POST-CRISIS DEBT OVERHANG: GROWTH IMPLICATIONS ACROSS COUNTRIES

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ABSTRACT

Public debt in the OECD area passed annual GDP in 2011 and is still rising. For many countries, just stabilising debt - let alone bringing it down to a more sustainable level - is a major challenge. The debt overhangs can affect growth through channels such as raising the cost of capital. The main focus of this paper however is the implications for growth both in the short term and in the long term of reducing debt levels. Consolidation needs are large and most of the reduction in debt overhangs will need to come from improvements in the primary balance. In the short term, the pace of consolidation needs to balance consolidation requirements with the effects of fiscal retrenchment on aggregate demand. The trade-off will depend on the choice of fiscal instrument and on the ability of monetary policy to accommodate consolidation. However, other things being equal, a slow consolidation will ultimately require more effort to meet a fixed debt target. In this context, consolidation should aim to use instruments that are friendly to long-term growth. There is scope to improve budgetary positions by reforming transfer systems, raising the efficiency of public services, eliminating certain tax expenditures and collecting additional revenues from less distortionary tax bases.

JEL Codes: H62; H63; H68
Keywords: Fiscal consolidation; Growth

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Introduction

1. Public debt in the OECD area passed annual GDP in 2011 and is still rising. For many countries, just stabilising debt - let alone bringing it down to a more sustainable level - is a major challenge. Concerns about debt sustainability have manifested themselves in the euro area debt crisis, but could spread beyond that area.

2. Both high debt levels and efforts to reduce them can affect growth. The debt overhangs can affect growth through channels such as raising the cost of capital and increasing the burden of distortionary taxation. The main focus of this paper however is on the implications of reducing debt levels for growth both in the short term and in the long term. In the short term, the trade-off between macroeconomic stabilisation and consolidation creates a particular challenge, especially in an environment when many countries need to implement fiscal consolidation more-or-less simultaneously and with policy interest rates close to the zero lower bound giving little scope for monetary policy to accommodate fiscal consolidation. In this context, fiscal consolidation needs to be carefully designed, notably in the choice of policy instruments which will affect the trade-off not only with short-term but also long-term growth.

3. The rest of the paper is organised as follows: after a brief review of the lead up to the current debt debacle, the second section looks at the impact of high debt on economic growth and establishes consolidation needs, relying principally on fiscal gap calculations, and considers the factors likely to influence debt dynamics; the next section discusses the combined challenge of consolidation and macroeconomic stabilisation, considering the appropriate pace of consolidation and the consequences of international spillovers. This section also discusses the short-term impact through the multiplier effects of different instruments, with pension reform representing an extreme case of little initial impact but potentially large long-term impact on fiscal sustainability; the following section discusses available policy instruments and their implications for long-term growth. A final section concludes.

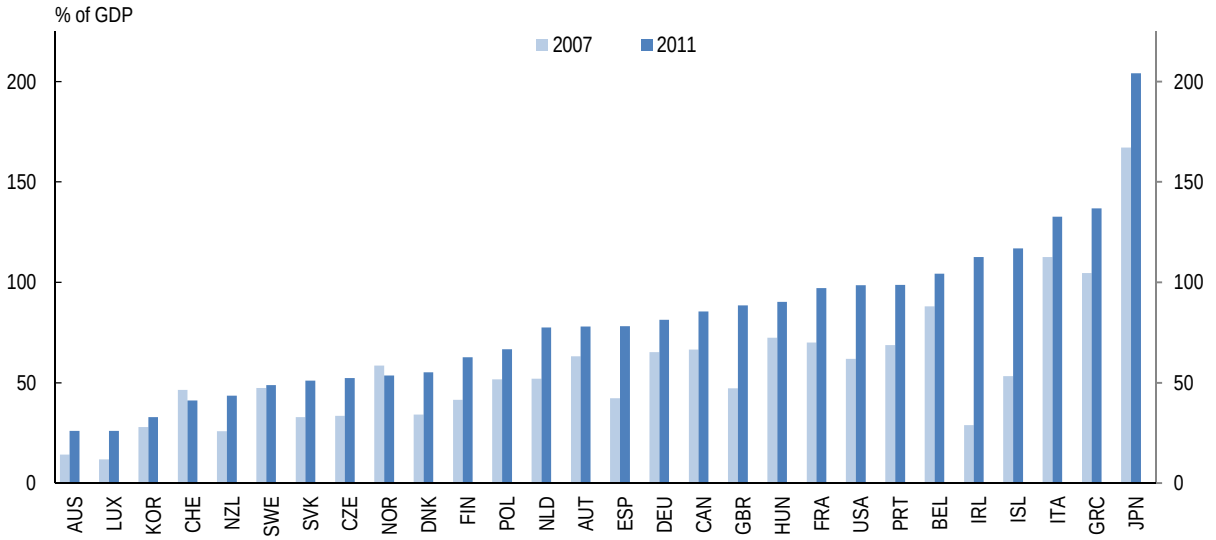
The size of debt overhangs

4. Debt levels in the OECD have trended upwards since the early 1970s, with countries often insufficiently ambitious in bringing debt levels down during expansions. Indeed, during the upswing that preceded the recent crisis, underlying deficits were not reduced much, such that debt levels were not brought down, notably in Greece, the United Kingdom and the United States. In some cases, declines in revenue shares during the expansion suggest that governments were engaging in a pro-cyclical easing of fiscal policy – something which has been a consistent feature of policy in some European countries since the early 1970s (Égert, 2010). The impact of lower interest rates and in some cases lower debt on debt servicing and the apparent strength of revenues seduced some governments into cutting taxes and relaxing control over spending. Indeed, new estimates of underlying budget balances that adjust not only for the effect of the economic cycle but also take account of asset price effects on revenues suggest significantly weaker balances as a share of GDP in a number of countries, notably Ireland and Spain (Price and Dang, 2011). As such, when fiscal positions appeared to improve before the financial crisis, they often gave an impression that was too flattering. And in retrospect, given the weaknesses in financial sector prudential policy, fiscal positions were insufficiently robust given the scale of the liabilities and contingent liabilities that some governments had to assume during the crisis.

* The views expressed in this paper are those of the authors and do not necessarily represent those of the OECD or its member countries. Secretarial assistance is gratefully acknowledged from Lyn Urmston.

5. What sets the crisis apart is how widespread and rapid the build-up of debt has been, making the need for fiscal consolidation pressing for most OECD countries. The automatic stabilisers played a role with spending on unemployment benefits surging and tax revenues evaporating. Tax revenues were further dented by asset price movements, which had boosted revenues in the pre-crisis period. Spending further jumped due to support packages and assuming various liabilities. In addition, a downward level shift in potential output as an effect of the crisis effectively meant that prevailing levels of spending became inconsistent with pre-existing tax rates and implied a need to tighten just to stand still. For the OECD as a whole, gross government debt is expected to rise to unprecedented levels, exceeding 100% of GDP for the first time in 2011 (Figure 1). In Japan, this ratio has risen to over 200% of GDP. Even in some low-debt countries gross debt increased quite strongly. Only Norway and Switzerland have bucked the trend, reducing debt levels.

Figure 1. **Gross government financial liabilities**



Source: *OECD Economic Outlook 89 Database*.

6. In emerging market economies, less debt build-up occurred over the crisis and debt levels are often more favourable than in many OECD countries, not least because high growth rates tend to ease debt dynamics. Nonetheless, in a number of countries debt levels are not negligible. In Brazil and India, debt levels were around 65% of GDP at the end of 2010. Fiscal consolidation is underway in both countries and Brazil is already running a relatively large primary surplus. For India, consolidation will be difficult due to large spending pressures and possibly weaker revenue growth. In China, the official debt burden was low at 19% of GDP in 2010. However, off budget sub-central government and state enterprise debt could potentially raise total debt well over one third of GDP at the end of 2010, with contingent liabilities in the financial sector of uncertain magnitude and the on-going push to provide affordable housing potentially adding to debt.

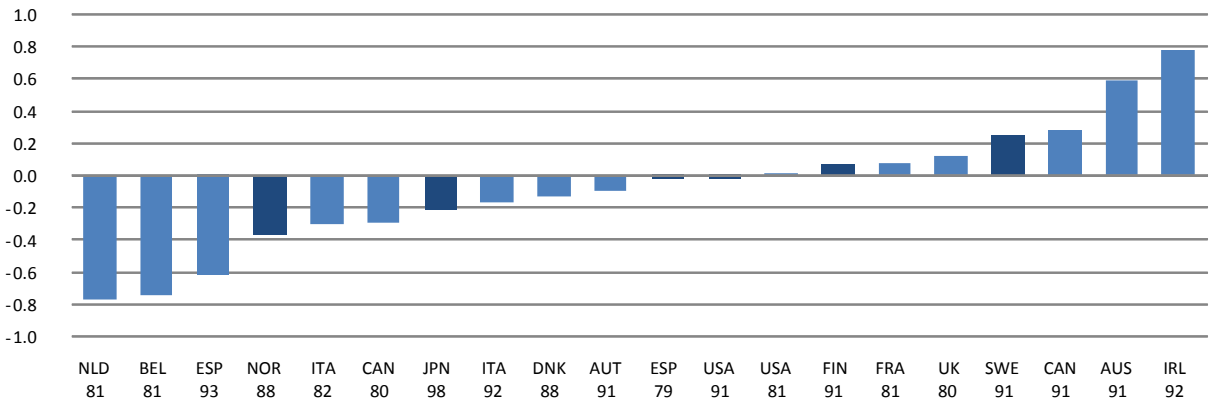
Consequences of high debt levels for growth

7. High public debt levels may have adverse effects on growth. Higher debt loads could affect output by raising the costs of capital or more speculatively through higher distortionary taxes, inflation or greater volatility in policy. Cournède (2010) demonstrated the potential impact of higher corporate financing costs, which may be a consequence of not only a normalisation of the artificially low risk premia that prevailed before the crisis but also of crowding out due to higher government issuance of debt. A higher cost of capital is likely to reduce the capital-to-labour ratio and hence productivity. Using the

assumptions embodied in the OECD's medium-term baseline and a production function with three factors (labour, business sector capital and oil), the calculations suggest that the level of GDP in the long run would fall by just over 2% in the United States and 2.6% in the euro area for a normalisation of interest rates following the crisis, which would entail a real interest rate shock of around one percentage point in both the United States and the euro area. If higher government debt does lead to crowding out, with the real interest rate shock rising by around an additional percentage point, then the fall in GDP could be more substantial, with the level of output falling by around 5% in both the United States and euro area.

8. The effects of higher costs of capital on the intensity of capital in production should essentially lead to a level shift in potential output and therefore to growth rate effects over some finite period only. More long-lasting effects on economic growth could arise to the extent higher costs of capital lead to reduced investment in research and development. More speculative and uncertain combinations of OECD research suggests that if the fall in potential output by 3% as a result of lower capital intensity were combined with the above higher cost of capital, then the stock of R&D could fall by 5.4%, which would reduce long-run total factor productivity (TFP) by 0.7%, based on an estimated long-run elasticity (Guellec *et al*., 2004). In practice, evidence on TFP growth in OECD countries before and after past crises suggests that experience is very heterogeneous (Figure 2). Since impacts of debt via R&D should be expected to accrue via TFP, this underlines the need to treat the calculations with care.

Figure 2. **TFP growth following severe downturns**



Note: Change in the average annual growth rate comparing the five years following the start of the downturn with the five years preceding it. Darker bars note severe downturns associated with financial crises. The darker bars denote downturns that are associated with banking crises, see Haugh and Ollivaud, (2009).

9. Empirical work has identified various thresholds in the relationship between public debt and growth. For example, Reinhart and Rogoff (2010) found that growth rates in both developed and developing countries where the public debt to GDP ratio exceeds 90% are about 1% point lower than in the less indebted countries (Cecchetti *et al.*, 2011 find a similar threshold effect). In a similar vein, Caner *et al.* (2010) found a threshold effect on growth rates at 77% of GDP for a large sample of countries, with the threshold being lower for emerging markets, and Kumar and Woo (2010) found that a 10 percentage point increase in debt reduces annual real per capita GDP growth by 0.2 percentage points per year, with the effect being smaller for advanced economies and some evidence for non-linearity beyond a debt/GDP ratio of 90% of GDP.

10. Indeed, fitting density functions to growth rates of OECD countries suggests that growth is typically lower in periods that follow years of high debt (Figure 3). This is more obvious when looking at

growth rates over a short window of 5 years, where some of the effect may reflect that high debt is followed by consolidation with negative effects on the cycle. However, the effect appears to persist over 10 years when cyclical effects of consolidation should matter less. Even so, the relationship could be spurious to some degree given the secular tendency for debt levels to drift up and growth rates to trend down which may account for some of the relationship. Moreover, causality may be less than clear with, for example, less well managed countries likely to have both high debt and low growth. Though subject to some of the same caveats, the results of growth regressions that include government debt levels, suggest that debt may have a negative impact on subsequent growth (Box 1). Furthermore, there is some evidence that there may be two thresholds, at around 40% of GDP and then close to 70% of GDP, above which the negative effect becomes more important.

Box 1. **Growth regressions with debt thresholds**

In the spirit of Cecchetti *et al.* (2010) we estimate a simple growth regression using fairly standard explanatory variables and including a measure of debt. The sample includes 12 countries (Austria, Belgium, Canada, France, United Kingdom, Italy, Japan, Korea, Netherlands, Norway, Sweden, United States) using non-overlapping 5-year periods from 1965 to 2010 to create a balanced panel. All explanatory variables are for the previous five year period. The estimation uses simple OLS and the Hansen bootstrap to determine the possible debt thresholds (Hansen, 1999). The results should be taken with some caution as there are likely to be a number of estimation problems, not least the bias introduced by estimating a dynamic model. Bearing this in mind, the results suggest that there may be two thresholds in the relationship with growth above with the impact becomes more important. The thresholds are relatively stable to changing the sample by dropping a country and re-estimating the relationship.

Table 1. **Growth regressions**

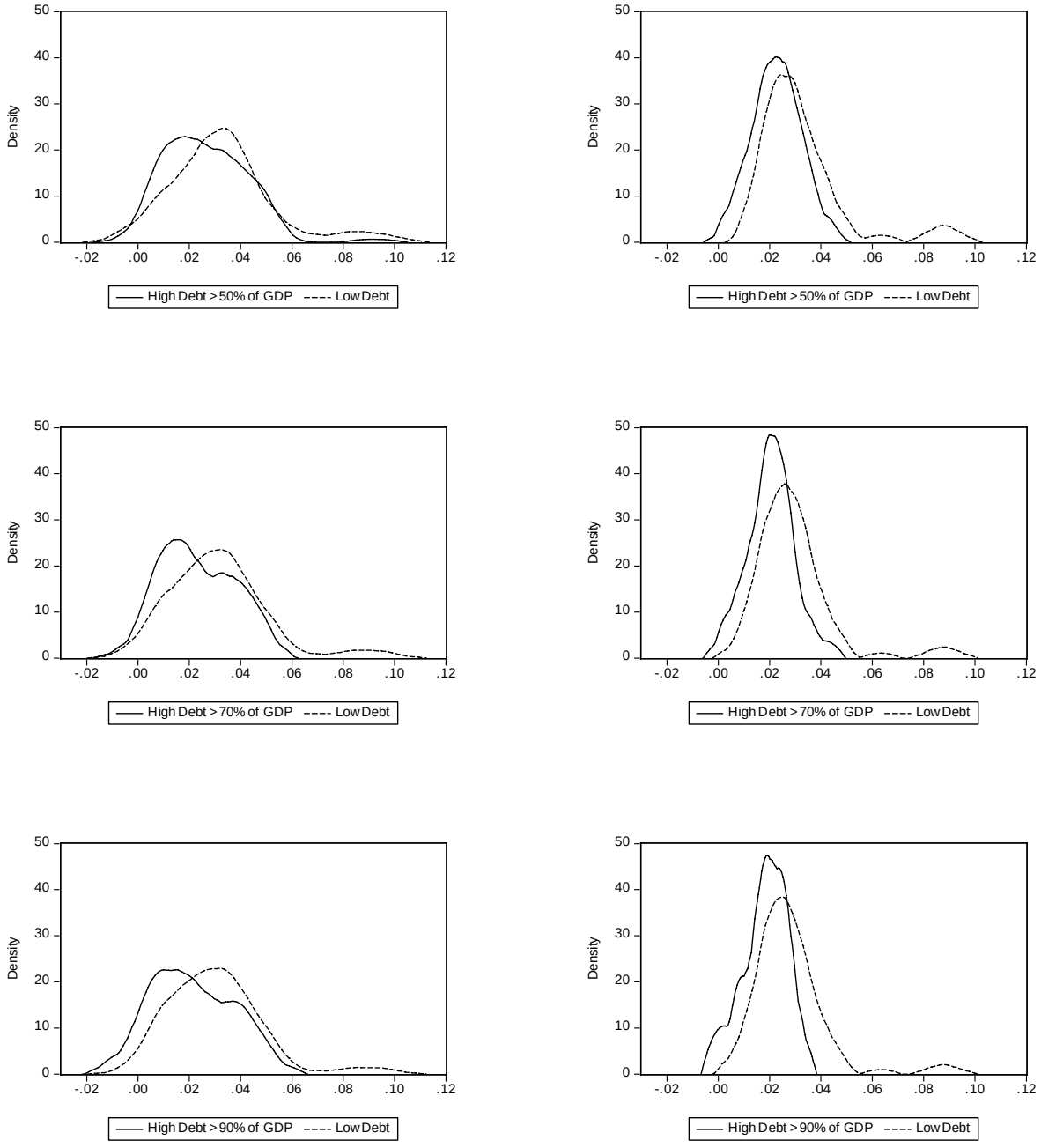
Dependent variable: per capital real GDP growth	Coefficient	Coefficient
log of real per capital GDP	-0.180 ***	-0.173 ***
Years of education	0.015 ***	0.014 ***
Population growth	-0.411 **	-0.356
Inflation	-0.051 **	-0.063 *
Openness ratio	0.015	0.014
Saving rate	0.002	0.002
Government gross financial liabilities	-0.040 **	
Gross financial liabilities < 45% of GDP		-0.040
Gross financial liabilities between lower and upper thresholds		-0.050 *
Gross financial liabilities > 66% of GDP		-0.100 **
Adjusted R-squard	0.490	0.523
Observations	96	96
P value for three regime model		0.01

Notes: *, ** and *** denote statistical significance at the 10%, 5% and 1% levels.

Figure 3**. Growth conditional on past debt levels**

Left hand Panel: growth in the following 5 years; right hand panel: growth in the following 10 years

Top panel: debt threshold 50% of GDP; middle panel debt threshold 70% of GDP; bottom panel debt threshold 90% of GDP



Note: The distributions are kernel densities for growth rates in the subsequent 5 and 10 years when growth rates are above and below the given threshold (see Box 1 for a description of the data).

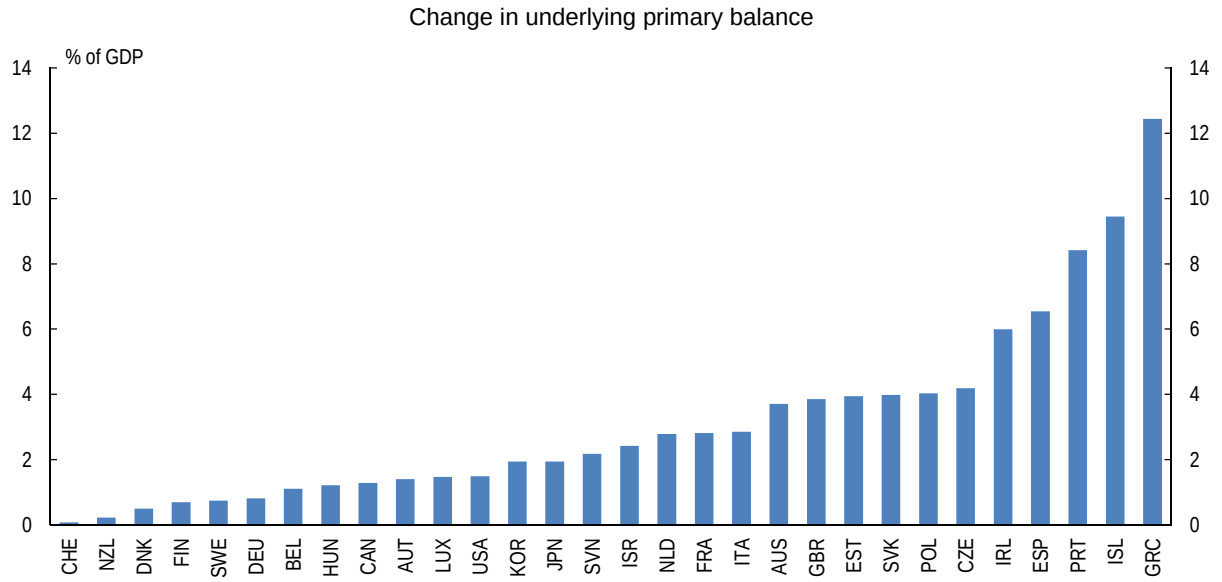
11. In sum, high debt levels are likely to have negative impacts on growth, though correlation is not the same as causation. Hence, there are good reasons for many countries to reduce their debt overhangs,

including creating room to react to future shocks. Reducing debt in turn has implications for growth both in the short and long term, with the scale of the necessary adjustment likely to give some indication of how painful fiscal consolidation will be. We turn to this issue in the next section.

Size of adjustment

12. Facing large debt overhangs, many countries have already started fiscal consolidation, which has implications for economic growth in the short term. In some cases, notably for those countries most under pressure from the bond markets, the on-going and announced tightening is substantial, rapid and unusually correlated by historical comparison (Figure 4). Between the trough (measured by the underlying primary balance) following the onset of the crisis, which was 2009 for most countries, and the projected value for 2012, five countries are expected to tighten by more than 5% of GDP (Greece, Iceland, Ireland, Portugal and Spain). In 11 other countries, underlying primary balances are expected to have tightened by more than 2% of GDP. Recent policy announcement imply that these numbers would be larger if recalculated today.

Figure 4. **Cumulative fiscal tightening between the deficit trough and 2012**



Source: *OECD Economic Outlook 90 Database*.

13. Additional fiscal consolidation will be required beyond 2012. Recent OECD work has assessed these post-2012 needs, both in terms of stabilising debt over the medium term and also meeting prudent long-term debt targets. The consolidation requirements to stabilise debt (OECD, 2011c), are based on stylised assumptions about a sustained and gradual annual tightening of the underlying primary balance by 0.5% of GDP until debt stabilization is reached. The long-term fiscal gaps on the other hand make an alternative stylised assumption that the tightening will be implemented immediately and sustained until 2050 to meet a specific debt target (Merola and Sutherland, 2011). Both sets of assumptions ignore the implications for output, which will obviously be important (discussed below). Both approaches come to similar conclusions on the need for consolidation, but here we concentrate on the long-term fiscal gap calculations, which will be used later in the paper to illustrate consolidation options.

Fiscal gaps

14. The fiscal gap shows the *immediate* and *permanent* improvement in the underlying primary balance that is required to ensure that debt meets a target at a certain point in time, based on a simplified model of the economy and a number of assumptions about growth, interest rates, inflation and underlying fiscal policy (see appendix). [1] The presentation of the results below typically reports the fiscal gaps for ensuring gross financial liabilities is 50% of GDP in 2050 (Box 2). This is intended to be illustrative and not normative. Indeed, different debt targets will be appropriate for different countries. For example, a low gross debt target may be less compelling for countries with large government financial asset holdings. In other cases, the public has demonstrated a preference for very low levels of debt. Countries with large implicit liabilities due to a large financial sector may wish to err on the side of caution. Although the 50% target is arbitrary it may nonetheless be supported by some arguments. Thus, empirical estimation suggests that changes in the functioning of the economy occur around debt levels of 70-80% of GDP. For example, interest rate effects of debt seem to become more pronounced (Egert, 2010), offsetting saving responses to discretionary policy changes become more powerful (Roehn, 2010) and, as illustrated above, trend growth seems to suffer. Building in a safety margin to avoid exceeding the 70-80% levels in a downturn may suggest aiming for 50% or thereabout during normal times. In any case, over a very long period such as up to 2050, the size of fiscal gap does not depend strongly on the particular target debt level (see below).

Box 2. **Debt objectives**

Various choices have to be made in setting a debt target:

The target can be based on either gross or net debt/financial liabilities. Gross financial liabilities are a visible headline indicator and typically the measure used in empirical analysis. Net financial liabilities are in principle more appropriate when considering long-term sustainability, though government net worth, which also takes into account non-financial assets (the public capital stock), may be the appropriate indicator when also considering inter-generational issues. However, there are serious problems due to lack of comparability across countries, particularly when valuing government non-financial assets. Furthermore, government assets may not be easily used to offset liabilities, at least in the short term. For example, it may not be advisable to privatise public enterprises operating in sectors with significant market failures or when financial markets could not easily absorb large asset sales. There may also be asymmetries across levels of government and with social security funds between the holding of assets and liabilities.

The scope of the public sector can vary. For example, the debt target may affect only the central government, general government or an even wider definition, including for instance, public enterprises. The choice can make a sizeable difference. In the United Kingdom, recent whole of government accounts estimated net liabilities to be 84.5% of GDP in 2009-10, whereas the national accounts net liabilities measure was 52.8% of GDP (HM Treasury, 2011).

If the focus is on servicing debt, then the measure of debt should correspond to gross interest bearing liabilities but if it is the present value budget constraint, all liabilities should be included.

The target should address the effect of ageing on entitlement spending (ageing is not the primary driver of health spending but is used as a catch-all label here). The appropriate degree of consolidation will need to take into account the impact of ageing-related spending. Ageing-related spending pressures stem from two factors. First, in many OECD countries spending ramps up with the demographic transition as the post-war "baby boomers" move into retirement. As this transition is either already happening or is imminent, the policy options are limited. In this light, the "hump" in spending may need to be absorbed and adds to the consolidation requirement. A second, uncertain but potentially huge or even infinite, ageing effect on spending stems from longevity, which has been more or less steadily rising for more than 150 years across OECD countries. In this case, the appropriate response is to reform pension and other

1. Following a severe economic dislocation, estimating potential output and thereby the underlying primary balance represents a challenge. While the fiscal gap simulations do not directly assess uncertainties about potential output, the variety of simulations reported below reveal how varying different parameters affect the fiscal gap calculations.

benefit systems, such as long-term care, rather than to attempt to pre-save to finance the rising ageing-related spending. Attempting to pre-save for future increase in longevity rather than adjusting pension and other welfare schemes would be unfair across generations and would be difficult in light of uncertainty concerning the development of longevity.

More generally, the target should also consider inter-generational fairness. Pay-as-you-go pension systems present an obvious example of a transfer of resources between generations. Likewise, "excessive" deficits can transfer liabilities to future generations. In other cases, investment can create assets which will be enjoyed by future generations. As such, the degree of consolidation will need to consider the source of the transfer between generations and how much of a burden it is fair to pass onto future generations.

15. The fiscal gaps should be seen as giving a common metric for assessing the need for fiscal consolidation rather than being normative about how such a consolidation should be implemented. When the fiscal gap is large, it would be difficult to implement such a large consolidation effort immediately. Furthermore, sustaining the fiscal policy tightening, even seemingly modest ones, over very long periods may also present a considerable challenge. Finally, as the fiscal gaps are based on meeting arbitrary debt targets in 2050, the evolution of gross debt is unlikely to be stable as a share of GDP at the end of the simulation. In some cases, for example, the fiscal gap will involve substantial undershooting of the debt target early in the simulation, masking pressures on public finances that will continue to mount beyond the end of the simulation.

Baseline simulation

16. The baseline simulation shows the immediate tightening of the underlying primary balance in 2013 needed to ensure that gross financial liabilities are 50% of GDP in 2050. The baseline assumes that pension, health and long-term care spending is constant as a share of GDP and, as such, the fiscal gaps present the minimum that is required to meet consolidation needs in the case when pensions and health schemes are reformed to alleviate any upward pressure on spending or when other spending categories are curtailed and taxes raised to accommodate such spending pressures (simulations incorporating spending pressures emanating from pensions, health and long-term care are presented below).

17. Fiscal gaps differ across countries mainly because of large differences in underlying deficits at the starting point and to some extent due to differences in the level of initial debt (Appendix Table). Countries already undertaking large fiscal consolidations (Greece, Iceland, Portugal and Spain) generally face moderate fiscal gaps on the assumption that the present large improvements in underlying primary balances are maintained. Countries where underlying deficits are expected to remain substantial in 2012 face much larger fiscal gaps. For example, the fiscal gaps for Japan, the United States, the United Kingdom and New Zealand exceed 5% of GDP. On the other hand, a number of countries – Korea, Luxembourg, Sweden and Switzerland – do not face any additional tightening requirements to meet the debt target. It may seem ironic that euro area countries with relatively modest fiscal gaps are the victims of a virulent debt crisis whereas other countries with much larger fiscal gaps enjoy very low bond yields at present. This partly reflects concerns about potential needs for intervention in euro area banking systems, but also that euro area debt essentially corresponds to foreign currency denominated debt for the individual country. Lately, pressures may also have reflected increased concerns about the integrity of the euro area more generally.

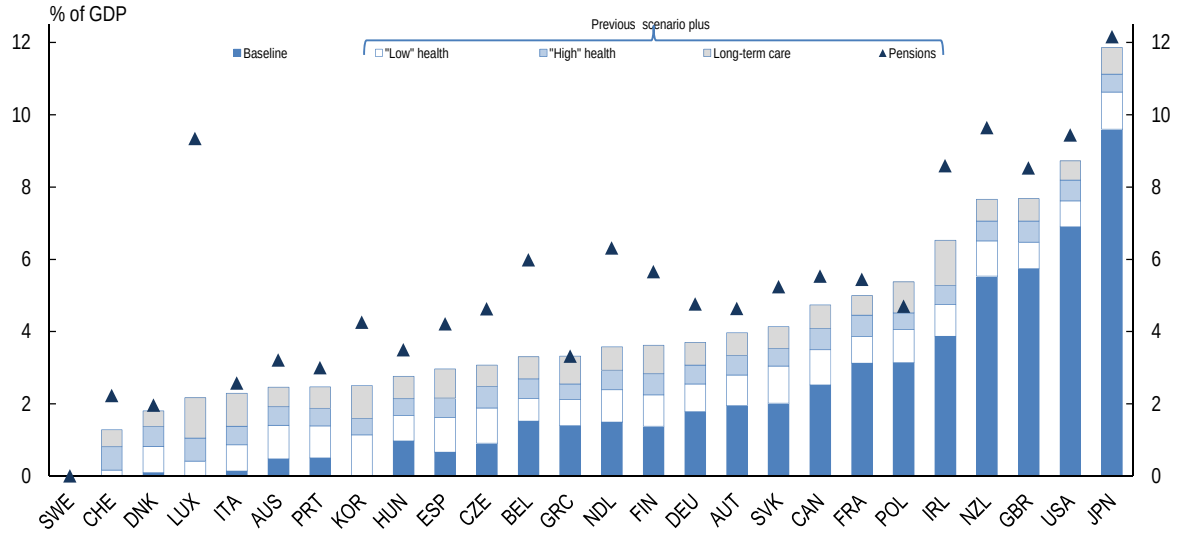
18. When spending pressures projected to arise from health and long-term care and pensions are included, all countries, with the exception of Sweden, will require significant additional fiscal consolidation.

- In the case of health care spending, higher levels of spending are not necessarily undesirable, but financing higher spending can create difficulties (Hall and Jones, 2007). Two different sets of health care spending projections are used (Oliveira-Martins and de la Maisonneuve, 2006). The average projected increases in health and long-term care spending by 2050 are 3½ per cent of GDP in a low spending scenario, when it is assumed that spending increases above those related to demographic change and to a unitary income elasticity will gradually fade, and around 6% of GDP in a high spending one. As the projected increases are relatively similar across countries, because health spending is not primarily driven by demographics but rather to a large extent by expected supply developments, the impact on the fiscal gaps does not vary much across countries. Nonetheless, the fiscal gaps rise over 1.5% of GDP in Canada, the Czech Republic, Japan, New Zealand and Switzerland when greater cost pressures affect health spending (Figure 5).

- Including pension spending alters radically the fiscal gaps for many countries relative to the baseline scenario (Figure 5).[2] The fiscal gaps of the countries facing the largest pension problems, such as Luxembourg, Belgium and the Netherlands underscore that meeting these challenges would be better addressed by reform rather than pre-saving. In some cases, such as Greece and Spain, reforms to the pension systems in 2010, which are incorporated in the projections, have addressed significant pressures emanating from this source. In Sweden and Poland, the notionally-defined contribution pension system means that no additional or even less tightening is required to meet a gross financial liabilities debt target of 50% of GDP in 2050.

Figure 5. **Fiscal gaps, baseline and with health and long-term care spending and pensions**

Immediate rise in the underlying primary balance needed to bring gross financial liabilities to 50% of GDP in 2050



Note: "Low" health assumes policy action curbs health spending growth. "High" health is the additional cost pressure in the absence of these policy actions.

19. The fiscal gaps do not change markedly relative to the baseline if alternative debt targets are used. This occurs because even relatively small changes to underlying fiscal positions add up when maintained for 40 years. It is the same effect that lies behind initial debt levels having an only modest

2. The pension projections are based on OECD (2011a). For Greece and Spain, estimates of the impact of reforms in 2010 and a change in the law in 2011, respectively, are used. For the United States, estimates from CBO (2011) are used. For most European countries, public sector occupational schemes are included. This is not the case for Canada and Japan. The path of projected public pension spending is phased in so that the spending profile follows the profile of the old-age dependency ratio.

effect on fiscal gaps compared with initial deficit levels. Taking government financial assets into consideration may indicate that fiscal positions are in relatively better shape, notably for Japan. In other cases, such as in Finland, the large net asset position reflects pre-funding for pension spending.

Debt dynamics

20. How will the debt overhang be worked off? A review of episodes of declining debt since the early 1970s suggests that improvements in the primary balance are more consistently important in reducing debt, though at times interest rate and growth dynamics can help.[3] One possible decomposition of past debt developments shows the difference between the inertial contributions of debt dynamics on the one hand and the more direct policy lever of the primary balance on the other (Table 2). When debt has been falling in recent decades this has been typically accompanied by the primary balance having a negative effect on debt. The real interest rate and real growth rate effects often offset one another. That said, in some countries during the 1970s, negative real interest rates had an effect allowing them to run larger primary deficits.

Table 2**. Episodes of falling debt: the contribution of the primary balance, inflation and growth**

	Episode	Total change in gross financial liabilities, %GDP	Change after accounting for valuation effects	primary balance	of which real growth	real interest
Australia	1996-2008	-27.7	-18.1	-24.0	-11.6	17.6
Belgium	1994-2007	-52.6	-33.7	-64.0	-37.8	63.9
	1971-1976	-11.7	-0.3	5.7	-10.9	-1.1
Canda	1997-2000	-19.6	-19.8	-21.7	-17.1	25.5
	2002-2007	-16.1	-16.6	-13.6	-11.6	17.1
	1985-1989	-12.5	-15.3	-31.7	-7.5	21.3
Denmark	1994-2007	-58.0	-27.3	-41.3	-23.0	34.5
	1999-2001	-6.0	-0.8	-3.4	-5.8	6.8
France	1999-2001	-2.4	7.7	-5.0	-4.0	8.8
Germany	1999-2003	-15.7	-9.2	-16.6	-9.2	14.6
Italy	1988-1991	-13.6	-10.8	-11.2	-14.0	10.0
Japan	1999-2007	-33.2	-27.3	-19.8	-19.3	3.2
Spain	1985-1990	-24.6	-13.5	-25.8	-9.4	13.4
Sweden	1997-2003	-23.6	-6.8	-17.9	-15.9	18.7
	1972-1976	-20.1	-6.6	8.6	-6.9	-12.8
United Kingdom	1978-1981	-11.8	1.1	4.5	-1.5	-4.8
	1985-1990	-18.3	3.4	-9.1	-9.1	11.9
	1999-2001	-12.2	-9.6	-12.1	-4.6	5.4
	1972-1974	-5.4	-5.9	-1.5	-4.5	-0.7
United States	1976-1979	-3.5	-4.5	-0.2	-5.4	-0.2
	1994-2001	-17.4	-12.1	-15.6	-18.5	24.7

Note: the decomposition is based on the relationship: $d_t - d_{t-1} = \frac{r_t}{1+g_t} d_{t-1} - \frac{g_t}{1+g_t} d_{t-1} - pb_t$, where *d* is the debt as a ratio of GDP, *r* is the real interest rate, *g* is the real growth rate and *pb* is the primary balance as a ratio of GDP.

3. In earlier periods of very high debt, overhangs were worked off by rapid growth, primary balances and negative real returns, helped in some cases by financial repression (see below). For example, Hall and Sargent (2011) estimate that the debt reduction as a per cent of GDP in the United States between 1945 and 1974 was mainly the result of high growth and primary surpluses with about one-fifth of the reduction stemming from negative real returns due principally to high inflation.

The effects of stronger productivity growth

21. Going forward, debt dynamics can be influenced by stronger productivity growth. To illustrate this, simple calculations reveal the effect of productivity growth on debt levels over a 10 year period (Table 3). Extending the calculation beyond the medium term would have a larger impact. Nonetheless, for the countries with the largest fiscal gaps, while productivity gains would help, the fiscal challenge remains large. In these calculations, interest rates are assumed not to change, although they would likely rise with a boost in productivity, thereby undoing some of the potential gains. On the other hand, if government spending did not rise fully in line with GDP, the gains from higher growth could be substantial by improving the underlying primary balance.

Table 3**. The effect of higher productivity on the real growth effect**

Reduction in initial debt stock as per cent of GDP after 10 years with growth in the baseline (*OECD Economic Outlook* 89 medium term baseline) and with growth rates raised by 0.25 and 0.5 basis points.

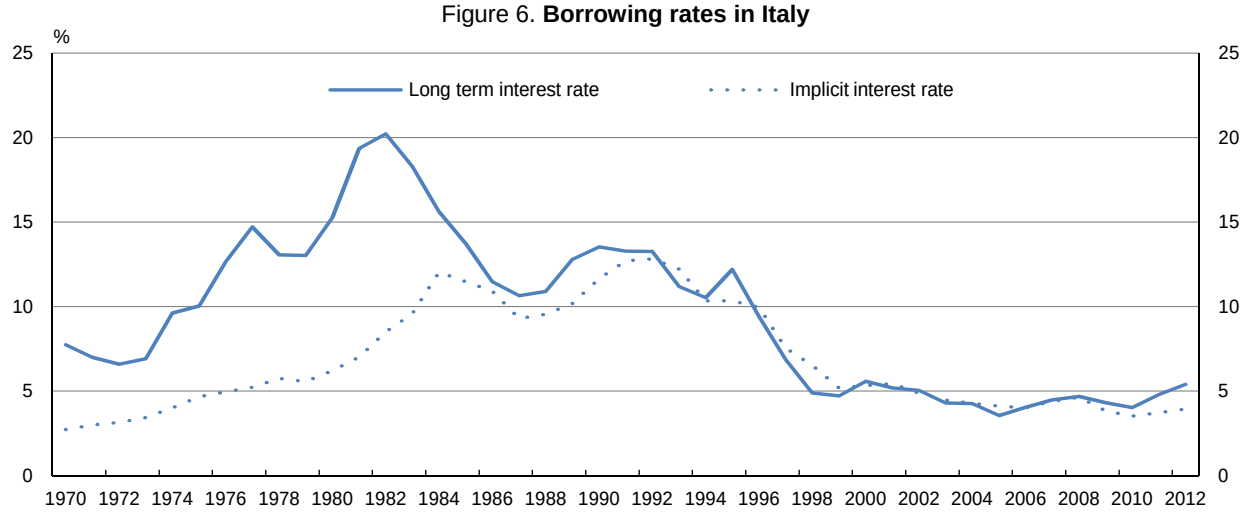
	Initial debt level	Real growth effect, as % of GDP		
	% of GDP	Baseline	+ 0.25 basis points	+ 0.5 basis ponts
Australia	31	7.2	7.5	8.0
Austria	82	12.9	14.2	15.6
Belgium	100	13.5	15.2	16.9
Canada	88	15.2	16.5	17.9
Czech Republic	51	10.7	11.3	12.0
Denmark	60	8.2	9.2	10.2
Estonia	19	4.1	4.3	4.6
Finland	66	12.1	13.1	14.1
France	100	16.0	17.6	19.2
Germany	87	9.5	11.1	12.7
Greece	159	35.8	37.7	39.9
Hungary	81	11.5	12.9	14.2
Iceland	120	26.7	28.1	29.8
Ireland	126	34.8	35.9	37.4
Isreal	70	19.5	20.2	21.1
Italy	128	14.7	17.1	19.4
Japan	219	32.8	36.4	40.0
Korea	33	7.5	7.9	8.4
Luxembourg	24	5.9	6.1	6.4
Netherlands	75	8.5	9.9	11.3
New Zealand	52	10.8	11.5	12.2
Norway	51	11.8	12.4	13.1
Poland	66	10.7	11.7	12.8
Portugal	116	26.7	28.1	29.6
Slovak Republic	51	10.2	10.9	11.6
Slovenia	56	6.8	7.9	8.9
Spain	75	17.8	18.7	19.7
Sweden	41	6.9	7.5	8.2
Switzerland	37	6.0	6.5	7.1
United Kingdom	93	17.1	18.5	19.9
United States	107	22.3	23.7	25.2

Inflation and interest rates

22. One possible way to deal with a high debt level is to erode it through higher inflation, but this is likely to be accompanied by drawbacks. Higher inflation is most likely to have an effect in an environment when debt is non-indexed, maturity is relatively long and rollover requirements are low, given that interest rates are likely to respond to higher inflation rates.[4] Even in this case, simulations presented in the *OECD Economic Outlook* 89 show that the contribution of inflation to reducing debt is modest (OECD, 2011c). For a standard country with debt around 100% of GDP and an average maturity structure, 1 percentage point on inflation would typically reduce the debt ratio by some 5-6 percentage points assuming the interest rate on new borrowing rose in tandem with inflation. Getting debt to even lower levels would correspondingly require higher permanent inflation rates. The drawbacks of such an approach to reducing debt would be felt principally through the negative growth effects of higher rates of inflation (OECD, 2003), some of which may accrue through associated higher price volatility as well as distortions created through interactions with the tax and benefit system (Edey, 1994).

23. For higher inflation to make a marked dent in debt levels, some form of financial repression would probably be needed to ensure interest rates remain low relative to inflation.[5] Following the end of World War II until the beginning of the 1980s, financial repression often played a role in reducing the huge stocks of debt accumulated during the war. Reinhart and Sbracia (2011) estimate that financial repression contributed to a "liquidation effect" which, for example, amounted to a reduction of Italian government debt of around 5% annually. Figure 6 presents suggestive evidence of financial repression during the 1970s, particularly after mid-decade when inflation was no longer surging, during which a large wedge existed between the yield on 10 year government bonds and the effective interest rate the government was paying on debt. While financial repression may be one avenue to liquidate debt there are adverse consequences. For example, Jonung (2011) argues that the imbalances which developed as a cause of financial repression contributed directly to financial crises in the Nordic countries in the late 1980s and early 1990s.

Figure 6. **Borrowing rates in Italy**



Source: *OECD Economic Outlook 90 Database*.

4. Aizenman and Marion (2009) show for the United States that the maturity structure of publically-held debt is shorter than in the post-war period, reducing the incentive to use inflation to reduce the debt overhang. On the other hand, a larger share of debt is held by foreigners, which pulls in the opposite direction.

5. Financial repression includes directed lending to government by captive domestic lenders, caps on interest rates, regulation of cross-border capital movements and a tighter connection between government and the operation of banks.

Dynamics of adjustment

24. The previous section suggested that relying on favourable debt dynamics to address the debt overhang may not be a viable option. Hence, improvements in the primary balance are called for. The pace of consolidation needs to balance consolidation requirements with the effects of fiscal retrenchment on aggregate demand. Ideally, in the short term, the pace should depend on the state of the public finances, the strength of the recovery, the ability of monetary policy to cushion the demand effects of fiscal tightening, and the need to signal a credible commitment to fiscal consolidation. However, there are significant uncertainties surrounding several of these factors, which make gauging the appropriate pace of consolidation complicated. These uncertainties would argue for a consolidation strategy that could be implemented flexibly, capable of adjusting the speed and intensity as new information becomes available. Moreover, it argues for implementation that initially favours policies with comparatively low multipliers and reforms that underpin credibility, but have little negative effect on demand in the short run. For example, pension reforms can have large effects on long-term sustainability and may have little negative effect in the short term. Indeed, insofar as postponed retirement reduces the need for future pensioners to save for retirement there could in principle even be a positive effect.

The pace of consolidation

25. Given high government debt-to-GDP ratios, some countries run the risk of unsustainable debt dynamics developing, especially if financing costs spike because of lack of credibility. While interest rates on government debt remain relatively low in many countries, debt levels in the wake of the crisis are significantly higher, implying latent upward pressure on borrowing costs. When interest rates are linked to government debt levels, this can tilt the case towards earlier consolidation. Even moderate delays may incur high costs with the development of particularly adverse debt dynamics (Corsetti *et al*., 2011). On average for the OECD, interest payments accounted for around 2.5% of GDP in 2007, but higher debt levels coupled with a normalisation of interest rates could push up interest payments to over 4% of GDP in 2026 (OECD, 2011c). Thus, in countries which are particularly exposed to a financial market reaction the extent of consolidation may need to be larger and the pace faster than may be optimal if the main concern was the strength of the recovery.

26. The impact of fiscal consolidation on economic activity will depend on the size and time profile of the fiscal multipliers. To explore the potential importance of different consolidation strategies a number of simulations were run using the NiGEM macro-econometric model. The model embodies a set of multipliers that may differ depending on the assumptions under which the model is run, but more generally, the size of multipliers remains a subject of debate (Box 3). Differences across countries are largely related to the size and openness of the economy, the size of the public sector, the degree of dependence of consumption on current income and also the flexibility of the economy (Table 4). The multipliers in the model tend to be largest for government consumption, whereas tax impulses tend to have lower multipliers than spending. The differences in multipliers across instruments suggest that the sequencing of fiscal consolidations could start with tax increases before cutting government spending, though political economy considerations may suggest otherwise. Beyond the model-based multipliers, pension reform that delay retirement may, as argued above, have particularly attractive features.

Table 4. **First-year multipliers across countries**

	Government spending		Taxes	
	Consumption	Benefits	Indirect	Direct
Australia	-0.61	-0.17	-0.32	-0.12
Belgium	-0.16	-0.04	-0.02	-0.03
Canada	-0.43	-0.13	-0.1	-0.08
Denmark	-0.54	-0.1	-0.02	-0.05
Finland	-0.67	-0.16	-0.05	-0.1
France	-0.65	-0.33	-0.11	-0.26
Germany	-0.46	-0.29	-0.12	-0.25
Greece	-1.02	-0.44	-0.29	-0.37
Ireland	-0.33	-0.11	-0.06	-0.08
Italy	-0.62	-0.17	-0.06	-0.12
Japan	-1.15	-0.58	-0.43	-0.48
Neths	-0.51	-0.19	-0.05	-0.15
Austria	-0.55	-0.18	-0.05	-0.13
Portugal	-0.7	-0.17	-0.06	-0.12
Sweden	-0.4	-0.17	-0.05	-0.13
Spain	-0.74	-0.17	-0.16	-0.12
United Kingdom	-0.55	-0.14	-0.14	-0.08
United States	-0.9	-0.25	-0.27	-0.16

Note: First year multipliers based on the NiGEM model.

Box 3. **Fiscal policy multipliers**

The empirical research on the size of fiscal policy multipliers is voluminous and far from settled. Multipliers vary across countries and type of fiscal policy instrument, in part, due to differences in economic structures and the state of the economy, such as the state of financial markets (Cogan *et al*., 2010). A wide range of factors could potentially influence the effect of fiscal consolidation on activity.

- Multipliers may change in potency due to the state of the economy. In particular, during a recession, when the output gap is negative, expansionary spending is less likely to crowd out private consumption or investment (Auerbach and Gorodnichenko, 2010). Furthermore, when the zero interest rate bound is no longer a constraint, monetary policy could respond to fiscal contraction and thus crowd in private demand (Christiano *et al.*, 2009; Woodford, 2010). At least in the short run, while interest rates are close to the zero bound, the contractionary effects of fiscal consolidation are likely to be stronger. Within Europe, the situation is more complex due to the scope for fiscal tightening to affect yield spreads though a number of channels. Furthermore, fiscal needs across countries vary enormously making it impossible for a common monetary policy to provide appropriate accommodation everywhere.

- Whether a fiscal policy change is permanent or temporary can affect the size of the multiplier (Woodford, 2010; Cogan *et al*., 2010).

- Expectations may have an effect through private saving reactions to fiscal policy. Recent OECD work assessing "Ricardian equivalence" suggests that the public-private saving offset becomes larger at high government debt levels (Röhn, 2010). These results suggest that at the current high level of government debt in many countries there may be a less contractionary effect from pursuing fiscal consolidation. However, with financial markets impaired some of this cushioning effect may be mitigated.

- Expectations may also matter in other cases. A fiscal consolidation strategy that includes credible cuts in the future would lower long-term rates immediately and provide some stimulus. While such an effect is unlikely to give much support in countries with very low bond yields, it could be more important for countries facing greater market pressure.

- A higher marginal propensity to consume out of current income by credit-constrained households can lead to a sharper contraction in response to the consolidation. The potency of fiscal policy may also rise if collateral constraints limit access to financial markets (Roeger and in't Veld, 2009). Financial market recovery may reduce the impact of these features, thus diminishing the size of multipliers during the consolidation period.

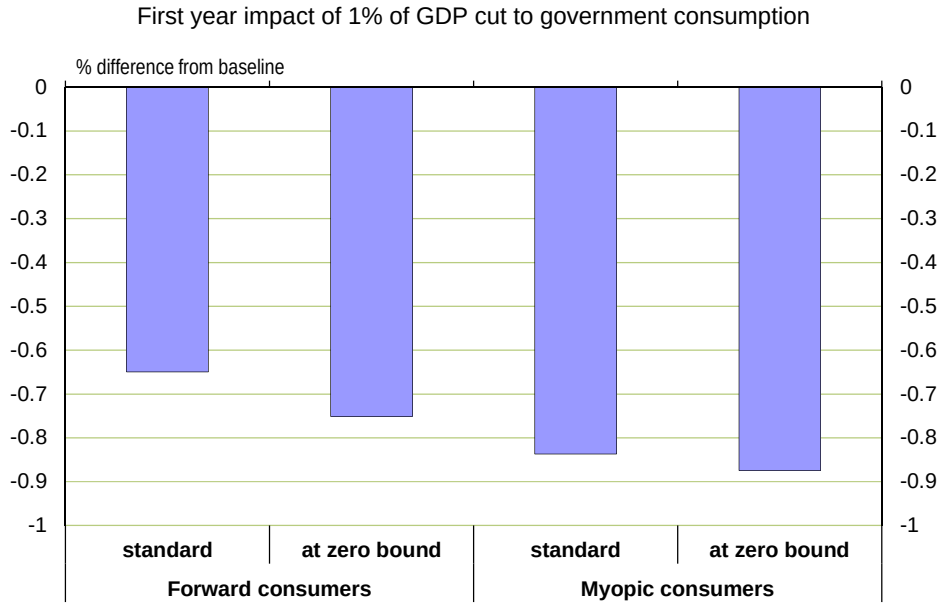
One strand of the empirical literature has argued that under certain circumstances fiscal consolidations can have non-Keynesian effects leading to so-called expansionary fiscal contractions (Giavazzi and Pagano, 1990). More recently, some authors have questioned the empirical approach behind these results. Guajardo *et al.* (2010), for example, examined the use of changes in cyclically-adjusted primary balances to identify fiscal consolidation episodes. If unsuccessful consolidation episodes fail relatively quickly the sample will only capture successful consolidations leading to a bias. If instead consolidation episodes are identified based on stated intentions by governments, they found that fiscal consolidations are typically contractionary.

Whether fiscal consolidation is exogenous to growth has also been questioned. If consolidations are typically initiated when growth is picking up, the finding of consolidation episodes being correlated with stronger growth would merely reflect that and not imply causality. Once this endogeneity is taken into account, the episodes based on movements in cyclically-adjusted primary balances are also typically contractionary (Hernandez-De Cos and Moral-Benito, 2011).

27. With policy rates low in many countries, and the zero lower bound still an important constraint, monetary policy is unlikely to be able to offer much support, arguing for a gradual phasing in of consolidation measures. As economies recover, monetary policy is less likely to be constrained by the zero bound and thus the pace of consolidation could be increased. To explore the implication of the zero bound a simulation for the United States is based on this constraint being binding during the first year of the simulation. As interest rates cannot fall, consumption does not absorb as much of the shock and output falls by 0.1 percentage points more than in a baseline where the zero floor is not binding and with forward-looking consumers. In NiGEM myopic consumers are less influenced by short-term interest rates. Hence the zero bound raises the multiplier by less if consumers are myopic, as can be seen from Figure 7. When agents are forward-looking (which is equivalent to assuming that policies are credible), the negative multiplier effects are smaller than when compared with scenarios when agents have myopic expectations. The simulations for the United States suggest that the multiplier effect of fiscal consolidation, based on a cut to government consumption, would shrink from -0.9 when all agents are backward looking, to -0.6 when agents are forward looking, but adjustments are not instantaneous, and somewhere in between when only consumers are myopic. In this context, policies and institutions that help commit government to fiscal probity have a potential role in cushioning activity in the short run.

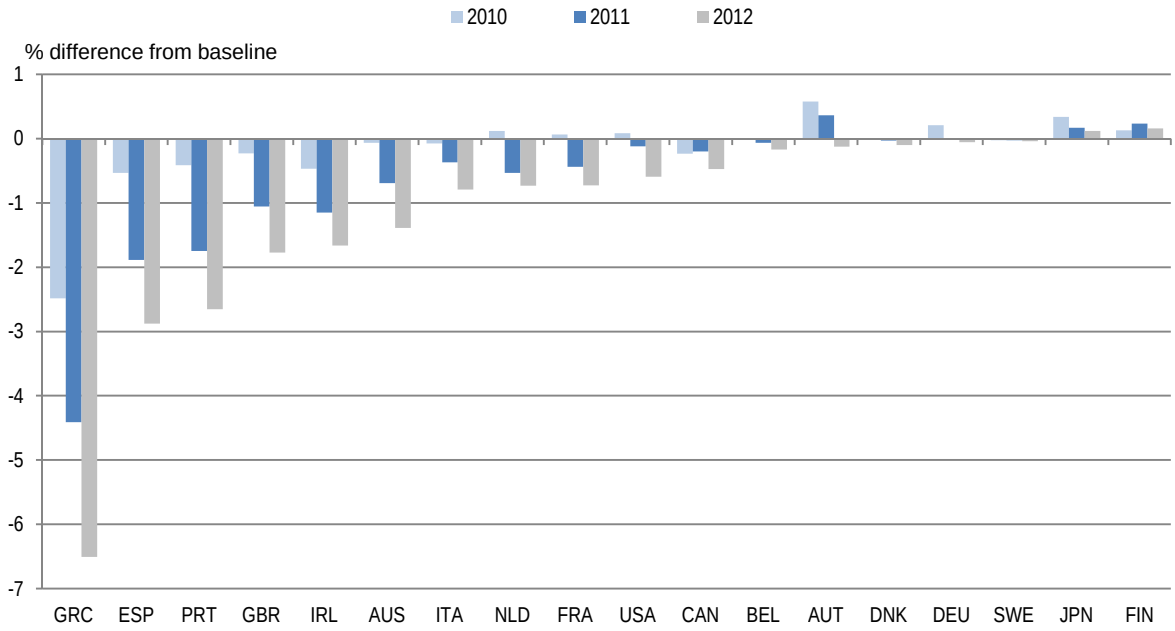
28. Using the model to assess the implications of announced and partly implemented programmes (announcements since mid-2011 are not included and would strengthen the negative impacts) suggest that these are severe for the countries consolidating most. In these simulations, which are based on simulations that are not in all cases realistic and may tend to make early consolidation look favourable, financial markets are forward looking, whereas consumers are myopic, all consolidation measures are permanent and monetary policy has some limited room to move. Moreover, the impacts of consolidation programmes are assessed one by one, rather than simultaneously. For example, the rapid and large consolidation in Greece is expected to lead to a cumulative reduction in GDP of over 6% relative to the baseline (Figure 8). Other substantial impacts on output are projected by the model in Ireland, Portugal, Spain and the United Kingdom. When governments consolidate simultaneously, the implications for output are more severe due to international spillovers. Simulations reported in OECD (2009) suggest that multipliers increase by a factor of ¼-½ in major OECD regions when they consolidate jointly as opposed to individually.

Figure 7. **Impact of the zero lower bound on interest rates on the US consolidation multiplier**



Source: Barrell *et al*. (2011).

Figure 8. **Impact of announced fiscal consolidation on GDP**



Note: Assumptions include financial markets are forward looking, consumers are myopic, all consolidation measures are permanent and monetary policy targets inflation and the stock of money.

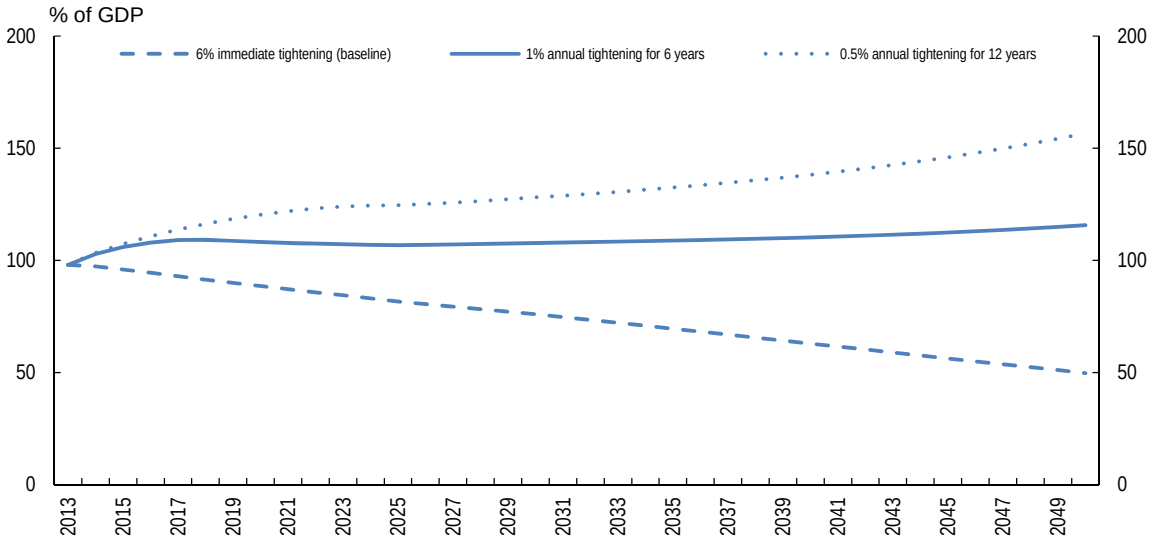
Consequences of gradual and delayed consolidation needs

29. When the state of fiscal policy doesn't dictate the pace of consolidation, more gradual tightening may minimise the short term pain but require a larger overall amount of consolidation. Simulations for the United States, using the long-run model behind the fiscal gaps and therefore assuming no impact of

consolidation on output, shows that gradual tightening could allow adverse debt dynamics to develop (Figure 9). Thus, too slow a consolidation may require further fiscal tightening to bring debt down to prudent levels. This arises because debt levels above a threshold of around 75% of GDP are assumed to incur a higher risk premium of four basis points for each additional percentage point of debt (Egert, 2010). Using the model, fiscal gap calculations examining the consequences of a short delay to fiscal consolidation generally find that for most countries this has little effect on the necessary tightening, as long as the subsequent consolidation is large, as implied by the fiscal gap. However, for countries where actual debt is high or current deficit levels imply a particularly rapid run-up in debt, such as New Zealand, the United Kingdom, the United States and Japan, even a short delay would visibly increase the required tightening of the underlying primary balance to reach prudent debt levels.

Figure 9. **The pace of fiscal tightening**

Evolution of gross financial liabilities for the United States when the underlying primary balance is tightened so that debt is 50% of GDP in 2050 and the consequences of phasing in the same tightening more gradually



Long-term growth and choice of instruments

30. The scale of consolidation needs suggests that consolidation should aim to use instruments that are friendly to long-term growth. In addition, supporting structural reforms can help, both through their implied effects on primary budget balances and to the extent higher growth is beneficial for debt dynamics. As concerns the primary balance and the respective contributions from lower spending and higher revenues, the "optimal" size of government is not known. However, the marginal net social costs - including the excess burden of taxation – of additional public spending are usually thought to increase more than proportionately with the additional taxation needed to finance spending. Hence, given the current high level of public spending in many OECD countries and the future spending pressures due to population ageing, a large part of consolidation probably should consist of cuts in public spending and addressing drivers of future spending pressures. In countries where spending is low, greater emphasis may have to be put on revenue measures.

Table 5. **Quantifying the contribution of various policy instruments to fiscal consolidation**

Per cent of GDP

	AUS	AUT	BEL	CAN	CHE	CZE	DEU	DNK	ESP	FRA	FIN	GBR	GRC	HUN	ISL
1. Social transfers															
A. Family benefits	0.5	0.7	0.6	-	-	0.1	-	1.4	-	1.1	0.9	1.3	-	1.4	1.0
B. Disability benefits	-	0.3	0.2	-	0.5	0.5	-	1.3	0.6	-	0.9	0.3	-	0.6	-
2. Pensions															
A. Eliminate tax breaks	2.7	0.1	0.1	2.0		0.1	0.8		0.2	0.0	0.1	1.2			1.0
3. Health care															
A. Increase efficiency	0.5	1.8	2.1	2.5	0.5	1.3	1.3	2.8	1.6	1.3	2.5	3.7	3.9	1.7	1.9
4. Education															
A. Increase efficiency in primary and secondary education	0.4	0.4	0.5	0.2	0.2	0.2	0.4	0.6	0.2		0.2	0.2		0.3	1.1
B. Introduce or raise tuition fees for tertiary education	-	0.4	0.4	-	0.4	0.3	0.4	0.4	0.2	0.3	0.4	-	0.4	0.4	0.3
5. Government wage bill															
A. Restore public-private sector pay relativities	-	0.3	0.6	-	-	0.4	0.2	2.0	1.0	-	0.5	1.8	-	-	-
6.. Reduce subsidies as share of GDP to OECD average	-	2.3	0.8	-	2.4	0.7	-	1.2	-	0.2	-	-	-	-	0.4
7. Broaden VAT base	0.6	-	1.4	-	-	-	0.4	-	1.4	1.4	0.1	1.8	2.0	0.1	0.8
8. Introduce or increase taxes on immovable property	-	0.8	0.6	-	0.9	0.8	0.6	-	0.3	-	0.5	-	0.8	0.7	-
9. Environmental taxes															
A. Cut GHG emissions to 20% below 1990 levels via an emission trading system with full permit auctioning	4.2	1.8	1.8	2.5	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	

Table 5. **Quantifying the contribution of various policy instruments to fiscal consolidation (*continued*)**

	IRL	ITA	JPN	KOR	LUX	MEX	NLD	NZL	NOR	POL	PRT	SVK	SWE	TUR	USA
1. Social transfers															
A. Family benefits	0.7	-	-	-	1.2	-	0.1	1.1	0.9	-	-	-	1.4	-	-
B. Disability benefits	-	-	-	-	0.1	-	0.8	0.7	1.8	0.6	0.3	-	1.3	-	-
2. Pensions															
A. Eliminate tax breaks	1.2	0.0	0.7		0.5	0.2			0.6	0.2	0.1	0.2			0.8
3. Health care															
A. Increase efficiency	4.8	1.1	0.8	0.6	2.0	0.7	2.7	2.6	1.5	1.5	1.0	2.7	2.7	1.5	2.7
4. Education															
A. Increase efficiency in primary and secondary education	0.3	0.4	0.2	-	0.5	-	0.3	0.3	0.8	0.2	0.1	0.2	0.5	-	0.8
B. Introduce or raise tuition fees for tertiary education	0.3	0.2	-	-	0.4	0.1	0.2	-	0.4	0.1	0.1	-	0.4	0.4	-
5. Government wage bill															
A. Restore public-private sector pay relativities	0.9	1.1	0.6	-	0.8	-	0.3	0.9	-	2.2	-	0.8	0.7	-	0.5
6. Reduce subsidies as share of GDP to OECD average	-	-	-	-	0.2	-	0.1	-	0.7	-	-	0.2	0.1	-	-
7. Broaden VAT base	0.4	2.6	-	-	-	2..5	-	-	0.2	1.4	1.2	0.6	-	3.3	
8. Introduce or increase taxes on immovable property	0.2	0.4	-	0.0	0.9	0.8	0.4	-	0.7	-	0.3	0.6	0.2	0.9	-
9. Environmental															
A. Cut GHG emissions to 20% below 1990 levels via an ETS with full permit auctioning	1.8	1.8	1.2		1.8		1.8	4.2		1.8	1.8	1.8	1.8		2.2

Notes:
An empty cell indicates that no information was available. Cells with a dash indicate that no savings are available from this source.
Estimates for family benefits are based on reducing the figure reported in the OECD Socex Database to the unweighted OECD average as a per cent of GDP.
Estimates for disability benefits are based on reducing the figure reported in the OECD Socex Database to the unweighted OECD average as a per cent of GDP.
The elimination of tax breaks for retirement is based on data for 2007 from OECD (2011), *Pensions at a Glance*.
Health care efficiency estimates are from Joumard *et al.* (2010).
Education efficiency estimates are based on Sutherland *et al.* (2007) updated to 2007 spending figures.
Tuition fees for tertiary education are based on raising direct household expenditure for tertiary education institutions to the unweighted average of those countries where households spend on this category.
Government wage relativities are based on returning the government to private sector wage ratio in the early 2000s.
Estimates for subsidies are based on reducing national account data for 2009 to the unweighted OECD average.
The figures for broadening VAT base assume collection efficiency rises to the unweighted OECD average.
The figures for immovable property are based on the unweighted average for 2008 from the Revenue Statistics.
Revenues from greenhouse gas emissions are based on de Serres *et al.* (2010).

31. Given that spending cuts are largely unavoidable, a key question is how to maximise the positive and minimise the negative impacts on long-run growth, while at the same time considering other policy objectives such as equity concerns. In some cases, rethinking how distributional goals are achieved may offer scope to reduce transfers while encouraging greater labour force participation. In other cases, scope to minimise costs exists by aiming to improve both allocative efficiency (better use of resources) and technical efficiency (maximising output for a given level of inputs). In most OECD countries, fiscal consolidation will also entail revenue reforms. There is scope to increase revenue by base broadening measures, particularly targeting so-called tax expenditures. When marginal rates need to go up, orientating measures towards those tax bases that have less distortionary effects can help to make fiscal consolidation on the revenue side less costly to long-term output. Finally, taxation of negative externalities may improve both welfare and public budgets.

Instrument options

Social transfers

32. Reforms in a number of countries have aimed to transform social transfers so that vulnerable groups are protected while encouraging greater labour force attachment. This includes, for example, reforming previously unconditional unemployment benefit systems and re-orientating child and family benefits towards employment-conditional measures such as child-care support. In other cases, some transfers, such as disability benefits, have been prone to misuse. Measures which address inflows into disability rolls can be effective in reducing spending while encouraging greater labour force participation. If such measures allowed high spending countries to move towards the current cross-country average spending ratio on family and disability benefits, countries could enjoy savings of over 0.5% of GDP on average and up to almost 3% of GDP in some countries (Table 5), while boosting long-term output.

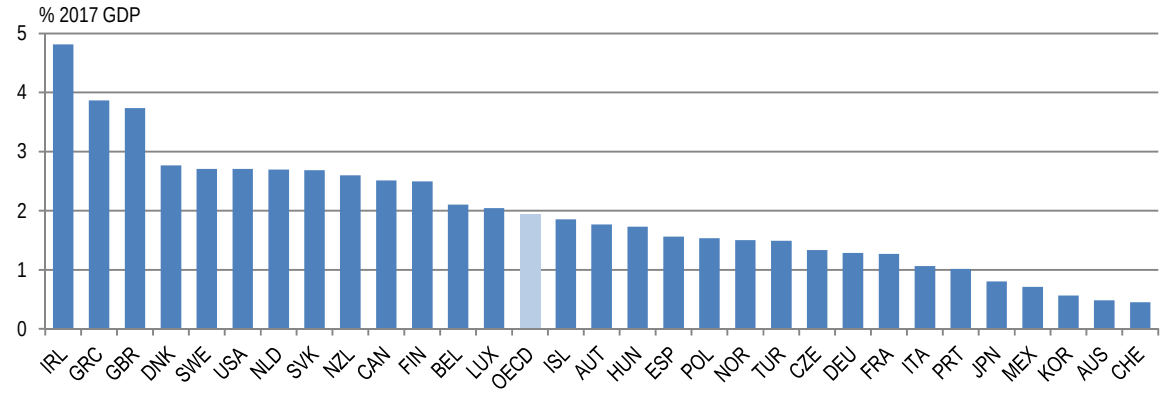
Greater efficiency

33. Work by the OECD has examined the opportunities to improve the efficiency in service delivery for health and education (similar savings are likely to be available in other spending programmes, Hagemann, 2011). These are important spending programmes accounting for about a quarter of government spending or on average across OECD countries around 10% of GDP between them.

- No "one-size-fits-all" exists for health, in the sense that no "model" of health care delivery seems to be universally more cost efficient than other "models". However, within each "model" countries achieve widely divergent degrees of cost efficiency, suggesting that optimisation at the margin rather than a switch of model is the best way to achieve savings. Indeed, adopting best practice policies could see potential efficiency gains in the region of 2% of GDP on average by 2017 (Joumard *et al.*, 2010), thereby allowing savings to be made without compromising service delivery (Figure 10, Table 5).

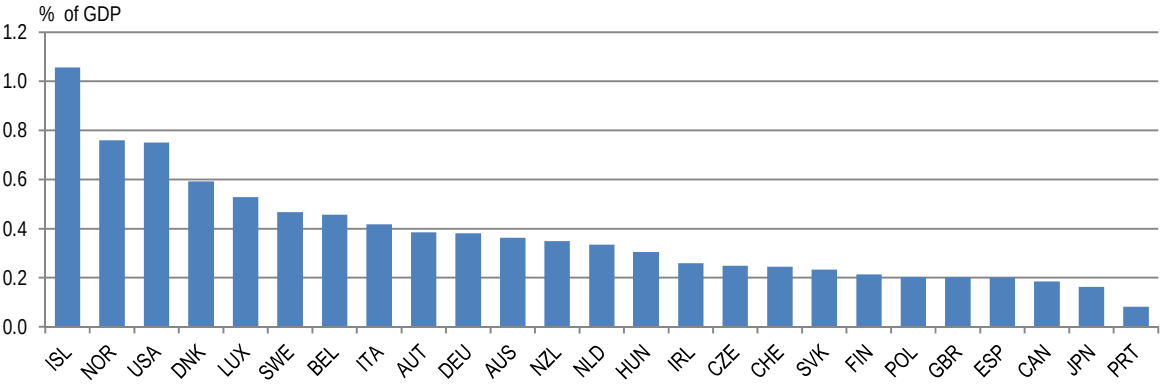
- For primary and secondary education, schools adopting best practice measures could realise important savings, up to around 1% of GDP in some cases (Sutherland *et al.*, 2007). The estimates for school savings are based on benchmarking individual school performance against the best performing schools with similar student populations and resources (using data envelopment analysis). The implications of reducing inefficiency are then translated into aggregate resource savings by the implied possible reduction in staffing costs (Figure 11, Table 5).

Figure 10. **Potential savings from greater efficiency in public health care spending**



Note: Potential savings represent the difference between a no-reform scenario and a scenario where countries would exploit efficiency gains. The no-reform scenario assumes that between 2007 and 2017 life expectancy and spending increase at the same pace as over the previous 10 years and that the mix between public and private spending remains constant over time.
Source: Joumard *et al.* (2010b).

Figure 11**. Potential savings from greater efficiency in primary and secondary education spending**



Source: Sutherland *et al.* (2007)

Government wages

34. Important gains can be achieved through management and pay reforms, and reducing the public sector wage bill is a candidate for fiscal consolidation in many countries. On average, the general government wage bill is close to 10% of GDP and accounts for roughly one quarter of overall spending. Indeed, there are countries where a large public-private sector wage gap has developed over time. Restoring the wage relativities in the early 2000s could yield significant savings in a number of countries (Table 5). Ireland and Hungary have demonstrated recently that substantial cuts in public sector wages can be implemented if there is an urgent need for consolidation and a case arising from public-private pay

relativities. That said, comparing public and private remuneration levels poses serious challenges, and requires valuation of working conditions and non-wage remuneration, such as defined benefit pension schemes. The ultimate test of adequacy is likely to be the difficulty or ease of recruitment into and retention in the civil service. From this perspective, budgetary savings achievable through reductions in the government wage bill should best be the outcome of a thorough review rather than across-the-board or arbitrary cuts in pay.

Subsidies

35. Subsidy reduction should rank high on the policy agenda as many subsidies may have surpassed their initial intended objective and may now have adverse economic effects. The elimination of subsidies (as defined in the national accounts), to the average for the OECD could yield sizeable savings in a number of countries (Table 5). Furthermore, by reducing the distortions they create, cutting subsidies offers the potential to boost growth.

Tuition fees

36. Close to a quarter of public spending on education is to support tertiary education, including tuition-free attendance in many countries, especially in continental Europe. A large share of returns to publicly-funded tertiary education accrue to individuals rather than to society (Blöndal *et al.*, 2002), and although some of the private returns are reduced by progressive taxes continued generous public support for higher education can be questioned. This is more so given the greater prevalence of tertiary education among middle and upper income households. The introduction or increase of tuition fees may also improve educational outcomes, by making schools more responsive to market demands, with long-term gains to human capital, the quality of labour supply, the economy's rate of potential growth, and overall fairness. Introducing or raising tuition fees to the average spending in countries that use tuition fees could yield additional revenues of around 0.4% of GDP (Table 5). Concerns that such reforms would reduce enrolment by students from poor backgrounds could to a large extent be addressed by loan programmes with repayment conditional on subsequent income level.

Tax expenditures

37. All OECD governments use tax expenditures to promote a range of policy objectives. The scope of tax expenditures varies greatly across OECD countries, but they account for very substantial revenue leakages in some cases. Not all tax expenditures are undesirable, though, as some improve equity-efficiency trade-offs, like the case of earned income tax credits. Many, however, are distorting, poorly targeted, and contribute to a lack of transparency. In some cases, estimates of the revenues forgone by a tax expenditure can exceed a percentage point of GDP and the aggregate impact of all tax expenditures is likely to exceed several percentage points of GDP in most OECD countries. Typically, the most costly tax expenditures are those aimed at boosting retirement savings, promoting homeownership, health insurance and charitable giving (OECD, 2010a).

38. Two examples reveal the potential importance for consolidation of reforming tax expenditures in personal income tax:

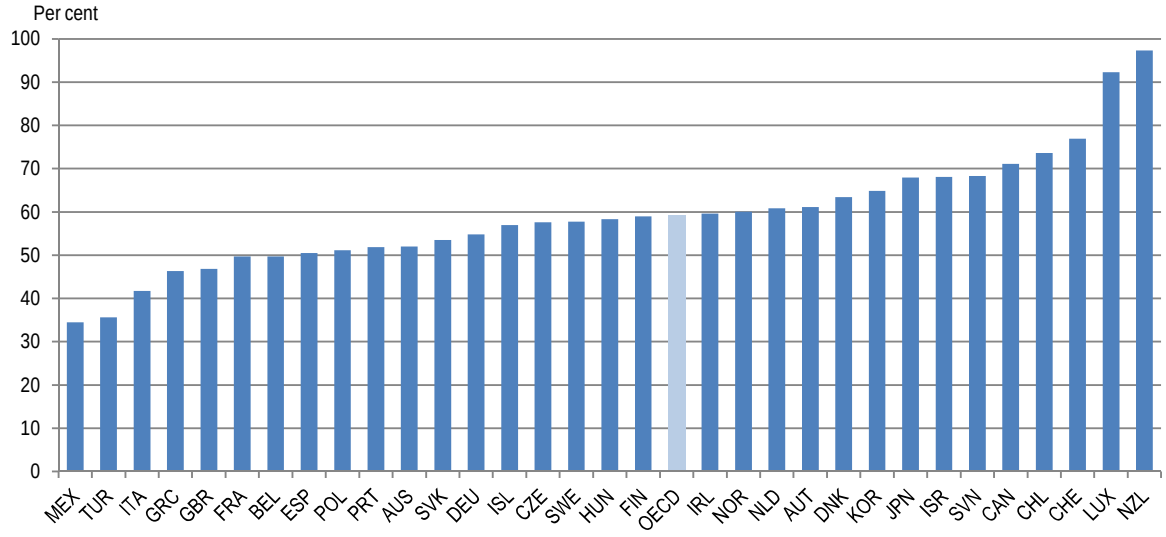
- Tax-favoured treatment of saving for retirement is found to boost retirement savings *per se*, but there is scant evidence that it raises aggregate private saving. Instead, such tax breaks result in a reallocation of saving from non-tax preferred to tax-preferred vehicles, while causing substantial revenue leakages, which may even reduce aggregate national saving. Phasing out such incentives could yield 1.7% of GDP or more in additional revenues on average across a sample of OECD countries (Antolin *et al.*, 2004).

- Preferential tax treatment of owner-occupied housing is one of the costliest tax preferences in many OECD countries. The most important source of housing-related revenue leakages arises from the tax exemption granted to the implicit rental income of the owner-occupied home. Whereas the owner of a residence that is rented pays tax on the rental payments (less interest and operational costs), the implicit rental income of the owner-occupant is tax-exempt in the vast majority of member countries, except in the Netherlands, Sweden and Switzerland.[6] Despite the exclusion of the implicit rental income, some countries nevertheless allow the deductibility of mortgage interest, as well as property taxes (normally paid at the sub-national level). In addition, many countries provide favourable treatment to long-term capital gains from the sale of owner-occupied housing, adding further to the post-tax attractiveness of investment in housing. Thus, by removing a bias favourable to owner-occupied housing, reform could not only increase revenue but also improve the allocation of capital, boosting growth.

39. There are also important tax expenditures in indirect taxation. While VAT is widely recognised as an efficient and buoyant revenue source, its revenue potential is not fully used. Indeed, with the exception of New Zealand, a substantial portion of potential revenue is foregone in most countries due to a combination of reduced VAT rates, a narrow base, and low compliance (Figure 12). There is thus considerable scope for boosting revenue through VAT reforms (Table 5). Direct fiscal consolidation aside, broadening the base and reducing the number of rates offer scope to improve administration and compliance, by reducing complexity and countering political pressure for additional low rates. A more effective means to meet distributional objectives may be to target compensatory increased cash transfers or refundable tax credits to compensate low-income households.

Figure 12. **Value added tax performance: the VAT revenue ratio**

Average 2007-08



Note: The VAT revenue ratio measures the difference between the VAT revenue actually collected and what would theoretically be raised if VAT was applied at the standard rate to the entire potential tax base in a "pure" VAT regime and all revenue was collected: The VAT revenue ratio equals VAT Revenue/(Consumption * Standard VAT rate)*100.

Source: OECD (2011), *Consumption Tax Trends 2010: VAT/GST and Excise Rates, Trends and Administration Issues*.

40. Financial services are typically exempted from the VAT, largely due to technical difficulties in determining the precise tax base for margin-based services (*i.e.*, intermediation). Since much of VAT paid by financial service providers on inputs is non-recoverable, the sector's VAT exemption causes a number

6. In the Netherlands and Switzerland, however, taxable imputed rentals are very low, which combined with mortgage interest deductibility acts to reduce personal income tax revenues significantly.

of economic distortions that result in more household consumption of financial services, and less use of and greater self-provision of financial services by businesses. However, the evolution of accounting methods and information systems has reduced the technical obstacles to imposing VAT on financial services considerably (OECD, 2010b). Moreover, following the recent financial crisis, there is increased interest among governments in both raising revenue from financial institutions and reducing moral hazard in the financial services sector via new taxes on financial services or (elements of) balance sheets.

Less distortionary tax bases

41. When tax rates need to be raised, some taxes are natural candidates for fiscal consolidation programmes both from an efficiency and revenue-raising perspective. The efficiency costs of taxes on immobile property are lower than on consumption or income, but represent a small share of overall tax revenue in many OECD countries.[7] Where they are low or non-existent, corrective taxes such as so-called "sin" taxes that can help deter harmful behaviours (*e.g.* alcohol and tobacco consumption), or taxes on polluting activities or consumption (*e.g.* fossil fuels) can improve welfare while boosting revenues.

42. Environmental taxes hold the promise of both boosting revenue and helping to achieve environmental objectives by discouraging pollution. While some countries raise considerable revenues from such taxes, reaching 4% of GDP in Denmark and the Netherlands in 2008, their yield is relatively low in several countries, notably Canada, New Zealand and the United States. Nonetheless, imposing a tax on carbon emissions or auctioning tradable emission rights to contain greenhouse gas emissions has become more widespread. For example, the European Union has auctioned permits as part of the Emission Trading Scheme. Despite such developments, many countries maintain differences in taxation depending on fuel type that run counter to estimates of environmental externalities. From a fiscal consolidation perspective, greenhouse gas levies consistent with international action to stabilise atmospheric concentrations of greenhouse gases by 2020, could generate around 2% of GDP (de Serres *et al.*, 2010) (Table 5).

Summing up potential for primary balance adjustment

43. Table 5 brings together estimates quoted above on the potential contributions of spending and revenue measures to fiscal consolidation and could inform a choice of where potential may exist to make savings or increase revenues. Even without being able to quantify all the possible measures across countries, and not taking into account any dynamic effects, the cumulative potential cuts in spending (benchmarked using the OECD average or estimates of potential efficiency gains) and increases in taxation (benchmarked using the OECD average) are sizeable. On average across countries, budget enhancements could reach around 7% of GDP, with the larger part available on the spending side. Given that there are measures that are difficult to quantify this is a lower estimate. Furthermore, the potential tends to be somewhat greater in the English-speaking countries which generally face the larger consolidation needs. A large share of the savings in spending would come from reaping efficiency gains, which are likely to take some time to emerge. On the revenue side, relatively large opportunities exist for the greater use of environmental taxes and the broadening of income and indirect tax bases.

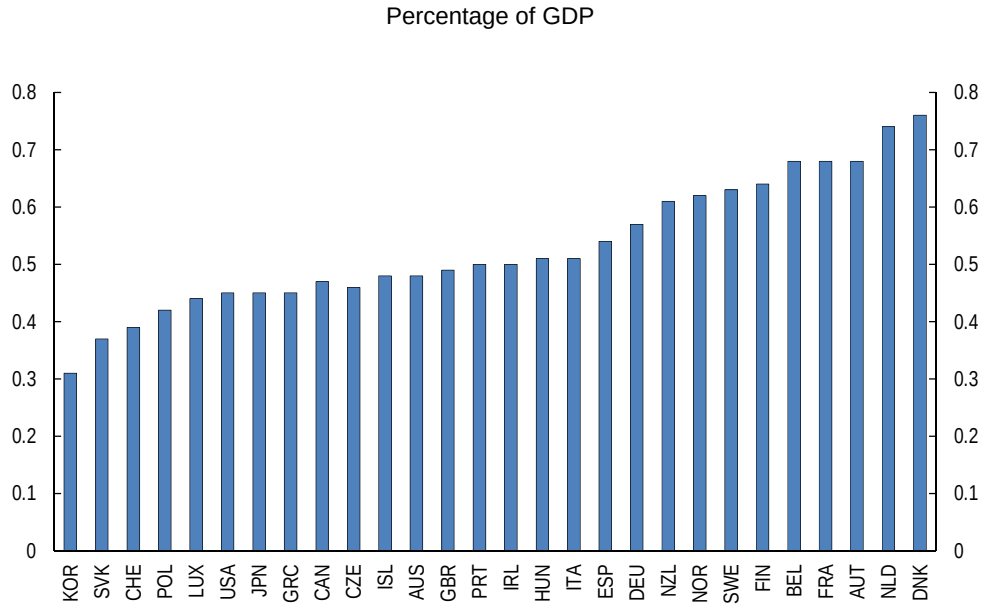
Supporting reforms

44. In a number of cases supporting reforms could assist fiscal consolidation. Aside from their direct budgetary impact, as discussed above, reforms to pension systems that delay retirement and increase labour force participation will boost revenues and thereby reduce long-run budget pressures. Reforms that link retirement age to gains in longevity would thus help cushioning budgets against future changes in

7. In most countries, property taxes are a main source of finance for sub-national governments, posing potentially challenging fiscal federalism problems should national property taxes be introduced or raised.

longevity. More generally, growth-enhancing structural policy reform may support fiscal consolidation. This is most obvious when reforms, such as retirement reforms, lead to a higher sustainable employment level because such a change will have a permanent impact on the primary balance (Figure 13). The size of the effect will depend on the taxes levied on the additional income and consumption created as well as on whether the reform in question has any direct budgetary impact. The latter will be the case, for example, when additional spending on active labour market policy boosts aggregate spending or cutbacks on unemployment benefit duration reduces it. But many structural reforms have little direct impact on budgets while at the same time boosting employment levels, such as in the case of product market reforms that boost competition.

Figure 13. **Effect of 1% higher potential employment on the primary balance**



Source: OECD Economic Outlook 88 database; and OECD calculations.

45. The effects of productivity-enhancing structural reforms on public budgets are less clear. Higher productivity in the private sector will tend to boost revenues but also spending unless public/private wage relativities change or transfer income replacement ratios are altered. Hence, the effect on the primary budget balance may be muted. However, to the extent higher productivity growth is not matched by a corresponding increase in real interest rates debt dynamics will be favourably affected. Such an effect is particularly likely for individual countries participating in a monetary union since the general structure of interest rates is unlikely to be strongly affected by structural reform in an individual country while at the same time higher growth may lead to a narrowing of risk premia.

Conclusions

46. Overall, the link between economic growth and the post-crisis debt overhang is complicated. On the one hand, high debt seems to be associated with lower growth. But, on the other hand, fiscal consolidation may weaken growth both in the near term and over a longer horizon. Realistically, debt problems are so serious in many countries that consolidation has the potential to hamper growth strongly.

47. In the short run, consolidation may weaken demand and monetary policy may not be able to compensate for such effects for some time to come. This argues for phasing in consolidation. Appropriate and clear fiscal objectives together with institutions that ensure accountability may help to preserve credibility in the process. However, to maintain credibility it may also be necessary to take some action up-front, in which case instruments with small short-term multipliers may be given some weight. This may involve some political economy risk, to the extent it skews consolidation towards inappropriate instruments. Slow consolidation may also entail a price insofar as it involves higher debt and thereby higher interest rates.

48. In the longer run, effects of consolidation on growth will depend on the choice of instruments. Some instruments are available that will have limited detrimental impacts on growth and little or no conflict with other policy objectives. Notably, increasing spending efficiency, reforming unsustainable pension systems, putting prices on environmental externalities and maximising the benefits of structural reforms could make sizeable contributions to consolidation. In addition, reviewing tax and benefit systems more generally could help identify how policy objectives could be achieved at lower cost and where support is less justified.

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APPENDIX: FISCAL GAPS

49. The underlying model used to calculate fiscal gaps is deliberately simple (Merola and Sutherland, 2011). It builds on the assumptions underlying the *Economic Outlook* medium-term baseline on potential output growth, output gaps, interest and inflation rates until 2025. Between 2025 and 2050, GDP growth is determined by the growth rate of potential, which is driven by demographic developments and assumptions about productivity growth. The fiscal side of the model assumes that revenues adjusted for the cycle remain a constant share of GDP and, in the baseline, primary spending is also a constant share of GDP.

50. For any long-run fiscal projections, GDP growth, interest rates and inflation together with the fiscal assumptions determine long-run sustainability (Appendix Table). In the country models the main assumptions are as follows:

- GDP growth in the long term is driven by potential output. One of the main components of potential output that is varying over time is working age population growth, which is based on cohort data from long-term demographic projections. GDP growth is then determined by participation rates and employment and labour productivity growth. The latter is assumed to converge to 1.75% by 2035 at the latest. The simulations ignore possible impacts of fiscal policy and debt developments on output.

- Interest rates on government borrowing are partly determined by monetary policy. The return of output to potential is accompanied by a normalisation of interest rates, such that the risk-free rate is at its estimated natural rate by 2025. Inflation converges to the monetary authorities' target, typically 2% annually. Interest payments are determined by the stock of debt and an interest rate that is based on a mix of long and short-term rates, with the long-term rate including a premium of 4 basis points for each percentage point of financial liabilities in excess of 75% of GDP. Japan is assumed to remain unusual, with the very high share of domestic financing keeping the risk premium at only 1 basis point for each percentage point of financial liabilities in excess of 75% of GDP.

- The other major assumptions concern fiscal policy. In the baseline, underlying revenues and primary spending are constant as shares of GDP, though the automatic stabilisers operate while the economy moves back to potential. In some scenarios, ageing-related spending is added to underlying spending to highlight the fiscal pressures coming from population ageing. For health care, given that only a relatively small portion of the projected increase is ageing-related, additional spending is phased in linearly over the projection horizon.

51. The fiscal gaps are distinct from recent work by the OECD that has assessed the consolidation requirements to stabilise debt (OECD, 2011c). These requirements are based on stylised assumptions about a sustained gradual annual tightening of the underlying primary balance by 0.5% of GDP until debt stabilization is reached. The fiscal gaps on the other hand make the alternative stylised assumption that the tightening will be implemented immediately and sustained until 2050 to meet a specific debt target. Both sets of assumptions ignore the implications for output, which will obviously be important.

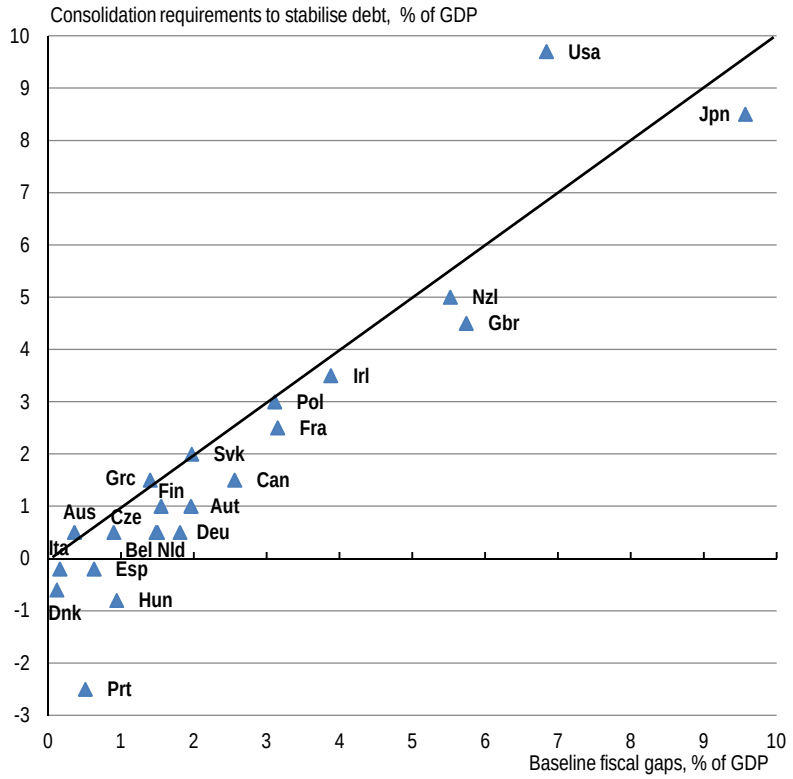
52. Overall the two approaches produce similar rankings of consolidation needs across counties (Appendix Figure). The two approaches differ in three ways. First the time path of consolidation is different. Second, the final debt level is different. Third, the time horizon is different. The first and third

differences in particular pull in opposite directions for the two approaches. The combined effect of the differences leads to the additional tightening to bring debt down to 50% of GDP in 2050 being typically not much greater than the gradual fiscal tightening needed after 2012 to stabilise debt levels. In general, the immediate consolidation assumed by the fiscal gap calculations is sufficient to bring debt dynamics under control more quickly which combined with the assumption that the fiscal tightening is permanent over a longer time horizon will see debt levels gradually fall for the rest of the simulation. The estimates of the amount of consolidation needed to stabilise debt are particularly large for the United States and Japan and the gradual tightening takes considerably longer to stabilise debt. As a higher interest premium for each percentage point of debt above 75% of GDP is assumed for the United States than Japan, the consequences of the gradual tightening for adverse debt dynamics are more severe, which explains why the relationship with the fiscal gap estimates differs from the other countries. If countries do not need to consolidate to meet the terminal debt target, such as in the case of Sweden, no fiscal gap is calculated and the country is excluded from the figure.

Appendix Table. **Key assumptions in the baseline simulation**

	Starting point, 2012		Average over simulation	
	Gross debt, % of GDP	Underlying primary balance, % of GDP	Effective interest rate	Nominal GDP growth
Australia	31	0.6	6.9	4.8
Austria	82	0.1	4.4	3.5
Belgium	100	0.9	4.7	3.8
Canada	88	-1.8	4.9	4.2
Czech Republic	51	0.3	4.4	4.2
Denmark	60	0.8	5.0	3.5
Finland	66	0.8	4.2	3.9
France	100	-0.6	4.1	3.6
Germany	87	0.6	4.3	3.0
Greece	159	3.5	5.5	3.4
Hungary	81	1.1	5.8	3.2
Ireland	126	-0.4	4.7	4.3
Italy	128	3.3	4.6	3.1
Japan	219	-4.2	3.0	2.2
Korea	33	0.5	5.6	2.4
Luxembourg	24	2.0	4.5	4.9
Netherlands	75	0.0	4.3	3.5
New Zealand	52	-4.0	5.8	4.3
Poland	66	-1.5	5.3	3.2
Portugal	116	3.5	4.6	3.1
Slovak Republic	51	-1.7	5.1	2.8
Spain	75	0.5	4.2	3.5
Sweden	41	2.6	4.7	4.0
Switzerland	37	1.2	2.9	2.9
United Kingdom	93	-3.0	4.6	4.1
United States	107	-5.8	4.6	4.3

Appendix Figure. **Relation between fiscal gaps and consolidation requirements**



Source: OECD (2011c), *OECD Economic Outlook* 89.