IV. Fiscal sustainability: where do we stand?

Six years after the onset of the global financial crisis, public debt in most advanced economies has reached levels unprecedented in peacetime. And, worryingly, it continues to rise. But the crisis has only made an already bad situation worse. In 2007, public debt was already at historical highs in many advanced economies, having trended upwards more or less continuously since the mid-1970s. Even worse, official debt statistics understate the true scale of the fiscal problems faced by many economies, as governments have made promises that imply major increases in pension and health care spending over the coming decades.

Since 2010, there has been uneven progress in consolidating public finances. In economies facing heavy market pressure, fiscal consolidation efforts have been substantial and have helped to stabilise financial conditions. In others, especially those that have continued to enjoy very low interest rates, progress in closing current deficits as well as in tackling unfunded liabilities has been slower. In these economies, the needed fiscal adjustment remains large and could swell further if long-term interest rates rise from their current ultra-low levels.

Most emerging market economies (EMEs) are in better shape than advanced economies. A stronger recovery has helped them to reduce their deficits. Yet their fiscal situations may appear rosier than they actually are. In several cases, budget positions may have benefited from strong credit growth as well as surging asset and commodity prices. Furthermore, public spending on pensions and health care is expected to rise substantially in some economies. Governments in emerging market economies therefore need to remain fiscally prudent and ensure the funding of future age-related liabilities.

In this chapter, we take stock of the progress that advanced and emerging market economies have made in consolidating their public finances. After reviewing the changes in deficits and debt that have occurred since 2009, we discuss how much consolidation is still needed to ensure fiscal sustainability. Then we assess the potential impact that a rise in interest rates could have on public debt trajectories in several economies that are currently experiencing low long-term interest rates. Following this, we discuss whether calls for slower or more back-loaded fiscal adjustment are justified. Finally, we stress the crucial importance of the quality, or composition, of fiscal adjustment in enhancing long-term growth.

Progress to date

In 2010, advanced economies began to shrink their deficits, which had risen sharply soon after the onset of the financial crisis. For most countries, headline deficits peaked in 2009 at between 5 and 16% of GDP. They have narrowed since, and by the end of 2013 are expected to be roughly 2 to 12 percentage points below their peaks.

The underlying primary balance (the cyclically adjusted balance net of interest expenses and one-offs) may provide a more accurate picture of fiscal progress than do headline deficits.[1] In the short term, fiscal tightening lessens output growth. At

[1] The underlying primary balance is still an imperfect measure, as it is based on an estimate of the output gap, which is inevitably unreliable. While the short-run negative impact of fiscal consolidation on growth will fade out over time, part of what is judged to be cyclical may turn out to be more persistent or structural. If the belief is that the size of negative output gaps is overestimated, then true fiscal progress would be overestimated too.

the same time, the level of interest payments may not immediately reflect improvements brought about by fiscal consolidation. Based on the underlying primary balance as a measure and using 2009 as a baseline, advanced economies are expected to have improved their balances by an average of almost 4 percentage points (1 point per year) by end-2013.

But progress has not been uniform across advanced economies. The largest adjustment has taken place in economies facing financial market pressures. Among the countries under EU-IMF financial support programmes, Greece is expected to have improved its underlying primary balance by almost 17 percentage points of potential GDP by the end of 2013, while Ireland and Portugal are expected to have improved theirs by 7.3 and 6.8 points, respectively. As for countries whose governments still enjoy financial market access, Spain's underlying primary balance will have improved by 8.3 percentage points and Italy's by 5.1 points (Table IV.1). By contrast, the pace of adjustment has been slower in those countries where market pressures have been less intense. Within the euro area, France will have raised its underlying primary balance by 4.9 percentage points, while the figures for the Netherlands, Austria and Belgium are 3.5, 2.4 and 2.3 points, respectively.

Progress has also been slower in countries where interest rates are currently below historical averages – due in large part to central bank bond purchases and safe haven capital inflows. By end-2013, the United Kingdom and the United States will have improved their underlying primary balances by 3.3 and 4.8 percentage points of potential GDP, respectively, since 2009. Only Japan has experienced a deterioration of its underlying primary balance, partly due to post-earthquake rebuilding efforts. In view of a projected 2013 headline deficit that exceeds 10% of GDP, restoring Japan's fiscal health remains a huge challenge (Table IV.1).

In most advanced economies, the current episode resembles previous periods of large fiscal adjustment in terms of the pace of consolidation. In these past episodes, the median improvement in the underlying primary balance was roughly 1 percentage point per year.[2] Nevertheless, current efforts fall short in many countries considering the size of deficits and the scale of adjustment needed.

General government gross debt is expected to continue increasing in numerous advanced economies. In 2013, it is projected to be close to 230% of GDP in Japan; over 180% in Greece; over 140% in Italy and Portugal; close to 130% in Ireland; around 110% in the United States, the United Kingdom and France; and near 100% in Belgium and Spain. By contrast, it is projected to be below 90% and close to stabilising in Canada and Germany (Table IV.1).

Adjusting debt figures to account for government assets changes the picture in a few cases. Net government debt is much lower than gross government debt in Japan, but remains at 145% of GDP, while in Canada it is almost 50 percentage points lower. However, the difference is significantly smaller in most other economies. Moreover, due to the difficulty involved in determining the value of some financial assets held by the public sector (eg shares in government-controlled companies), net debt is a more uncertain measure than gross debt.

Current fiscal balances and government debt levels suggest that emerging market economies are in better fiscal shape than advanced economies. Many EMEs entered the most recent global recession with lower deficit and debt levels than in previous episodes. And thanks to a sharp rebound in output growth and favourable

[2] See eg H Blöchliger, D Song and D Sutherland, "Fiscal consolidation: part 4. Case studies of large fiscal consolidation episodes", OECD, *Economics Department Working Papers*, no 935, February 2012. See also BIS, *80th Annual Report*, June 2010, Table V.2.

Fiscal positions[1]

Table IV.1

	Overall balance[2]			Underlying government primary balance[3]			Gross debt[2]		
	2009	2013	Change	2009	2013	Change	2009	2013	Change
Advanced economies									
Austria	–4.1	–2.3	1.8	–1.4	1.1	2.4	74	87	12.6
Belgium	–5.6	–2.6	3.1	–0.9	1.4	2.3	100	105	4.9
Canada	–4.8	–2.9	1.9	–3.0	–2.0	0.9	82	85	3.6
France	–7.6	–4.0	3.6	–4.6	0.3	4.9	91	114	22.2
Germany	–3.1	–0.2	2.9	0.7	1.4	0.7	77	88	10.4
Greece	–15.6	–4.1	11.5	–11.4	5.5	16.9	138	184	45.4
Ireland	–13.9	–7.5	6.4	–7.7	–0.5	7.3	71	129	58.7
Italy	–5.4	–3.0	2.5	0.3	5.4	5.1	130	144	13.5
Japan	–8.8	–10.3	–1.4	–7.0	–8.5	–1.6	189	228	39.7
Netherlands	–5.6	–3.7	1.9	–3.5	–0.1	3.5	68	84	16.6
Portugal	–10.2	–6.4	3.8	–4.9	1.8	6.8	94	143	48.9
Spain	–11.2	–6.9	4.3	–8.1	0.3	8.3	63	98	34.9
Sweden	–1.0	–1.6	–0.6	1.9	–0.2	–2.1	52	53	0.5
United Kingdom	–10.8	–7.1	3.8	–7.6	–4.3	3.3	72	109	37.1
United States	–11.9	–5.4	6.6	–7.9	–3.1	4.8	89	109	20.3
Emerging market economies									
Brazil	–3.1	–1.2	1.9	2.8	3.3	0.4	67	67	0.2
China	–3.1	–2.1	0.9	–2.2	–0.3	1.9	18	21	3.6
India	–10.1	–8.3	1.8	–5.8	–4.3	1.5	75	66	–8.6
Indonesia	–1.8	–2.8	–1.1	–0.0	–1.4	–1.4	29	24	–5.0
Korea	–1.1	1.4	2.5	–1.0	0.8	1.8	34	35	1.5
Malaysia	–6.2	–4.0	2.1	–4.0	–2.1	1.9	53	56	3.2
Mexico	–4.7	–3.1	1.6	–1.2	–0.5	0.7	45	44	–1.0
South Africa	–5.5	–4.8	0.8	–2.8	–1.5	1.3	31	43	11.4
Thailand	–3.2	–2.7	0.5	–1.4	–2.5	–1.1	45	46	0.7

[1] For the general government. [2] As a percentage of GDP. OECD estimates for advanced economies and Korea, otherwise IMF. [3] As a percentage of potential GDP; excluding net interest payments. OECD estimates for advanced economies and Korea, otherwise IMF. OECD estimates are adjusted for the cycle and for one-off transactions, and IMF estimates are adjusted for the cycle.

Sources: IMF; OECD.

financing conditions, they saw their headline deficits shrink rapidly in the first two years of the recovery. Debt levels have already fallen in several economies, including India, Indonesia and Mexico (Table IV.1).

However, the adjustments in the fiscal deficits of some EMEs, including India, South Africa and Thailand, have slowed in response to weakening global demand. Debt is now forecast to rise in the next few years in South Africa and Thailand, and is expected to remain at over 66% of GDP in India – an already high level that leaves little margin for manoeuvre in case of unexpected adverse conditions.

Recent favourable developments in the public finances of most EMEs should not breed complacency. Headline budget balances have improved, but remain below pre-crisis levels in several EMEs. Furthermore, fiscal revenues in some EMEs may have benefited so far from an unsustainable boom in credit and asset prices. And some countries may face sizeable hidden liabilities – potential extra debt that would materialise if financial institutions, local governments or other state entities needed to be rescued. Finally, some economies face large increases in pension and health care expenditures over the coming decades.

What is still needed to ensure fiscal sustainability?

Despite recent fiscal consolidation efforts, substantial further improvements in underlying primary balances are needed to ensure sustainability in most advanced economies as well as in several EMEs.

To assess these needs, it is important to determine what level of debt is in fact sustainable. Simply stabilising debt is unlikely to be enough to ensure long-term solvency. With debt having already hit peacetime records in several advanced economies, any unanticipated major event (eg another financial crisis) could lead to a further sharp increase, quickly turning apparently sustainable fiscal positions into unsustainable ones.

Even in the absence of such developments, persistently elevated debt levels may be costly for a number of reasons. First, the higher probability of default or inflationary finance that could follow another large negative shock is likely to increase the risk premia that lenders demand from both sovereigns and the private sector. Second, high debt levels reduce the room for countercyclical policy, rendering the economy more volatile. Furthermore, they raise uncertainty about future taxes and public expenditure, which may make firms and households more reluctant to spend. Finally, persistently higher debt means larger interest payments that might have to be financed by raising distortionary taxes. All of these factors can be a drag on growth.

A number of empirical studies support this conclusion, showing that average growth tends to be lower when gross public debt exceeds about 80% of GDP (see box). Going over this threshold does not automatically reduce growth, but when debt persists above this level it brings an increasing risk of slower trend growth. Given that a buffer is needed to accommodate major shocks, debt targets should be well below that threshold. Although there is no hard and fast rule for selecting debt targets, the calculations that follow assume a safe debt target of 60% of GDP for advanced economies and 40% for EMEs.[3]

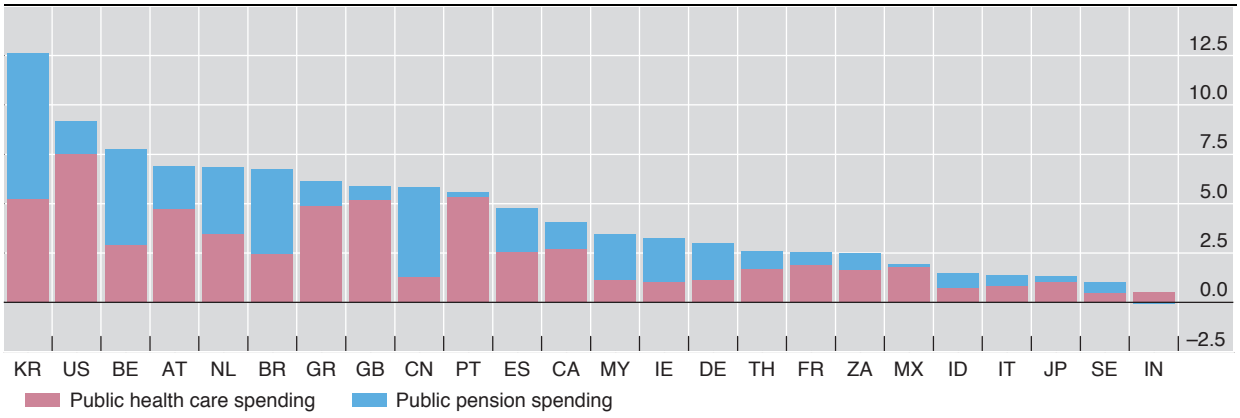
Existing commitments to future spending on pensions and health care that are not reflected in current measures of public debt add to fiscal adjustment needs. Graph IV.1 shows that age-related liabilities as a share of GDP are projected to rise considerably between 2013 and 2040 in a number of countries.[4] Among advanced economies, the greatest increase is anticipated in the United States (over 9 percentage points), with the bulk of that coming from rising health care expenditures. Austria, Belgium, Greece, the Netherlands, Portugal, Spain and the United Kingdom are also set to see large rises (approximately 5–8 percentage

[3] Japan's gross debt target is set at 200% of GDP.

[4] These projections do not take into account reforms enacted after December 2011, and are thus likely to overestimate the expected increases in age-related spending for countries which have legislated reforms since then.

Projected changes in age-related spending, 2013–40[1]

In percentage points of potential GDP — Graph IV.1



AT = Austria; BE = Belgium; BR = Brazil; CA = Canada; CN = China; DE = Germany; ES = Spain; FR = France; GB = United Kingdom; GR = Greece; ID = Indonesia; IE = Ireland; IN = India; IT = Italy; JP = Japan; KR = Korea; MX = Mexico; MY = Malaysia; NL = Netherlands; PT = Portugal; SE = Sweden; TH = Thailand; US = United States; ZA = South Africa.

[1] The 2013 levels of age-related spending represent a linear interpolation between (a) the actual 2010 levels of pension and health care spending and (b) the projected 2015 health care and 2020 pension spending levels.

Sources: B Clements, D Coady, F Eich, S Gupta, A Kangur, B Shang and M Soto, "The challenge of public pension reform in advanced and emerging market economies", IMF, *Occasional Papers*, no 275, January 2013; M Soto, B Shang and D Coady, "New projections of public health spending, 2010–50", in B Clements, D Coady and S Gupta (eds), *The economics of public health care reform in advanced and emerging economies*, April 2012; BIS calculations.

points). Substantial increases are also projected for several EMEs – in particular, Korea (over 12 percentage points), Brazil (about 7 points) and China (about 6 points) – owing mostly to pension expenditure.[5]

Table IV.2 presents estimates of the change in the underlying primary balance that would be needed to bring debt levels down to the above-mentioned targets by 2040. The calculation is based on the following assumptions. First, debt and deficits are projected from the values forecast for the end of 2013. Second, the underlying primary balance improves by 1 percentage point a year until debt is put on a steadily declining path. The required adjustment is then the difference between the 2013 primary balance and the highest required underlying primary surplus during 2014–40. Third, the calculation assumes that the output gap closes over the next five years so that the primary balance converges gradually towards the underlying primary balance over the same period of time. Finally, it is assumed that the debt level itself has no impact on either interest rates or economic growth.

The first column in Table IV.2 reports the required adjustment in the underlying primary balance assuming that age-related spending remains constant as a share of GDP. The second shows how much the underlying primary balance net of age-related spending would have to improve under the assumption that no measures are taken to stem the rise in age-related spending. The third and fourth columns report the same information assuming that the growth-adjusted interest rate gradually converges from current levels to 1% over a five-year period. The estimates presented in these two columns provide a more conservative assessment of the

[5] Fiscal sustainability also depends on liabilities that may materialise if a government needs to rescue private financial institutions or state entities. Unfortunately, scarcity of information makes assessing such liabilities subject to a high degree of uncertainty. Our calculations do not allow for them explicitly, but using conservative debt targets is a way of accounting for them.

Fiscal adjustment needs[1]

In percentage points of potential GDP

Table IV.2

	Growth-adjusted interest rate[2] = 2013 level		Growth-adjusted interest rate[2] = 2013 level converging to 1% over 5 years		*Memo: 2013 growth-adjusted interest rate (%)[2]*
	Excluding ARS[3]	Including ARS[4]	Excluding ARS[3]	Including ARS[4]	
Advanced economies					
Austria	1.0	7.7	0.9	7.6	*1.1*
Belgium	1.8	9.0	1.6	8.8	*1.3*
Canada	4.3	8.1	4.2	8.1	*1.1*
France	3.6	5.4	3.3	5.2	*1.3*
Germany	0.6	3.4	0.6	3.3	*1.1*
Italy	4.2	4.0	2.0	1.9	*4.1*
Japan	13.3	14.9	17.9	19.6	*0.2*
Netherlands	2.4	8.9	2.2	8.8	*1.2*
Spain	7.8	10.4	3.7	7.3	*4.7*
Sweden	0.2	1.3	0.6	1.7	*0.3*
United Kingdom	7.4	13.2	8.5	14.0	*0.2*
United States	4.8	14.1	6.9	16.1	*–1.0*
Emerging market economies					
Brazil	.	5.0	.	4.8	*1.4*
China	.	2.5	.	5.9	*–7.3*
India	3.3	3.7	6.4	6.6	*–5.0*
Indonesia	.	0.2	1.2	2.7	*–5.3*
Korea	.	11.9	.	12.0	*0.7*
Malaysia	2.2	5.6	3.5	6.8	*–1.7*
Mexico	0.1	2.3	1.1	3.2	*–1.2*
South Africa	0.9	3.3	2.1	4.6	*–1.9*
Thailand	1.3	3.9	3.3	5.8	*–3.5*

[1] Adjustment in the underlying primary balance (defined as the difference between the peak in the underlying primary balance during 2014–40 and its projected 2013 level) needed to bring the gross debt-to-GDP ratio to 60% for advanced economies (200% for Japan) and 40% for emerging market economies by 2040. The dots signify that the target debt-to-GDP ratio can be achieved without improvements in the underlying primary balance relative to its 2013 level. [2] Defined as $(1 + r) / (1 + g) - 1$, where r = nominal effective interest rate and g = nominal GDP growth. The nominal effective interest rate in each year is defined as the government interest expense for that year divided by the stock of government debt at the end of the previous year. [3] Not accounting for projected changes in age-related spending (ARS) as a share of GDP. [4] Accounting for projected changes in ARS as a share of GDP.

Sources: IMF; OECD; BIS calculations.

fiscal adjustment needs of countries that currently have low interest rates, and possibly a more realistic one for those that are currently experiencing very high interest rates and low output growth. If the countries in the latter group make progress in their consolidation, their borrowing costs can be expected to diminish somewhat and their growth may pick up over time.

The advanced economies require sizeable fiscal adjustments, especially when projected increases in age-related spending are taken into account. And some of the countries that have so far enjoyed very low long-term interest rates face the largest adjustment needs. In Japan, even under the most benign scenario of current

low growth-adjusted interest rates, and despite a high debt target, the required adjustment in the underlying primary balance is over 13 percentage points of potential GDP.

The United Kingdom needs to improve its underlying primary balance by 7.4 points, and the United States by nearly 5 points (column 1). If no measures are adopted to curb age-related spending (column 2), the United Kingdom and the United States will have to make massive adjustments to the non-age-related portion of their underlying primary budgets (13 and 14 percentage points of GDP, respectively). Given their huge size, it is unlikely that such adjustments will be made, as governments will probably focus on redesigning entitlements.

These adjustment needs are based on current growth-adjusted interest rates. If one assumes that current levels gradually converge to 1%, then the result is more conservative. The necessary adjustment increases by around 2.1 percentage points to 6.9 for the United States, and by over 1 point to 8.5 for the United Kingdom (column 3). If no measures to curtail age-related spending are adopted, the required adjustment would rise to 14.0 and 16.1 percentage points, respectively (column 4).

Significant adjustments are also required in Spain (7.8 percentage points), Canada (4.3 points), Italy (4.2 points) and France (3.6 points) (column 1). In the absence of entitlement reforms, adjustment needs would be a few percentage points higher in all of those countries except for Italy (column 2).[6] The required adjustment in Spain and Italy would be lower (column 3) if their high growth-adjusted interest rates of over 4% (column 5) were to decline.

Other advanced economies (Austria, Belgium and the Netherlands) have generally low adjustment needs if age-related spending is not taken into account. However, without measures to curb projected rises in age-related spending, much larger adjustments (8–9 points) would be necessary.

For many EMEs, low current fiscal deficits imply that a relatively small degree of adjustment is needed when age-related spending is not taken into account (column 1). One notable exception is India, which requires an improvement of over 3 percentage points of GDP. Besides low deficits, fiscal sustainability in many EMEs is facilitated by the fact that their effective interest rates are lower than GDP growth, due in part to less developed financial markets. However, this is unlikely to persist as financial markets develop and become more integrated internationally. Another factor in EMEs' low borrowing costs is the very low interest rates in advanced economies. That said, even under the more conservative assumption of gradual convergence towards a 1% growth-adjusted interest rate, fiscal consolidation requirements remain relatively small in most countries (column 3).

This benign assessment of fiscal conditions in EMEs changes when projected increases in age-related spending are factored in. In this case, Korea will have to improve its underlying primary balance by 12 percentage points, while the challenge for Brazil, China, Malaysia, South Africa and Thailand will be between 4 and 7 points (column 4). To ensure fiscal sustainability, these countries will need to either limit future age-related spending or make room for it by cutting other expenses or raising tax revenues.

[6] Italy's consolidation needs are slightly lower when the projected changes in age-related spending are included, because such spending (as a share of GDP) is forecast to decline at the start of the simulation period before edging upwards.

Is high public debt a drag on growth?

One would expect public debt to be a drag on long-term average GDP growth, for at least three reasons.

First, as debt rises, so do interest payments. And higher debt service means higher taxes and lower productive government expenditure. When a significant share of debt is held by foreigners, fewer resources are available for investment and domestic consumption. More damagingly, the higher tax rates needed to service the higher debt are distortionary, depressing economic activity, and possibly growth, even further.①

Second, as debt rises, so do sovereign risk premia. Economics and politics both put limits on how high tax rates can go. When rates beyond this maximum are required for debt sustainability, a country will be forced to default, either explicitly or through inflation. The probability of hitting such limits increases with the level of debt.② And with higher sovereign risk premia come higher borrowing costs, lower private investment and lower long-term growth.

Third, as debt rises, authorities lose the flexibility to employ countercyclical policies. This results in higher volatility, greater uncertainty and, again, lower growth.

Empirical research confirms this negative link between public debt and trend growth, starting with a contribution by Reinhart and Rogoff (2010).③ The studies fall into two groups: one that investigates the simple, bivariate correlation between debt and growth,④ and another that considers a more complex relationship taking into account differences in population growth, ageing, education, trade openness, financial depth and so on.

To reduce the impact of cyclical fluctuations and focus on the determinants of long-term trends, most of these studies start with multi-year averages of per capita growth rates. The results, summarised in Table IV.A, are consistent and unambiguous: a 10 percentage point increase in the debt-to-GDP ratio is associated with a 13–17 basis point decline in trend per capita GDP growth for debt levels above about 80%. The last study, by Baum et al (2012), covering only euro area countries and including the recent financial crisis, obtains much larger estimates, albeit for a somewhat higher threshold.⑤

Multivariate studies on the effects of debt on growth

Table IV.A

Study	Sample	Threshold	Effect of 10 ppt rise in the debt-to-GDP ratio
Kumar and Woo (2010)[1]	38 advanced and emerging market economies, 1970–2007	90%	–0.17 ppt
Caner, Grennes and Koehler-Geib (2010)[2]	79 advanced and developing economies, 1980–2008	77%	–0.17 ppt
Cecchetti, Mohanty and Zampolli (2011)[3]	18 OECD economies, 1980–2006	84%	–0.13 ppt
Baum, Checherita-Westphal and Rother (2012)[4]	12 euro area economies, 1990–2010	96%	–0.59 ppt

[1] M Kumar and J Woo, "Public debt and growth", *IMF Working Papers*, no WP/10/174, July 2010. [2] M Caner, T Grennes and F Koehler-Geib, "Finding the tipping point – when sovereign debt turns bad", World Bank, *Policy Research Working Papers*, no 5391, July 2010. [3] S Cecchetti, M Mohanty and F Zampolli, "The real effects of debt", in *Achieving maximum long-run growth*, proceedings of the Federal Reserve Bank of Kansas City Jackson Hole symposium, August 2011, pp 145–96. [4] A Baum, C Checherita-Westphal and P Rother, "Debt and growth: new evidence for the euro area", *ECB Working Paper Series*, no 1450, July 2012.

Furthermore, as documented by Reinhart et al (2012),③ public debt overhangs tend to last for many years. Over long stretches of time, rising debt levels cannot be regarded as the outcome of an unpredicted adverse effect such as a recession or a financial crisis. Rather, they must be the outcome of deliberate policy decisions. The question is therefore whether policies that allow debt to rise are sensible. Even if slow growth caused higher debt, this would not make higher debt less dangerous. If slow growth persists and its root causes (which critics would ascribe to factors other than debt itself) are not tackled, then increasing debt further can only be a temporary fix, and at a certain point it will push the economy close to its fiscal limits.

To sum up, there are strong theoretical and empirical reasons for believing that high public debt reduces future trend real growth. And the evidence shows that the impact is sizeable and begins to take hold at about 80% of GDP.

This means that to support strong, sustainable growth, advanced economies must aim for levels well below this threshold. In a number of cases, this means doing more than simply stabilising debt – it means reducing it.

① The effects of taxes on growth are probably non-linear, being larger when taxes are already high. See eg N Jaimovich and S Rebelo, "Non-linear effects of taxation on growth", *NBER Working Papers*, no 18473, October 2012. ② See H Bi and E Leeper, "Analyzing fiscal sustainability", April 2013. See also footnote 7 in the main text. ③ C Reinhart and K Rogoff, "Growth in a time of debt", *American Economic Review*, vol 100, no 2, May 2010, pp 573–78. The original version of this study contains a computation error and excludes data that were not available when the paper was written. However, these problems do not overturn the conclusion that growth is negatively related to debt. Before the problems became known, the paper had already been superseded by C Reinhart, V Reinhart and K Rogoff, "Public debt overhangs: advanced-economy episodes since 1800", *Journal of Economic Perspectives*, vol 26, no 3, June 2012. ④ See eg B Egert, "Public debt, economic growth and nonlinear effects: myth or reality?", OECD, *Economics Department Working Papers*, no 993, October 2012; A Minea and A Parent, "Is high public debt always harmful to economic growth? Reinhart and Rogoff and some complex non-linearities", Association Française de Cliométrie, *Working Papers*, no 8, February 2012. ⑤ See also U Panizza and A Presbitero, "Public debt and economic growth in advanced economies: a survey", *Money and Finance Research Group Working Papers*, no 78, January 2013, which acknowledges the negative relationship but asserts that it might be the result of reverse causation arising from the current high debt levels' being a consequence of expected low future growth.

Interest rates and sustainability

Governments in several major economies currently benefit from historically low funding costs. At the same time, rising debt levels have increased their exposure to higher interest rates. A rise in interest rates without an equal increase in the output growth rate will further undermine fiscal sustainability.[7]

Although predicting when and how a correction in long-term rates will unfold is difficult, it is possible to examine the potential impact on the sustainability of public finances. As the previous section has already shown, the consolidation needs of countries experiencing low interest rates would be greater if their growth-adjusted interest rates were to rise. To further illustrate the risks posed by a normalisation of long-term rates, Graph IV.2 shows the results of a number of simulations of debt-to-GDP ratios in Japan, the United Kingdom and the United States.

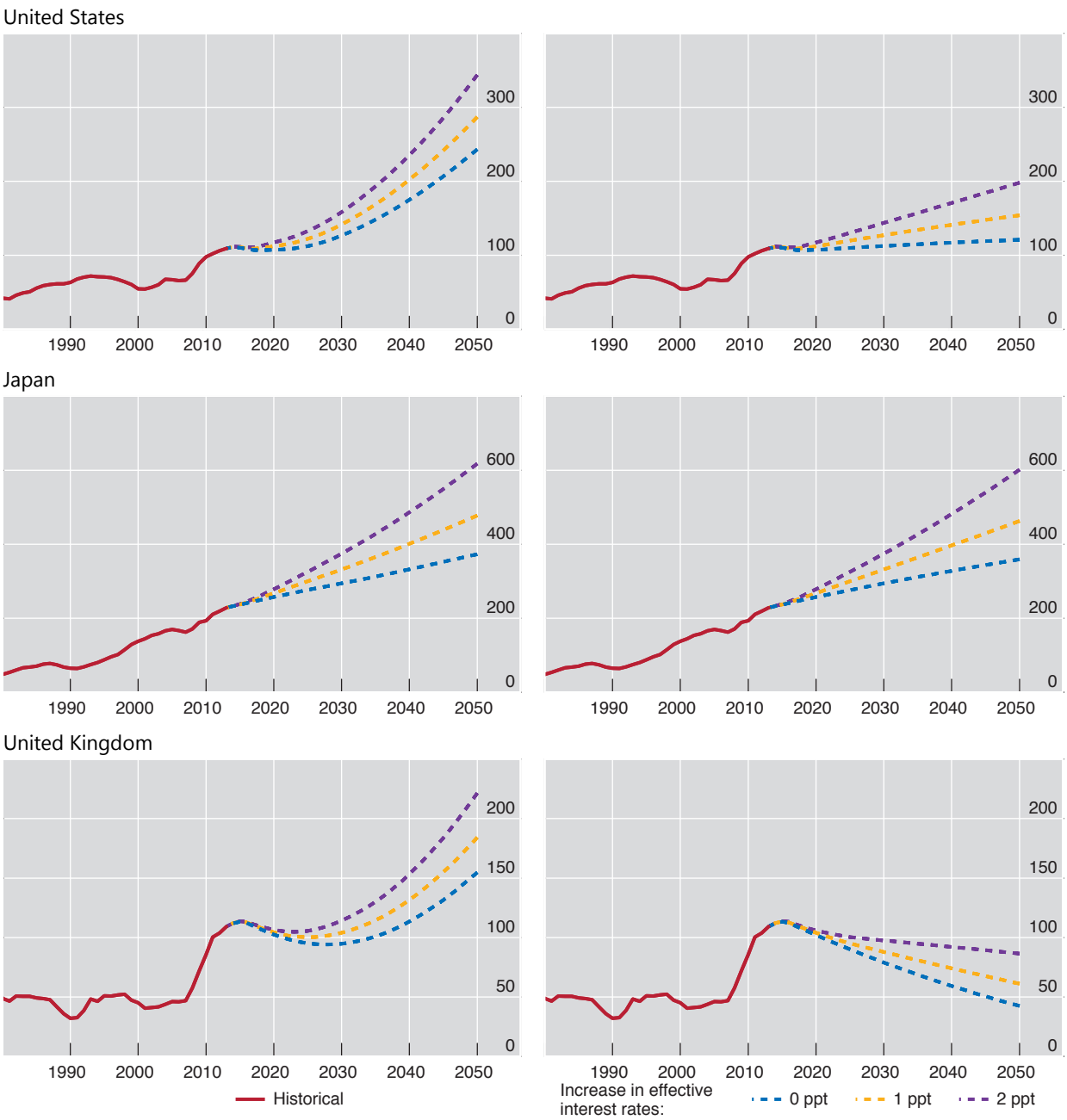
The simulations start with the current forecasts for 2013 debt and budget balance levels, and then make projections on the basis of the following main assumptions. First, the primary balance evolves in conformity with the latest projections by national authorities up to the last full calendar year for which they are available.[8] For subsequent years, the primary balance net of age-related spending remains constant as a share of GDP, so that the evolution of the overall primary balance depends on the projected changes in age-related spending. Second, any increase in interest rates occurs at the beginning of the period covered in the simulation and leads to a gradual increase in the effective interest rate paid on debt. This is because in any given year governments usually refinance only a fraction of their outstanding debt (in addition to any current deficit). For the sake

7 There is some evidence that countries facing public debt in excess of 80% of GDP and persistent current account deficits are vulnerable to adverse interest rate dynamics. See D Greenlaw, J Hamilton, P Hooper and F Mishkin, "Crunch time: fiscal crises and the role of monetary policy", paper prepared for the US Monetary Policy Forum, New York, February 2013.

8 Projections by the Congressional Budget Office (CBO) up to 2022 for the United States, the Cabinet Office up to 2022 for Japan and the Office for Budget Responsibility up to 2017 for the United Kingdom. The CBO reports the primary balance of the central government, whereas the primary balances used in the projections refer to general government. The latter are assumed to change by the same amount as the former in each year in which they are available.

General government debt projections under alternative scenarios

As a percentage of GDP — Graph IV.2



Primary balances are based on OECD projections (for 2013 and 2014) and national source projections (from 2015 to 2022 for the US and Japan and from 2015 to 2017 for the UK). For 2023–50 (for the US and Japan) and 2018–50 (for the UK), revenues and non-age-related spending are kept constant as a share of GDP, while age-related spending is based on projections from the sources cited in Graph IV.1 or held constant at 2022 levels (US and Japan) or 2017 levels (UK). Nominal GDP growth is based on projections from national sources up to 2022 (US and Japan) or 2017 (UK) and is assumed to remain at 2022 values (US and Japan) or 2017 values (UK) until 2050. Nominal effective interest rates from the OECD as defined in Table IV.2 are assumed to remain at their projected 2013 level between 2014 and 2050 or to increase gradually by 1 or 2 percentage points (at an annual rate equal to the inverse of the average remaining maturity of government debt).

Sources: IMF; OECD; Japanese Cabinet Office; UK Office for Budget Responsibility; US Congressional Budget Office; BIS calculations.

of simplicity, we make the crude assumption that the rise in the effective interest rate occurs over a number of years equal to the average maturity of debt outstanding at the start of the simulation period.[9]

The scenarios considered vary based on the size of the effective interest rate increase and on whether age-related spending keeps rising or remains constant (as a share of GDP). Graph IV.2 shows that for the United States a rise in the effective interest rate could have a significant impact on debt trajectories. Two points stand out. First, age-related spending will eventually put debt on an upward path regardless of the interest rate. However, a higher interest rate causes debt to go up much sooner. Second, even if age-related spending stays constant as a share of GDP, current adjustment plans will not stabilise debt under the higher interest rate scenarios.

The simulations show that, under current plans, Japan's debt ratio will also continue to rise. This is despite the fact that the increase in age-related spending is expected to be modest in Japan. Unsurprisingly, the higher the interest rate, the faster debt will increase.

Debt ratios for the United Kingdom are expected to peak in the middle of the decade. Since the outstanding debt has a very long average maturity of approximately 14 years, the three interest rate scenarios yield similar trajectories until the end of the decade. This factor effectively provides some insurance against sharp interest rate rises. That said, if left unchecked, age-related spending will put additional pressure on debt ratios further down the road.[10]

Costs and benefits of fiscal consolidation

Fiscal consolidation has undoubtedly been a drag on growth in the last few years. Moreover, the fact that growth has proved to be weaker than expected in many advanced economies has recently led to calls for a more gradual or back-loaded fiscal adjustment. Critics believe that policymakers have misjudged the adverse effects of consolidation on growth by underestimating the impact of credit constraints on households and firms, overestimating the effectiveness of monetary policy when policy rates are near zero, and failing to account for the synchronous nature of consolidation across countries. Critics also argue that less fiscal consolidation now would leave more time for economies to heal and adjust, and that consolidation will be less costly once growth is strong and self-sustaining.

There are reasons to be sceptical about all these arguments. First, even if the short-term adverse effects of fiscal policy on output (or fiscal multipliers) are somewhat greater than in the pre-crisis period, there is considerable uncertainty about their magnitude and no compelling evidence that they are large enough to render fiscal consolidation more difficult (or actually self-defeating). Instead, the size of the multipliers depends on the credibility and quality of fiscal adjustment (see next section), as well as on accompanying structural policies, including measures to repair the financial system.

[9] The simulations do not account for any feedback effects from debt to growth and interest rates, or for the possible different short- and long-term effects that different paces of consolidation could have on growth and interest rates.

[10] The hypothetical trajectories shown in Graph IV.2 are based on the average maturity of the (unconsolidated) outstanding general government debt. In reality, the average maturity of the consolidated government balance sheet (including both the liabilities issued by the fiscal authority and those issued by the central bank) is shorter on account of the very short maturities of central bank liabilities. Accounting for such shorter maturities would worsen debt trajectories somewhat for a given increase in interest rates.

Second, other factors almost surely contributed to unexpectedly weak growth. Especially in the euro area, investors' worries about fiscal sustainability and liquidity drove up sovereign bond yields, putting a strain on bank and sovereign balance sheets and leading to more restrictive credit conditions. Some countries lost market access and had to borrow from official sources. In these cases, large, front-loaded fiscal consolidation was a necessary remedy without which the loss of output would have been even greater.

Third, larger multipliers do not necessarily undermine the case for an early or relatively fast adjustment. The argument for back-loading or slowing the pace of fiscal consolidation relies on the expectation that fiscal multipliers will decrease in the future or that economic growth will rebound significantly. However, if these expectations do not materialise, shifting the bulk of fiscal consolidation to the future would mean greater debt and higher debt servicing costs, making future adjustment even more costly and prolonged.

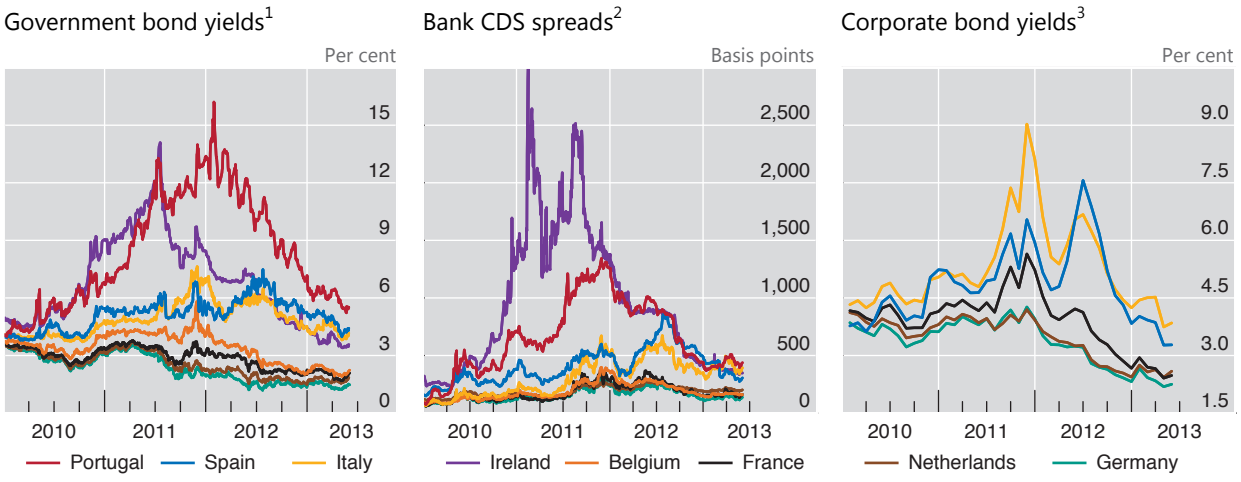
The case for back-loading fiscal adjustment also relies on the credibility of fiscal plans. Current governments will have to make commitments on behalf of future ones. Yet some existing institutional setups and fiscal rules may not be strong enough to effectively tie the hands of future elected policymakers. Furthermore, slower progress in reforming public finances could lead to reform fatigue – the belief that reforms are not delivering the expected results and should therefore be abandoned. Tackling problems early on might be more costly in the short run, but could help ensure that essential reforms are carried out.

Finally, the impact of fiscal consolidation on growth extends beyond the short run. By restoring sound financial conditions, eliminating the risks associated with high debt and reducing the resources needed to service the debt, consolidation will lead to higher sustainable economic growth. As a result, its long-term benefits will more than offset its short-term costs.

For countries that have implemented the largest adjustments, fiscal consolidation has already begun to pay off in the form of improved financial conditions. Within the euro area, Ireland, Italy, Portugal and Spain have seen their sovereign bond yields (Graph IV.3, left-hand panel) and credit default swap (CDS)

Financial conditions in the euro area

Graph IV.3



[1] Ten-year yields. [2] Simple average of senior five-year credit default swap (CDS) spreads for a sample of domestic financial institutions. [3] Market value-weighted average of corporate bond yields.

Sources: Barclays; Markit; national data.

spreads decline substantially over the past year. In Ireland, yields fell from a peak of roughly 14% in mid-2011 to less than 4% at end-May 2013, and the government has been able to return to the market by issuing bonds of various maturities. Portugal has also regained market access recently.

The private sector has also benefited. The CDS spreads of banks and other financial intermediaries have fallen substantially over the past year, leading to sizeable declines in banks' borrowing costs (Graph IV.3, centre panel). Likewise, non-financial corporate bond yields in Italy and Spain have come down considerably from their peaks (right-hand panel).

Certainly, the improvement in broad financial conditions reflects not only the reduction of fiscal deficits but also euro area-wide measures such as the ECB's three-year longer-term refinancing operations (LTROs) and the announcement of the Outright Monetary Transactions (OMTs) facility. Nevertheless, the long-run viability of these programmes ultimately hinges on countries' carrying out the necessary fiscal adjustment. They do not substitute for fiscal consolidation, but complement it.

The quality of fiscal adjustment

The composition of fiscal adjustment is critical for reducing its adverse short-term effects on growth, for enhancing economies' growth potential and for ensuring the ultimate success of large adjustments.

Existing evidence suggests that successful large consolidations generally focus on spending cuts, especially in government consumption and transfers, rather than on tax increases. Expenditures tend to have larger fiscal multipliers than taxes, but lowering them frees resources so that taxes can be cut over time. They also tend to be more difficult to reverse – so reducing them early on strengthens the credibility of overall fiscal plans. By contrast, revenue-based consolidations generally cost less in the short run, but lead to higher distortions and hence lower potential output in the future, unless tax increases start from a low base. Thus, in high-tax countries, tax-based stabilisations are less likely to lead to a lasting reduction of debt ratios.[11]

Levels of taxation and expenditure vary significantly across economies. Over the period 2008–12, the United States had one of the lowest tax burdens (the sum of direct and indirect taxes and social contributions) among the major advanced economies: at 25% of GDP on average, it was about the same as in the early 1960s. The country's latest public consumption figure is also little changed since that time – remaining at around 17%. Transfers, however, have tripled to 15%. Japan also has relatively low taxes, at 29% of GDP. But public consumption has risen from 12% to 21%, while transfers have climbed from 2% to 15%.

Elsewhere, especially in Europe, the tax burden has increased, hand in hand with public debt, government consumption and transfers. It currently stands at 33% in Spain, 36% in Portugal and 37% in the United Kingdom, and has reached roughly 40–46% in France, Germany and Italy. The countries in this last group have less room for further tax increases. While the level and composition of public spending depends on society's preferences, the narrower scope for raising taxes means that several economies would have to focus on cutting spending.[12]

[11] See eg IMF, "From stimulus to consolidation: revenue and expenditure policies in advanced and emerging economies", April 2010; and OECD, "Fiscal consolidation: how much, how fast, and by what means?", *OECD Economic Policy Papers*, no 1, April 2012.

[12] An attempt to estimate the maximum achievable tax rates suggests that some of these countries have little scope to raise taxes further. See M Trabandt and H Uhlig, "How do Laffer curves differ across countries?", *NBER Working Papers*, no 17862, February 2012.

Different items included within aggregate expenditure and revenue may be chosen to minimise the short-term costs of fiscal consolidation and to boost output potential. Property and indirect sales taxes tend to be less distortionary than taxes on labour and capital. Similarly, cuts to social transfers may hurt growth in the short run less than do reductions in public consumption.

Governments can also improve growth prospects through early and more incisive entitlement reform. These measures are meant to yield benefits over many years; but by immediately strengthening fiscal sustainability and market confidence, they may have a welcome effect on the rates of interest paid on debt.

Summing up

Public debt has reached record peacetime levels in many advanced economies. And it continues to rise. Greater debt represents a clear vulnerability for these countries. It leads to higher interest payments and hence higher taxes, and implies less room for countercyclical policy. It also makes investors fret about future inflation or default and hence demand higher risk premia. Fear of default leads to higher borrowing costs for financial institutions that hold government securities and less credit to firms and households.

While progress has been made towards reducing fiscal deficits, many economies still need to increase their primary balances significantly to put their debt on safer, downward trajectories. The success of these efforts relies crucially on measures to curb future increases in pension and health care spending.

Unlike those of advanced economies, debt levels in most emerging markets are stable or falling. Fiscal prudence and efforts to tackle rising age-related spending will ensure that public finances in EMEs remain sound.