

»» Debt sustainability after the coronavirus crisis – interest rates and growth are pivotal

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Government debt has grown dramatically in response to the coronavirus crisis. Many countries are likely to see new record levels. But how sustainable is the debt that has built up? This paper analyses the prospects for stabilising and reducing government debt ratios using the examples of Germany and Italy. It focuses on longer-term developments from 2023, when both the recession and the immediate recovery phase will presumably have come to an end.

A crucial factor for the development of government debt ratios is the relationship between interest rates and economic growth, which determines the primary balance necessary for consolidation – the balance of government revenue and expenditure without interest payments. As the interest-growth differential has tended to fall for more than 20 years now and was even negative in many economies in the years preceding the crisis, the conditions for reducing government debt ratios are mostly good. If the interest level and growth rate return to their typical levels before the crisis, five of the G6 states could achieve consolidation even without a primary surplus.

This applies to Germany in particular. A matrix of possible interest-growth combinations demonstrates that in a favourable scenario a reduction in the debt ratio would be possible even with significant primary deficits and that, under realistic assumptions, the primary balance would only have to exceed -0.7% of GDP. Moderate primary surpluses will be necessary only under very unfavourable conditions. Given an average primary surplus of 2.2% in the years between the financial crisis and the coronavirus crisis, it is obvious that Germany's government debt is sustainable.

In Italy the situation is more difficult. It is the only G6 economy to have had a positive interest-growth differential for a long time, driven by increased spreads and chronically low nominal growth. Despite nearly consistent primary surpluses over the course of the past 25 years, it has therefore been unable to reduce its government debt ratio. Lately, however, the interest payments on Italy's government debt have also dropped considerably. If interest rates settle down on the level of the five-year period that preceded the crisis and growth on the longer-term mean level, then the debt ratio could be stabilised with a primary surplus of roughly 1% of GDP.

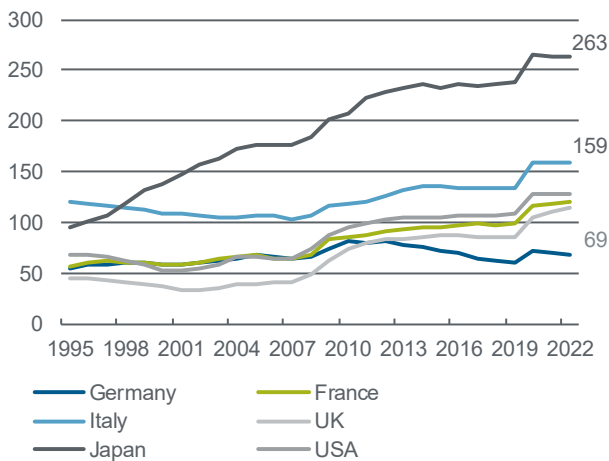
If the record low interest level since the coronavirus crisis continues, even a merely balanced primary budget would be sufficient. By contrast, if the interest on Italy's government debt were to return to the longer-term mean level, a surplus of around 3% of GDP would be necessary to stabilise the debt ratio.

The experience of the past 20–30 years has shown, however, that primary surpluses of more than 3% of GDP are rarely achieved over several years. Reasonable nominal growth and low interest rates are therefore important for countries with high government debt. As real interest rates have already been trending downward globally for several decades now and structural explanatory approaches are plausible, a trend reversal in the interest-growth relationship is not very likely. An increase in inflation driven by temporary factors, as has been the case since the turn of the year in the euro area, will not be enough to cause a tightening of monetary policy.

Government debt ratios have grown noticeably

Government debt ratios – government debt in relation to nominal gross domestic product – have grown significantly around the world in response to the coronavirus crisis (Figure 1). Tax revenues are falling while government expenditure is rising as a result of support measures and economic stimulus packages. What is more, GDP in the denominator of the debt-to-GDP ratio shrank significantly as a result of the recession of 2020, so the ratio would have risen substantially even if government debt had stayed the same. To be sure, the catch-up movement during the current and presumably also the coming year is currently reversing this effect for now. But what is the long-term outlook for the time after 2022, when the recovery phase should be completed? In the following we will analyse the medium-term outlook for a consolidation of government debt ratios using the examples of Germany and Italy. Both states exemplify the very diverse challenges which industrialised countries are facing.

Figure 1: Government debt ratios in the G6 countries



Source: European Commission, forecasts from 2020.

Debt ratios: interest and growth rates are crucial

The development of the government debt ratio can be calculated with a simple formula:

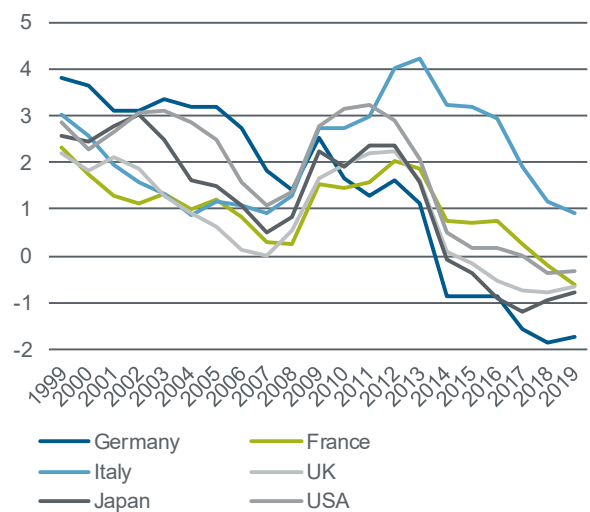
$$\Delta b_t = \frac{i_t - g_t}{1 + g_t} b_{t-1} - p b_t$$

It shows that in addition to the primary balance-to-GDP ratio (pb_t), i.e. the balance between government revenue and expenditure without interest payments relative to GDP, the total interest to be paid on the government debt (nominal effective interest: i_t) and the nominal growth rate (GDP growth in current prices: g_t) are the crucial factors.¹ The debt in the initial situation (b_{t-1}) reinforces or weakens the effect of the interest-growth differential. If the interest-growth differential is positive, then primary surpluses are necessary to maintain steady or reduce the debt ratio. If, however, the interest-growth differential is negative, consolidation is possible even with a primary deficit.²

The future sustainability of government debt therefore depends heavily on how interest and growth rates will evolve after the crisis. The trends prevailing up to the outbreak of the coronavirus crisis can provide indications.

Figure 2: Interest-growth differential in the G6 countries

Interest due on government debt less nominal GDP growth (i-g). Five-year moving average.



Sources: European Commission, KfW Research.

Figure 2 illustrates that although the interest-growth differential exhibited significant swings during the financial crisis and the coronavirus crisis since the 1990s, the long-term trend has seen it fall across a broad front. On average across the five-year period of 2015–2019, i-g was even negative in all G6 countries except Italy. The decline was particularly pronounced in Germany, where the differential has fallen by 5.5 percentage points since the 1990s (1995–1999) to now just -1.7 percentage points (2015–2019). In Germany and Japan, slightly higher growth was also helpful. But the drop in the interest-growth differential is typically due exclusively to a significantly lower interest level. On average across the G6, the interest rate on government debt fell by 4.2 percentage points up to the crisis. A downward trend can generally be seen in Italy as well, after it overcame a temporary increase in the interest-growth differential during the euro crisis. In a comparison between the five-year periods of 1995–1999 and 2015–2019, the interest level in Italy even dropped at an above-average rate (-5.3 percentage points). However, nominal growth also fell significantly (-3.2 percentage points), which is why Italy's interest-growth differential was also still positive shortly before the coronavirus crisis.

Table: Primary balances necessary to stabilise the debt ratio from 2023

Starting levels are the debt ratios predicted by the EU Commission for 2022. Germany: 69.0%, Italy: 159.1%.

| | | Effective interest rate for government debt | | |
|-----------------------|------|---|-------------------------|-----------------------|
| | | Low (EU forecast 2022) | Medium (mean 2015–2019) | High (mean 1999–2019) |
| Italy | | | | |
| Nominal growth | | 2.0% | 2.8% | 4.2% |
| High (medium +0.5*SD) | 3.3% | -2.0% | -0.8% | 1.4% |
| Medium (1999–2019) | 2.2% | -0.3% | 0.9% | 3.1% |
| Low (medium -0.5*SD) | 1.1% | 1.4% | 2.7% | 4.9% |
| Germany | | | | |
| | | Low (EU forecast 2022) | Medium (mean 2015–2019) | High (mean 1999–2019) |
| Nominal growth | | 0.8% | 1.6% | 3.5% |
| High (medium +0.5*SD) | 3.6% | -1.9% | -1.3% | -0.1% |
| Medium (1999–2019) | 2.6% | -1.2% | -0.7% | 0.6% |
| Low (medium -0.5*SD) | 1.7% | -0.6% | -0.1% | 1.2% |

Sources: European Commission, KfW Research.

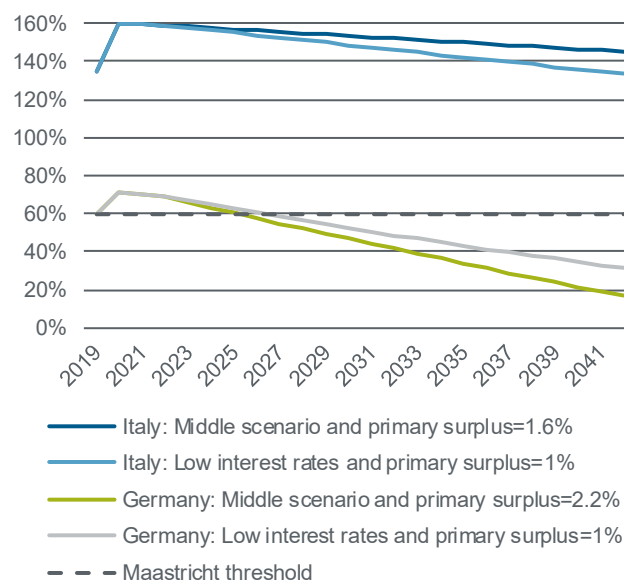
Scenarios for the consolidation challenge

If the interest-growth relation remains as favourable as in the years before the crisis, the outlook for reducing the government debt ratios of most G6 countries is good. Germany and Italy exemplify the broad range of challenges involved here. Using a matrix of possible interest-growth combinations, the table shows what primary balances might be required in the respective country to stabilise the government debt ratio. The focus is on the longer-term development from 2023 using the government debt ratios forecast by the EU Commission for the year 2022 as a starting point. The average nominal growth rate since the introduction of the euro in the year 1999 was taken as the mean growth scenario. Half a standard deviation was added and subtracted for the upside and downside scenarios. As the interest level is on a clear downward trend, the mean interest scenario was not based on the long-term average but on the five-year period before the outbreak of the coronavirus crisis (2015–2019). The EU Commission's forecast for the interest level in 2022 was taken as the low interest scenario. For the high interest scenario, in turn, we used the long-term average interest rate of 1999–2019.

In all combinations calculated, Germany only needs a moderate primary surplus to stabilise the debt ratio. In the mean scenario (mean growth path, mean interest scenario), the debt ratio could be kept constant even with a primary deficit of -0.7%. In the scenario with average growth but continuing low interest rates even -1.2% would be sufficient. The considerable span between the primary balances resulting from the scenarios (-1.9 to +1.2%) also demonstrates, however, how crucial the interest-growth differential is to Germany's consolidation challenge.

Given the average primary surplus of 2.2% of GDP in the years between the financial crisis and the coronavirus crisis (2011–2019) and a foreseeably favourable interest-growth constellation, ultimately there is no question that Germany's government debt is sustainable. Should the debt ratio develop up to 2022 as the EU Commission has predicted, for

example, and subsequently an average primary surplus of 2.2% of GDP be reached at the same time as the mean interest-growth scenario, the debt-to-GDP ratio would again fall below the Maastricht threshold of 60% of GDP as early as in 2026. With a merely balanced primary budget it would take until 2038 – all other conditions remaining equal. But with a persistently low interest rate environment, average nominal growth and a moderate primary surplus of 1% of GDP, the debt ratio could drop below the Maastricht threshold already in 2027.

Figure 3: Scenarios for reducing the debt ratios

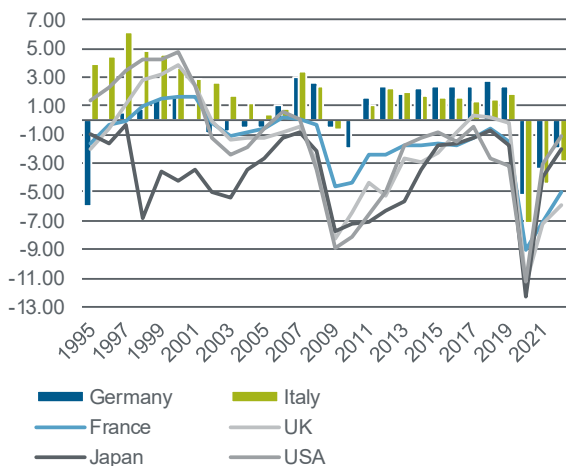
Sources: European Commission, KfW Research.

The low interest level is even more critical for Italy's debt sustainability than Germany's. Should interest rates continue on the level forecast by the EU Commission for 2022 and nominal growth reach the long-term average rate, Italy could maintain its debt ratio steady even with a small primary deficit (-0.3%).

In the medium scenario, where interest is on the level of the years prior to the crisis, on the other hand, a surplus of 0.9% of GDP would be necessary. Should growth turn out very low or interest rates return to the long-term average, primary surpluses of around 3% would have to be achieved in order to stabilise the debt ratio. In the worst-case scenario, the primary surplus would have to be as high as 4.9%. To be sure, the latter is an extreme scenario. But constellations with below-average growth are not unlikely, as Italy's nominal growth averaged a mere 1.9% in the five years that preceded the crisis.

However, it must be acknowledged that Italy continuously achieved primary surpluses over a very long period of time. In order to stabilise its high debt ratio under relatively unfavourable conditions, it achieved a primary surplus in 24 of the 25 years through 2019. Particularly high surpluses averaging 4.8% of GDP accrued in the years prior to the introduction of the euro in 1999 (Figure 4). Following the financial crisis, Italy and Germany were also the only two G6 states to quickly consolidate their national budgets. From 2011 to 2019, Italy's primary surplus averaged 1.6% of GDP. In a medium interest-growth scenario, that would make it possible to reduce the debt ratio slowly. Should the low-interest environment continue, growth remain average and a primary surplus of 1% of GDP be achievable, the debt ratio would fall below the pre-crisis level in 2042.

Figure 4: Germany and Italy are the only G6 states with long-term primary surpluses



Source: European Commission.

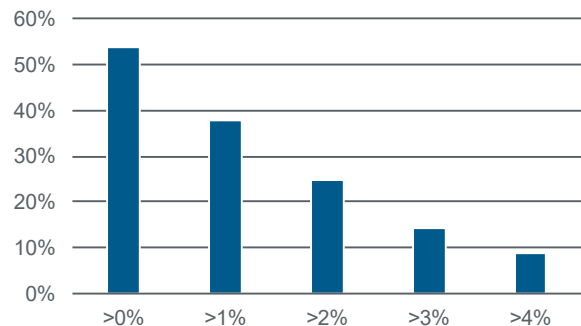
What surpluses are achievable?

Under favourable conditions, Italy's government debt ratio could hence be stabilised without a tough austerity policy. But what if Italy were to be hit by an unfavourable growth or interest-rate scenario that would require primary surpluses of, say, 3% of GDP to stabilise the debt ratio? The EU countries' experience from 1995 to 2019 illustrated in Figure 5 shows that high primary surpluses are not entirely uncommon. After all, 14% of the 700 observations made in the 1995–2019 are surpluses exceeding 3% of GDP. But such high surpluses are achieved only rarely over long periods of time. In the 28 countries observed, since 1995 there have been only eight

periods in which primary surpluses of more than 3% of GDP were achieved for at least five years. After the financial crisis, only Greece was able to achieve multi-year primary surpluses of this magnitude (2016–2019), after previously running a very tough austerity policy and suffering several years of deep recession. Besides Italy, the success stories of the 1990s and 2000s include, above all, Belgium, Ireland and Finland. The conditions under which such high primary surpluses occur have been empirically studied by Eichengreen and Panizza (2014).³ When applied to the current situation, this implies a mixed outlook for the probability of a sustained high budget surplus in Italy. On the one hand, the starting position of a high debt ratio increases the likelihood of success as it increases the pressure to consolidate. Besides, the surplus in Italy's current account balance (according to the IMF forecast, >=3% by 2025) is likely to be helpful as an expression of a high macroeconomic saving rate. On the other hand, the low potential growth is a clear barrier to successful consolidation. What is ambiguous is the assessment of the country's political conditions. In the past, a high fiscal surplus was more likely when a more leftist government was in power. Besides, the mostly dominant system of proportional representation tends to be helpful. But stable majorities cannot be assumed and experience shows that this makes high surpluses hard to achieve.

Figure 5: High primary surpluses are rare

Share of primary surpluses in the 700 observations of EU states in 1995–2019. Guide: A surplus exceeding 3% of GDP was achieved in 14% of observations.



Source: European Commission, KfW Research

Rising interest rates and other risks

Ultimately, Italy has a chance to stabilise and gradually reduce its government debt ratio as well – provided the interest to growth relationship does not deteriorate significantly. But there are risks which we briefly outline below:

- Real interest on government bonds – or the long-term real interest rate in general – has followed a clear downward trend around the world since the mid-1980s. There is no doubt that monetary policy directly influences the interest level through measures such as government bond purchases. But as most economies have not overheated despite the long decline in the interest level, the natural interest rate which balances aggregate demand and supply, i.e. private saving and investment propensities, has probably declined as well. Structural explanatory approaches which have become particularly popular

among economists in recent years are therefore plausible.⁴ The causes of increased saving propensities could lie in higher life expectancy with a longer retirement, increased income and asset inequality, as well as growing uncertainty. At the same time, investment needs may have declined as a result of slower workforce growth, increased efficiency in the use of capital and the drop in relative prices of capital goods. However, a trend reversal cannot be ruled out for these structural causes either. With baby boomer cohorts entering retirement age, for example, saving propensities may decrease in favour of consumption. At the same time, the transition to climate neutrality is generating higher investment needs.

- The scope for the very expansionary monetary policy in the euro area is mainly the result of persistently low inflation rates since the financial crisis. Medium-term euro area inflation expectations on the financial market are currently well below 2%. But there are upside risks for inflation as well. Reversals in globalisation are among the structural factors that might accelerate an upsurge in prices. As a result of the crisis, price pressure may also increase when households' high savings flow into consumption while supply drops as a result of an unexpectedly high number of business insolvencies. Furthermore, rising inflation is foreseeable in Germany over the course of this year as a result of factors such as higher energy prices and higher value-added tax. But as these are temporary effects, even a jump in inflation above the 2% mark would not force the ECB to tighten monetary policy. Only a significant rise in the hitherto stable inflation expectations would create a critical situation.
- The downward trend in real interest rates has so far been very pronounced in most countries, while trend growth has dropped less sharply. Structural factors such as demographic developments, however, do not just influence the interest level but will negatively influence growth potential in the course of the 2020s, particularly in Germany and Italy.
- The development of the debt ratio arithmetically depends on the rate of economic growth. However, there are empirical studies indicating that, conversely, high government debt also weighs on economic growth, making it all the

more difficult to grow out of high debt ratios. Baum, Checherita-Westphal and Rother (2013) suggest for example, that for the euro area a debt ratio exceeding 95% of GDP significantly weighs on growth.⁵ However, the existence of a uniform threshold for government debt and the causality of the effect are disputed in the literature.⁶

- The downward trend in the interest-growth differential should not mask the fact that this is not a steady parameter but usually increases noticeably in economic crises. This applies in particular to countries where government debt is already high to begin with.⁷ A vicious circle of rising interest rates, negative growth and high primary deficits then looms where reducing the latter, in turn, weighs on growth. During the euro crisis, for example, countries such as Italy experienced a clear interest rate increase driven by risk premiums which contributed to negative economic growth. This time the decisive response of the ECB and close solidarity between the EU states succeeded in preventing such development. It is still possible that investors lose trust as a result of particular events in the future, however, since the function of the central bank as a 'lender of last resort' in the euro area is not secure.

Conclusion: interest and growth rates are crucial

For Germany, the conditions for stabilising and reducing government debt ratios in the course of the 2020s are very good. For highly indebted countries such as Italy, however, that will depend even more strongly on the continuation of the low interest environment. Thus, high inflation in the euro area combined with low nominal growth in Italy generally hold potential for monetary policy conflicts. But the likelihood of the interest environment reverting to one of the unfavourable scenarios is rather low for the foreseeable future. In particular, the rise in the rate of inflation driven by temporary factors this year will not trigger tighter monetary policy. Interest rate risks, however, can be minimised even further by taking advantage of the currently extremely favourable interest environment to issue government bonds with the longest possible maturities. At the same time, it will be crucial to lift the growth potential, which the EU Recovery Fund is supporting with significant amounts.⁸ It will also be important in future to avoid repeating the mistakes made in the years following the financial crisis. That will include taking a measured approach to consolidating public finances until the upswing has fully taken hold.

¹ For the sake of simplicity, in the following we usually refer to interest and growth only. Unless otherwise explicitly mentioned, this refers to the nominal effective interest on outstanding government debt and nominal economic growth. In general, however, the interest-growth differential can also be calculated using the differential between effective real interest and real economic growth. Effective interest is the total interest to be paid on the government debt and, depending on the financing structure, it differs from the interest on newly issued government bonds. When interest rates fall, it is above the current market interest.

² Exceptional reasons for modifying the government debt ratio such as valuation effects are summarised as deficit-debt-adjustment (dda) and added where appropriate.

³ Cf. Eichengreen B. and Panizza, U. (2016), 'A surplus of ambition: can Europe rely on large primary surpluses to solve its debt problem?', *Economic Policy*, vol. 31(85), pages 5–49, and <https://voxeu.org/article/can-large-primary-surpluses-solve-europe-s-debt-problem>

⁴ Cf. Blanchard O. (2019), 'Public Debt and Low Interest Rates.' *American Economic Review* 109(4): 1197-1229; and Furman, J., Summers, L. (2020), *A Reconsideration of Fiscal Policy in the Era of Low Interest Rates*, Discussion Draft, 30 November 2020.

⁵ Cf. Baum A., Checherita-Westphal C. and Rother, P. (2013), Debt and growth: New evidence for the euro area, *Journal of International Money and Finance*, Volume 32, 2013.

⁶ Cf. Eberhardt M. and Presbitero, A. F. (2015), Public debt and growth: Heterogeneity and non-linearity, *Journal of International Economics*, Volume 97, Issue 1; and Panizza, U. and Presbitero, A. F. (2013) Public debt and economic growth in advanced economies: A survey. *Swiss J Economics Statistics* 149.

⁷ Cf. Checherita-Westphal C. (2019), Interest rate-growth differential and government debt dynamics, *ECB Economic Bulletin*, Issue 2/2019.

⁸ One model calculation shows that under conservative assumptions, even a gradual and delayed 'normalisation' of interest rates from funds of the EU Recovery Fund would not undermine debt sustainability either. Cf. Codogno L., Corsetti G. (2020), Post-pandemic debt sustainability in the EU/euro area: This time may (and should) be different, <https://voxeu.org/article/post-pandemic-debt-sustainability-eueuro-area>.