Chapter 2

USING THE FISCAL LEVERS
TO ESCAPE THE LOW-GROWTH TRAP

Introduction

Almost a decade after the outbreak of the financial crisis, the global economy remains in a low-growth trap with weak investment, trade, productivity and wage growth and rising inequality in some countries. Monetary policy is overburdened, leading to growing financial risks and distortions. Alongside structural reforms, a stronger fiscal policy response is needed to boost near-term growth and strengthen long-term prospects for inclusive growth.

However, in the context where public debt has reached high levels in most OECD countries, it is important to assess the extent of countries' fiscal space and the temporary deficit increase they can afford to run. In the past few years, the assessment of fiscal policy has focused essentially on public budget balance positions rather than on the consequences for growth. This focus has resulted in a higher debt-to-GDP ratio in the short term through shortfalls in investment, human capital and productivity. A rethink is needed for how the fiscal policy stance should be evaluated, particularly in the context where very low sovereign interest rates provide more fiscal space.

In order to escape the low-growth trap, this chapter emphasises the need for a fiscal initiative, comprising of spending or tax measures, to foster productivity in the medium to long term. Measures should be chosen depending on each country's most pressing needs and could include not only raising soft and hard infrastructure or education spending, but also cutting harmful taxes. In many countries, such a package could be deficit-financed for a few years, before turning budget-neutral. Combining this initiative with structural reforms will enhance the output gains.

The main messages from re-evaluation in this chapter are the following:

Fiscal space has increased

- Interest rates on government debt are very low in advanced economies, following exceptional monetary stimulus, and borrowing costs are also relatively favourable in many emerging market economies (EMEs).

- Measures of fiscal space – those that focus on the gap between actual debt and estimated levels at which market access would be compromised – appear to have risen in most OECD countries since 2014, as lower interest rates have more than offset headwinds from lower potential growth and higher debt.

- Other measures that account for projected long-term ageing-related spending pressures also point to some fiscal space in most of the larger advanced economies. This provides room for manoeuvre, provided that low interest rates are locked-in with long-term borrowing.

- Structural reforms that aim at containing the cost of healthcare and pension spending, including by reforming entitlements, can create additional space. Governments can also increase fiscal space with policies raising long-term growth, for instance by changing the composition of taxes and spending.

A fiscal initiative would support long-term growth

- OECD governments could finance a ½ percentage point of GDP productivity-enhancing fiscal initiative, for three to four years on average in OECD countries without raising the debt-to-GDP ratio in the medium term, provided the selected activities and projects are sound. Such an initiative could encompass high-quality spending on education, health and research and development as well as green infrastructure that all bring significant output gains in the long run.

  - ❖ In the current economic environment and with monetary policy unchanged, the average output gains for the large advanced economies of such a fiscal initiative amount to 0.4-0.6% in the first year. However, the gains are particularly uncertain for Japan.

  - ❖ Pursuing the fiscal initiative by reprioritising spending in later years would increase long-run output by up to 2% in the large advanced economies.

Its impact could be enhanced under certain conditions

- Complementing fiscal action with structural reforms is crucial to get the most out of the stimulus.

- Persistent demand weakness, which gradually undermines the productive capacity of the economy ("hysteresis"), reinforces the case for a fiscal initiative in Italy and France and in a number of smaller Southern European economies with wide negative output gaps.

- Collective fiscal action among the large advanced economies is estimated to bring additional output gains of about 0.2 percentage point on average after one year (through international trade linkages), compared with a scenario where countries act individually.

The fiscal initiative should be adapted to national circumstances

- The increased fiscal space should be used efficiently and country specificities, in particular their fiscal situation, cyclical position and other features, such as the extent of investment needs in soft or hard infrastructure or other priorities, need to be accounted for.

  - ❖ In about a third of the countries covered in the *Economic Outlook*, the OECD recommends more expansionary fiscal policy than currently planned.

  - ❖ With the fiscal stance in advanced economies expected to be broadly neutral in 2017 according to current fiscal plans, a number of large economies, including Germany, should borrow more than currently envisaged to raise public investment. A fiscal initiative in the United Kingdom would help to manage the contractionary impact of Brexit. In a few countries like Japan, however, a productivity-enhancing fiscal initiative should be budget-neutral.

  - ❖ Ample but narrowing fiscal space gives China room to run an expansionary fiscal policy, but less so than currently planned by the government. It should be directed at increasing social safety nets rather than already high infrastructure spending, which would tend to reduce precautionary household saving and thus achieve the same objective of higher demand and supply. India can regain fiscal room for manoeuvre with an increase in tax revenues and an improvement in spending efficiency.

● In all the countries covered, taxes and spending should be reprioritised and move towards a mix that fosters long-term growth and inclusiveness, including by restoring public investment and other productive spending that was cut in the recent past.
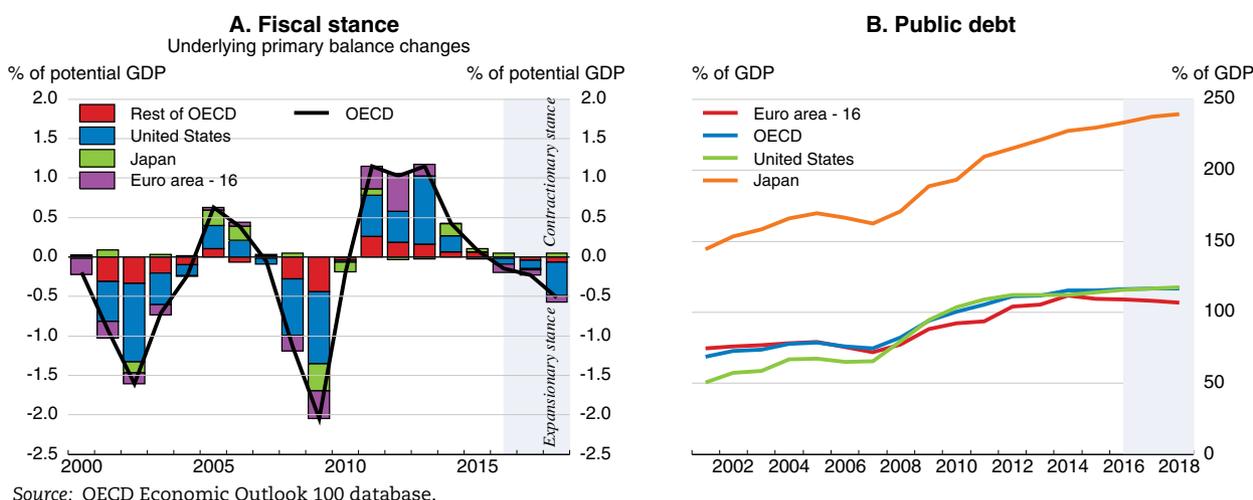
Very low interest rates in advanced economies have increased fiscal space

The very low level of interest rates on government debt in advanced economies raises important questions about the use of fiscal policy in the context of the low-growth trap and high debt levels. Other things being equal, low interest rates increase the amount of "fiscal space" – a measure of how much governments can borrow without losing market access or facing sustainability challenges. This shifts the perceived trade-off between borrowing to support growth and consolidation, making it possible in some countries to borrow more without undermining sustainability. However, lower growth and higher debt, as well as risks and long-term challenges need to be taken into account in evaluating the size and desirability of using fiscal space.

Public debt has risen since the mid-2000s…

The 2008 crisis, and the expansionary response it triggered, led to a surge in public debt. Fiscal policy was subsequently tightened in most OECD countries, bringing the debt-to-GDP ratio onto a more sustainable path but depressing demand (Figure 2.1). Since 2015, the fiscal stance in the OECD has moved to being broadly neutral in many countries and financial turbulence in euro area markets has waned. In a context where the recovery has been fragile, monetary policy is overburdened and political uncertainties have risen, a number of OECD countries have announced in 2016 a reconsideration of fiscal policy initiatives to support growth and increase long-term productive capacities.

Figure 2.1. **Fiscal stance and public debt levels in OECD countries**


Source: OECD Economic Outlook 100 database.

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… and potential output has been hit hard…

Estimates of potential output per capita growth in the major OECD economies have declined in the aftermath of the crisis. They are estimated on average at around 1% in 2016, almost 1 percentage point below the average in the two decades preceding the crisis (Figure 2.2). Weak capital stock growth and declining factor productivity were the two main factors contributing to the decline.

Figure 2.2. **OECD Potential output growth has slowed markedly**

Contribution to potential per capita growth
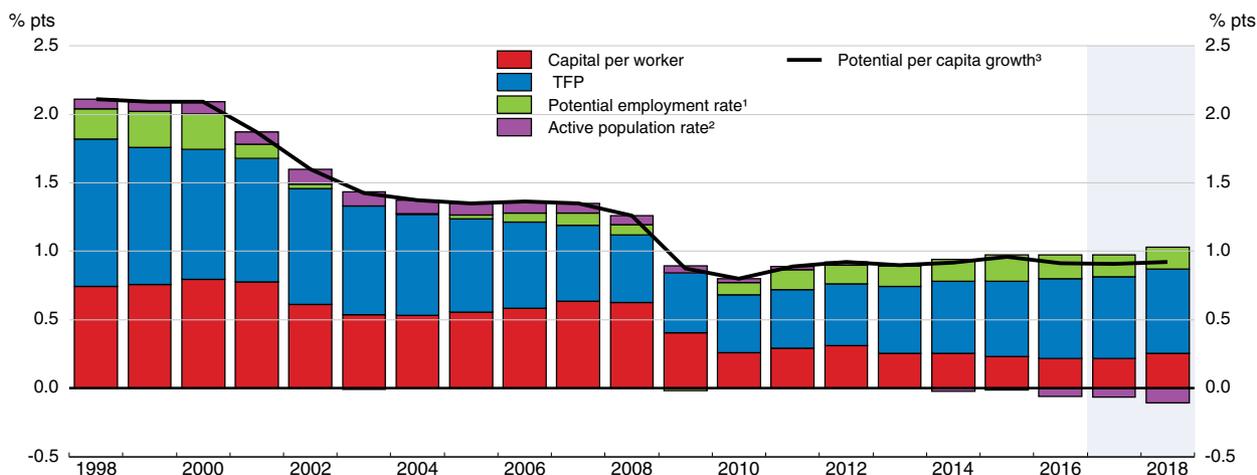
Note: Assuming potential output (Y*) can be represented by a Cobb-Douglas production function in terms of potential employment (N*), the capital stock (K) and total factor productivity (E*) then y* = a * (n*+e*) + (1 - a) * k, where lower case letters denote logs and a is the wage share. If P is the total population and PWA the population of working age (here taken to be aged 15-74), then the growth rate of potential GDP per capita (where growth rates are denoted by the first difference, d( ), of logged variables) can be decomposed into the four components depicted in the figure: d(y* - p) = a * d(e*) + (1-a) * d(k - n*) + d(n* - pwa) + d(pwa - p).

1. Potential employment rate refers to potential employment as a share of the working-age population (aged 15-74).
2. Active population rate refers to the share of the population of working age in the total population.
3. Percentage changes. With growth in Ireland in 2015 computed using gross value added at constant prices excluding foreign-owned multinational enterprise dominated sectors.

Source: OECD Economic Outlook 100 database.

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... but lower interest rates provide savings...

The fall in interest rates on government debt in advanced economies has in part reflected exceptional monetary policy stimulus, with just over 30% of OECD government debt currently trading at negative yields. This continues a long trend of declining nominal and real yields over past decades, which has been compounded by very low or even negative policy rates and large-scale central bank purchases at long maturities, as well as the reduction in the term premium following changes in banking regulations. In the euro area, declining risk spreads since the 2011-12 crisis have contributed to lower borrowing costs. At the same time, many governments have used the opportunity to extend the maturity of outstanding debt, locking in low rates (OECD, 2016). Nominal yields are also at relatively low levels in many EMEs compared with past experience, while EME interest rates remain typically well above those in advanced economies, commensurate with their growth and inflation prospects.

Declining interest rates have resulted in unexpected savings on interest costs for governments. Looking forward, and partially accounting for the maturity structure of public debt, further reduction in interest costs are likely if yields remain around the current level as old debt at higher yields matures. This would lead to significant additional savings, notably in Italy and to a lesser extent in France and the United Kingdom over the period 2015-17, under the assumption that 15% of the initial stock of debt is rolled over each year and the rest is valued at an implicit rate that captures the maturity structure of the debt (Figure 2.3). Assuming an alternative scenario of 25% of debt maturing each year would lead to even stronger gains.

Figure 2.3. **Fall in government interest payments**

Estimated budget gains over 2015-17 due to lower interest rates
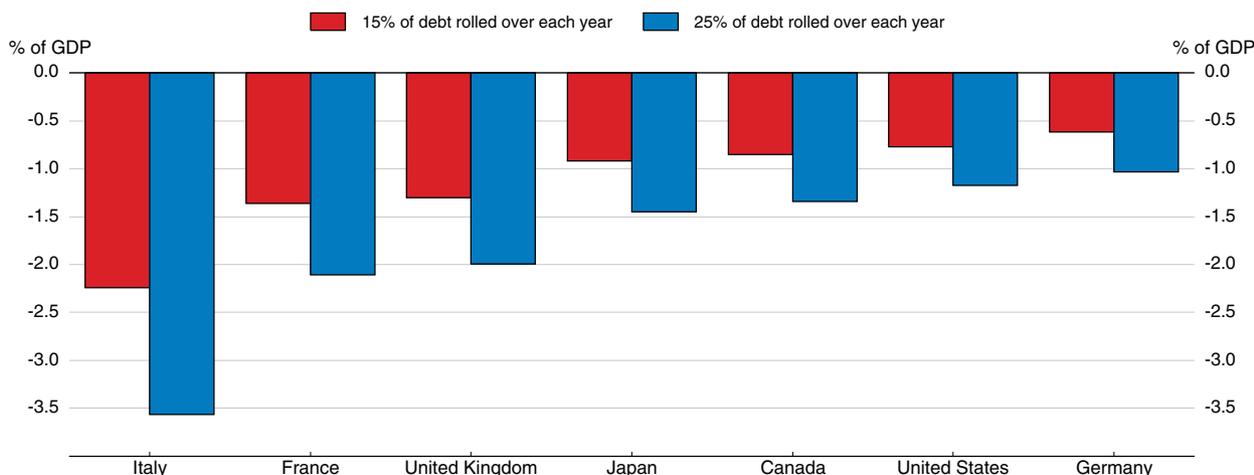
Note: Based on general government debt at the end of 2014, assuming that 15% or 25% of this initial debt stock matures each year, comparing the interest rate on 10-year government bonds in 2014 with the interest rate for 2015 and the 2016 average until August for 2016 and 2017. The remaining stock of debt is valued at the implicit interest rate, which depends on the maturity structure. The computation does not incorporate the most recent increase in sovereign bond yields.
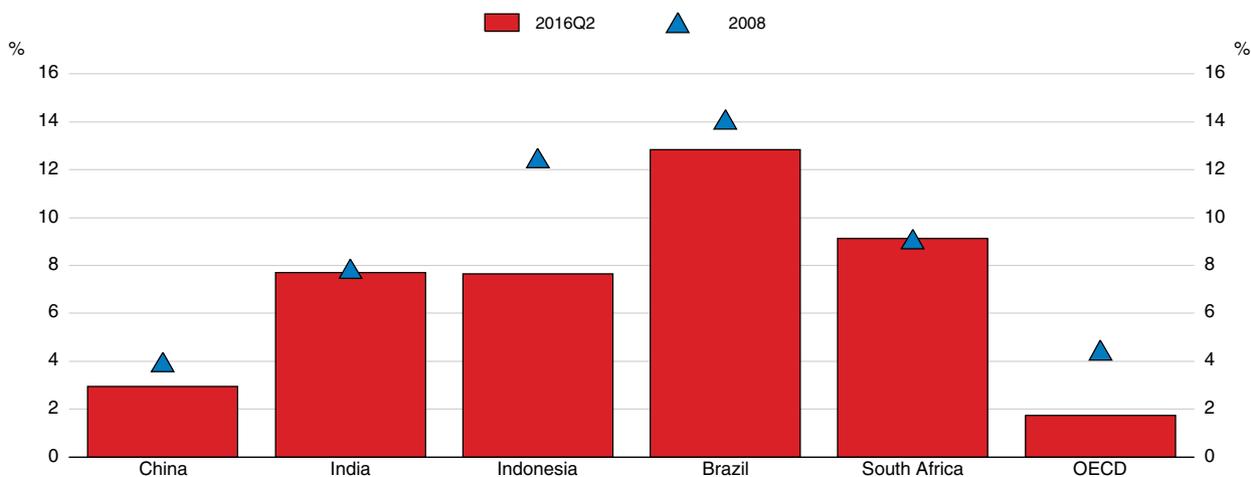*Source:* OECD Economic Outlook 100 database and OECD analytical database.

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Interest rates have also come down in many EMEs (Figure 2.4). Many of them also benefit from savings on interest outlays, except South Africa where steady increases in public debt and higher borrowing rates have led to a rise in interest payments. Governments are taking advantage of the low borrowing rates: sovereign issuance has significantly increased in a few EMEs such as Brazil and Indonesia.

Figure 2.4. **Nominal long-term interest rates in EMEs**

Per cent

Source: OECD Economic Outlook 100 database.

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... and fiscal space has increased

Several approaches to measure fiscal space

With conventional monetary policy facing constraints and evidence pointing to a greater effectiveness of fiscal policy to stabilise the economy than in the past, fiscal space needs to be reassessed (Furman, 2016). At first glance, fiscal space appears to be a relatively intuitive concept and can be defined as the "room in a government's budget that allows it to provide resources for a desired purpose without jeopardizing the sustainability of its financial position or the stability of the economy" (Heller, 2005).

However, there is no consensus on the way fiscal space should be measured. On one side, there is uncertainty about the extent to which the government is facing the risk to be unable to roll over debt anymore. The fiscal space can be thought of as the difference between the current debt level and the debt limit at which the government would lose *market access*. On the other side, fiscal space can be defined in terms of long-term *fiscal sustainability*. In practice, the conclusions from these two approaches can differ. For instance, a country with an expected marked rise in public spending on ageing and health can have fiscal space according to the former approach, but none according to the latter. These two aspects of fiscal space are sometimes interrelated, as long-term sustainability considerations often affect market access through risk premia. However, it is difficult to comprehensively capture all the factors affecting fiscal space with a single method, and therefore empirical studies usually predominantly focus on either market access or long-term sustainability (Figure 2.5).

The absence of information on factors potentially triggering a default in advanced economies in recent history renders the estimation of fiscal space – not least by the market access definition – challenging. Quantitative analysis can only build on assumptions on how households and businesses would react in the future should higher debt levels be reached. As a result, debt limits and resulting fiscal space estimates should be used with

Figure 2.5. **Different approaches to measuring fiscal space**
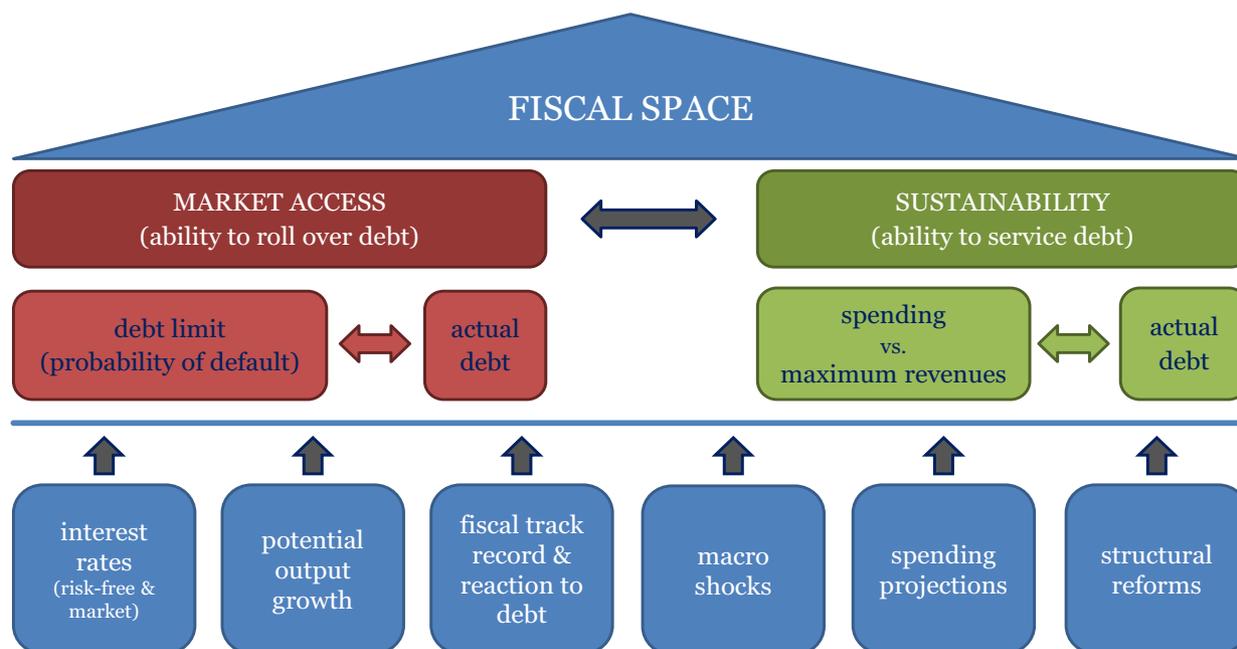
care and uncertainties surrounding such estimates underlined. In real life, debt limits have to account for many factors, including the level and trajectory of public debt, financing needs, fiscal track record, economic development, market sentiment and macroeconomic shocks. However, as statistical methods usually have to be parsimonious, the best option is to rely on a range on methods to get a full assessment. Rather than pointing to a precise point estimate, these complementary analyses help in understanding the key mechanisms at work.

In recent years, a number of new methods have complemented the more traditional approaches to assess fiscal space. This chapter relies essentially on three (see Annex 2.A1 for an overview of the different methods used in this chapter), with the objective of approaching the complex reality from different angles:

- Ghosh *et al*. (2013) and Fournier and Fall (2015) focus on *market access*. They calculate fiscal space as the distance between actual debt levels and their estimated limits, measured as the debt level at which a sovereign borrower loses market access and hence cannot service its debt in a normal way. Debt limits depend on assumptions made on risk-free interest rates and potential output growth, the size of shocks that hit economies, the country's fiscal track record and the fiscal reaction to increasing debt. The fiscal reaction relies on the assumption that governments cannot indefinitely sustain public primary surpluses and will experience fiscal fatigue at some point. The model includes a non-linear risk premium that rises sharply if debt becomes close to the debt limit.

- Bi (2011) and Bi and Leeper (2013) examine sovereign default risks but account for *long-term fiscal sustainability*. They rely on a DSGE approach, whereby the shape of the Laffer curve (which derives expected tax revenues from tax rates) depends on macroeconomic circumstances. Shocks to the economy and long-term projections of spending and transfers are accounted for. The approach does not compute a point estimate of the debt limit, but its distribution, i.e. the probability for a country to default at each value of the debt-to-GDP ratio. This distribution is derived using the expected present value of future maximum primary surpluses, where the latter comes from driving tax revenues to the peak of the Laffer curve and expenditure to its projected level.

- Blanchard et al. (1990) focus essentially on *long-term fiscal sustainability* in the context where the interest rate is above the economic growth rate. When the interest rate is persistently below the growth rate, governments are able to run permanent deficits of any size. When the differential between the interest rate and growth is positive, fiscal space is computed as the tax gap between the sustainable and the current tax-to-GDP rate, where the former is the constant tax rate that would achieve an unchanged debt-to-GDP ratio over the relevant horizon, for a given projection of public spending and transfers. In this chapter, a variant of this methodology is used: sustainable tax rates are recomputed using the FM model (see Annex 2.A2), whereby part of health spending is categorised as an investment.

The three methods used have their limitations. The market access method assumes that a lender of last resort prevents any self-fulfilling crisis. In practice, institutions do not always guarantee this, and a self-fulfilling crisis can crucially depend on other parameters, such as the debt maturity structure and the share of debt issued in foreign currency. The approach based on Laffer curves does not take into account possible political economy considerations associated with driving tax revenues to the peak of the Laffer curve or with adjusting government spending instead. The approach based on Blanchard et al. (1990), on

the other hand, does not take macroeconomic shocks into account. Therefore, this chapter does not rely on any one single approach, but rather treats them as illustrative. Consequently, the main focus of the analysis is not on precise numerical estimates of fiscal space, but rather on the trends and underlying mechanism at work.

Very low interest rates have increased fiscal space

Focusing on market access, fiscal space is assessed to have increased significantly in many advanced economies from 2014 to 2016, as the impact of the reduction in interest rates outweighs the estimated fall in potential output growth and the increase in debt limits is larger than the changes in the debt-to-GDP ratio (Figure 2.6). The magnitude of the estimated increase in fiscal space varies widely across countries. It was above 20% of GDP in seven OECD countries, including Germany and the United Kingdom. However, it is estimated to have perceptibly narrowed in Finland and Korea, due to the large fall in potential output and the relatively small decline in real interest rates, but significant space remains.

An alternative way to look at fiscal space is to focus on long-term sustainability and compute the maximum primary surplus countries can accumulate, given their projected spending. A typical OECD country is indeed going to see its age-related spending, including pension and health care costs, rise dramatically over the next 30 years. At the same time, countries can maximise their tax revenues. As discussed above, a simple way to approach this is to make use of a Laffer curve, which will determine the maximum revenue a typical country can collect, given its characteristics and the state of the economy. If economies were not subject to shocks, the combination of such spending and revenues would define a debt limit. However, uncertainty in the economy means that there is no fixed threshold for debt that, when crossed, triggers sovereign default.

Figure 2.6. **Lower interest rates increase fiscal space**

Changes in fiscal space between 2014 and 2016 and contributions of changes in its determinants
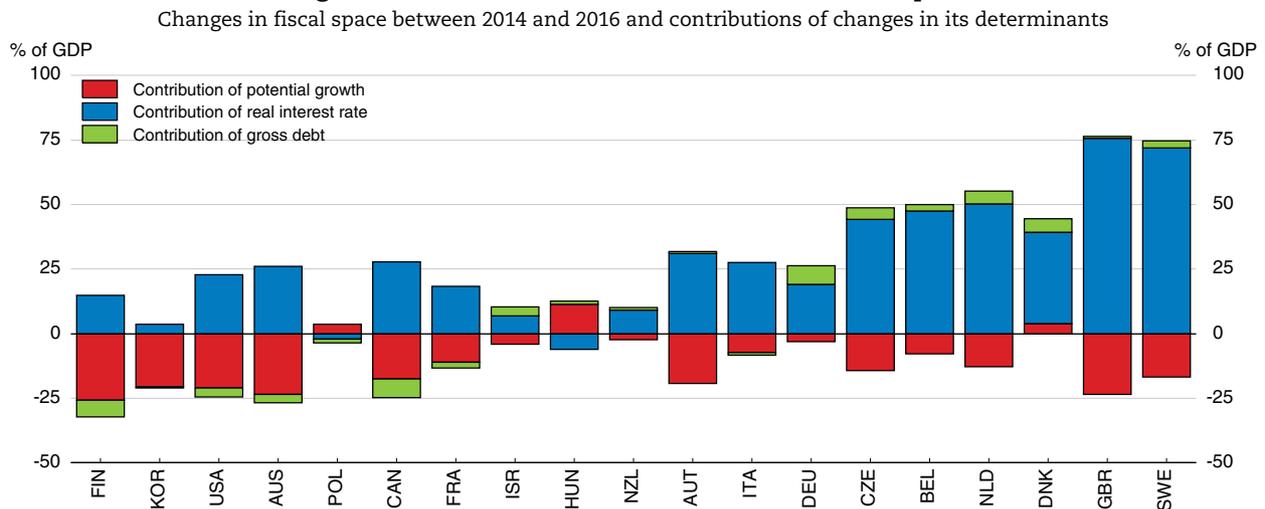
Note: Fiscal space is the difference between debt limits and current debt. Debt limits are computed with a stylised model in which the estimated fiscal reaction function of governments has the "fiscal fatigue" property and the modelled interest rate takes into account market reactions. The potential growth and the real risk-free interest rate are exogenous. The debt limits are computed with the information available until 16 November 2016 and with the information available when the Economic Outlook No. 95 (May 2014) was finalised. The size of shocks and the fiscal track records are assumed unchanged between 2014 and 2016. 15 OECD countries are not shown in this chart in most cases because of data limitations and in some cases, as reported in Fournier and Fall (2015), because of the absence of solution in the model as the past behaviour did not suffice to keep debt sustainable.
Source: OECD calculations based on Fournier and Fall (2015) and OECD Economic Outlook 100 database.

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Looking at fiscal space from this perspective, the distribution probability functions of the debt limits, that show the respective probability of default at a given level of public debt for each economy, suggest that most large advanced economies have fiscal space, Japan being a notable exception. The "market access" approach also suggests that Japan lacks fiscal space.

The "long-term fiscal sustainability" approach also points to uncertainties regarding the extent of fiscal space in France and Italy (Figure 2.7). In France, the "market access" measure of fiscal space points to small gains of fiscal space, within the margin of uncertainty. The "fiscal sustainability" measure does not send a clear signal either. In Italy, fiscal space appears to be limited when focusing on fiscal sustainability as compared to market access, reflecting whether the focus is on past developments of the primary balance ("market access" approach) or on the budgetary implications of population ageing ("long-term fiscal sustainability" approach).

A qualitative assessment suggests that the extent of the increase in fiscal space is mixed across EMEs, even though public debt is lower in these countries than in the average OECD country. Given the projected output growth, the current interest rate level but also financial-market fragility, the Economic Outlook projections suggest that there is ample though narrowing fiscal space in China, while India, Brazil and South Africa will continue to lack fiscal space in the absence of reforms.

Figure 2.7. **Fiscal limit cumulative distribution functions**
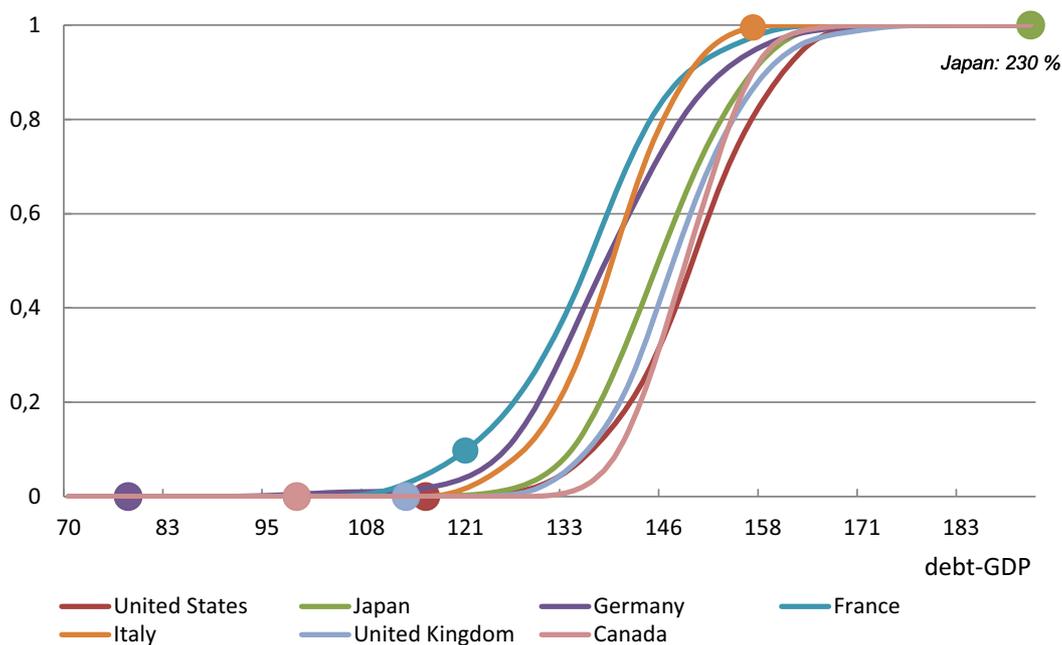
Note: For each country the curve depicts the probability of default at each given public debt-to GDP level. For instance, the probability of default is zero is in all advanced economies countries when the actual debt-to-GDP ratio is below 113%. Circles correspond to the 2015 level of the debt-to-GDP ratio. Public debt refers to general government gross financial liabilities according to the SNA definition.
*Source:* OECD calculations using Bi (2011) and Bi and Leeper (2013).

Fiscal space depends on the pace at which real interest rates and potential output growth become aligned…

Low interest rates provide policy makers with room for manoeuvre but are also associated with fiscal risks. Assuming the differentials between growth and interest rates gradually converge to their long-term average, the long-term measure of fiscal space, based on Blanchard et al. (1990) and OECD pension spending projections, point to limited sustainability risks over the long term in the three main euro area economies (OECD, 2015a). However, health spending is expected to rise markedly over the next decades as the population ages (de la Maisonneuve and Oliveira Martins, 2015). Accounting for these projected increases in health costs, large advanced economies will have to adjust their tax ratios and/or spending by several percentage points of GDP to stabilise debt at current levels by 2060. The pace of this adjustment will depend to a large extent on the speed at which real interest rates become aligned to output growth. Locking in the very low levels of interest rates by issuing more long-dated bonds would help manage the interest-rate risk.

… but structural reforms to key spending programmes can help increase fiscal space

Structural fiscal reforms to contain health spending would ease long-term spending pressures, and many countries have room to reduce those costs (Joumard et al., 2010). Total health and long-term care expenditure could increase by 3.3 percentage points of GDP between 2010 and 2060 on average across OECD countries in a cost-containment scenario, down from 7.7 percentage points in a cost-pressure scenario, under similar income and demographic assumptions (de la Maisonneuve and Oliveira Martins, 2015). This would help countries regain some fiscal room, even when taking into account that some of the health spending is investment that contributes to future output, as the effect on the budget balance would dominate the effect on potential output (Figure 2.8). Across the largest advanced economies, tax gaps, which quantify by how much actual tax-to-GDP rates

Figure 2.8. **Fiscal space gains from healthcare reforms**

Percentage points
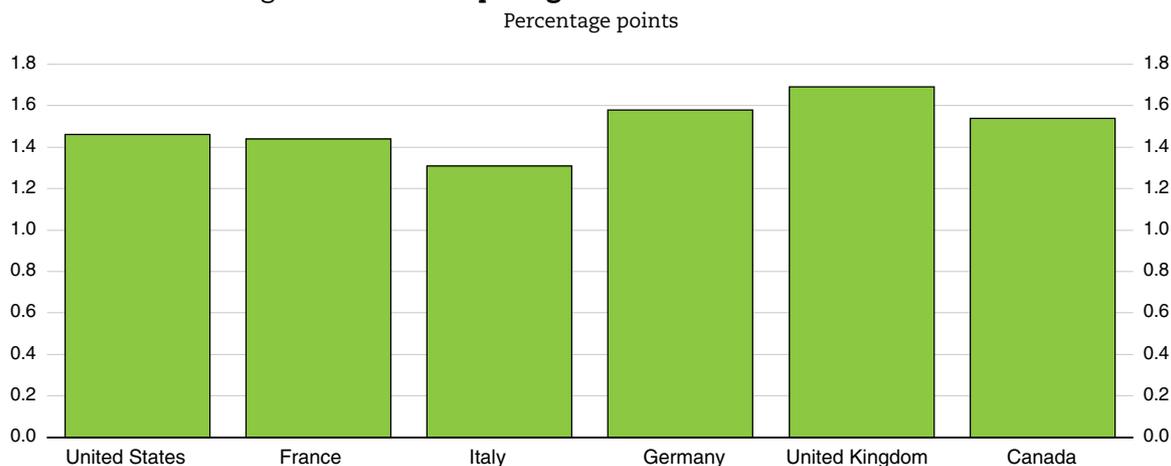
Note: Fiscal space is measured here in terms of tax gaps. These are computed by the difference between the actual and the sustainable tax rate, the latter being the tax rate that should prevail for the debt-to-GDP ratio in 2060 to be equal to the current level, for a given path of public spending. The reform is a change in entitlements, moving from a "cost-pressure"' to a "cost-contained" scenario.
Source: OECD calculations using Blanchard et al. (1990) and data from de la Maisonneuve and Oliveira Martins (2015).

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would have to increase for the debt-to-GDP ratios to be stabilised at current levels over the long term, would be reduced by 1.5 points on average.

Thanks to a number of past reforms of pension systems, long-run sustainability has improved in some countries. Further reforms in this direction will also raise fiscal space. Whereas low growth of aggregate productivity can add to pension sustainability pressures (see Chapter 1), reforms that increase the retirement age allow contribution rates and replacement rates to be maintained, while also contributing to sizeable output gains (Johansson and Fournier, 2016). Finally, by raising potential output, product and labour market reforms will also increase the fiscal space available to governments.

A fiscal initiative can help boost long-term growth and inclusiveness

A continuation of the very low economic growth in recent years would further undermine longer-term fiscal sustainability and accentuates the need for well-designed fiscal stimulus programmes to raise productive potential. Such a programme could include high-quality spending on education, health and research and development as well as green infrastructure that all bring significant output gains in the long run and foster inclusiveness. The question is to what extent such a stimulus could be financed by issuing long-term bonds, without endangering long-term fiscal sustainability.

This section reviews the likely impact of such an initiative both in the short and long term. It also identifies the factors that can help maximise the growth impact of such an initiative. Those impacts will vary over time (Figure 2.9). Indeed, high returns on capital, the persistence of long-term unemployment and the implementation of structural reforms will have an impact that increases over time, while the effect of acting collectively and of financing the initiative through higher public deficit in the short term will dissipate over time. These different factors are described in more details in the following sections.

Figure 2.9. **Factors that can influence the growth impact of a fiscal initiative**
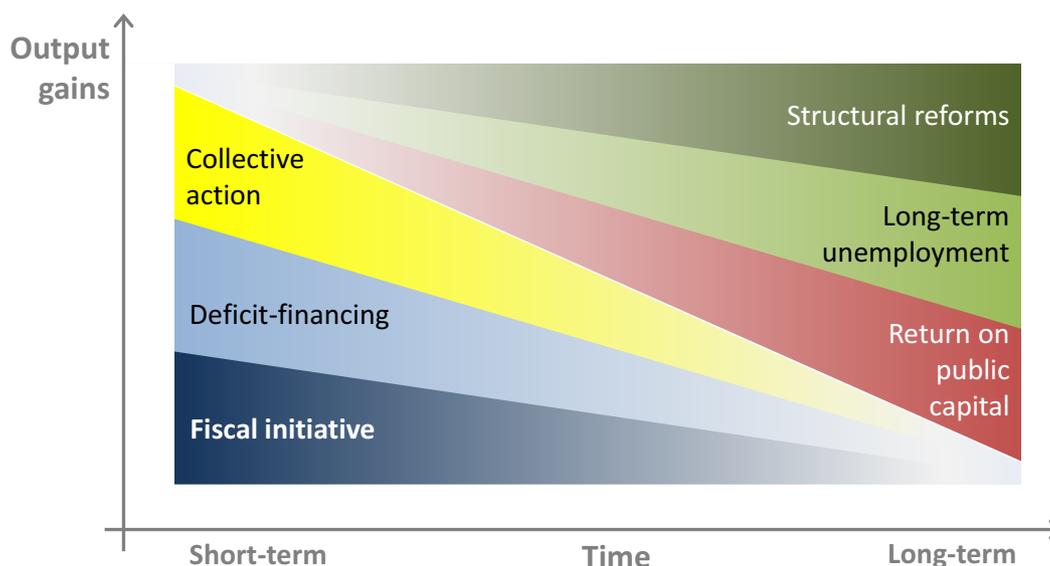

Note: The figure is illustrative and the relative gains of individual factors and the timing of their gains are not drawn to scale.

There is room to finance a ½ per cent of GDP of productivity-enhancing fiscal initiative for 3-4 years on average in OECD countries

A productivity-enhancing fiscal initiative can be financed temporarily by issuing debt. Taking the example of public investment, simulations suggest that the number of years during which a country can finance a permanent ½ per cent of GDP fiscal initiative by increasing its deficit ranges between 1 year in Korea to 6 years in Ireland or the United Kingdom (Figure 2.10). The intuition behind this is that the fiscal initiative can raise output more than it increases debt, reducing the debt-to-GDP ratio (Box 2.1). The magnitude of this fiscal initiative is close to the average of the annual increase in public investment observed over the past decades in OECD countries in the years when public

Figure 2.10. **Number of years during which a permanent investment increase can be funded with temporary deficits**
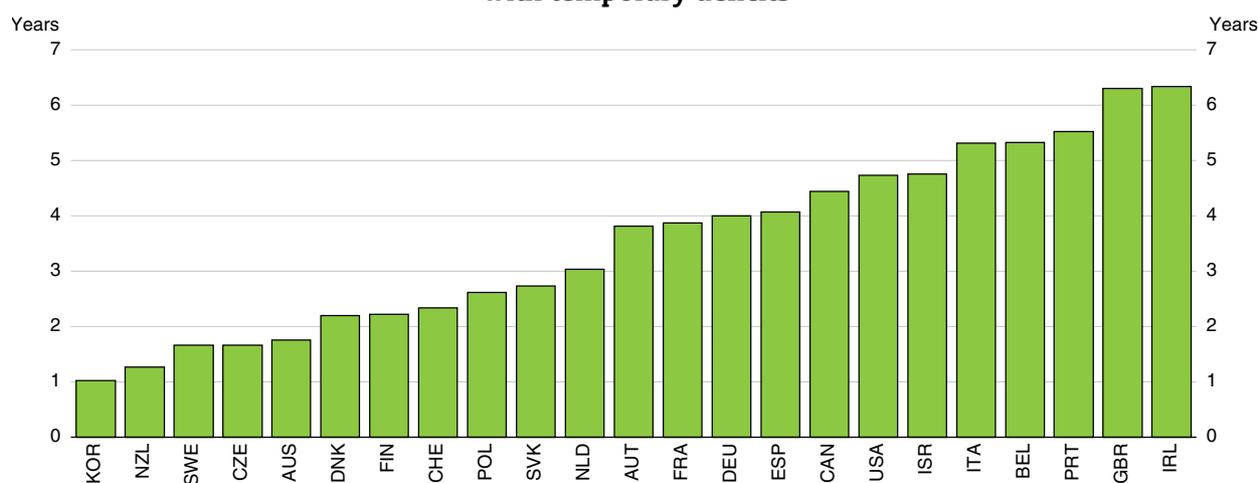
Note: A no-policy change scenario is compared to a scenario with a permanent increase of public investment by 0.5% of GDP and a temporary deficit increase of the same amount during the number of years reported in this figure. The number of years is set so that the debt level in 2040 is the same in the no-policy change scenario and in the investment shift scenario. Public investment has decreasing marginal returns as estimated in Fournier (2016), and the other structural parameters estimated in Fall and Fournier (2015) are homogenous across countries. The most important country-specific parameters that can influence the computation are the initial public investment level, the initial capital stock level, the initial public debt level and the interest rate to growth rate gap. The computation assumes countries have access to markets.
Source: OECD calculations based on Mourougane et al., (2016).

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Box 2.1. **Debt-financed public investment with no long-term effect on the debt-to-GDP ratio**

Debt-financed public investment has two long-term effects on the debt-to-GDP ratio: it increases the debt level as the government borrows more, and it raises the denominator as potential GDP is increased by hard or soft public investment and business investment is boosted. The government can choose how long to run the deficit so that the debt increase is just offset by the GDP increase. This depends on the difference between the return of the public investment (which is captured here with the positive effect of public investment on GDP) and the interest rate paid by the government.

This is illustrated here with a stylised scenario in which the government increases public investment relative to GDP permanently, against a no-policy change baseline scenario with constant ratio of public investment to GDP and with the primary deficit following an agreed plan. The long-term debt-to-GDP ratio in the baseline scenario is reported in the figure below (dashed line, no-policy action).

Box 2.1. **Debt-financed public investment with no long-term effect
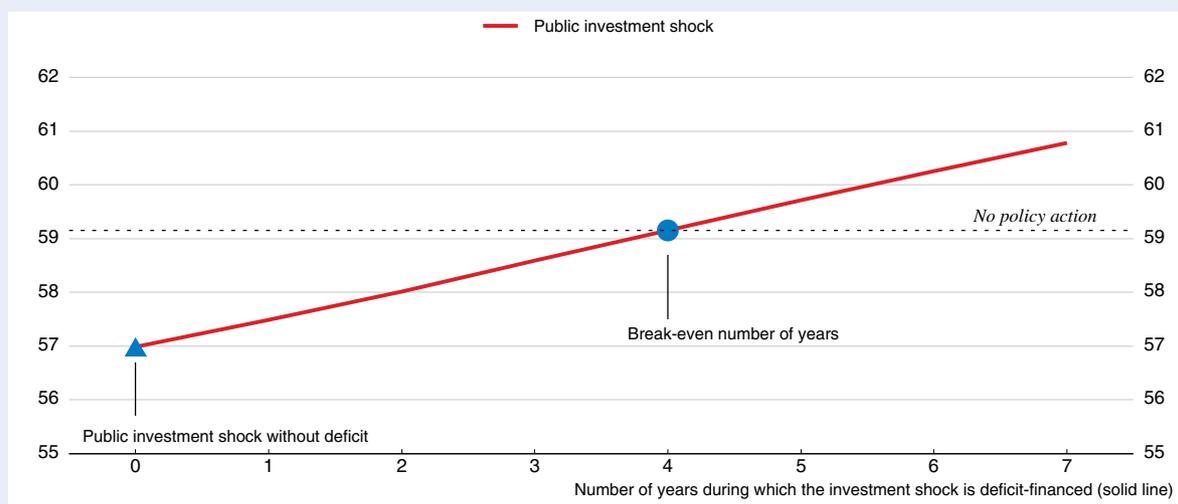on the debt-to-GDP ratio** (*cont.*)

In a first scenario, it is assumed that public investment is financed by cuts in current spending or by tax increases. In this scenario, public borrowing is unchanged, while the denominator is increased on account of the different multipliers on the investment versus current spending versus taxes: the debt-to-GDP ratio declines. As a result, the debt-to-GDP ratio is 2 percentage points below the no-policy action scenario (triangle in the figure below). In a second scenario, investment is deficit-financed for a given number of years, and government borrowing will increase with the number of years, as illustrated by the solid line in the figure below. In this second scenario, it is assumed that it takes time to restrain current spending or to reap the benefits of public investment in terms of higher tax revenues. As the figure illustrates, there is a break-even duration of investment for which the debt-to-GDP ratio is equal to the one with the no-policy change scenario (circle in the figure below).

This break-even number of years depends on the effect of public investment on potential GDP. Should the government identify higher-quality projects and activities, the number of years of deficit-financing could be even greater. This is most likely the case in countries where public investment decreased during the crisis, or where the public capital stock is relatively low. Structural reforms that increase GDP can also provide room for longer-lasting deficits. Last, the break-even number of years depends on the level of the debt-to-GDP ratio itself: it is all the more crucial that the portfolio of changes to the fiscal budget increases GDP in the most indebted countries. For instance, a policy that increases GDP by one per cent while leaving the debt level unchanged would decrease the debt-to-GDP ratio by one percentage point if the debt-to-GDP ratio is 100%; it would decrease the debt-to-GDP ratio by only one-half of a percentage point if the debt-to-GDP ratio is 50%.

This stylised exercise considers gross debt: it ignores public real assets. This is a prudent simplification: the number of years during which investment-led stimulus can be deficit-financed would be higher if one replaces gross debt by net debt in the analysis. A permanent increase in public investment implies a permanent increase in the capital stock that decreases net debt.

**The break-even number of years of deficit-financed public investment:
the example of Germany**

Long-term public debt in per cent of GDP

Note: The 2040 debt-to-GDP ratio is reported here to represent the long-term debt-to-GDP ratio.
Source: OECD calculations based on Fall and Fournier (2015).

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investment increased (0.6 % of GDP). In the simulation, the number of years is calculated so that the public debt level remained unchanged in 2040. This number is a function of the country's initial level of the public capital stock and of the differential between economic growth and the interest rate, as well as the initial level of public debt. According to this analysis, Japan is found to have no room to finance a fiscal initiative through higher deficit.

A productivity-enhancing fiscal initiative boosts the economy in the short and the long term

A productivity-enhancing fiscal initiative has not only a short-term demand effect but also a longer-term supply effect, in contrast with boosting current public expenditure. Public investment is an example of such a fiscal measure. To the extent that monetary policy is constrained, an investment-led stimulus may raise output more than it increases debt, leading to a fall in the debt-to-GDP ratio in the short term. This will likely be the case if public investment manages to catalyse private investment. In the long term, the boost in investment increases the productive capacity of the economy and the positive effect on potential output leads in additional tax revenues. Whether higher investment increases or lowers the debt-to-GDP ratio in the long term will depend on a number of factors, including the extent to which potential output is boosted. In all cases, the long-term effect of a public investment shock on the debt ratio will be more favourable than a public consumption shock that does not raise the productive capacity of economies.

Strong institutions and effective public governance are key for a successful fiscal initiative. This includes respect for the rule of law, quality regulation, transparency, openness and integrity. Whole-of-government approaches will improve outcomes and enhance the use of public resources. Fiscal policy is intertwined with a lot of other public policies – like competitiveness, climate-change mitigation, managing demographic change and innovation – and their effective combination can bring about synergies (OECD, 2015b). Regarding public investment specifically, good governance and reliable *ex ante* assessment of projects' social rates of return are crucial to ensure that high returns materialise and to prevent the cost overruns and over-estimation of future demand that have occurred in a number of past infrastructure projects (Persson and Song, 2010). More generally, regulation and other framework conditions, including access to markets and pricing regimes, will also affect the return on investment (Sutherland et al., 2011). Evidence suggests that most OECD countries still have room to improve their existing regulatory framework to ensure that regulation is fit for purpose and achieves its goals (Figure 2.11, OECD, 2015c).

The short-term output impact of ½ per cent of GDP fiscal initiative could be up to 0.6% in the first year…

Quantitatively, in the current environment and with monetary policy unchanged, a permanent investment-led stimulus of ½ percentage point of GDP that would be deficit-financed for a few years is estimated to increase output by 0.4-0.6% in the first year in the large advanced economies (Figure 2.12). However, short-term output gains are particularly unclear for Japan where the evidence points to lower and much more uncertain fiscal multipliers in the most recent period (Auerbach and Gorodnichenko, 2014). In this country, the fiscal initiative is assumed to be budget neutral over the whole simulation period.

Estimates have been computed using three models (Annex 2.A2). They assume projects undertaken are economically worthwhile and can be implemented without delay. While some infrastructure projects may take a long time to activate, other forms of public
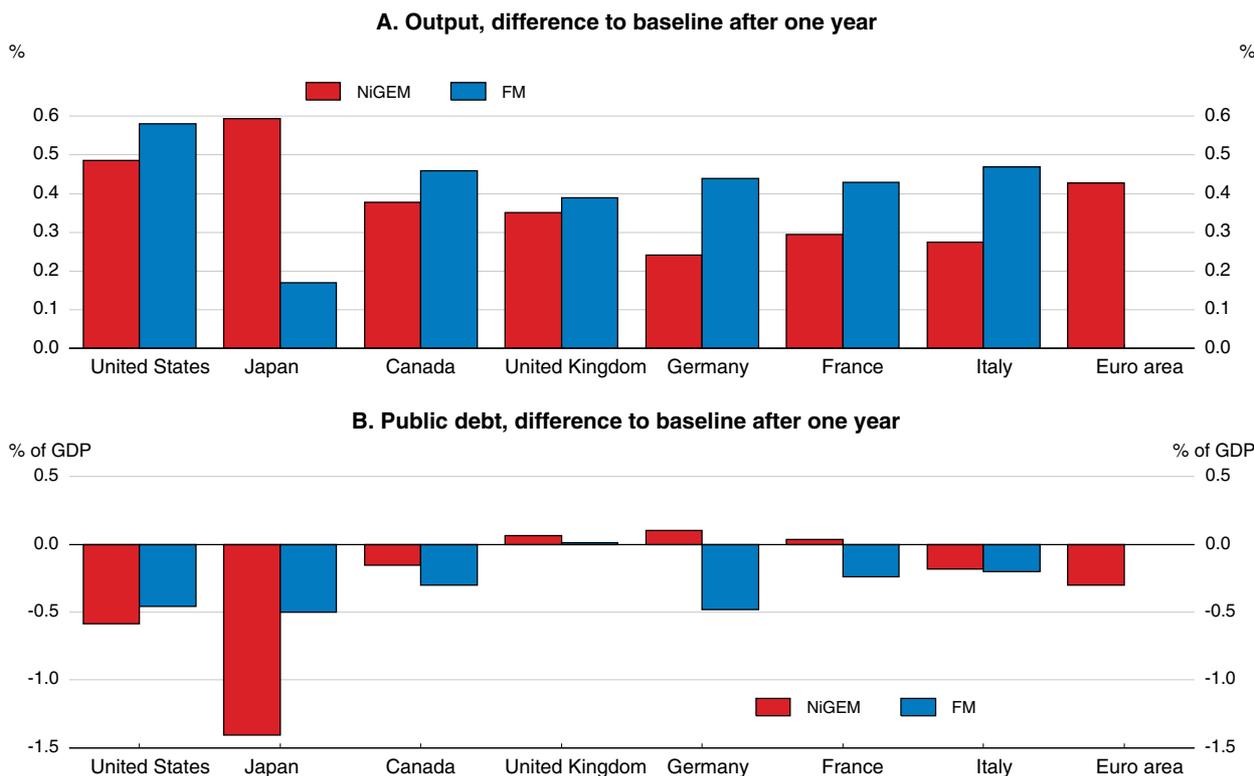
Figure 2.11. **Ex post evaluation of regulation**
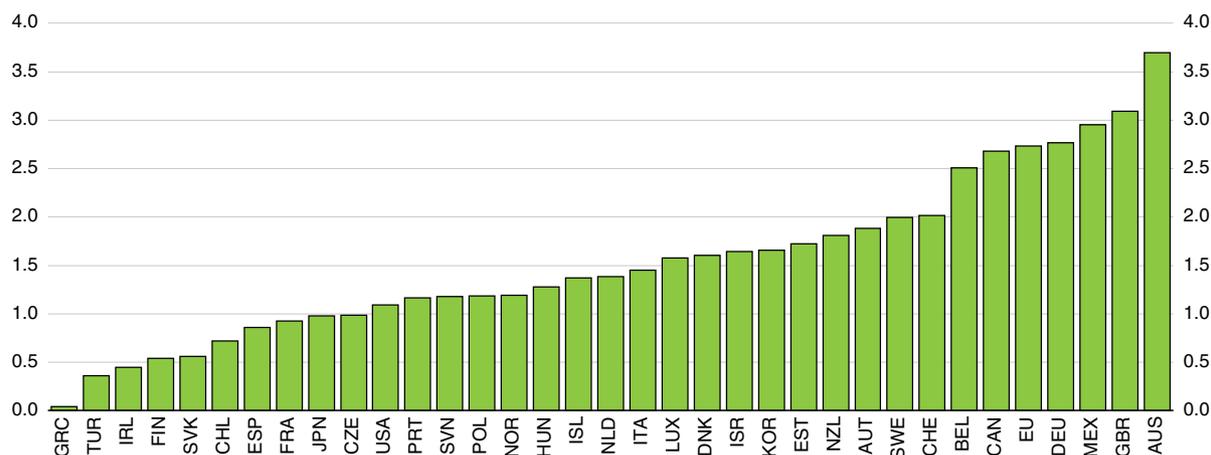
Note: The vertical axis represents the total aggregate score across the four separate categories of the composite indicators. The maximum score for each category is one, and the maximum aggregate score for the composite indicator is four. The scores are an average of the scores for primary laws and subordinate regulations, except for the United States, for which only the results for subordinate regulations are presented. The groupings are based on countries that scored 0.5 above or below the mean score. The data covers practices on the national level that apply to all policy areas. Further information on the indicator design and methodology, as well as the full list of survey questions covered by the indicator are available in C. Arndt, A. Custance Baker, T. Querbach and R. Schultz (2015), 2015 Indicators of Regulatory Policy and Governance: Design, Methodology and Key Results, *OECD Regulatory Policy Working Papers*, No. 1.
Source: 2014 Regulatory Indicators Survey results, www.oecd.org/gov/regulatory-policy/measuring-regulatory-performance.htm.

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Figure 2.12. **The short-term effect of a sustained increase in public investment of 0.5% of GDP**

A. Output, difference to baseline after one year

B. Public debt, difference to baseline after one year

Note: The increase in public investment is deficit financed for a few years and subsequently budget neutral in all countries but Japan. It is budget neutral over the whole simulation period for Japan.
Source: OECD calculations using the NiGEM and FM models (see Annex 2.A2).

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investment could be mobilised more rapidly and, given the recent falls in public investment in many countries, there may be a backlog of existing projects or maintenance needs. Furthermore, commitment to bring new projects on stream may help to improve the environment for private investment.

Raising public investment lifts business investment by a median of 0.7% in the most advanced economies after one year, with corresponding increases in the business sector capital stock and potential output. These effects could be even stronger if the additional public investment were to be concentrated in network industries, particularly in the European Union, where there is a greater possibility of crowding in private investment (OECD, 2015d).

The stimulus impact on the public debt-to-GDP ratio depends essentially on growth dynamics. The public debt-to-GDP ratio would fall compared to the baseline in the short term in the United States and, to a lesser extent, in the euro area.

… while its long-term impact could reach up to 2%

Long-term output gains appear to be positive and could reach up to 2% on average in OECD countries and in the large advanced economies (Figure 2.13). The magnitude of these gains depends on a number of factors.

● First, returns on the hard and soft investment play a key role. While there is evidence that the returns depend on institutional factors, such as the quality of project selection and the regulatory and operational frameworks, public investment is likely to have high returns in countries where the initial stock of public capital and investment is low (Fournier, 2016). The effect on output would be, amongst the large advanced economies, above average in Germany and the United Kingdom, where the stock of public capital is estimated to be relatively low (Figure 2.14). On the other hand, the output gains could be

Figure 2.13. **Long-term output gains of a permanent increase in public investment of 0.5% of GDP**

Difference to baseline
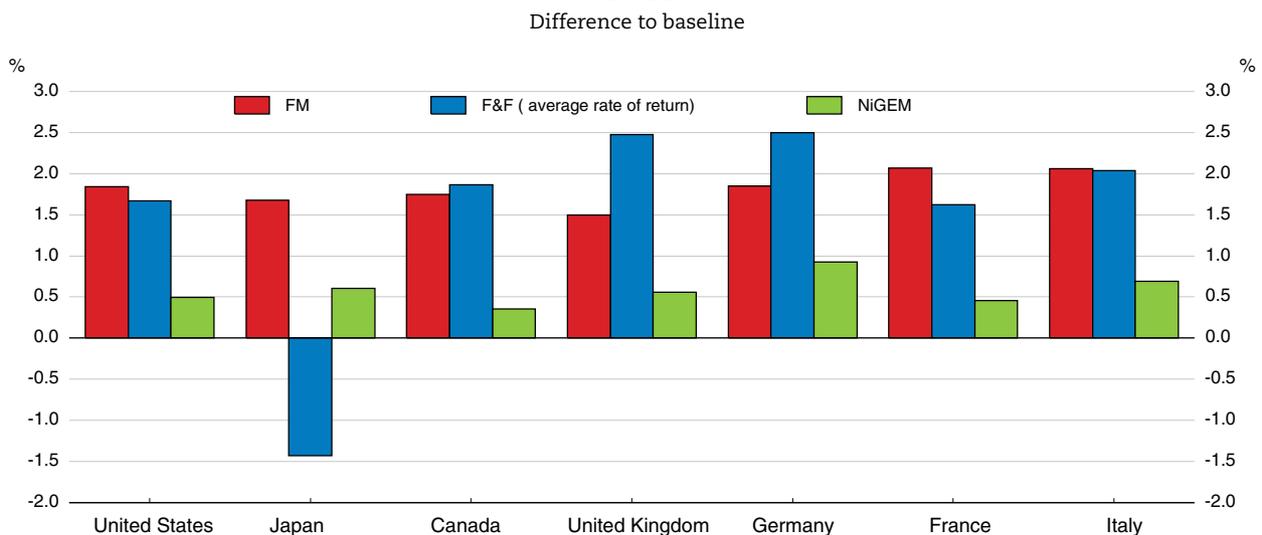
Note: FM and F&F assume budget neutrality is achieved by increasing non-distortionary taxes, while it is achieved through an increase in labour tax in NiGEM. The increase in public investment is deficit financed for a few years and subsequently budget neutral in all countries but Japan. It is budget neutral over the whole simulation period for Japan.
Source: OECD calculations using F&F, NiGEM and FM models (see Annex 2.A2).

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Figure 2.14. **Long-term output gains of different assumptions on the rate of return on public investment**
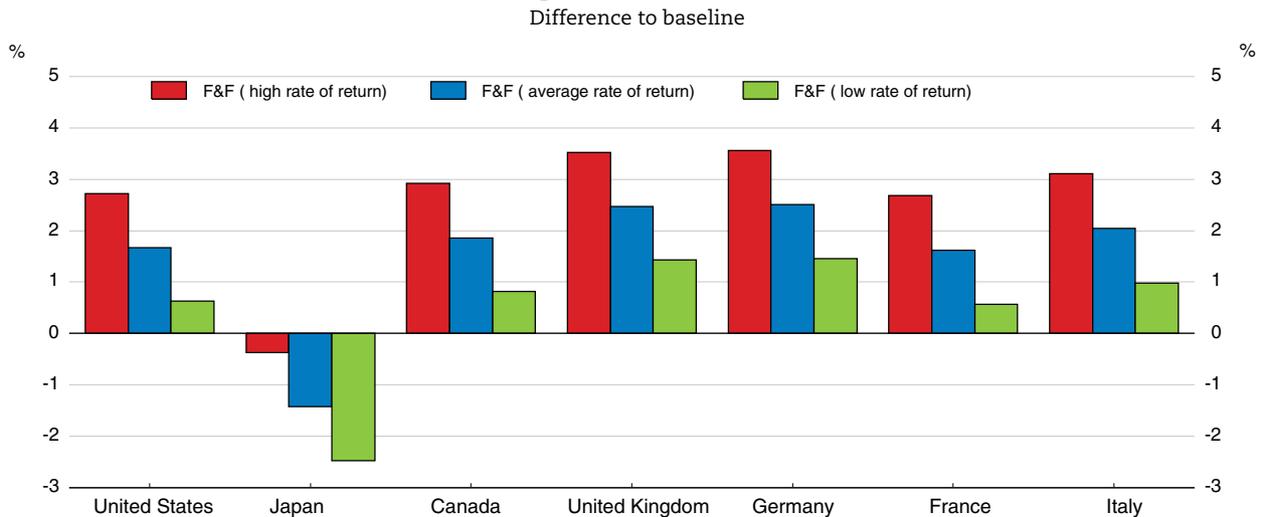
Difference to baseline

Note: The increase in public investment is deficit financed for a few years and subsequently budget neutral in all countries but Japan. It is budget neutral over the whole simulation period for Japan.
*Source:* OECD calculations using the F&F models.

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very negative for Japan, reflecting a large initial public capital stock and associated low and even negative rates of return at the margin for conventionally-defined public capital. The long-term elasticity of capital to potential output and the depreciation rates determine the extent to which the additional public investment will accumulate into productive capacity. These parameters have been calibrated using results reported in the economic literature. For instance, a meta-study by Bom and Ligthard (2014) suggests, that the elasticity of investment in core infrastructure, such as roads, rails and telecommunications on long-term output could be relatively high. In particular, spillovers from the higher public capital stock on potential output have been estimated to be positive for infrastructure spending in the United States and in the European Union (White House, 2016; European Commission, 2014).

● Second, the long-term impact also depends on the way budget neutrality is achieved over the medium term. The 2% gains in long-term output are conditional on the assumption that the stimulus is financed after three to four years through an increase in non-distortionary taxes or a cut in other spending, with neither of these factors affecting potential output. Alternative assumptions, such as financing a stimulus through an increase in direct taxes on households, which reduces household disposable income and spending, would lower this impact.

Structural reforms enhance the growth impact of the fiscal initiative

The output gains of the fiscal initiative would be increased if countries undertake much needed structural reforms that will enhance total factor productivity and potential output. In recent years, the pace of structural reforms in both advanced and EMEs has slowed. This slowdown is particularly troubling for long-term growth prospects. Actions across a broad range of reform objectives, such as product market competition, labour mobility and financial market robustness are essential in order to reverse the widespread slowdown in productivity and improve inclusiveness.

Figure 2.15. **Additional output gains from structural reforms after one year**
Difference to baseline
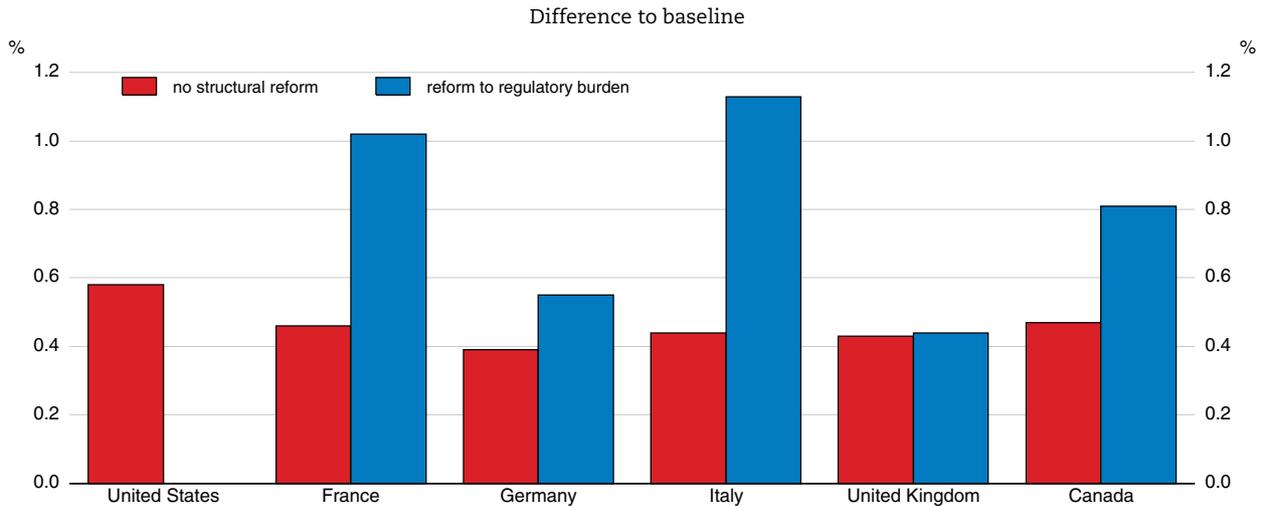
Note: In the scenario with structural reform, the regulatory burden, stemming from anti-competitive product market regulation in upstream sectors, is assumed to be reduced by 10%. Its effect on total factor productivity has been derived from Bourls et al. (2010), where total factor productivity depends on institutions and the distance to the frontier country (the United States). Structural reforms are also assumed to increase the speed of adjustment of the economy following a shock. For illustrative purposes, the adjustment speed has been doubled when structural reforms are implemented. The possible broader effects of such a reform on employment and the capital stock have been omitted, suggesting possible over-estimation of the impact of the reform in the short term. Also, the budgetary costs of reforms are not considered, as the latter are hard to quantify.
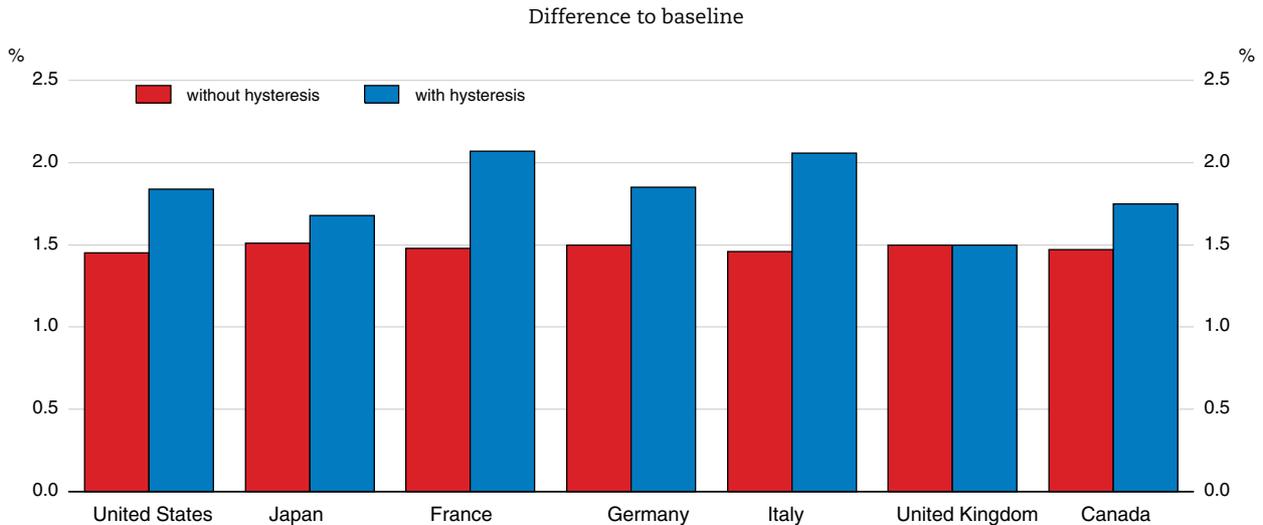*Source:* OECD calculations using the FM model.

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In particular, there could be benefits from reforms targeted at frictions that hold back demand for investment, such as lowering the regulatory burden. Simulations suggest that the output gains of a fiscal initiative could be lower by some 0.3 percentage point on average compared to a scenario where the fiscal initiative is combined with a 10% reduction in the regulatory burden as captured by OECD indicators (Figure 2.15).

A number of caveats should be kept in mind when interpreting these results. While the focus is mainly on GDP and government balances, there could also be important distributional consequences, with some reforms affecting certain household groups more than others. A reduction in barriers to competition has been found to lift incomes of the lower-middle class more than GDP per capita, pointing to some synergies between growth and equity (Causa et al., 2015).

High long-term unemployment reinforces the case for a productivity-enhancing fiscal initiative in the current environment

The current economic environment is characterised by a low-growth trap with weak demand investment, productivity and trade. In such an environment, demand effects lead to permanent supply-side effects through the process of hysteresis, which changes the dynamics of labour demand and of capital investment through insiders/outsiders effects (Blanchard and Summers, 1987; Lindbeck and Snower, 1988) or skill losses (Pissarides, 1992). This in turn has persistent negative effects on supply (Delong and Summers, 2012). The existence of hysteresis in a weak economy leads to stronger long-term output gains from stimulus. The magnitude of the gains depends on the initial position in the cycle and, to a lesser extent, on the degree of labour market rigidity. They are estimated to be particularly important for France and Italy (Figure 2.16). They are also likely to be particularly marked in Southern European countries where demand has been depressed for an extended period of time.

Figure 2.16. **Effects of hysteresis on long-term output gains**

Difference to baseline

Source: OECD calculations using the FM model.

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Hysteresis matters essentially in the longer term and when the stimulus is sustained (Mourougane et al., 2016). For instance, an investment-led fiscal stimulus is found to have a stronger long-term effect on the output level of about ½ percentage point in France and Italy than it would be in the absence of labour market hysteresis. The differences are smaller, of by around ¼ percentage point, in the United States and Canada. Starting from an output gap that is close to zero, the United Kingdom does not benefit from additional output gains when hysteresis is taken into account.

Collective action brings additional gains

With globalisation and tighter links between countries, collective action may be increasingly more powerful than taking fiscal action alone. Demand spillovers, whereby policy action in one country influences investment and export flows with partner economies (Barrell et al., 2012), are found to be significant in the case of synchronised fiscal stimulus (Auerbach and Gorodnichenko, 2014). In addition to these traditional channels, knowledge spillovers, resulting from the international diffusion of innovations and higher trade levels, will raise the benefits to other countries from higher innovation in each economy. While the knowledge spillovers are less important in the short term, they play a role in the long term.

Episodes of collective fiscal action have rarely been observed in the past, the coordinated response to the 2008 financial crisis and the period of fiscal austerity that followed in the euro area being two notable exceptions. For example, the number of OECD countries which simultaneously injected a sustained large public investment stimulus was around four per year on average in the pre-crisis period, and in general these were not coordinated. By contrast, more than 15 countries markedly increased public investment spending in 2008 and 17 did so in 2009.

In order to quantify those spillover effects, the impact of an increase of ½ percentage point of GDP in public investment for each country acting alone was compared with a scenario where all the countries act simultaneously in a context where monetary policy is
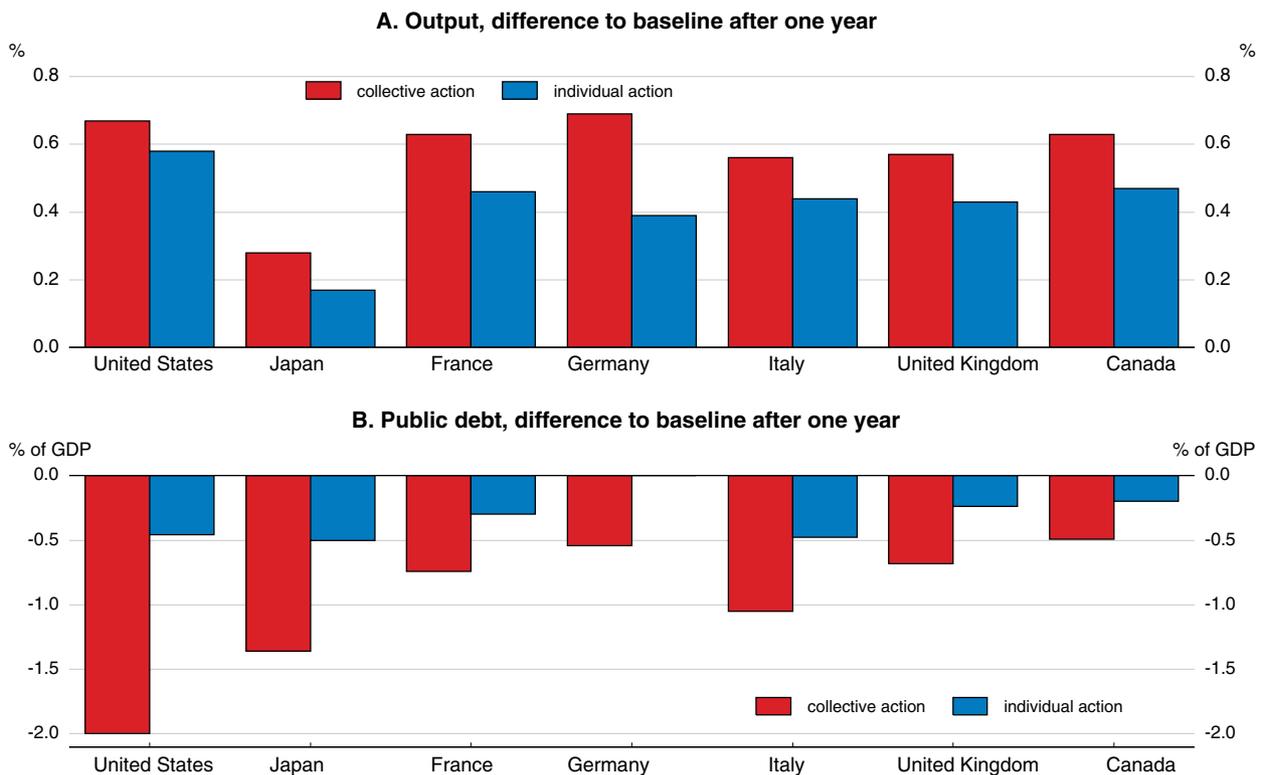
assumed to remain unchanged (OECD countries for the NiGEM model, large advanced economies for the FM model).

Overall, after one year, collective action to raise high-quality public investment is estimated to raise the fiscal multiplier in each country, bringing additional output gains of about 0.2 percentage point on average in the large advanced economies compared with a scenario where countries act individually (Figure 2.17, Mourougane et al., 2016). As a consequence, the debt-to-GDP ratio would also fall more in all countries compared with the outcome when each country acts alone.

Although the average output gains would be broadly of the same order of magnitude whether the collective action happens in OECD versus the large advanced economies, there are differences in the outcome across countries. In both cases, though, Germany would be, amongst the large advanced economies, the country that benefits the most from participating in collective action to boost public investment.

Table 2.1 provides a summary of the main results with respect to the initial size of the public capital stock, hysteresis and collective action for the large advanced economies.

Figure 2.17. **Gains from collective action in the OECD countries**

A. Output, difference to baseline after one year

B. Public debt, difference to baseline after one year

Note: The increase in public investment is deficit financed for a few years and subsequently budget neutral in all countries but Japan. It is budget neutral over the whole simulation period for Japan.
Source: OECD calculations using the FM model.

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Table 2.1. **Country-specific conditions and the impact of public investment stimulus**

	Low level of public capital/high rate of return	Hysteresis	Collective action
United States	+	+	+
Japan	--	=	+
Germany	++	=	++
France	+	++	+
Italy	+	++	+
United Kingdom	++	=	+
Canada	+	+	+

Note: signs summarise the amplitude of the output gains following an investment-led stimulus. + means that output gains are higher, ++ that they are markedly higher and = that there is no change. For instance the existence of hysteresis in France and Italy makes these countries gain more from such a measure than other advanced economies.
Source: OECD calculations based on F&F, FM and NiGEM models.

The composition of spending and taxes should be made more supportive of inclusive growth

A fiscal initiative now can be an opportunity to improve the tax and spending mix by focusing on the measures that will foster long-term growth and promote inclusiveness and the protection of the environment. Countries where fiscal space is limited also have room to move toward a mix that is more supportive of inclusive growth. Productive spending has a permanent effect on the supply side of the economy, while unproductive spending has a short-lived effect. Likewise, the tax structure can be modified to support inclusive growth. The composition of the fiscal initiative is thus essential for fiscal expansion to be undertaken without increasing the debt-to-GDP ratio in the long run.

Boosting public investment and improving education outcomes can yield large growth gains and benefit all

Increasing the share of public investment in government spending yields large growth gains for the whole population (Table 2.2; Fournier, 2016). These gains are particularly strong in fields that are associated with large externalities, such as health (e.g. hospitals, medical equipment and prevention). A spending shift towards public investment and away from other spending in less advanced economies would also speed up their convergence

Table 2.2. **Effects of public spending reforms on growth and equity**

Policy	Growth	Income of the poor	Countries which will benefit the most from the reform
Increasing government effectiveness	+	+	FRA, GRC, HUN, ITA, SVN
Increasing education outcomes	+	+	CHL, GRC, MEX, PRT, TUR
Increasing public investment (including R&D)	+	+	BEL, DEU, GBR, IRL, ISR, ITA, MEX, TUR
Pension reform	+	+	AUT, DEU, FIN, FRA, GRC, ITA, JPN, POL, PRT, SVN
Increasing family benefits	0	+	CHE, ESP, GRC, PRT
Decreasing public subsidies	+	0	BEL, CHE

Note: The analysis is based on information up until 2013 and therefore do not reflect recently implemented reforms. + stands for a positively significant, and – for a negatively significant. The countries which benefit the most from the reform are those where reforms would yield gains of more than 10% of GDP. For family benefits, the table shows countries where the reform would increase the income of the poor by more than 20%.
Source: Fournier J.M. and Johansson A. (2016), "The Effect of the Size and the Mix of Public Spending on Growth and Inequality", *OECD Economics Department Working Papers*, No. 1344.

with the most advanced economies, provided that good governance is in place. As discussed above, the growth gains from increasing public investment may decline at a high level of the public capital stock due to decreasing returns. Still, estimations suggest that all OECD countries but Japan have room for additional public investment. Overall, such a spending shift would lift "all boats" as it raises average income without any adverse equity effects. Targeted additional capital spending can also help achieve long-term objectives such as those related to climate change and environmental quality.

Output gains from increased public spending on research and development are potentially large, particularly if spending is directed to basic research where widespread market failures lead to under-investment by the private sector (OECD, 2015c). Higher public spending on basic research can also enhance the ability of economies to learn from innovations at the global frontier (Saia et al., 2015).

Recent evidence based on OECD countries suggests that increasing the quality of, and the time spent in, education yields large growth gains by raising skills and thereby productivity (Fournier and Johansson, 2016). In addition, an education reform that aims at encouraging completion of secondary education can decrease income inequality. This is in line with earlier research on the effect of education on earnings inequality: an increase in the share of upper-secondary degrees decreases labour earning inequality, while an increase in the share of tertiary degrees increases inequality in education outcomes and hence can increase earnings inequality (Fournier and Koske, 2012).

Shifting spending towards family benefits and childcare and away from other spending also decreases income inequality. This may also facilitate the participation of second earners in the labour market and will help the social inclusion of children from more deprived backgrounds. In the long run, these spending reforms could be funded by cutting public subsidies and raising the retirement age, as pensions and subsidies can have adverse effects on growth. Subsidy cuts that yield disproportionately greater gains for the rich than the poor can be complemented by other redistributive policies that reduce inequality.

Turning to revenues, shifting part of the revenue base from personal and corporate income taxes to less distortive taxes such as recurrent taxes on immovable property or consumption would boost growth (Johansson et al., 2008; Table 2.3). However, such a tax shift would reduce the overall progressivity of the tax system as these taxes are less progressive than income taxes. Furthermore, a combination of base broadening and rate reduction of individual taxes can complement a revenue shift.

Table 2.3. **Growth and equity effects of decreases in selected tax and contributions**

Decrease in…	Growth		Equity	
	Short-term	Long-term	Short-term	Long-term
Personal income taxes	+	++	-	-
Social security contributions	+	++	+	+
Corporate income taxes	+	++	-	-
Environmental taxes	+	-	+	
Consumption taxes (other than environmental)	+	+	+	
Recurrent taxes on immovable property	+			
Other property taxes	+		--	-
Sales of goods and services	+	-	+	+

Source: Cournède, B., A. Pina and A. Goujard (2014), "Reconciling Fiscal Consolidation with Growth and Equity", *OECD Journal: Economic Studies*, Vol. 2013 Issue 1.

Beyond the average effects of a fiscal reform, the long-term effect depends on the context, the design and the implementation. For instance, public investment gains are the largest in countries with the lowest public capital stock, so that investment needs are the highest, and when it is targeted toward appropriate fields, such as research and development (Fournier, 2016). As regards education spending, sound education policies are key to improve outcomes (see Hanushek and Woessmann, 2011 for a literature review). For taxes, broadening the tax base while reducing the tax rate avoids tax-induced distortions (Johansson et al., 2008). Business investment can also be supported by a predictable and simple tax design.

The spending composition has moved towards unproductive outlays in recent years

Since the crisis, the tax and spending mix has moved towards a combination that is less favourable to long-term growth prospects.

- The share of productive spending in output has decreased in many OECD countries in recent years (Figure 2.18). Some euro area countries under market pressure have cut public investment substantially to help meet their fiscal consolidation objectives in the aftermath of the sovereign crisis (Figure 2.19). On average in OECD countries, consolidations of 1% of GDP were associated with a 0.3% of GDP cut in public investment (OECD, 2015d). Even some countries that have taken measures to ease the fiscal stance have at the same time made further cuts to investment.

- R&D spending as a percentage of GDP has been broadly stable on average in the OECD countries since the crisis, but has decreased in absolute terms in a few countries such as Spain and Portugal.

- The share of education and investment in primary spending has declined in most OECD economies, with massive declines in Spain, Ireland and Iceland.

- At the same time, about half of 27 OECD countries have increased the share of personal income tax, social security contribution and corporate income tax in their cyclically-adjusted primary revenues. This could be detrimental to long-term growth.

Figure 2.18. **Changes in the share of productive spending between 2007 and 2013**
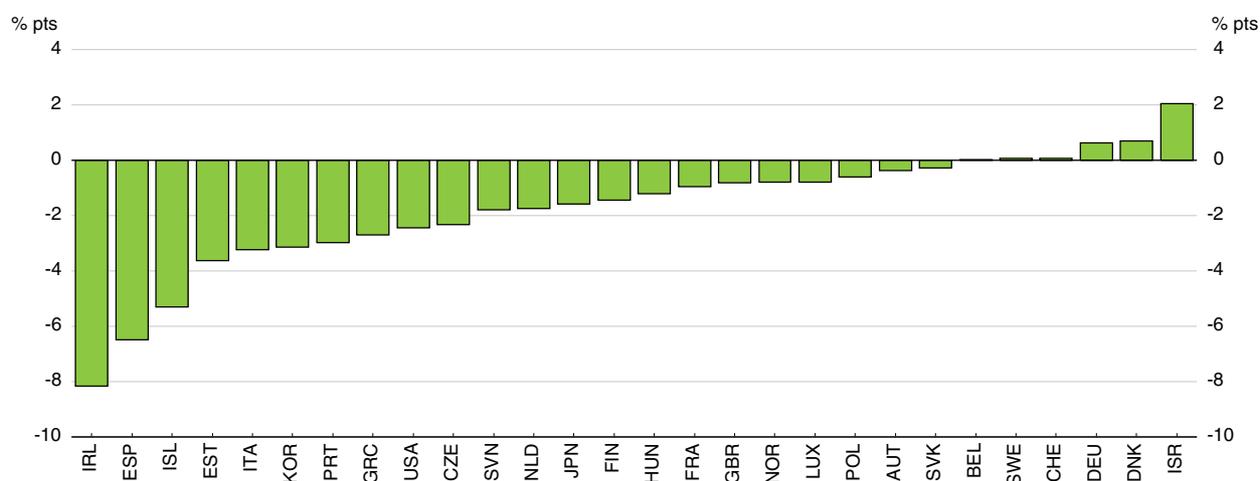
Note: Cyclically-adjusted education and investment data are expressed as a percentage of cyclically-adjusted primary expenditure.
Source: OECD Public Finance Dataset, forthcoming.

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Figure 2.19. **Net public investment in large euro area countries**

% of GDP

Germany
France
Italy
Spain
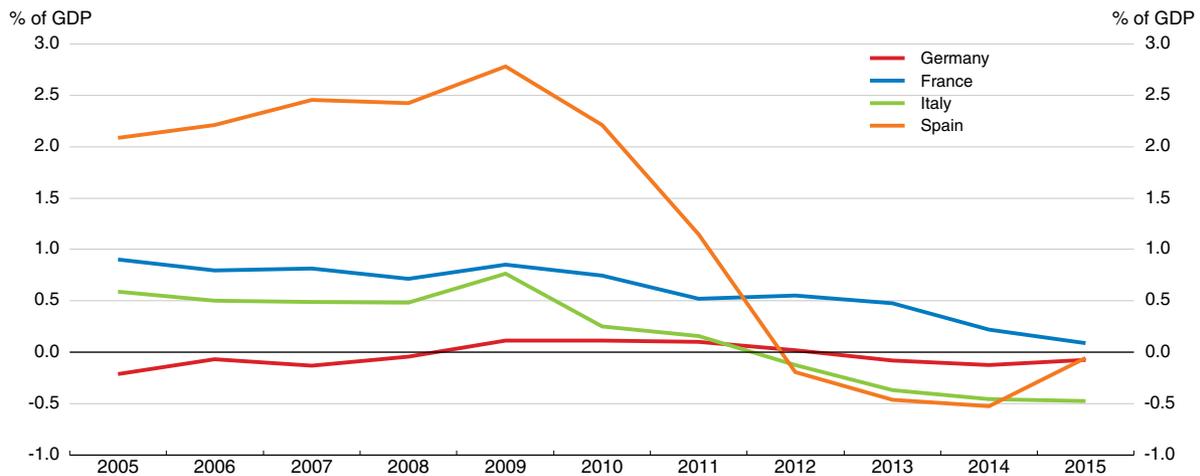
Most advanced countries should make use of the expanded fiscal space and all can make the tax and spending mix more growth and equity friendly

Although policy requirements vary by country depending on their national circumstances and positions in the cycle, most advanced countries have scope to use the expanded fiscal space in the context of an initiative, where the composition of tax and spending choices is adjusted over time to make the mix more supportive of inclusive growth (Table 2.4). In a few countries like Japan, however, a productivity-enhancing fiscal initiative should be budget-neutral.

Table 2.4. **Planned versus recommended fiscal stances for 2017-18**

		Recommended fiscal stance				
		Contractionary	Mildly contractionary	Broadly neutral	Mildly expansionary	Expansionary
Projected fiscal stance	Contractionary					
	Mildly contractionary		ARG, BRA, COL, CRI, GRC, SVK	BEL	AUS, GBR, IDN, KOR	
	Broadly neutral			CHL, CZE, DNK, ESP, IND, IRL, ISR, JPN, LTU, MEX, NZL, PRT, TUR, SWE, ZAF	AUT, FIN, NLD, FRA, RUS	CHE
	Mildly expansionary	HUN		SVN	CAN, ITA, NOR, POL	DEU, EST, LVA
	Expansionary	ISL			CHN	LUX, USA

OECD recommends more expansionary than planned
OECD recommends less expansionary policy than planned

Source: OECD Economic Outlook.

A number of countries have already announced a fiscal package to support the economy. In particular, Austria, Hungary, Iceland, Norway and Spain have provided a fiscal stimulus of 1% of GDP or more in 2016. Amongst the large advanced economies, fiscal support in 2016 amounts to around ½ per cent of GDP in Canada, Germany and Italy. Country-specific assessments of the fiscal packages are set out in Chapter 3.

The likely shift towards more expansionary fiscal policy in the United States in coming years will provide support to economic growth, although the mix between tax cuts and spending may unduly favour tax cuts. However, in many OECD countries, fiscal policy could be more expansionary than currently planned. A few large economies, including Germany, should borrow more in the coming years to raise public investment more than currently envisaged. A fiscal initiative in the United Kingdom would help to manage the contractionary impact of Brexit. By contrast, in a few countries such as Hungary and Iceland, tighter policy stances would be preferable.

Most EMEs have room to boost public investment and health and education spending. In China, spending needs to be directed at the health and education sectors. In India, an increase in tax revenues and an improvement in spending efficiency will help regain fiscal room.

The allocation of resources will depend on country needs and specificities, including the size of public investment needs (including both hard and soft infrastructure spending), room to improve the tax and spending mix and more generally to implement structural reforms that boost potential output in the medium term. Countries with no fiscal space would also benefit from raising the share of their productive spending and lowering the share of harmful taxes in total spending and taxes.

Most OECD countries with increased fiscal space have room to significantly increase either high-quality public investment or spending on health or education. In particular, there is a need to repair existing infrastructure and carry out other maintenance in a number of countries. More spending toward quality childcare and early education spending is also warranted in a number of countries, including Germany and Italy. A few countries such as Denmark and France, where tax rates are elevated, should possibly rather focus on lowering labour and/or corporate taxes rather than increase spending.

In about a third of OECD countries and Key partners, bank balance sheets need to be repaired. This is notably the case in China, India and Russia, but also in a few European countries, Italy in particular. In the European countries, it may be preferable to use the increase in fiscal space to clean up banks' balance sheets and opt for a stimulus at the euro-area-wide rather than the national level, for instance through larger bond issuance by the European Investment Bank.

In about half of the countries considered, there is evidence that existing fiscal rules limit recourse to fiscal policy in Europe and elsewhere, even when such a policy would be warranted. The application of the EU Stability and Growth Pact could be modified to allow for a more supportive fiscal stance, for example by excluding net investment spending from fiscal rules and, more generally, developing a coherent approach for using discretion in applying fiscal rules (Box 2.2).

Box 2.2. **Expanding fiscal space under the EU Stability and Growth Pact**

Making use of the increased fiscal space from exceptionally low interest rates to address low growth in the euro area is challenging in the context of the EU Stability and Growth Pact (SGP).[1] This box considers two options, one temporary and the other permanent, to expand the fiscal space available to countries under the SGP without fundamental and difficult-to-achieve changes to the Pact's architecture.

The rules of the SGP currently require the major euro area economies, with the exception of Germany, to pursue fiscal consolidation efforts of around 0.5 percentage point of GDP or higher each year. Under the "corrective arm", a benchmark annual structural balance adjustment of at least 0.5% of GDP is typically required under the Excessive Deficit Procedure regardless of cyclical conditions for countries. In the "preventive arm", for countries that have not reached their medium-term objective (MTO), a benchmark 0.5% of GDP annual structural balance adjustment is also required, although there is some limited scope to waive it, for example in the event of negative growth. In principle, the "1/20th of excess over 60% ceiling" debt reduction rule could here lead to much larger adjustments in countries with high debt. There is some flexibility under clauses for structural reforms and investment, as has been the case of Italy in 2016 but conditions are restrictive.

In practice, recommendations from the Council have often required annual adjustment of the structural balance in excess of 0.5% of GDP. However, incomplete compliance with these requirements has led – on the European Commission's assessment – to less consolidation than required and a somewhat easier stance than the rules implied.

Current very low government yields in the euro area create additional fiscal space. If a fiscal expansion in this conjuncture were well-designed, with strong emphasis on high-quality investment projects, debt-to-GDP ratios might not even increase and therefore fiscal sustainability would not be impaired.

The SGP rules make it difficult to use this additional fiscal space, both for countries currently in the EDP or who have not reached their MTOs, and can restrict policy for countries that currently meet the EU requirements.

To achieve the most appropriate area-wide fiscal stance, some modulation is required in how the rules are applied. Two options are set out below, one temporary and the other permanent, to expand the room available to countries under the SGP without fundamental and difficult-to-achieve changes to the Pact's architecture.

Using discretion and flexibility within the rules

In practice current rules appear to be extremely complex, have been interpreted in a very *ad hoc* way and, as a result, lack credibility. Indeed, the Council has full discretion as to whether a rule has been breached, whether to apply sanctions and whether to modify adjustment paths (OECD, 2014). There is some room for interpretation in the application of the rules, including the use of flexibility clauses. In practice, slippage relative to previous adjustment requirements has been common. For example, extensions of EDP deadlines have been allowed 18 times since 2009.

Rather than *ad hoc* extensions and responding in a piecemeal way to fiscal developments, the Council could develop a coherent approach to the application of discretion in the current exceptional circumstances. This would make policy more predictable and could encourage governments to pursue medium-term plans based on spending with high multipliers. The new European Fiscal Board (EFB) could provide guidance on the approach.

Box 2.2. **Expanding fiscal space under the EU Stability and Growth Pact** *(cont.)*

Treating public investment more flexibly

The SGP rules essentially do not distinguish between public investment and other forms of expenditure as they are defined in terms of overall budget balances or broad expenditure measures. A number of small adjustments exist to take into account investment, but these are marginal.[2]

Fiscal expansion through higher public investment would be facilitated by excluding net public investment spending from assessment of compliance with fiscal rules, as is currently the case for countries' contributions to the EFSI (Juncker Plan). This could, for example, be achieved by expanding the existing "investment clause" to cover all forms of (net) investment as defined in the national accounts and easing the conditions for its use. The clause should also apply in the corrective arm by broadening interpretation of structural reforms (European Commission, 2015). Such a move to a "golden rule" could be formalised on a permanent basis through deeper changes to the rules. Existing Eurostat rules and procedures would provide some safeguard against reclassification of spending towards investment, in part at the cost of focussing only on physical capital.

The advantage of this approach is that it creates an incentive to use additional fiscal space to boost public investment, for which short and long-run multipliers are likely to be higher than other forms of fiscal expansion. There is also evidence of sizeable spillovers across countries (OECD, 2015e; In't Veld, 2016). Furthermore, net public investment has been zero or negative in the main euro area economies in recent years.

These two options would help to use expanded fiscal space without fundamental changes to the EU SGP rules. There are a number of other potential issues with the EU rules in the current exceptional environment that would not be addressed by these options, including a possible exacerbation of measurement issues related to potential output whereby weak growth leads to a reduction in estimated potential output and narrows fiscal space. In addition, the change in circumstances since the numerical rules were calibrated would warrant careful re-consideration.

1. See also Box 1.6 "Fiscal space in the euro area under the European fiscal rules" in OECD (2014).
2. In the preventive arm, the investment clause allows a temporary leeway of up to 0.5% of GDP (or 0.75% in total if combined with the structural reform clause) but only for projects co-financed by the EU (including the European Fund for Strategic Investments, EFSI) and under poor cyclical conditions (negative growth or a negative output gap – below 1.5% of GDP). Further, a country can use the clause only once until it reaches its MTO and only if its structural balance is within 1.5 percentage points of GDP of the MTO. In addition, the expenditure benchmark smoothes total investment expenditure over four years. In the corrective arm, the European Commission should take into account whether the deficit exceeds total investment expenditure, but no operational provisions have been defined for investment (with the exception of national contributions to the EFSI).

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ANNEX 2.A1

Selected approaches to estimate fiscal space

This annex reviews the methods used to estimate fiscal space in this chapter.

All these methods face common limitations. In particular, they all boil down to a stylised representation of a very complex problem and consider a closed economy. They also do not account for many country-specific factors, for instance the maturity structure of public debt.

Fiscal space as a measure of distance to loss in market access

Following Ghosh et al. (2013), Fournier and Fall (2015) investigate the limits to public debt sustainability with a theoretical model that embeds both the fiscal reaction of government to rising debt and the market reaction. For those countries that have never experienced particularly high debt levels, a model-based approach makes it possible to investigate their theoretical debt limit. Such a model-based approach also provides insights on the mechanisms at work when government debt is becoming large.

The model builds on an estimated reaction of governments to rising debt. This means that market participants assume that governments will behave in the future as they did in the past. The reaction function estimation differs from Ghosh et al. (2013) and uses a piece-wise linear functional form. Post-2007 data are also taken into account. More specifically, fiscal authorities are assumed to follow a fiscal reaction function, whereby the primary budget balance reacts to the public debt level and control variables:

$$PB_{it} = \beta_1 GAP_{it} + \beta_2 OT_{it} + \beta_3\left(D_{it-1}1_{D_{it-1}<d_1} + d_1 1_{d_1 \leq D_{it-1}}\right) + \beta_4\left(D_{it-1}1_{d_1 \leq D_{it-1}<d_2} + (d_2 - d_1)1_{d_2 \leq D_{it-1}}\right)$$
$$+ \beta_5 D_{it-1}1_{d_2 \leq D_{it-1}} + \beta_6 OO_{it} + u_i + v_{it} \qquad (1)$$

where PB_{it} denotes the primary budget balance of country i at time t, GAP_{it} denotes the output gap, OT_{it} denotes the openness ratio scaled by the terms of trade, OO_{it} denotes fiscal one-offs, D_{it} denotes the public debt level and d_1 and d_2 are estimated thresholds beyond which the fiscal reaction to debt changes. u_i are country fixed effects and v_{it} follows an AR(1) process.

Using annual panel data for 31 OECD countries over the period 1985–2013, estimations in Fournier and Fall (2015) reveal different government behaviours at different debt levels. Estimates confirm that governments react weakly by increasing their primary balance when debt increases but remains below about 120% of GDP (d_1 in Figure 2.A1.1). But, from about 120% to about 170% (d_2 in Figure 2.A1.1), governments react strongly to rising debt. Beyond this threshold, governments may abandon fiscal discipline and measure the primary deficit. Alternative estimates also capture the effect of the business cycle on the

primary balance, and include additional control variables, such as asset prices, inflation, IMF programmes, the old age dependency ratio, the euro area or the government size.

The interest rate can include a risk premium reflecting the probability of default in the next period p_{t+1}, which is the probability that debt d_{t+1} goes beyond its maximum level $\bar{d}$:

$$p_{t+1} = P(d_{t+1} > \bar{d}) \qquad\qquad (2)$$

with the following debt accumulation dynamic:

$$d_{t+1} = (1 + r(p_{t+1}) - g)d_t + \mu + f(d) + \varepsilon_t \qquad (3)$$

where g denotes the potential growth rate, μ denotes an average stance of fiscal policy, $f(d)$ the estimated reaction of the primary balance to debt and ε_t captures macroeconomic shocks to the primary balance.

The debt limit is a function of the exogenous variables of the model, including the risk-free interest rate-growth rate differential $r_i - g_i$, the size of the macroeconomic shocks $V(\varepsilon_i)$, and the average past primary surplus μ_i. Debt stabilises when the effect of past debt accumulation is exactly offset by the primary balance. There is a stable equilibrium for which the government would generate a higher surplus if a shock increases the debt ratio (Figure 2.A1.1). By contrast, when the debt level approaches the debt limit, then the government is facing an interest rate spiral, and at the debt limit, the interest rate goes towards infinity, which means that the government loses market access (dashed red curve in Figure 2.A1.1).

This model takes the macroeconomic environment as given. It is thus useful to examine the sensitivity of the results to the macroeconomic assumptions and identify the main determinants of estimated debt limits. Assumptions on potential growth, inflation, risk-free interest rate, size of shocks appears to be those that matter the most (Figure 2.A1.2).

The model is non-linear and can have two types of solutions. In most cases, a debt limit can be found, suggesting that the past behaviour is sustainable. In some other cases,
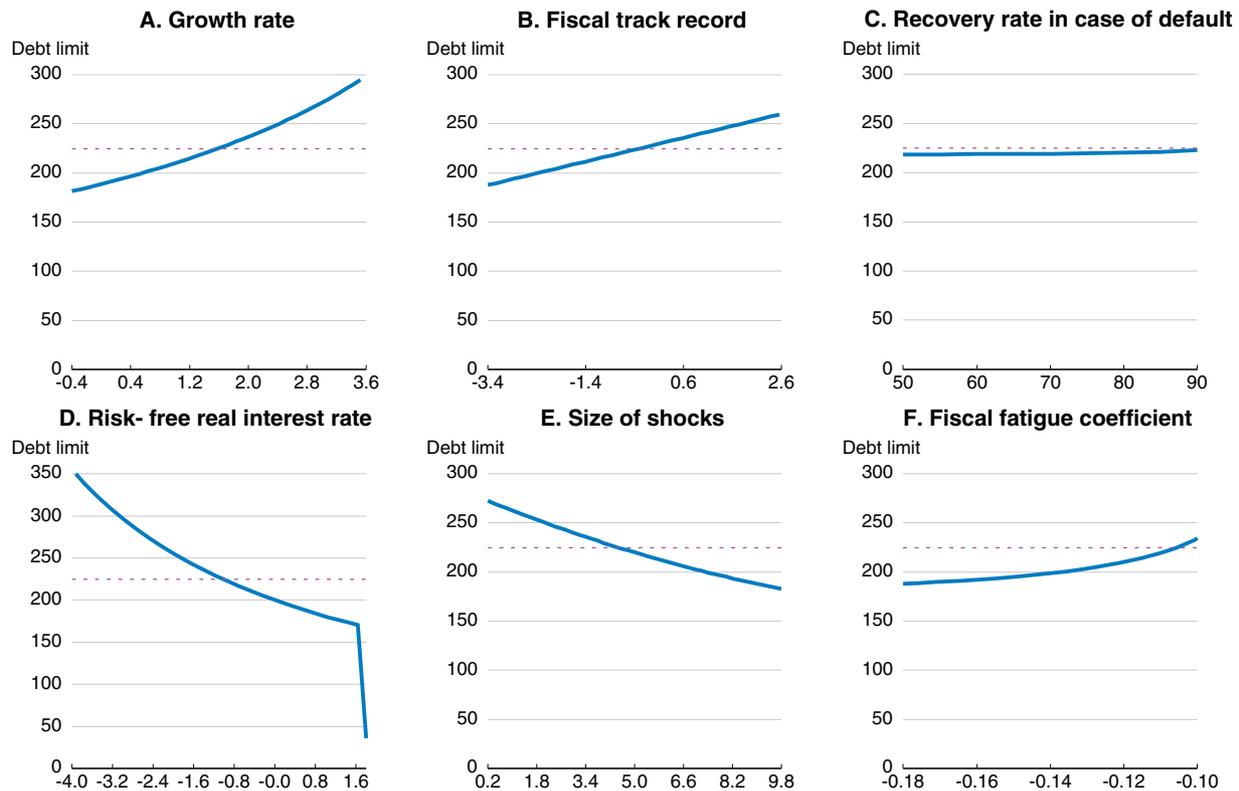
Figure 2.A1.1. **Determination of the debt limit**
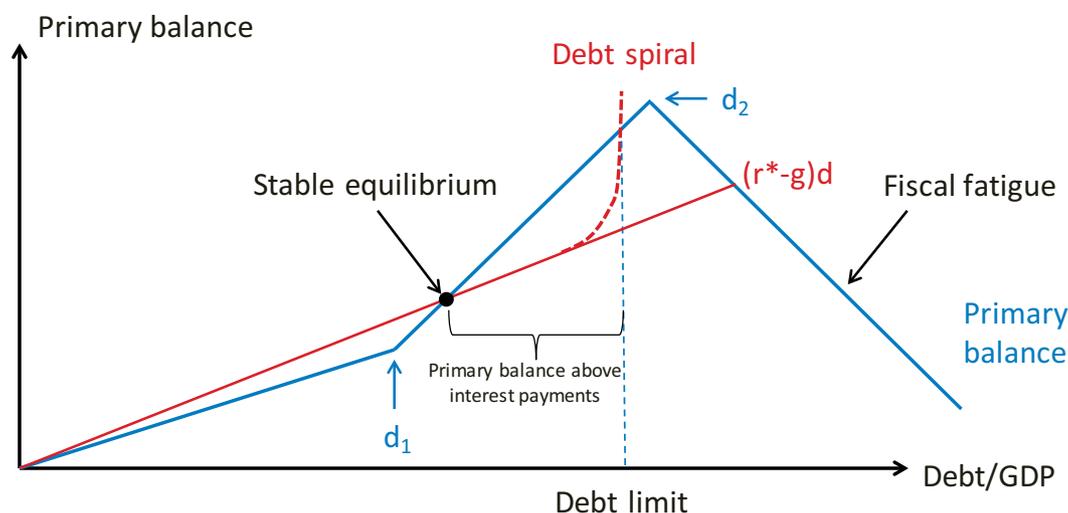
Note: g is the growth rate, r* is the risk-free interest rate, d is the debt-to-GDP ratio, d_1 and d_2 are two estimated thresholds signalling changes in the reaction function to increasing debt.

Figure 2.A1.2. **Debt limit sensitivity analysis**
Per cent of GDP

Note: For each panel, the title refers to the parameter that is varied, all other parameters being set equal to the OECD average. Parameter values are reported on the horizontal axis, and the corresponding debt limit is reported on the vertical axis. The fiscal track record is the average primary deficit in GDP point that would prevail if the debt level is zero. Below a growth threshold, or above a risk-free real interest rate threshold, there is no solution. Horizontal lines denote the debt limit that would prevail in a virtual country parametrised using OECD average parameters.
Source: Calculations based on Fournier and Fall (2015).

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no solution can be found, suggesting that under the assumption of unchanged behaviour, the public debt dynamic is not sustainable. One important feature of the approach is to underline that is that if the public debt of a country is quite close to its limit, a change in the macroeconomic environment can induce a shift into an unsustainable dynamic. Conversely, a change in government behaviour or an improvement in macroeconomic conditions can bring a country out of a sovereign stress situation.

One limitation of this approach is that a lender of last resort is assumed to prevent any self-fulfilling crisis. In practice, institutions do not always guaranty this, and a self-fulfilling crisis can crucially depend on other parameters, such as the debt maturity structure and the share of debt issued in foreign currency.

Defining fiscal space in terms of long-term fiscal sustainability

Rather than loosing access to market, a number of alternative approaches focus on measures that are consistent on ensuring fiscal sustainability. The rationale is that policymakers need to account for long-term spending projections when deciding today's fiscal stance.

Tax gaps and sustainable tax rates

Blanchard et al. (1990) assess fiscal space by examining the tax gap, which is the difference between the sustainable and the actual tax rate. This gap can be computed at different horizons. A positive indicator points to the need for either increasing taxes or decreasing spending in the future. The indicator also measures the size of the required adjustment, under the assumption the adjustment is undertaken without delay.

The sustainable tax rate is the rate which, if constant, would achieve an unchanged debt-to-GDP ratio over the relevant horizon, for a given forecast of spending and transfers. The assumption that the debt-to-GDP ratio converges to its initial level is less stringent than it could seem, as discounting means two different levels of the ratio far in the future imply nearly the same sustainable tax rate today.

This approach is valid in a context where the interest rate is above the economic growth rate. When the interest rate is persistently below the growth rate, governments are able to run permanent deficits of any size.

Over the medium term, a simplified indicator can be computed without having to project spending. Using the methodology described in Blanchard et al. (1990) and data from the latest Economic Outlook, two-year-ahead gaps appear to be positive in all the large advanced economies but Germany (Figure 2.A1.3). This result points to some fiscal space in Germany over the period 2016-17, reflecting essentially the negative interest rate to growth differential that is expected during that period. In such a situation, governments would no longer need to generate primary surpluses to achieve sustainability. Such a measure, however, faces the same limits as synthetic indicators in that it does not account for long-term developments in public spending.

Over the long term, the computation requires to project the main categories of public spending, such as those on social spending from population ageing, as governments' commitments to specific programmes have implications far into the future. For this purpose, projections of pensions were taken from *Pensions at a Glance* (2015) up to 2060 and healthcare spending from the long-term health spending scenario derived in de la

Figure 2.A1.3. **Medium term gap**

2-years ahead 2016-17, percentage points
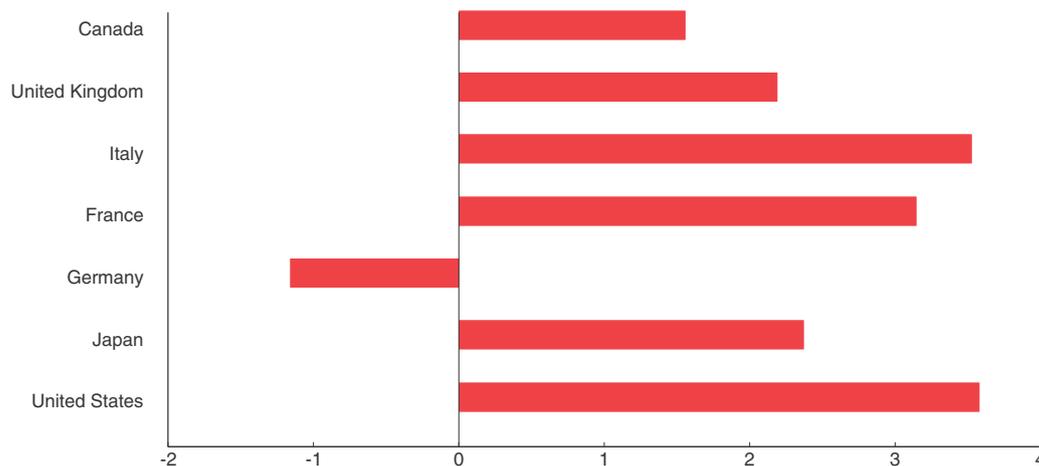
Source: OECD calculations.

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Maisonneuve and Oliveira Martins (2015). One caveat of using these two sets of projections is that they may rely, at least over the medium term, on different growth and price projections. Other spending is assumed to remain constant at 2015 levels.

In this chapter, the calculation is somewhat different from the original computation done in Blanchard et al. (1990). In particular, tax gaps are derived using the FM, a small macroeconomic model (see Annex 2.A2 for a brief description). Health spending is partly considered as an investment and fosters output growth. The sign of the gaps depends to a very large extent on the assumptions used to project health care spending, which are traditionally surrounded by large uncertainties, given the difficulty to estimate how technology affects costs. Measures taken to contain costs in the health sector are found to increase fiscal limits in all the countries considered. In the same vein, reforms that will restrain increase in pension spending will also increase fiscal space.

This method presents several advantages. It takes into account future developments of the economy and long-term spending projections. It is also tractable and relatively easy to communicate. Gaps can also be computed under a range of policy assumptions. However, in the current context of persistent low and negative interest rates, this approach loses some of its relevance. Finally, a major drawback is its reliance on specific assumptions, such as long-term spending on health care, which are surrounded by large uncertainties.

Making use of the Laffer curve and defining forward looking debt limits

Bi (2011) and Bi and Leeper (2013) also emphasise long-term sustainability in their assessment of fiscal limits, a measurement of the government's ability to service its debt. Empirically those limits are derived from a DSGE framework. The fiscal limit is forward-looking and depends on expected future policies and how credible those policies are, private behaviour (consumption-saving and labour-leisure choices) and the fundamental shocks to the economy.

In this approach, the fiscal limit arises endogenously from the economy's dynamic Laffer curve, whose shape depends on the state of the economy. The maximum debt level depends on the expected present value of future maximum primary surpluses. This is derived from driving tax revenues to the peak of the Laffer curve and driving expenditure and transfers to some expected levels.

More specifically, a closed economy with linear production technology is considered. Output depends on the level of productivity and labour supply. Household consumption and government purchases satisfy the aggregate resource constraint. The gap between productivity and its steady state follows an autoregressive process of order 1.

At time t, the government may partially default on its liability. The government finances lump-sum transfers to households and unproductive purchases by collecting tax revenue through a tax on labour income and issuing one-period bonds. Lump-sum transfers are countercyclical and government purchases follow an autoregressive process of order 1. Following Schmitt-Grohe and Uribe (2007), the government increases tax rates when public debt rises. An increase in the tax rate may or may not increase the tax revenue, depending on where that actual tax rate is in the Laffer curve. For a given state, the government can reach the maximum fiscal surplus at the peak of the Laffer curve. At each point in time and for each state of the economy, the maximum primary balance will be derived from the difference between these maximum revenues and projected spending

(Figure 2.A1.4). The resulting fiscal space will be computed as the sum of all these maximum primary surpluses, expressed in present value terms.

Uncertainty about the economy means that there is no one threshold for debt that, when crossed, triggers sovereign default. Rather, the outcome is a probability distribution of the fiscal limit, i.e. the probability for a country to default at each value of the public debt-to-GDP ratio.

This approach faces several limitations. First, a country may not be able, for political reasons, to raise tax to reach the peak of the Laffer curve. Second, some tax rates such as consumption tax rates do not necessarily yield a Laffer curve. Third, the ability to reduce spending is also important in determining the maximum surplus and the Laffer curve has no information about the potential for government spending reduction.

Figure 2.A1.4. **Maximum primary balance at a given period and state of the economy**
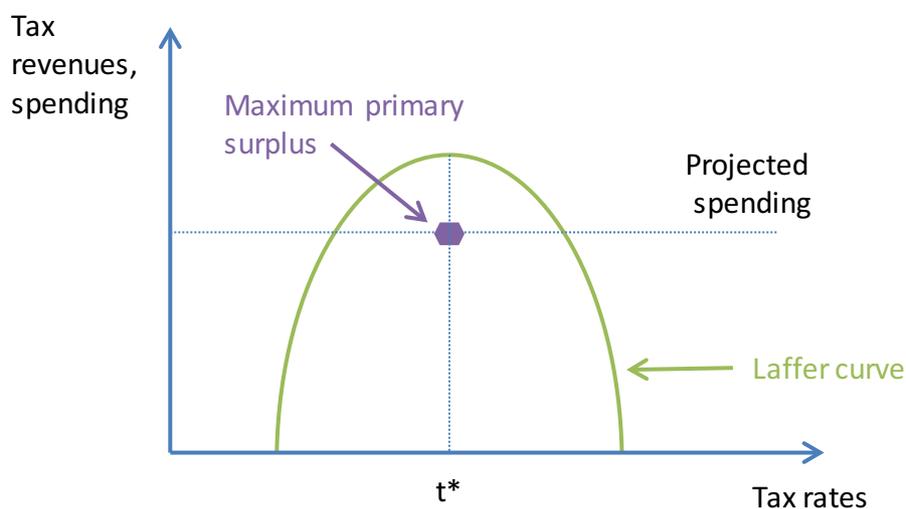
ANNEX 2.A2

Brief comparison of the models used in the public investment simulations

The three models employed in the analysis share a number of common features. In particular, the transmission mechanisms of an increase in public investment to the economy are very similar. In addition to the short-term boost in demand, such a shock increases output in the long run when it is permanent. When the shock is temporary, the long-term impact on output is close to zero in the three models.

The definition of the public sector differs across countries and partly explains observed differences in government investment across countries. One major source of difference is the extent to which governments subcontract the delivery of public services to private firms.

Each model has specific features that cast different lights on the examined issues.

- The Fall & Fournier model (F&F) is a long-term stochastic model and allows examining the impact of uncertainties on simulation outcomes. Twenty-six OECD economies are modelled. The efficiency of investment is estimated to be a decreasing function of the initial capital stock level (Fournier, 2016). In addition, interest rates are assumed to be more sensitive to public debt levels in the euro area countries than in the other OECD countries.

- The Fiscal Maquette (FM model) encompasses structural features (such as hysteresis) and some international dimensions, through trade volumes linkages. Only the large advanced economies and the rest of the world are modelled. As in the F&F model, a rise in public debt increases the credit risks premium faced by governments.

- NiGEM is a full-fledged international model maintained by the UK National Institute of Economic and Social Research. All economies, including large emerging-market economies, are modelled. Individual country models are linked through trade (via world demand and price competiveness). The model also encompasses a number of options in terms of monetary policy or fiscal rules and can be run in backward and forward-looking modes.

A more detailed description of the first two models is provided in Mourougane et al. (2016). More information on the NiGEM model can be found in Barrell et al. (2012).