been identified:

1) The first cluster is formed by eleven geographically dispersed countries (Australia, Canada, Estonia, Israel, Italy, Japan, Korea, New Zealand, Poland, Portugal and the United Kingdom), which mainly have in common above-average levels of inequality. Short-term growth risks are generally moderate (Italy and Portugal being exceptions) and current account positions, though with considerable heterogeneity, do not include cases of extreme imbalances and are on average fairly close to balance.
2) The United States finds itself alone in the second cluster, as the sheer absolute size of its current account deficit places it at a considerable distance even from other deficit countries. Inequality is high and cyclical developments carry potentially substantial hysteresis risks although the materialisation of these risks would run counter to historical experience.
3) The third cluster comprises three euro area members from the geographical periphery (Greece, Ireland and Spain) sharing very high cyclical slack and hysteresis risks. Greece and Spain (but not Ireland) also display above-average inequality and large underlying external deficits.
4) A fourth cluster is formed by eleven European countries: Austria, Belgium, the Czech Republic, Denmark, Finland, France, Hungary, Iceland, Norway, Slovakia and Slovenia. It is the most egalitarian cluster. As in the first group of countries, current account imbalances are on average small, though with significant intra-group heterogeneity,[11] and short-term growth risks are generally moderate.
5) The fifth and final cluster comprises five countries, Germany, Luxembourg, the Netherlands, Sweden and Switzerland, all with large current account surpluses. Inequality levels are below-average and short-term growth vulnerability risks are among the lowest in the OECD.

For each of these clusters, specific weights are calculated for the short-term growth, equity and current-account objectives (Table 3). The weights depend on the degree to which each objective is relevant for the cluster as a whole in comparison with the other objectives (but do not compare the importance of each objective across different clusters of countries). For instance, short-run growth will attract a strong weight in groups of countries where cyclical weakness and hysteresis risks – whether very high in themselves (cluster no. 3) or only moderate (cluster no. 4) – are clearly a more important concern than equity or current account issues. Similarly, the high weight attached to the current account objective in cluster no. 5 stems from the contrast between

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[11] As is well known, Norway has a huge current account surplus (at an estimated 17 per cent of 2012 GDP in cyclically adjusted terms). However, unlike the other surplus countries covered by this study, this large positive current-account balance is largely due to the exploitation of finite natural resources (oil and gas). As the Norwegian external position reflects exceptional circumstances, it has not been taken into account when forming clusters.

Table 3

Weights Put on the Growth, Equity and Current Account Dimensions Across Groups of Countries

Cluster	Countries	Growth		Equity		Current Account
		Short Term	Long Term	Short Term	Long Term	Short Term
1	Australia, Canada, Estonia, Israel, Italy, Japan, Korea, New Zealand, Poland, Portugal, United Kingdom	0.13	0.25	0.30	0.30	0.01
2	United States	0.13	0.25	0.21	0.21	0.20
3	Greece, Ireland, Spain	0.29	0.25	0.18	0.18	0.10
4	Austria, Belgium, Czech Republic, Denmark, Finland, France, Hungary, Iceland, Norway, Slovak Republic, Slovenia	0.47	0.25	0.14	0.14	0.00
5	Germany, Luxembourg, Netherlands, Sweden, Switzerland	0.12	0.25	0.15	0.15	0.33

large surpluses and mostly benign short-term growth and equity outlooks. As mentioned above, the same weight (25 per cent) is given to long-term growth in all clusters. These cluster-specific weights are used to aggregate the pluses and minuses reported on Table 2 and give score to instruments and rank them.

Table 4 displays the ensuing cluster-specific instrument rankings. Rank variation across country groups is smallest for those instruments that have similar impacts on virtually all objectives, such as education, subsidies or property taxes, and widest for instruments with the sharpest trade-offs between growth, equity and the current account. For instance, personal and corporate income taxes come out as good candidate instruments for cluster 1, where equity objectives carry a high weight, but much less so for groups of countries such as those forming clusters 4 and 5 where relatively equal income distribution is assumed to lead to less emphasis on outcomes in this area.

5 How far down instrument rankings do countries need to go? Some illustrative simulations

In this section simulations are performed to investigate how far down instrument rankings countries will need to go in order to meet their consolidation needs. Countries are assumed to implement budget tightening according to the relevant instrument ranking, i.e., to start by adjusting the most beneficial (or least detrimental) instrument and only proceed down the list after exhausting the estimated room for manoeuvre available in the preceding instrument. In practice, implementing this approach would raise political-economy challenges: the top ranking instruments tend to be either streams of spending accruing to politically powerful constituencies, such as subsidies or pensions, or forms of taxation where planned increases often meet with strong resistance, such as property taxes. Nonetheless, it may still provide a useful benchmark for considering a consolidation strategy.

Table 4

Possible Hierarchies of Consolidation Instruments for Groups of Countries

Instruments	Generic Ranking	Cluster-specific Ranking					Long-term Ranking
		1	2	3	4	5	
Subsidies	1	1	1	2	2	1	1
Pensions	2-3	3	2	1	1	3	2
Other property taxes	2-3	2	3	3	3	2	3-6
Unemployment benefits	4-8	7	4	4	4	9	3-6
Personal income taxes	4-8	5	8	9	9-10	8	10-12
Corporate income taxes	4-8	4	5	7	9-10	12	10-12
Environmental taxes	4-8	8	6	5	4	4	3-6
Recurrent taxes on immovable property	4-8	6	7	6	6	5	7-9
Other government in kind consumption	9-10	9	9	11	11	6	3-6
Sales of goods and services	9-10	10	10	8	7	7	7-9
Sickness and disability payments	11-12	13	11	10	8	11	7-9
Consumption taxes (other than environmental)	11-12	11	12	12	12	13	10-12
Public investment	13	12	13	13	15	15	13-14
Health services provided in kind	14-15	14	14	14	16	16	13-14
Social security contributions	14-15	15	16	15	13	10	15-16
Family	16	16	15	16	14	14	15-16
Education	17	17	17	17	17	17	17

Note: The rankings are based on the assessments in Table 2 with scores of +1 and -1 given to each + and – signs, respectively, and weights resulting from the cluster analysis (see Cournède, Goujard and Pina, 2013). The current account scores of Table 2 switch sign for surplus clusters. The long-term ranking in the final column is based on equal weights given to impacts on long-term growth and equity. Cluster 1 regroups Australia, Canada, Estonia, Israel, Italy, Japan, Korea, New Zealand, Poland, Portugal and the United Kingdom. Cluster 2 includes only the United States. Cluster 3 comprises Greece, Ireland and Spain. Cluster 4 is formed by Austria, Belgium, the Czech Republic, Denmark, Finland, France, Hungary, Iceland, Norway, Slovakia and Slovenia. Cluster 5 is made up by Germany, Luxembourg, the Netherlands, Sweden and Switzerland.

The analysis is conducted separately for the short to medium term and for the long term, and requires three building blocks, themselves differentiated according to the respective time dimension: *i)* estimated consolidation needs for both horizons, as presented in Section 2; *ii)* a hierarchy of instruments, which is common to all countries in the long-run simulation (as presented in section 3) but varies across clusters in the short to medium term (Table 4 and Section 4); *iii)* estimates of the available margin for adjustment in each instrument, which is discussed next.

5.1 Room for manoeuvre in instruments[12]

Although it is an important building block when drawing up an illustrative consolidation plan, estimating the room for manoeuvre for each policy instrument – or, put differently, the margin of feasible adjustment – is necessarily judgemental. As such, it can only be done in an indicative and approximate way that is to some degree arbitrary. In a cross-country setting, it is impossible to fully account for the economic circumstances, social preferences and institutions which, in each country, shape the relative size of budget items. At one extreme, it could be assumed that the current structure of budgets already equalises the marginal costs and benefits of adjusting the different instruments (whose growth and equity impacts vary across countries, as acknowledged above), and is therefore optimal. If so, consolidation should be pursued, at least at the beginning, through a proportional adjustment of budget items. At another extreme, the budget structure status quo, hard to change as it may be, could be viewed as the suboptimal outcome of political and institutional distortions, the correction of which would require sweeping changes. For instance, it could be the case that property taxes should be increased further even in countries where they are already high by international comparison.

This exercise attempts to strike a balance between the above considerations by assuming that there is some margin, albeit limited, to scale back expenditure items that are large relative to a significant number of other OECD countries and similarly to increase revenue streams that are relatively low. One reason for not pushing adjustment along each individual item too far is that the positive and negative assessments underpinning the rankings can be expected to be most reliable in relatively standard situations. The effects may change if adjustment along one item takes a country to a more extreme situation. For instance, up to a point reducing spending on unemployment benefits improves incentives to take up a new job and boosts long-term output through higher employment, but if cuts are pushed too far they can impair the quality of labour market matches and harm output through lower productivity while also resulting in insufficient macroeconomic stabilisation. On the tax side, marginal rate increases from a high starting point are more distortive than from a low-rate baseline. At the same time, social preference and political feasibility considerations call for putting an upper bound on the amount of change to any spending cuts (tax hikes) in a given item, no matter how high (low) the departure point is.

In operational terms, two constraints are imposed on instrument use. First, the simulations assume that a spending instrument can be used up until the point where the country would join the group of the ten covered OECD countries where governments spend least, relative to GDP, in the area under consideration. Similarly, a revenue-side instrument can be used by hiking taxes or raising user charges until it would make the country one of the top-ten OECD countries in terms of revenue raised from this particular tax or charge relative to GDP. This constraint implies that each instrument is unavailable to one third of the covered countries. Secondly, an additional constraint is imposed on the room for manoeuvre by stipulating that a change in an instrument cannot exceed the standard deviation of the cross-country distribution of the GDP share of the instrument. This

[12] More detailed information on the assumptions and methodology used to define the room for manoeuvre for individual instruments is found in Box 4 of Cournède, Goujard and Pina (2013).

BOX 3
DEFINING THE ROOM FOR MANOEUVRE FOR EACH INSTRUMENT

Simulations assume that room for manoeuvre exists in a revenue instrument if a country does not belong to the group of ten OECD countries with the highest ratio of receipts from this tax to GDP. In technical terms, room for manoeuvre is available if the country is below the 66th percentile in the cross-country distribution of cyclically-adjusted receipts from this instrument as a share of potential GDP. Similarly, room for manoeuvre on the spending side exists if a country is above the 33rd percentile in the cross-country distribution of cyclically-adjusted spending on this instrument as a share of potential GDP. The room for manoeuvre is given by *i)* the gap between the value in the country under consideration and the 66th or 33rd percentile or by *ii)* the standard deviation of the cross-country distribution of the instrument at hand, whichever is smallest. It turns out that this simulation design imposes only a moderate degree of convergence in budget structures across countries.

A few additional adjustments have been made to makes the simulations more realistic:

- Spending on pensions, education and unemployment benefits as a share of potential GDP has been corrected for the number of potential beneficiaries, defined in terms of age cohorts or labour market status. For instance, this acknowledges that, all else equal, a higher NAIRU implies a smaller room for manoeuvre in reducing the unemployment benefits bill.
- Further to the above correction, a special adjustment is made to reduce the available room for cuts in pension spending to acknowledge that the baseline already incorporates significant effort. More specifically, the reform effort already incorporated into the baseline is deducted from the room for manoeuvre in this area. In addition, in the short to medium term, the room for manoeuvre is set at a quarter of its long-run value, as the budget savings from most measures in this area (e.g., raising the retirement age, or lowering the replacement rate for new retirees) will only accrue gradually over time.
- Leeway for raising personal income tax and social security contributions is assessed by looking at these two revenue sources jointly because of their strong substitutability. For instance, a country that raises very low amounts of social contributions may nevertheless have little room for manoeuvre along this instrument if it has very high personal income taxation, as is the case in Denmark.

Cournède, Goujard and Pina (2013) provide additional detail about the calculation of the room for manoeuvre.

constraint is aimed at avoiding too radical shifts in budget composition that may be interpreted as conflicting with social preferences as reflected in existing budget structures. Box 3 provides more information about the way in which the room for manoeuvre is estimated while Cournède, Goujard and Pina (2013) present the methodology in full.

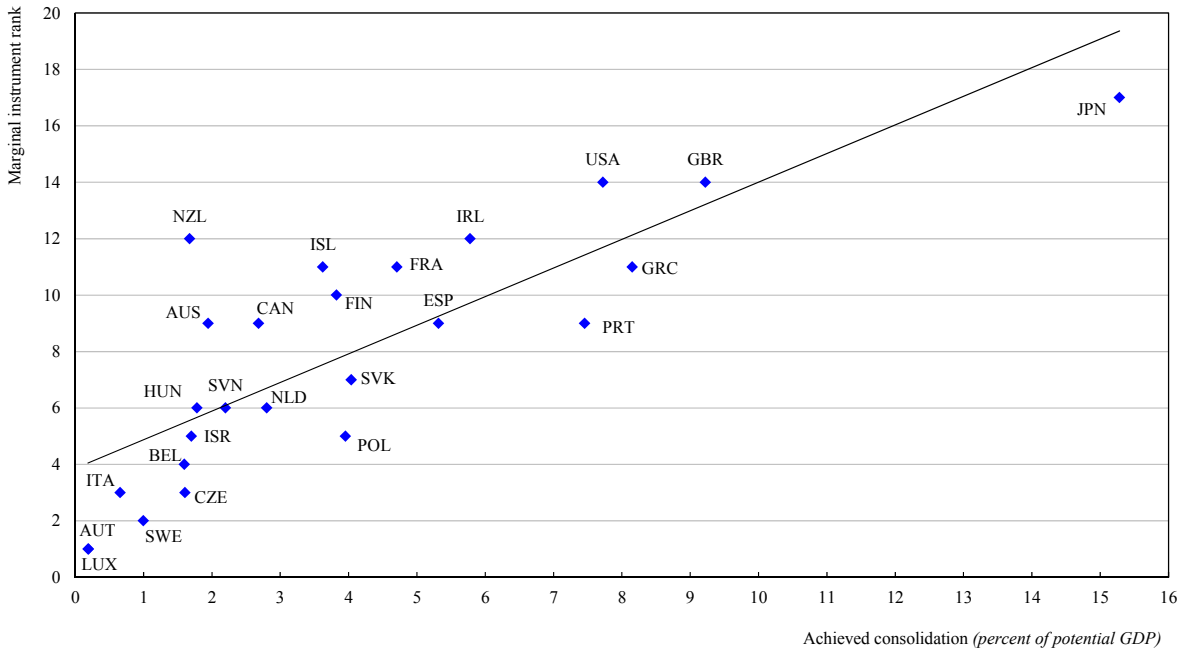
5.2 Meeting consolidation needs

5.2.1 Short- to medium-term consolidation needs

Under the simulation design outlined above, almost all countries have scope to meet their short- to medium-term consolidation needs within the constraints put on instrument use. The only

Figure 6

Marginal Instrument Rank and Achieved Short- to Medium-term Consolidation



exception is Japan where the constraints imposed by the chosen simulation design limit consolidation to 15 per cent of GDP against an estimated need of 18.5 per cent. This discrepancy implies that, in practice, the constraints imposed on instrument use would have to be eased.

However, even when fully meeting consolidation needs, several countries are forced to resort to a significant degree to instruments which lie towards the bottom of their respective instrument hierarchies (Table 4), and thus generally have an overall detrimental impact on objectives. On the basis of the marginal (*i.e.*, worst) instrument used (Figure 6), as well as the full consolidation packages pursued (Tables 7 to 11 in the Appendix), three groups of countries can be identified:

- Sixteen countries (Australia, Austria, Belgium, Canada, Czech Republic, Hungary, Israel, Italy, Luxembourg, Netherlands, Poland, Portugal, the Slovak Republic, Slovenia, Spain and Sweden) only need to use instruments featuring in the top half (first nine places) of their respective cluster-specific rankings. All these countries have short- to medium-term consolidation needs which do not exceed 3 percentage points of potential GDP. Though the simulated adjustment is not without economic costs, these will be mainly of a Keynesian nature, while negative impacts on equity or on long-term growth will be absent or, at worst, limited.
- Six countries (Finland, France, Greece, Iceland, Ireland, and New Zealand) use marginal instruments placed in the lower half of the respective cluster-specific hierarchies (ranked 10th or worse), but manage to implement consolidation packages where more than 50 per cent of the adjustment comes from instruments in the upper half. While the use of detrimental instruments remains moderate, fiscal tightening will entail costs which go beyond short-run aggregate demand, raising concerns about impacts on equity and long-term growth.
- Three countries (Japan, United Kingdom and the United States) have to resort to marginal instruments ranked 14th or worst, with more than 50 per cent of pursued consolidation packages consisting in the use of instruments placed in the lower half of rankings. Short- to medium-term

consolidation therefore presents considerable challenges for these countries as it appears difficult to avoid potentially strong detrimental effects on both growth and equity.

Among the countries covered in this study, six do not need any short- to medium-term fiscal tightening (Denmark, Estonia, Germany, Korea, Norway and Switzerland) so that no packages have been simulated for them.

5.2.2 Long-term needs

Despite generally larger consolidation needs in the long run, all countries can meet them fully while complying with the constraints imposed by the simulation design. However, as with short- to medium-term consolidation packages, there is a risk of significant negative impacts on equity and long-term growth for some countries. As above, one can identify three groups of countries according to their marginal instrument (Figure 7) and full consolidation packages (Appendix, Table 12):

- Twenty countries (Austria, Belgium, Canada, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Korea, Luxembourg, Netherlands, Poland, Portugal, Slovenia, Sweden and Switzerland) with low or moderate consolidation needs enjoy the favourable position of only having to use instruments in the upper half (top nine places) of the uniform long-run hierarchy, of which the overall impact on long-run growth and equity can be deemed mostly beneficial or fairly neutral.[13]
- Six countries (Ireland, Israel, Japan, Slovak Republic, Spain and the United Kingdom) resort to marginal instruments in the lower half of the ranking (10^{th} to 17^{th} places), which may entail more detrimental consequences for growth and equity objectives. However, these countries have consolidation packages where more than half (and in some cases virtually all) of the adjustment comes from better instruments (those in the upper half of the hierarchy).
- Three countries (Australia, New Zealand and the United States) with large long-term consolidation needs face the unpleasant prospect of both employing low-quality marginal instruments and letting poor instruments (those in the lower half of the ranking) account for more than half of the total fiscal adjustment. Therefore this group faces a substantial risk of overall negative impacts of consolidation on growth and equity.

With the assumptions outlined above, Italy and Norway have no estimated long-term consolidation needs and therefore no simulated packages at that horizon.

Despite estimated consolidation needs being generally larger in the long than the short run, more countries rely fully on well ranked instruments in their simulated long-term packages than in the short- to medium term ones. One reason is that other government consumption, an area with substantial consolidation potential in many countries, is much better ranked in the long term when demand effects are no longer taken into account. Another reason is that the simulations are designed to offer more room for adjustment in public pension spending in the long than the short term, reflecting that expenditure savings in general accrue gradually in this area. Finally, more countries are estimated to face positive consolidation needs in the long than the short term.

At either simulation horizon, countries facing the unpleasant prospect of having to resort on a large scale to low-ranking instruments have two non-mutually exclusive options. The first, further

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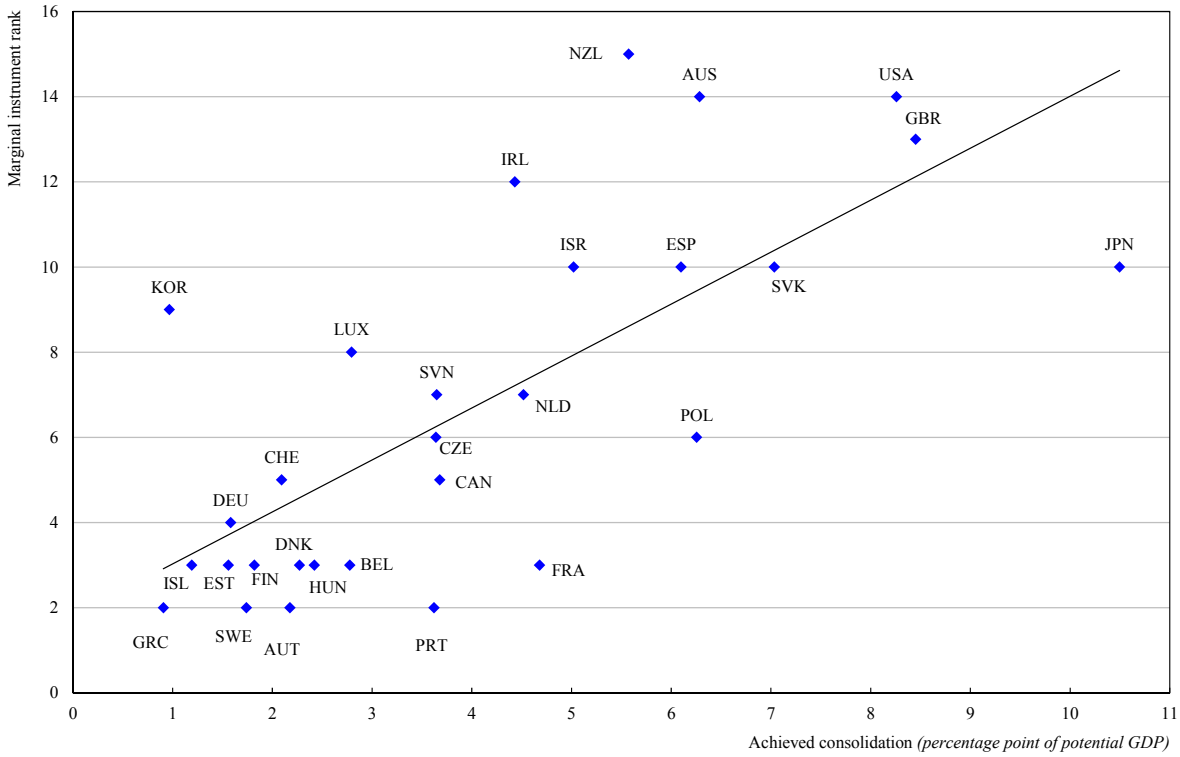
[13] The top nine instruments have either (*i)* beneficial impacts on both long-term growth and long-term equity (Table 2), as is the case of subsidy reduction, (*ii*) impacts which are beneficial on one objective and fairly neutral on the other, as it happens with other government consumption, or (*iii*) opposite impacts on long-term growth and long-term equity which can somehow be regarded as compensating each other, sickness and disability payments being an example, Implicit in this "compensation" argument is the use of +1 and –1 scores for each + and – sign in Table 2, which is admittedly a simplifying assumption, rather than an attempt to calibrate a social welfare function.

Figure 7

Marginal Instrument Rank and Achieved Long-term Consolidation



discussed in Section 6, is to supplement the use of such instruments by structural changes that make them more growth- or equity-friendly. The second option is to use the best instruments more intensively than implied by the somewhat arbitrary constraints. The simulation design implies that countries such as Australia, New Zealand and the United States which start out with an above-average use of the least detrimental forms of taxation or below-average spending in the least effective areas tend to lack room for manoeuvre in the best budget instruments. If the constraint that adjustment cannot take a country into the group of the ten OECD countries that tax most or spend least in the area of under consideration is relaxed by moving from ten- to five-country reference groups, then New Zealand and the United States achieve close to half of their simulated long-term consolidation with well ranked instruments while this proportion rises to almost three quarters in Australia.

5.3 Patterns of instrument use in simulated short- and long-term consolidation packages

The sequential nature of instrument use in the simulations, based on hierarchies which have strong resemblances across groups of countries (in the short to medium term) or are even common to all countries (in the long run), results in some instruments featuring much more often than others in consolidation packages. As a consequence, revenue and expenditure structures evolve and undergo some convergence across countries. While this subsection discusses general trends across countries, Tables 7-12 in the Appendix provide detailed information by country about the illustrative consolidation packages.

In the short to medium term, subsidy reduction and hikes of other property taxes are the most widely used instruments (Table 5). Spending reductions on unemployment benefits and pensions as well as increases in environmental taxes, corporate and personal income taxes, and recurring property taxes come next in frequency of use. Cuts in the areas of health, education and family policy are very rare in simulated packages, as are increases in social security contributions, reflecting their negative side-effects across the growth and equity dimensions.

The simulated long-term consolidation packages exhibit some differences from their short- to medium-term counterparts for two main reasons:

- Firstly, instruments resulting in cuts to public expenditure move up the ranking in the long term as their larger Keynesian demand effects are no longer taken into account. Cuts in other government consumption as a result play a much more important role in long- than in short-term simulated packages.
- Secondly, more room for manoeuvre is assumed to be available in the area of pensions (over and above the effort implicit in the baseline) in a 2060 perspective than over the medium term. Consequently, pensions are used more intensively to meet consolidation needs in the long than the short term.

These two factors result in a number of policy reversals, that is to say cases where a given country makes a larger use of a given instrument in the short to medium term than in the long term. Such policy reversals mainly concern taxes, and in particular property and corporate income taxes (Table 4), which generally fall from the upper to the lower half of instrument hierarchies as the time horizon expands.

As a result from this shift in the use of consolidation tools, the average share of spending reductions across national consolidation packages rises from 41 per cent in the short to medium term to 65 per cent in the long term. At both simulation horizons, the share of spending is particularly high among countries with modest consolidation needs, which to a large extent can be fulfilled with instruments like subsidies or pensions, which occupy top places in most rankings. In contrast, countries with substantial consolidation gaps often need to use large tax items as well, leading to a more balanced revenue-expenditure split or even to revenue-side adjustment becoming predominant.

If implemented, the simulated consolidation packages would not fundamentally alter the size of government and the structure of public finances in covered OECD countries. On average, total primary spending, adjusted for the cycle, barely changes between 2012 and 2060 (Table 6). Given the projected increase in health and long-term care spending incorporated in the baseline, this overall long-term stability masks a significant reduction in government expenditure outside the health sector. The long-term increase in taxation is very limited at only about one per cent of GDP, but in the short to medium term, however, the need to purge excess debt leads to a temporary additional increase in taxation. Despite being anchored on the same assessment of the impacts of consolidation instruments, the simulations largely respect the cross-country diversity in government spending and revenue items. The standard deviations reported in Table 6 make apparent that the degree of convergence is very small for most instruments and quite modest for three instruments that show strongest long-term convergence (pensions, other government consumption and consumption taxes). Looking at the level of individual countries, the long-term simulations seldom use any instruments for more than 2 per cent of GDP: the only such instances are pensions in Japan, Poland and France, other government consumption in Canada, Israel, the Netherlands and the United Kingdom, and personal income taxes in Japan.

Table 5

Summary Indicators About Consolidation Packages

	Number of Countries Using Instrument		Average Use Among Countries Using Instrument *(percent of GDP)*		Number of Countries with Policy Reversals
	Short Term	**Long Term**	**Short Term**	**Long Term**	
Subsidies	14	15	0.6	0.6	0
Pensions	11	12	0.5	1.7	0
Other property taxes	16	11	0.4	0.4	8
Unemployment benefits	11	13	0.6	0.5	3
Personal income taxes	9	7	1.9	1	6
Corporate income taxes	11	5	0.5	0.2	10
Environmental taxes	13	11	0.6	0.5	6
Recurrent taxes on immovable property	9	4	0.8	0.7	6
Other government in kind consumption (excluding family policy)	8	14	1	1.4	4
Sales of goods and services	7	7	0.6	0.7	2
Sickness and disability payments	4	7	0.4	0.5	2
Consumption taxes (other than environmental)	4	8	1.9	1.3	2
Public investment	4	4	0.5	0.5	3
Health services provided in kind	3	4	1.4	0.6	0
Social security contributions	1	0	0.9	0	1
Family	0	1	0	0.5	0
Education	1	0	0.3	0	0

Note: Instruments are ranked as in Figure. 8. ST and LT denote respectively short to medium term and long term. All figures in the table refer to the 24 countries common to both simulation horizons. Average shares of instruments are computed across national consolidation packages (Tables 7-12 in the Appendix). Policy reversals (cases of stronger instrument use in ST than in LT) exclude cases solely due to a smaller room for manoeuvre (*i.e.* in both ST and LT instrument use exhausts the available room for manoeuvre, which is smaller in LT than in ST).

Table 6

Evolution of Expenditure and Revenue Structures
(percentage points of potential GDP)

	2012		2020		2060	
Expenditure	**Average**	**Standard Deviation**	**Average**	**Standard Deviation**	**Average**	**Standard Deviation**
Public investment	2.6	1.0	2.5	0.9	2.4	0.9
Education	5.3	1.1	5.2	1.1	5.3	1.1
Health services provided in kind	6.5	1.4	6.4	1.3	9.5	1.2
Other in kind consumption	8.4	2.4	8.2	2.4	7.7	2.0
Pensions	8.1	3.3	7.9	3.1	7.2	2.8
Sickness and disability payments	2.0	0.6	1.8	0.5	1.8	0.5
Unemployment benefits	1.1	0.9	0.8	0.7	0.9	0.7
Family policy	2.4	1.1	2.4	1.1	2.4	1.1
Subsidies	1.2	0.8	0.8	0.6	0.8	0.5
Residual	4.7	1.4	4.5	1.4	4.4	1.4
Total primary spending	42.2	5.5	40.5	5.5	42.3	5.4
Revenue						
Personal income taxes	8.6	3.3	9.2	3.0	8.6	3.3
Social security contributions	11.2	5.4	11.2	5.4	11.2	5.3
Corporate income taxes	2.9	0.9	3.2	0.7	2.9	0.9
Environmental taxes	2.3	0.7	2.6	0.5	2.7	0.4
Consumption taxes	9.0	2.4	9.3	2.0	9.6	1.8
Recurring property taxes	1.3	1.0	1.4	0.9	1.3	1.0
Other property taxes	0.7	0.6	1.0	0.5	0.8	0.5
Sales of goods and services	2.8	1.0	3.0	0.9	3.0	0.9
Residual	1.5	1.0	1.6	1.0	1.6	1.0
Total primary revenue	40.2	6.2	42.6	5.4	41.7	5.0

Note: The table reports the average size and cross-country standard deviation of spending and revenue areas among the 24 countries common to both short- and long-term simulation horizons. Figures for 2012 are adjusted for cyclical effects as detailed in Appendix 2 of Cournède, Goujard and Pina (2013). Figures for 2020 and 2060 reflect baseline developments in health spending as well as the consolidation packages implemented by each country in the short to medium term and in the long term, respectively. For simplicity (in particular to ensure that the averages and standard deviations are calculated using figures with baseline positions that are comparable across countries), the year 2020 is taken as the medium-term consolidation horizon, though the latter varies somewhat across countries.

5.4 Robustness of the simulated consolidation packages

Extensive checks have been performed to test the robustness of the findings to uncertainty about the assessments of the side-effects of consolidation instruments. A large number of alternative scenarios have been simulated: in each of these, one in every four assessments in Table 2 (the equivalent of a full column) is chosen randomly and modified by adding a plus or minus sign. For each random draw, cluster-specific and long-term rankings corresponding to the new assessment of impacts are calculated, and full consolidation packages are simulated for the short to medium term as well as the long term. Cournède, Goujard and Pina (2013) report detailed results showing how all the numerical results in the above tables are affected by such modelled uncertainty. The conclusions from this extensive robustness checking can be summarised as follows:

- The degree to which countries have to use poorly ranked instruments, or can avoid doing so, is robust to uncertainty about impact assessments. In particular, in the alternative scenarios, there is almost no shift from being able to achieve most of the consolidation with well ranked instruments to being forced to rely heavily on badly ranked instruments, neither is there significant movement in the opposite direction.
- The average use of each instrument is quite stable across alternative scenarios for both very well and very poorly ranked instruments. There is more variation for middle-ranked instruments.
- The finding that short- as well as long-term simulated consolidation packages very seldom involve cuts in the areas of health, education and family policy holds very strongly in the robustness checks.
- While the split between spending and tax adjustment shows sensitivity to uncertainty, especially at the country level, the findings that long-term packages rely more on spending reductions than tax increases and that short-term adjustment give a larger role to tax increases are very robust.
- Policy reversals show some sensitivity to uncertainty. The reason is that policy reversals occur mostly for instruments that feature in the middle of the generic ranking, which is the most unstable part of the ranking.

In addition, a variant of the short- to medium-term simulation of consolidation packages has been performed to check the sensitivity of the results to the weights put on objectives as a result of the clustering techniques. These alternative simulations replace the clustering analysis with three simple country groups (strongly positive, strongly negative and close-to-balance current account positions) and uniform weights. The results for this variant, which Cournède, Goujard and Pina (2013) report in full, are relatively close to the main set of short- to medium-term simulations and corroborate its main findings although they take country circumstances less well into account.

Finally, variants of the short- to medium-term and long-term simulations have been conducted to explore the influence of the constraints on instrument use. The constraint that a given instrument can be used until the country joins the group of the ten covered OECD countries with the highest levels of taxation (or lowest level of spending) in the area under consideration has been relaxed by narrowing these reference groups to a size of five countries. In the short- to medium-term as well as the long-term simulations, relaxing the constraint on instrument use in this manner makes it possible for countries to make much more of their adjustment with well ranked instruments (see Cournède, Goujard and Pina, 2013, for detailed results). At the other extreme, another possibility would be to constrain the room for manoeuvre at the median of OECD countries. In other words, for a tax instrument, the adjustment would be allowed only as long as a country does not raise more revenue with it, as a share of GDP, than half the OECD countries covered in the study. For a spending instrument, the limit on the room for manoeuvre would be to spend no less in this area than half the covered OECD countries. The asterisks appearing in the Tables 7-12 of the Appendix indicate all cases where the adjustment along one instrument crosses

the median. The large number of asterisks in these tables illustrate that crossing the median is common in the simulations. Consequently, constraining the adjustment to stop at the median would result in much greater use of poorly ranked instruments.

6 The case for combining structural reforms and fiscal adjustment

The consolidation strategies identified in the previous section were designed with no consideration given to the scope for achieving efficiency gains. Cuts in expenditures were assumed to entail corresponding reductions in the provisions of public services (or benefits in the case of transfers) and increases in revenues were assumed to come through higher tax rates. This section looks at the scope for potential efficiency gains in selected spending or tax areas where estimates are available. Some of the estimated gains reported below may indeed have been used already, not least as a response to the crisis (OECD, 2013b).

Structural reforms, while desirable in their own right, can also ease the trade-offs between consolidation, equity and long-term growth objectives. Compared with pure budgetary changes, structural reforms in the area where taxes are raised or spending reduced can alleviate negative side-effects. In the most favourable cases, structural reform can even eliminate trade-offs and bring fiscal improvements as well as progress along growth or equity goals. Consistent with this view, some studies find that structural reforms make fiscal consolidation more likely to succeed (Alesina and Ardagna, 2012; Mauro, 2011).

Structural reforms can also contribute to fiscal consolidation directly. Structural reforms that boost private-sector employment are likely to improve the budget balance permanently (OECD, 2013b). The improvement results from tax base extension and lower spending on unemployment benefits, although the reform itself can involve budgetary costs, some of a temporary nature to facilitate implementation, some permanent (such as for instance greater expenditure on active labour-market policies or childcare). Structural reforms that improve productivity in general cannot be expected to result in permanently improved budget balances as public-sector wages and transfers catch up with higher private-sector wages over time. Nevertheless, by providing a boost to the level or growth rate of GDP, productivity-enhancing structural reforms have the potential to improve public debt dynamics and thereby reduce consolidation needs.

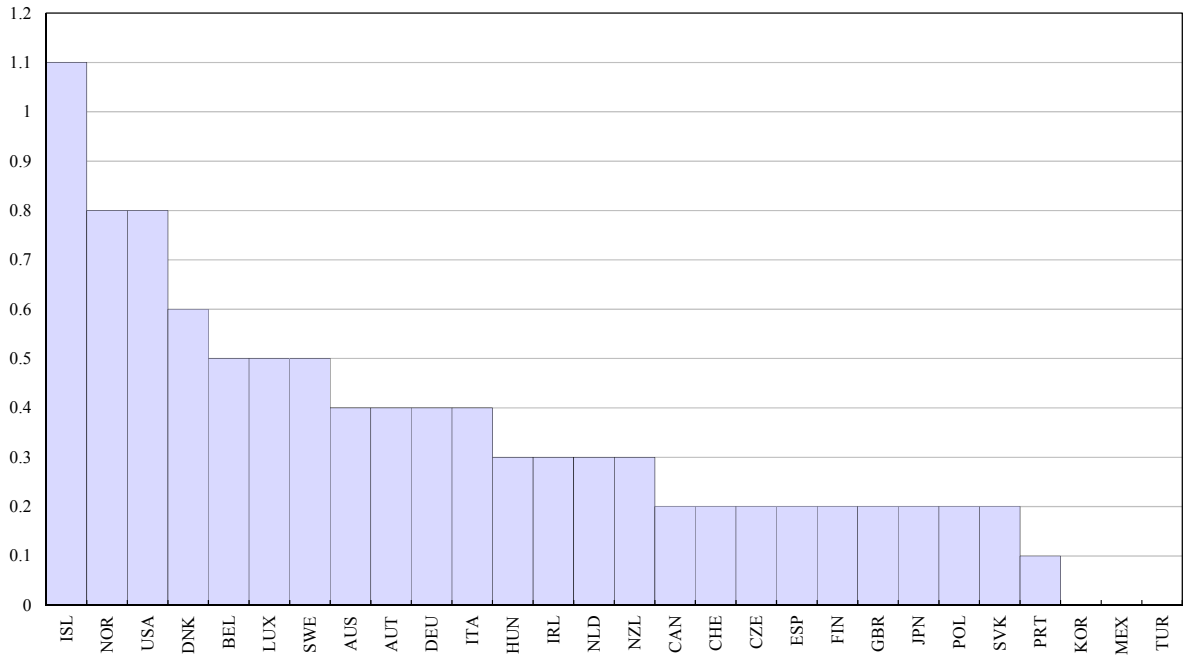
6.1 Structural reforms to accompany reductions in selected individual spending areas

At a general level, structural reforms that improve efficiency in the delivery of public services can reduce the adverse growth impact of spending cuts in productive areas of government spending. Similarly, the negative equity impact of spending cuts can be headed off by structural reforms that ensure a better targeting of public services and transfers and stimulate labour supply.

In **education**, structural reforms can bring benefits along all fiscal, growth and equity dimensions. For instance, introducing tuition fees in higher education coupled with means-tested grants or loan guarantees can improve public finances, possibly spur growth by encouraging tertiary schooling completion and educational investment in areas with greater economic potential and help to correct the regressive impact of public spending on tertiary education (Hagemann, 2012).

Figure 8

Potential Efficiency Gains in Primary and Secondary Education
(percent of GDP, 2007)



Note: Data-envelopment analysis (DEA) has been performed to estimate by how much, given students' socio-economic background, spending could be reduced while maintaining the same average level and dispersion of PISA scores. See Sutherland *et al.* (2007) for more details.
Source: Update of Sutherland *et al.* (2007) reported in Hagemann (2012).

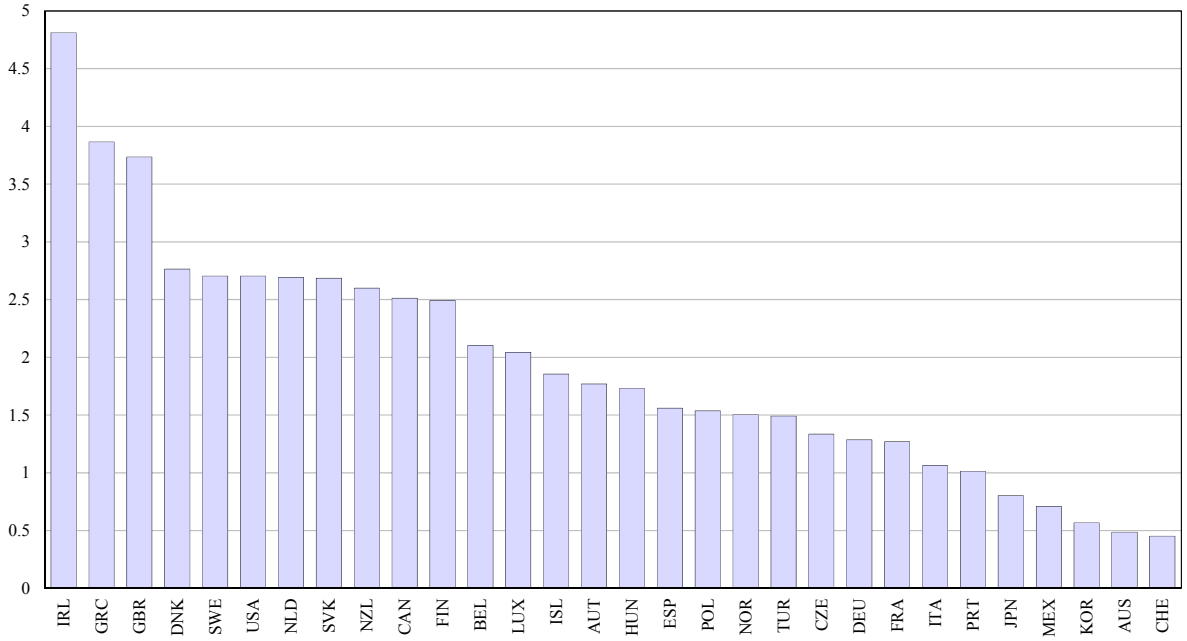
In primary and secondary education, a recent update of the analysis conducted by Sutherland *et al.* (2007) points to potentially sizeable efficiency gains in many OECD countries (Figure 8).[14] In tertiary education, European OECD countries can potentially obtain savings from efficiency gains worth around 0.4 per cent of GDP on average (St. Aubyn *et al.*, 2009). Earlier and more recent OECD work has suggested that more performance monitoring, more school autonomy and greater user choice is associated with greater efficiency in the public provision of primary and secondary schooling (Sutherland and Price, 2007, Blöchliger *et al.*, 2013). As it turns out, countries with the greatest potential for efficiency gains are generally not the ones with the largest consolidation needs, with the exception of the United States. However, in the United States, the need to address widening skill gaps identified in particular in the *2012 OECD Economic Survey* points to a case for allocating efficiency gains to providing more and better education rather than cutting expenditure (OECD, 2012b).

In **health care**, efficiency gains could also permit to improve or maintain service provision while containing cost to the public purse, therefore mitigating adverse growth and equity impacts (Hagemann, 2012). Although they are subject to considerable uncertainty, quantitative estimates

[14] This study uses data-envelopment analysis (DEA), a technique that relates outcomes with inputs and draws up an efficiency frontier based on the situation of the best performers. With a number of assumptions, countries can then be compared to this efficiency frontier to provide a rough indication of the extent to which they might achieve the same results with lower inputs. See Sutherland *et al.* (2007) for more details.

Figure 9

Potential Public-spending Savings from Efficiency Gains in Health Care
(percent of GDP, 2017)



Note: Potential savings represent the difference between a no-reform scenario and a scenario where countries would become as efficient as the best performing countries.
Source: Joumard *et al.* (2010).

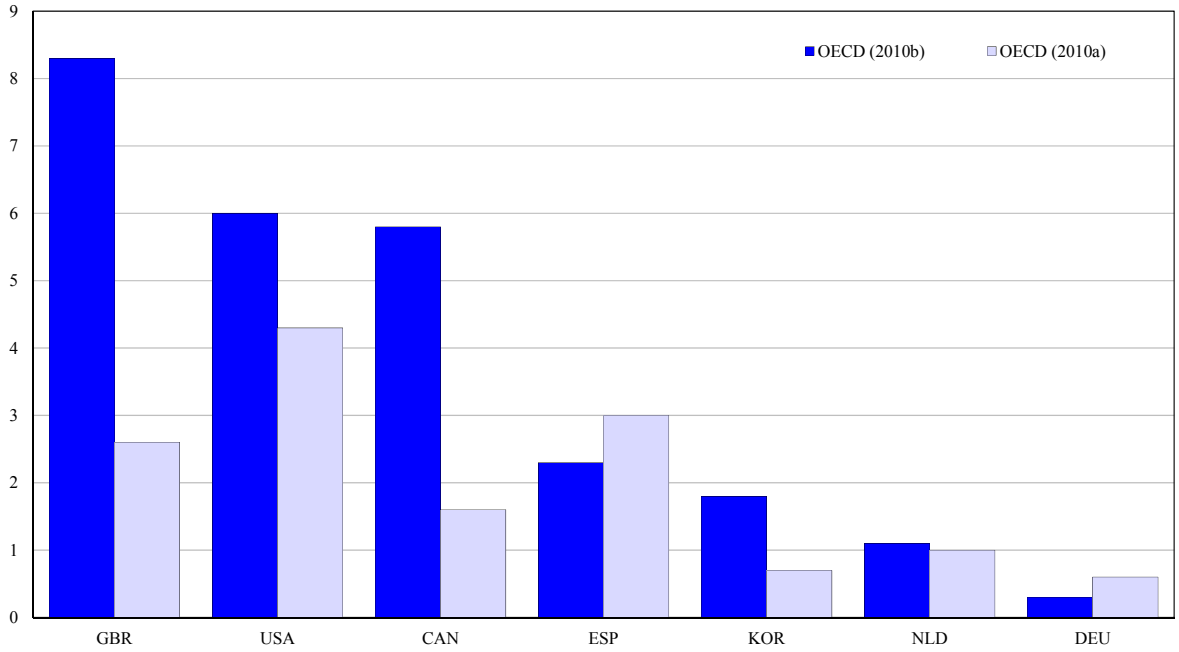
suggest that the scope for efficiency gains in the health sector can potentially be very large (Figure 9). Previous OECD work emphasised that, while structural reforms to realise potential efficiency gains vary depending on the structure of health systems, some apply to most countries. In particular, better priority setting, improved consistency in responsibility assignment across levels of government, and better user information on the quality and price of services would be reform options to consider in many OECD countries (Joumard *et al*, 2010).

6.2 Structural reforms to accompany revenue increases

On the tax side, the growth impact of hikes can be reduced through the closing of loopholes and base broadening (including by curbing fraud and evasion) rather than *via* rate increases. Hence, an important way of improving the trade-off between raising more revenue and preserving growth-friendly incentives is to cut back tax expenditures. As regards **personal and corporate income taxes**, tax expenditures often distort resource allocation and hamper productivity growth: some examples are the preferential tax treatment of owner-occupied housing or the dispersion of effective corporate tax rates. Figure 10 gives estimates from two different studies for corporate and personal income taxes. Despite the large margins of uncertainty surrounding the reported figures, in countries like Canada, Spain, United Kingdom or the United States even the smallest of the two estimates is very large, amounting to about one third to one half of short- to medium-term consolidation needs. Structural reforms in personal and corporate income taxes that curb tax expenditures will also in general lead to a more equal income distribution.

Figure 10

Tax Expenditures in Personal and Corporate Income Taxes
(different years between 2004 and 2008, percent of GDP)



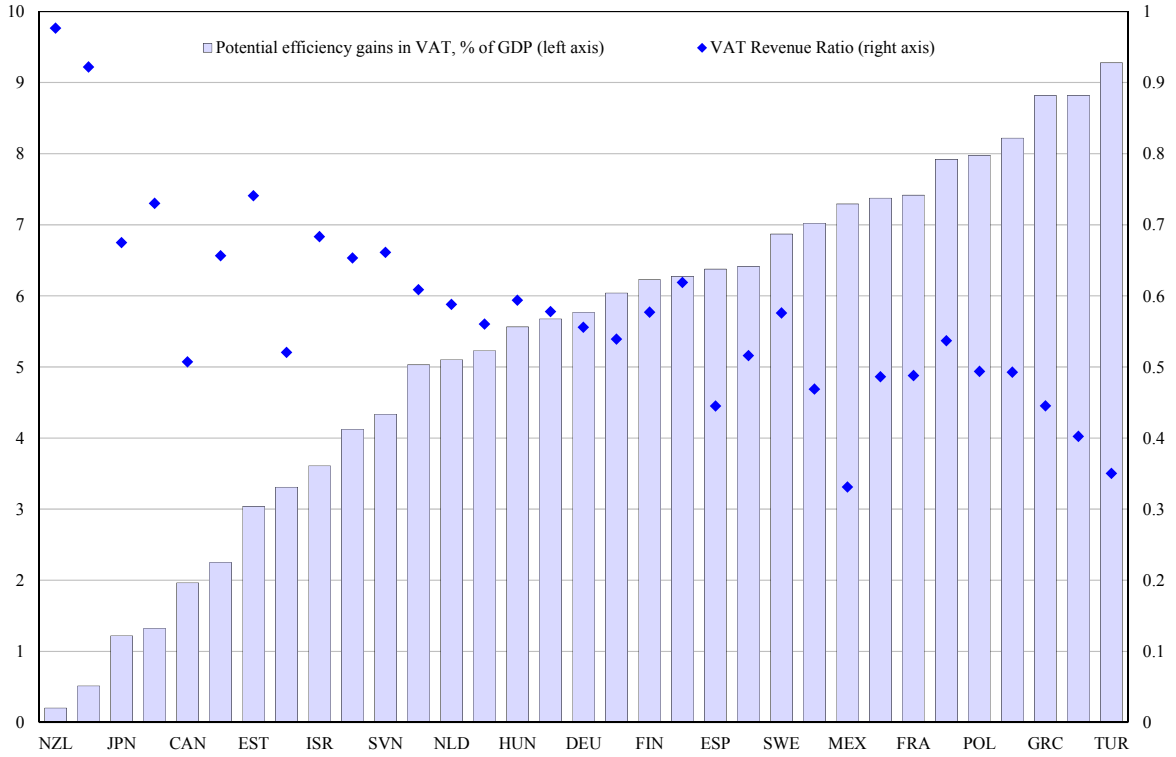
Note: international comparisons are subject to important limitations, as countries use different definitions of tax expenditures. For a given country, comparisons across studies are also hampered by factors like different years and inconsistencies in filling the questionnaires used to collect information (e.g., in OECD (2010) some countries reported only the 20 largest items, and others only those at central government level).

However, the recommendation of structural tax reform to eliminate tax breaks cannot be made across the board as some measures work to preserve productive potential or to alleviate poverty, or both. Such is the case of tax credits for low-income earners, which tackle poverty traps created by other parts of the tax and transfer system and help boost the employment of low-skill workers. Another important example are well-designed corporate income tax credits for research and development activities, which can provide remuneration for the growth-enhancing externalities from R&D (Jaumotte and Pain, 2005; Johansson *et al.*, 2008, Westmore, 2013).

In the area of **consumption taxes**, base-broadening reforms can bring in additional proceeds and reduce distortions detrimental to growth. If accompanied by targeted measures towards poorer households (for instance voucher programmes), abolishing reduced value-added or consumption tax rates may improve public finances without negative consequences for equity, at very low cost for growth (although targeted transfers involve a risk of contributing to poverty traps). Although crude and subject to important caveats (see note to Figure 11), the so-called VAT revenue ratio is the most readily available indicator to provide illustrative estimates, on a cross-country basis, of the scope for base-broadening. The ratio compares actual VAT revenue to the standard VAT rate multiplied by final consumption expenditure. The very high estimates shown in Figure 15 are uncertain and difficult to achieve in full including because the tax base would shrink in response to higher rates. Nevertheless, their sheer size suggests that, even after factoring in the costs of accompanying distributional measures, base broadening can yield substantial additional revenues while reducing cross-sector distortions.

Figure 11

VAT Revenue Ratio and Illustrative Potential Efficiency Gains in the VAT System



Note: The VAT revenue ratio (VRR) is calculated as total VAT receipts from *OECD revenue statistics* divided by an estimate of potential VAT revenues. This estimate is equal to the standard VAT rate multiplied by final consumption expenditure in national accounts (excluding VAT receipts). The estimates of potential efficiency gains shown in the chart are calculated strictly for illustrative purposes by assuming that the VRR can be raised to one. This simple calculation neglects that final consumption as calculated for national accounts purposes differs from the VAT tax base. For instance, imputed rents on owner-occupied housing and government services provided free of charge are included in final consumption but not the VAT tax base. In particular, making the government pay VAT to itself on the services it provides without charge would produce no net budget gain. On the other hand, final consumption does not include housing construction, which is subject to VAT in many countries.
Source: *OECD Consumption Tax Trends* (2012), average 2007-09, and OECD calculations.

As regards **property taxes**, broadening bases by regularly bringing real estate taxable values in line with market valuations could yield equity gains in addition to bringing in additional revenues and reducing distortions. In many countries cadastral values have become outdated, often by a large margin (by way of exemple, Austria, Belgium and France last carried out a housing valuation exercise three or four decades ago). Though the redistributive impact of updating is complex, being felt across individuals, generations and territorial units, it will tend to be progressive at least if account is taken of the distribution of wealth, and not merely of current income. Even on the basis of the latter, equity gains will ensue if those residing in buildings with more outdated values (often older buildings in city centres) tend to enjoy above-average income. Admittedly, updating cadastral values will raise difficulties for old people living on low pensions in large old houses, but this issue could be addressed by offering those taxpayers the option of paying this part of taxes in a deferred manner on their estate after their death. More generally, making the property tax structure more progressive would be an option to help offset harmful equity effects from other consolidation measures.

7 Concluding remarks

The present study proposed a structured way of looking at consolidation instruments in the light of their consequences on other economic objectives. While its aim is not to prescribe consolidation packages, some quantitative simulations have been provided for the sake of illustration as a way of gauging how deep adjustment in better instruments would have to go in order to avoid relying too much on more harmful instruments. While illustrative, these simulations cannot substitute for the analysis of country circumstances, and of interaction among instruments, that is required to design actual consolidation strategies.

APPENDIX
DETAILED COMPOSITION OF CONSOLIDATION PACKAGES

The present section provides detailed quantitative information about the illustrative consolidation packages presented in Section 5 of the main text. Tables 7 to 11 provide results about the illustrative short- to medium-term consolidation packages of countries with one table per cluster. Table 12 details the illustrative long-term consolidation packages for all covered countries. The instruments used are as described in Appendix 2, Section 2 of Cournède, Goujard and Pina (2013). The categories "used spending residual" and "used revenue residual" refer to the part of the adjustment that is achieved through residual items of primary expenditure and receipts which are not considered as instruments of consolidation as they have no direct economic interpretation. However, there is no reason to assume that they remain constant as a share of potential GDP when other budgetary items adjust, so the assumption is made that they remain fixed as shares of total primary spending or revenues (whichever is relevant).

Table 7

Instrument Use and Achieved Short- to Medium-term Consolidation *vs.* Needs in Cluster No. 1

(percentages of potential GDP except otherwise mentioned)

Description	AUS	CAN	GBR	ISR	ITA	JPN	NZL	POL	PRT
Subsidies	0.6*	0.3	0	0	0.3	0	0	0	0
Other property taxes	0	0.5*	0.2	0.2	0	0.4*	0.7*	0.7*	0.4*
Pensions	0	0	0.3	0.2	0.3	0.8	0	0.9	0.9
Corporate income taxes	0	0.2	0.4*	0	0	0	0	0.9*	0.2
Personal income taxes	0	0	0.5	1.3	0	4.6*	0	1.3	4.1*
Recurrent taxes on immovable property	0	0	0	0	0	0	0	0	0.8*
Unemployment benefits	0	0.2*	0	0	0	0.3	0	0	0.3
Environmental taxes	0.7*	0.7	0.2*	0	0	0.7	0.7	0	0.2
Other government in kind consumption (excluding family policy)	0.6	0.6	2.2*	0	0	0	0	0	0.2
Sales of goods and services	0	0	0.7*	0	0	1.0*	0	0	0
Consumption taxes (other than environmental)	0	0	1.4*	0	0	2.5	0	0	0
Public investment	0	0	0.3	0	0	1.1	0.2	0	0
Sickness and disability payments	0	0	0.7*	0	0	0	0	0	0
Health services provided in kind	0	0	1.5*	0	0	1.5*	0	0	0
Social security contributions	0	0	0	0	0	0.9*	0	0	0
Family	0	0	0	0	0	0	0	0	0
Education	0	0	0	0	0	0.3	0	0	0
Used spending residual	0.1	0.1	0.9	0	0	0.6	0	0.1	0.1
Used revenue residual	0	0	0.2	0	0	0.5	0.1	0.1	0.4
Share spending efforts	65	45	62	13	100	30	9	25	20
Achieved consolidation	1.9	2.7	9.2	1.7	0.7	15.3	1.7	4	7.5
Consolidation needs	1.9	2.7	9.2	1.7	0.7	18.3	1.7	4	7.5
Share top 9 instruments	100	100	45	100	100	48	90	100	100
Instruments crossing the median	2	2	7	0	0	5	1	2	3

Note: A star sign * denotes that the proposed instrument use takes the corresponding spending (tax) item moves from above to below (from below to above) the OECD median.

Table 8

Instrument Use and Achieved Short- to Medium-term Consolidation *vs.* Needs in Cluster No. 2

(percentages of potential GDP except otherwise mentioned)

Description	USA
Subsidies	0
Pensions	0.5
Other property taxes	0.7*
Unemployment benefits	0.2
Corporate income taxes	0.2
Environmental taxes	0.7
Recurrent taxes on immovable property	0
Personal income taxes	1
Other government in kind consumption (excluding family policy)	0
Sales of goods and services	0
Sickness and disability payments	0
Consumption taxes (other than environmental)	2.5
Public investment	0.3
Health services provided in kind	1.3*
Family	0
Social security contributions	0
Education	0
Used spending residual	0.2
Used revenue residual	0.2
Share spending efforts	31
Achieved consolidation	7.7
Consolidation needs	7.7
Share top 9 instruments	45
Instruments crossing the median	2

Note: See note to Table 7.

Table 9

Instrument Use and Achieved Short- to Medium-term Consolidation *vs.* Needs in Cluster No. 3
(percentages of potential GDP except otherwise mentioned)

Description	ESP	GRC	IRL
Pensions	0	0.6	0
Subsidies	0.2	0	0
Other property taxes	0	0	0
Unemployment benefits	1.6	0	1.1
Environmental taxes	0.7	0.2	0.3*
Recurrent taxes on immovable property	0.4	1.0*	1.0*
Corporate income taxes	0.9*	0.2	0.8*
Sales of goods and services	1	0.3	0.3*
Personal income taxes	0.3	3.4*	0.3
Sickness and disability payments	0	0	0.3*
Other government in kind consumption (excluding family policy)	0	1.9*	0
Consumption taxes (other than environmental)	0	0	1.4
Public investment	0	0	0
Health services provided in kind	0	0	0
Social security contributions	0	0	0
Family	0	0	0
Education	0	0	0
Used spending residual	0.1	0.1	0.2
Used revenue residual	0.1	0.4	0.2
Share spending efforts	36	33	27
Achieved consolidation	5.3	8.2	5.8
Consolidation needs	5.3	8.2	5.8
Share top 9 instruments	100	75	69
Instruments crossing the median	1	3	5

Note: See note to Table 7.

Table 10

Instrument Use and Achieved short- to Medium-term Consolidation *vs.* Needs in Cluster No. 4

(percentages of potential GDP except otherwise mentioned)

Description	AUT	BEL	CZE	FIN	FRA	HUN	ISL	SVK	SVN
Pensions	0.2	0	0.1	0	0.6	0.2	0	0	0
Subsidies	0	0.8	0.8	0.7*	0.7*	0.7*	0.8*	0.5*	0.5*
Other property taxes	0	0	0.6*	0.4*	0	0.2	0.3	0.7*	0.7*
Unemployment benefits	0	0.7	0	0.9	0.8*	0.2	0.6	0	0
Environmental taxes	0	0	0	0	0.7*	0	0.5*	0.7	0
Recurrent taxes on immovable property	0	0	0	0.8*	0	0.4*	0	1.0*	0.9*
Sales of goods and services	0	0	0	0	0	0	0.3	1	0
Sickness and disability payments	0	0	0	0.7	0	0	0.2	0	0
Personal income taxes	0	0	0	0	0	0	0	0	0
Corporate income taxes	0	0	0	0.1	0.5*	0	0.5*	0	0
Other government in kind consumption (excluding family policy)	0	0	0	0	1.2*	0	0.2	0	0
Consumption taxes (other than environmental)	0	0	0	0	0	0	0	0	0
Social security contributions	0	0	0	0	0	0	0	0	0
Family	0	0	0	0	0	0	0	0	0
Public investment	0	0	0	0	0	0	0	0	0
Health services provided in kind	0	0	0	0	0	0	0	0	0
Education	0	0	0	0	0	0	0	0	0
Used spending residual	0	0.1	0.1	0.2	0.2	0.1	0.2	0.1	0.1
Used revenue residual	0	0	0	0	0	0	0	0.1	0.1
Share spending efforts	100	100	64	65	73	67	56	13	23
Achieved consolidation	0.2	1.6	1.6	3.8	4.7	1.8	3.6	4	2.2
Consolidation needs	0.2	1.6	1.6	3.8	4.7	1.8	3.6	4	2.2
Share top 9 instruments	100	100	100	97	63	100	79	100	100
Instruments crossing the median	0	0	1	3	5	2	3	3	3

Note: See note to Table 7.

Table 11

Instrument Use and Achieved Short- to Medium-term Consolidation *vs.* Needs in Cluster No. 5

(percentages of potential GDP except otherwise mentioned)

Description	LUX	NLD	SWE
Subsidies	0.2	0.6*	0.7*
Other property taxes	0	0.2	0.2
Pensions	0	0	0
Environmental taxes	0	0	0
Recurrent taxes on immovable property	0	0.8*	0
Other government in kind consumption (excluding family policy)	0	1.1	0
Sales of goods and services	0	0	0
Personal income taxes	0	0	0
Unemployment benefits	0	0	0
Social security contributions	0	0	0
Sickness and disability payments	0	0	0
Corporate income taxes	0	0	0
Consumption taxes (other than environmental)	0	0	0
Family	0	0	0
Public investment	0	0	0
Health services provided in kind	0	0	0
Education	0	0	0
Used spending residual	0	0.1	0.1
Used revenue residual	0	0	0
Share spending efforts	100	65	85
Achieved consolidation	0.2	2.8	1
Consolidation needs	0.2	2.8	1
Share top 9 instruments	100	100	100
Instruments crossing the median	0	2	1

Note: See note to Table 7.

Table 12

Instrument Use and Achieved Long-term Consolidation *vs.* Needs
(percentages of potential GDP except otherwise mentioned)

Description	JPN	GBR	USA	SVK	AUS	POL	ESP	NZL
Subsidies	0	0	0	0.5*	0.6*	0	0.2	0
Pensions	3.2	1	1.9	0	0	3.7	0	0
Other government in kind consumption (excluding family policy)	0	2.2*	0	0	1	1.1	0.6	0
Unemployment benefits	0.3	0	0.2	0	0	0	1.4	0
Environmental taxes	0.7	0.2*	0.7	0.7	0.7*	0.6	0.7	0.7
Other property taxes	0.4*	0.2	0.7*	0.7*	0	0.6*	0	0.7*
Sickness and disability payments	0	0.7*	0	0	0	0	0.7*	0.7
Recurrent taxes on immovable property	0	0	0	1.0*	0	0	0.4	0
Sales of goods and services	1.0*	0.7*	0	1	0	0	1	0
Personal income taxes	2.8	0.5	1	1.8	0	0	0.4	0
Corporate income taxes	0	0.4*	0.2	0.2*	0	0	0.1	0
Consumption taxes (other than environmental)	1.5	1.4*	2.5	0.9	2.5	0	0.4	0
Public investment	0	0.1	0.1	0	0.8	0	0	1.1*
Health services provided in kind	0	0.2	0.3	0	0.4	0	0	1.3
Family	0	0	0	0	0	0	0	0.5
Social security contributions	0	0	0	0	0	0	0	0
Education	0	0	0	0	0	0	0	0
Used spending residual	0.4	0.8	0.6	0.1	0.2	0.3	0.1	0.4
Used revenue residual	0.1	0.2	0.2	0.2	0	0	0.1	0.1
Share spending efforts	37	59	36	8	49	80	49	73
Achieved consolidation	10.5	8.5	8.3	7	6.3	6.3	6.1	5.6
Consolidation needs	10.5	8.5	8.3	7	6.3	6.3	6.1	5.6
Share top 9 instruments	57	66	46	58	39	100	85	41
Instruments crossing the median	2	6	1	4	2	1	1	2

Note: See note to Table 7.

Table 12 (cont.)

Instrument Use and Achieved Long-term Consolidation *vs.* Needs
(percentage of potential GDP except otherwise mentioned)

Description	ISR	FRA	NLD	IRL	CAN	SVN	CZE	PRT
Subsidies	0	0.7*	0.6*	0	0.3	0.5*	0.8	0
Pensions	0.8	2.2	0	0	0	0	0.4	3.4
Other government in kind consumption (excluding family policy)	2.3	1.1*	2.3	0	2.3*	2.0*	1.4*	0
Unemployment benefits	0	0.4	0.5	0.9	0.2*	0	0.4*	0
Environmental taxes	0	0	0	0.3*	0.3	0	0	0
Other property taxes	0.2	0	0.2	0	0.2*	0.7*	0.3*	0
Sickness and disability payments	0.5*	0	0.6	0.3*	0	0.2*	0	0
Recurrent taxes on immovable property	0	0	0	1.0*	0	0	0	0
Sales of goods and services	0.5*	0	0	0.3*	0	0	0	0
Personal income taxes	0.2	0	0	0.1	0	0	0	0
Corporate income taxes	0	0	0	0.3	0	0	0	0
Consumption taxes (other than environmental)	0.1	0	0	1	0	0	0	0
Public investment	0	0	0	0	0	0	0	0
Health services provided in kind	0	0	0	0	0	0	0	0
Family	0	0	0	0	0	0	0	0
Social security contributions	0	0	0	0	0	0	0	0
Education	0	0	0	0	0	0	0	0
Used spending residual	0.4	0.3	0.3	0.1	0.3	0.3	0.3	0.2
Used revenue residual	0.1	0	0	0.2	0	0.1	0	0
Share spending efforts	80	100	95	29	87	80	92	100
Achieved consolidation	5	4.7	4.5	4.4	3.7	3.6	3.6	3.6
Consolidation needs	5	4.7	4.5	4.4	3.7	3.6	3.6	3.6
Share top 9 instruments	93	100	100	65	100	100	100	100
Instruments crossing the median	2	2	1	4	3	4	3	0

Note: See note to Table 7.

Table 12 (cont.)

Instrument Use and Achieved Long-term Consolidation vs. Needs
(percentage of potential GDP except otherwise mentioned)

Description	LUX	BEL	HUN	DNK	AUT	CHE	FIN	SWE
Subsidies	0.8*	0.8	0.7*	0.8	0.8	0.8	0.7*	0.7*
Pensions	0	0	0.6	0.7	1.2	0	0	0.9*
Other government in kind consumption (excluding family policy)	0	1.3*	0.9	0.4	0	0.6	0.8	0
Unemployment benefits	0.5*	0.6	0.1	0.1	0	0.2	0.3	0
Environmental taxes	0.2	0	0	0	0	0.3	0	0
Other property taxes	0	0	0	0	0	0	0	0
Sickness and disability payments	0	0	0	0	0	0	0	0
Recurrent taxes on immovable property	0.5	0	0	0	0	0	0	0
Sales of goods and services	0.5	0	0	0	0	0	0	0
Personal income taxes	0	0	0	0	0	0	0	0
Corporate income taxes	0	0	0	0	0	0	0	0
Consumption taxes (other than environmental)	0	0	0	0	0	0	0	0
Public investment	0	0	0	0	0	0	0	0
Health services provided in kind	0	0	0	0	0	0	0	0
Family	0	0	0	0	0	0	0	0
Social security contributions	0	0	0	0	0	0	0	0
Education	0	0	0	0	0	0	0	0
Used spending residual	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.1
Used revenue residual	0	0	0	0	0	0	0	0
Share spending efforts	58	100	100	100	100	86	100	100
Achieved consolidation	2.8	2.8	2.4	2.3	2.2	2.1	1.8	1.7
Consolidation needs	2.8	2.8	2.4	2.3	2.2	2.1	1.8	1.7
Share top 9 instruments	100	100	100	100	100	100	100	100
Instruments crossing the median	2	1	1	0	0	0	1	2

Note: See note to Table 7.

Table 12 (cont.)

Instrument Use and Achieved Long-term Consolidation vs. Needs
(percentage of potential GDP except otherwise mentioned)

Description	DEU	EST	ISL	KOR	GRC
Subsidies	0.3	0.3	0.8*	0	0
Pensions	0.8	0	0	0	0.9
Other government in kind consumption (excluding family policy)	0	1.3*	0.2	0	0
Unemployment benefits	0.4	0	0.1	0.1	0
Environmental taxes	0	0	0	0	0
Other property taxes	0	0	0	0	0
Sickness and disability payments	0	0	0	0	0
Recurrent taxes on immovable property	0	0	0	0.3	0
Sales of goods and services	0	0	0	0.5	0
Personal income taxes	0	0	0	0	0
Corporate income taxes	0	0	0	0	0
Consumption taxes (other than environmental)	0	0	0	0	0
Public investment	0	0	0	0	0
Health services provided in kind	0	0	0	0	0
Family	0	0	0	0	0
Social security contributions	0	0	0	0	0
Education	0	0	0	0	0
Used spending residual	0.1	0	0.1	0	0
Used revenue residual	0	0	0	0	0
Share spending efforts	100	100	100	12	100
Achieved consolidation	1.6	1.6	1.2	1	0.9
Consolidation needs	1.6	1.6	1.2	1	0.9
Share top 9 instruments	100	100	100	100	100
Instruments crossing the median	0	1	1	0	0

Note: See note to Table 7.

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