Gründler, Klaus; Potrafke, Niklas; Wochner, Timo

Article

How to Consolidate Public Debt in Germany?

CESifo Forum

Provided in Cooperation with:
Ifo Institute – Leibniz Institute for Economic Research at the University of Munich

Suggested Citation: Gründler, Klaus; Potrafke, Niklas; Wochner, Timo (2022) : How to Consolidate Public Debt in Germany?, CESifo Forum, ISSN 2190-717X, ifo Institut - Leibniz-Institut für Wirtschaftsforschung an der Universität München, München, Vol. 23, Iss. 01, pp. 17-23

Klaus Gründler, *Niklas Potrafke* and *Timo Wochner*

How to Consolidate Public Debt in Germany?

OVERVIEW: NATIONAL PUBLIC DEBT IN GERMANY

The Covid-19 pandemic has influenced countries' public finances to a large extent. National parliaments and the European Union reacted quickly by setting up recovery packages to mitigate the effects of the crisis. On top of the EUR 540 billion-strong EU Solidarity Fund (EUSF), which was created in 2002 to tackle major natural disasters, EU leaders also passed a EUR 750 billion recovery effort (*Next Generation EU*) in July 2020. The German Parliament passed two supplementary budgets. Instruments such as short-time allowances aimed at supporting firms. Strategies such as the temporary reduction of the value added tax aimed at increasing demand of households.[1] In light of the challenges posed by the Covid-19 pandemic that have been unparalleled in the younger German history, fiscal expenditures needed to be increased during the crisis. However, the spending packages substantially increased Germany's national debt. Compared to 2019, the debt-to-GDP ratio rose from just under 60 percent to more than 70 percent in 2020. Such a rapid increase in the public debt required temporarily suspending the European fiscal rules and the German public debt brake ("Schuldenbremse"), which restricts the annual deficit to a maximum of 0.35 percent of GDP. The financial reserves accumulated during the past decade have been exhausted in response to the Covid-19 crisis. Therefore, a major question is how Germany can consolidate public debt in the future.

Given the major changes in the age composition that Germany will face in the upcoming decades ("demographic transition"), Germany's public finances were scarcely sustainable even before the pandemic. This problem has been well-known for decades, but politicians have hardly responded with measures to improve sustainability. Sustainability of public finances requires that a country's intertemporal budget constraint is fulfilled. That is, the sum of outstanding debt plus discounted future budget positions sum to zero in the long run. Several methods quantify whether this condition is fulfilled and, if not, the degree to which a country's public finances lack sustainability ("sustainability gap"). The most prominent methods are generational accounting (e.g., Auerbach et al. 1994; Kotlikoff and Raffelhüschen 1999) and the sustainability indicators used by the European Commission in the Debt Sustainability Monitor (e.g., European Commission 2021). Generational accounting assesses how current debt levels ("explicit debt") and future debt levels that are based on liabilities the government has committed to ("implicit debt") distribute over current and future generations. Sustainability indicators quantify sustainability gaps in a single number. The S1 indicator shows by which degree the primary surplus needs to be improved to match the Maastricht criterion of 60 percent debt relative to GDP. The S2 indicator shows how primary surpluses need to be adjusted so that the intertemporal budget constraint of the government is fulfilled. The primary surplus is a key parameter to determine the long-run sustainability of public finances.

Common to all methods that aim to compute the sustainability of public finances is the challenge to project future macroeconomic and fiscal measures, often over multiple decades. Extrapolating the macroeconomic and fiscal environment into the future is difficult and requires assumptions about future developments such as birth rates, productivity growth,

[1] For an evaluation of the employed policy instruments to battle the Covid-19 crisis see Dorn et al. (2020).

Klaus Gründler

is Economist and Deputy Director of the ifo Center for Public Finance and Political Economy. Before joining the ifo Institute, he worked as a Post-Doc at the Julius-Maximilians Universität in Würzburg. His research focus is public economics and econometrics.

Niklas Potrafke

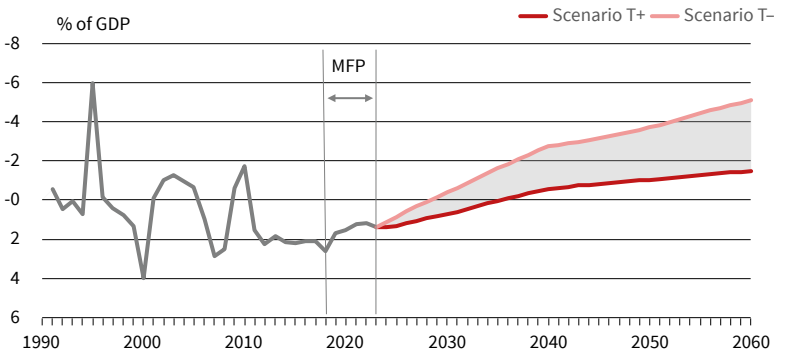
is Director of the ifo Center for Public Finance and Political Economy and Professor of Economics at the Ludwig-Maximilians-University in Munich. His research interests include public economics and political economy.

Timo Wochner

is a Doctoral Student at the ifo Center for Public Finance and Political Economy. His research focuses on political economy and evaluation.

Figure 1

General Government Primary Surplus



Source: Federal Statistical Office (VGR), Medium-term projection of the Federal Government (MFP, spring 2019), SIM.17.

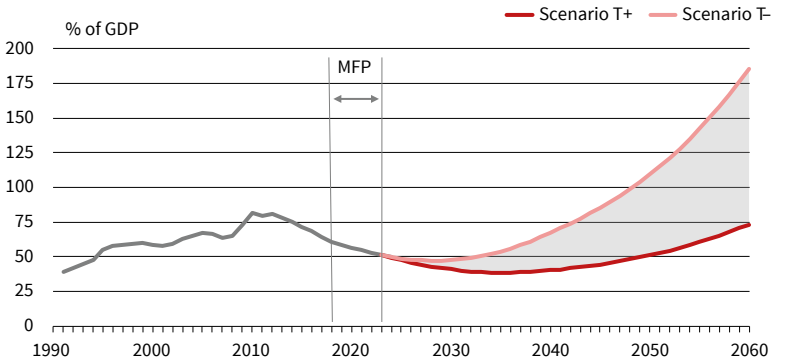
© ifo Institute

labor market, and the interest rate level. Methods to compute sustainability gaps are hence confronted with uncertainty. To address uncertainty, the fifth and most recent sustainability report on Germany's public finances, conducted for the German Federal Ministry of Finance, considers two—one rather optimistic and one rather pessimistic—scenarios (Werding et al. 2020a).[2] The scenarios describe a corridor within which the actual developments should plausibly lie without considering extreme scenarios. The assumptions are built on a "no-policy-change" scenario, projecting current revenues and expenditure based on the current tax and transfer system. The projections were published in early spring 2020 and show the pre-pandemic situation of Germany's public finances. The results of these projections serve as a counterfactual without the occurrence the Covid-19 crisis. Figure 1 shows the development of the primary surplus by the general government, which is key to compute sustainability measures. Figure 2 shows the development of general government debt that follows from the primary surpluses.

[2] Note that these scenarios are not extreme cases. Rather, both scenarios are reasonably likely. Scenario T+ considers mainly favorable macroeconomic and fiscal developments, scenario T- considers mainly unfavorable developments.

Figure 2

General Government Debt



Source: Federal Statistical Office (VGR), Medium-term projection of the Federal Government (MFP, spring 2019), SIM.17.

© ifo Institute

The results of the sustainability report show that even without the Covid-19 pandemic, there was a substantial long-run sustainability gap in Germany. This gap has even widened compared to 2016, when the prior sustainability report was published (Werding 2016).[3] The figures show that the primary surplus before the Covid-19 pandemic would have turned into a deficit over the simulation period, which then would have continued to widen (see Figure 1). One important factor contributing to this result is Germany's aging population, which yields diverging trends in the developments of the working-age population and the retirement age population. The working-age population will decline from the current 50 million by 10 percent to 45 million in 2050. At the same time, the population of retirement age will rise by 20 percent from 17.5 million to over 21 million (Ragnitz et al. 2021). In light of the stark increase in the old-age dependency ratio, expenditure increases for pensions and care insurances are main drivers of future deficits. The increase in primary deficits will also give rise to higher debt-to-GDP ratios (see Figure 2). The degree to which rising primary deficits will translate into higher debt levels will depend on the development of interest rates.

The calculations of the fifth sustainability report of the German Federal Ministry of Finance show that the sustainability gap measured via the S2 indicator assumes values between 1.5 (favorable variant T+) and 4.1 percent (unfavorable variant T-) of GDP. This ratio has increased by 0.3 percentage points compared to the estimates of the previous sustainability report (published in the year 2016). The less favorable results are attributable to public policy measures conducted during the past legislative period, which increased social expenditures, especially in the areas of pension and care insurance (due to the 2018 pension reform and the *care support act*), which considerably increases future liabilities.

The results show that even before the COVID-19 pandemic, public finances were hardly sustainable. The stark increase in public debt during the pandemic years 2020 and 2021 amplified the need to enter a path of fiscal consolidation. First, the national policy measure taken to tackle the pandemic increased the level of implicit debt relative to GDP by 109 percentage points, from 176 percent to 285 percent (see Bahnsen et al. 2020). Second, the European Union's fiscal stimulus package *Next Generation EU* increased public debt relative to GDP in the European Union by 5.5 percentage points (Dorn and Fuest, 2021a). Germany is one of the biggest net payers of this program, contributing to Next Generation EU with 790 Euro per capita (Dorn and Fuest 2021b). Germany's financial

[3] Overall, the simulations refer to expenditures amounting to 25.6 percent of GDP and 59.6 percent of general government primary expenditures (actual values for 2017). By 2060, the GDP ratios are projected to increase between 29.2 percent (a 3.6 percentage points increase) under scenario T+ and to 32.8 percent (a 7.2 percentage points increase) under scenario T-.

leeway enabled the extraordinary stimulus packages that helped to tackle the pandemic. When the next crisis hits, it will be important to have a similar cushion to alleviate the negative economic consequences.

Some commentators believe that in light of future challenges countries should not consolidate their budgets and rather spend more to tackle, e.g., challenges like digitalization, renewing infrastructure, and the transition to a greener economy. This brings up the question of why countries should aim to have sustainable debt levels in the first place. There are, however, many arguments for why governments should strive for sustainable public finances. Sound public finances permit long-term planning and ensure that the government can react to future unanticipated crises. As especially population aging will put further pressure on governments' expenditures, structuring governments in an efficient manner is also one of the most important tools to increase the confidence of citizens in the capabilities of the state. Moreover, unsustainable public finances increase risk premia and hence restrict the states' future funding options. Having unsustainable public finances also invokes an inevitable trade-off between the wealth of current and future generations. Finally, the increasing pressure caused by population aging on Germany's public finance will give rise to a dramatic increase in social security contributions in the next ten years under the current law. Until the year 2030, contributions for the statutory pension insurance will increase by 3 percentage points. Similar increases are expected also for other types of social security, particularly health insurance and care insurance (Büttner and Werding 2021). It is therefore unrealistic that the political intention to reduce total social security contributions to 40 percent of contributory income can be met, increasing the financial burden for households.

CONSOLIDATING PUBLIC DEBT

Consolidation Strategies

To consolidate public budgets, two main strategies can be employed: either raising taxes to increase revenues or cutting spending. A cut in spending may also include a change in the composition of public budgets and a careful reconsideration of expenditures. A hybrid strategy would involve letting spending rise less quickly than revenues and hence decrease deficits in the future. One prominently debated alternative strategy is "growing out of debt." This strategy requires that interest rates are permanently lower than the growth rate of GDP. Credit financing of interest payments on debt would no longer increase the debt-to-GDP ratio, and hence a national economy could grow out of any debt—at least if it stops taking on new debt for primary expenditures. It is, however, questionable whether one should rely on such a strategy. First, future interest rates may well rise again, particularly in light of the current inflation rates. Second, the interest rate also determines the rate by which future primary surpluses and deficits are discounted to present in the intertemporal budget equation. Lower interest rates put greater emphasis on a future period. When sustainability in future periods is lower than what it is today because of demographic change, low interest rates decrease the sustainability of public finances.[4] Third, many elements of the public budget, particularly those related to social spending (e.g., pensions and long-term care) and education, increase when the economy grows, because these budget components are automatically adjusted for the development of gross wages. Hence, when the economy grows, parts of the public budgets also increase without further policy intervention. This is why a more favorable macroeconomic environment often has little effect on the sustainability of public finances (e.g., Werding et al. 2020a; Werding et al. 2020b). A more favorable macroeconomic environment, however, facilitates economic reforms.

Government spending may influence economic performance in the short run in a different manner than in the long run. In the short run, an increase in government spending can increase demand and thus boost the economy. In the long run, however, deficit government spending increases debt levels, which increases interest rates and tends to have a negative impact on a country's long-term growth. The negative relation between permanent deficit spending and economic growth underlies the skepticism of many economists regarding public debt. This skepticism is perhaps most radically reflected in David Ricardo's conviction that increased government spending sacrifices private capital formation, and hence public spending should not be financed by increasing public debt (Ricardo 1817). Limiting public debt may prevent the negative growth effects from an increasing size of government (Berg et al. 2018; Gründler and Scheuermeyer 2018) and the occurrence of political business cycles (Bonfatti and Forni 2019). A more nuanced picture, however, emerges when one considers crowding-in effects; limiting public debt might hinder growth when public investment is decreased. A further distinction is often made between so-called consumptive government spending (for example, spending items on social benefits) and productive government spending (for example, spending on education or infrastructure). Some studies find a positive relationship between productive government spending and economic growth (e.g., Easterly and Rebelo 1993; Devarajan et al. 1996; Kneller et al. 1999; Chen 2006; Blankenau et al. 2007; Romero-Ávila and Strauch 2008; Leeper et al. 2010; Ilzetzki et al.

[4] This is not the case when interest rates are negative. In such a situation, public finances can be consolidated by growing out of debt. However, it is questionable whether the assumption of permanently negative interest rates over multiple decades would be reasonable.

2013). Consumptive government spending and total government spending may decrease economic growth (Kneller et al. 1999 and Chen 2006; Leeper et al. 2010; Afonso and Jalles 2014).

Further evidence corroborates that individual expenditure categories influence growth in different manners. In the European Union, budget consolidation was positively related with rising growth rates. Regarding spending categories, economic growth was positively associated with a reduction in government spending on social security and an increase in spending on education and R&D (Doerr et al. 2019).

Fiscal consolidation through spending cuts appears to be less harmful to economic growth than consolidation through tax increases, because both strategies have opposing effects on individuals' incentives (Alesina et al. 2017). Relative to tax increases, the duration of recessions caused by spending cuts are rather short-lived (Alesina et al. 2015). Recent evidence for Germany also indicates that further tax increases might be counterproductive for future economic growth (Dorn et al. 2021).

The Role of Fiscal Rules

Economists often argue that governments should pursue anticyclical fiscal policy, e.g., increasing debt in recessions to stimulate the economy and, in turn, consolidating public budgets in booms. This view is, however, often not in line with the implemented reforms and budget consolidation: most reforms are done in times of crises where the need of reforms is felt the most. A second reason are behavioral disincentives: governments have an incentive to build up debt even in good times to increase their chances of re-election because the burden of debt can be shifted to the future. To tackle those disincentives, countries implemented fiscal rules that constrain government expenditures, deficits, and debt levels.

The German debt brake—introduced in 2009 after the financial crisis—is an example of such a fiscal rule, as it limits the amount of new debt that can be incurred by the central government. Scholars argue that it is among the key reasons why Germany managed to bring down public debt in the decade before the Covid-19 pandemic (Feld and Reuter 2021). This reduction was facilitated by a period of high GDP growth and low interest rates and not driven by major cuts in public expenditures or increases in tax revenues. The debt brake, however, likely played a role in limiting further expenditure increases and revenue decreases (Fuest et al. 2019a). The design of the German debt brake installs an "automatic" mechanism of anticyclical fiscal policy. The debt brake limits the amount of the *structural deficit,* that is, the deficit over the long run adjusted for cyclical fluctuations. Deficit spending in recessions is therefore possible, but policymakers need to describe in detail how they would repay public debt.

Studies have shown that fiscal rules are indeed associated with lower levels of public debt (Burret and Feld 2014; 2018a; 2018b; Badinger and Reuter 2017; Salvi et al. 2020). A meta-study by Heineman et al. (2018) has re-examined the budgetary impact of fiscal rules in the last decade. The evidence is mixed. Fiscal rules exert a positive influence on economic growth —this is confirmed for historical (1789–1950) time periods and for modern economic growth (1985–2015) (Gründler and Potrafke 2020).

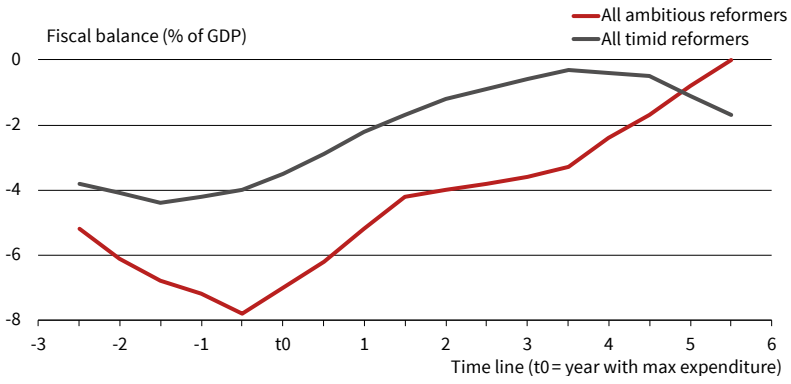
EXPERIENCES FROM REFORM EPISODES

In the last three decades, three waves of reforms and budget consolidations occurred in industrialized countries: The first wave consists of countries that implemented reforms in the early to mid-1980s, followed by the second wave in the beginning to mid-1990s. The financial global crisis was the trigger for the third wave of consolidation reforms in the beginning of the 2010s (Schuhknecht 2020). Within those waves, countries have been described as ambitious reform countries, timid reform countries, and non-reformers. Ambitious reformers are countries that reduced their primary expenditure by at least 5 percent of GDP, timid reformers are characterized with a more modest expenditure reduction, and non-reformers did not improve their primary expenditure at all (classification based on Hauptmeier et al. 2007).[5]

During the first and second wave the success of ambitious reform countries was quite remarkable. Within only six years, ambitious reformers improved their fiscal balances from about 7 percent of GDP to a balanced budget (see Figure 3).[6] This improvement was achieved by strong cuts in government expenditures. Timid reformers improved their fiscal

Figure 3

Reform Ambition and Fiscal Balances



Source: Schuknecht and Tanzi (2005).

[5] Ambitious reformers were Belgium, Ireland, Netherland, New Zealand, Austria, Canada, Finland, Norway, Spain, and Sweden. Timid reformers were Australia, Luxembourg, United Kingdom, Denmark, France, Germany, Italy, Switzerland, and the United States. Greece, Japan, and Portugal were classified as non-reformers.

[6] Figure 3 only includes ambitious reformers and timid reformers. The figure shows the development starting from the time t_0 at which consolidation started. For non-reformers, t_0 cannot be defined, as these countries did not consolidate budgets.

balances more modestly by about half that amount; however, they also started from lower initial fiscal deficits. Deficits for non-reformers, in contrast, rose. Examining common patterns across the ambitious reform countries helps learning from past successful reforms.

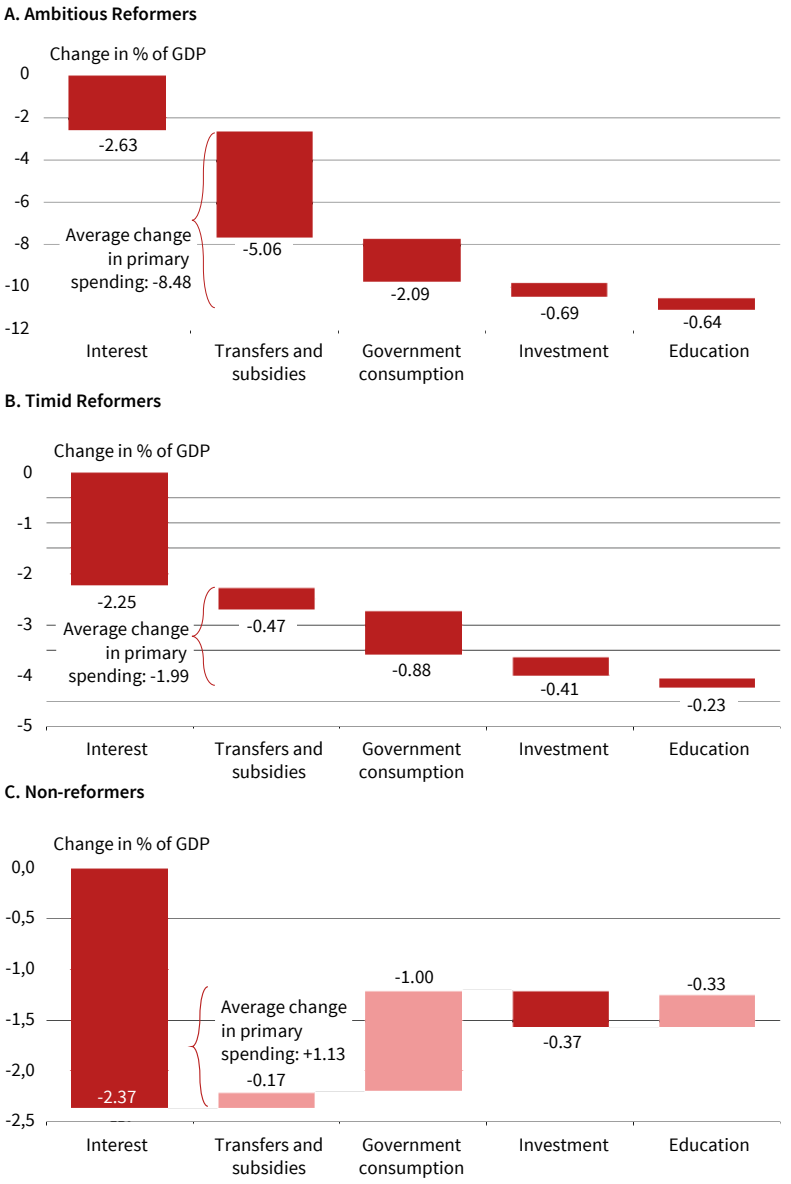
Over 80 percent of the decrease in the primary expenditure ratios of ambitious countries occurred in two categories: public consumption (wages and employment) (~ 25 percent) and transfers & subsidies (~ 60 percent). Productive government spending on education or public investment was often left untouched (see Figure 4A), changing the composition of public budgets more towards productive spending categories. Half of the cut in the primary spending of more timid reformers occurred in government consumption (see Figure 4B). Those figures contrast to those of the non-reformers, which increased spending on transfers & subsidies, government consumption and on education. The non-reformers all decreased public investments (see Figure 4C). This pattern underscores that unproductive government spending may crowd-out productive spending in infrastructure, R&D, and education.

The case studies also stress the importance of the institutional environment. In nearly all cases, expenditure cuts were part of a broader reform package (such as labor market reforms and privatization programs) and were accompanied by improvements in budgetary procedures. Not only were reformers successful in bringing down public debt levels, reform episodes also enabled significant tax cuts and coincided with more favorable growth performances.

During the third wave of reforms in the beginning of the 2010s, adjustments of fiscal expenditures focused primarily on non-social primary expenditure, followed by cuts in government spending. Social expenditure, however, was cut to a lesser extent than during the reforms in the 1980s and 1990s. Hence, the focus was less on cutting non-productive spending. A further difference concerns the revenue side. In contrast to prior waves, debt levels in the third wave of reforms were too high to allow tax cuts.

Figure 4

Reforms and Expenditure Composition



Source: Authors' illustration based on Schuknecht (2020). © ifo Institute

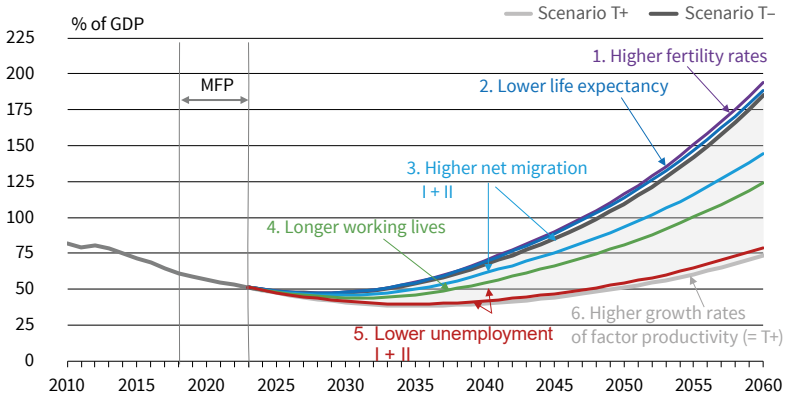
THE GERMAN CASE: REFORMS FOR GERMANY

What can we learn from past ambitious reforms? For Germany, the share of expenditure on social affairs increased from 45.8 percent in the year 1995 to 57.1 percent in the year 2018. Against the backdrop of the demographic transition and population aging, this share will be increasing considerably over the next two decades when the Baby-Boomer generation retires.

The fifth sustainability report models several alternative scenarios showing how changes in the macroeconomic environment and the structure of the workforce would influence the government's debt level. Figure 5 displays how higher net migration, higher labor force participation rates, higher growth rates of factor productivity, and higher fertility rates influence Germany's future debt-to-GDP level.

Figure 5 shows that increases in future productivity rates have little impact on the sustainability of public finances. On the one hand, demography-dependent components of public spending mimic the growth of GDP, as many of these components are linked to the development of gross wages. Hence, the foreseeable future financial strains tend to remain unchanged. Stronger macroeconomic growth, however, may facilitate reforms of taxes and expenditures. On the other hand, employment effects associated with macroeconomic developments have a direct impact on the sustainability of public finances. For example, an increase in structural unemployment in the wake of ongoing digitalization and

Figure 5
General Government Debt (2010–2060) – Alternative Scenarios



Note: In the transition from the assumptions for baseline scenario T– to those for baseline scenario T+, changes in individual assumptions (in the order in which they are numbered) are cumulatively incorporated into the curves of primary expenditure ratios shown.
Source: Statistical Office (VGR), Medium-term projection of the German government, SIM.17. © ifo Institute

technological change could widen the sustainability gaps resulting from demographic change. There are, however, interdependencies with the growth rates of productivity and GDP (e.g., Gründler and Potrafke 2021). For example, it is easier and more targeted to carry out re-qualification processes if workers remain employed in successfully growing companies without concerns of becoming unemployed because of unfavorable macroeconomic conditions.

Labor force participation also influences the long-term sustainability of public finances. An increase in the labor force participation of women and older workers, both in terms of the extensive and the intensive margin, would have a favorable impact on public finances. Regarding female labor force participation, a key policy measures would involve facilitating the family-work balance and equalizing equality of opportunity. The female part-time employment rate in Germany (36.3 percent) is among the highest in all OECD countries and far above the OECD average (25.1 percent). An increase in the labor-force participation rate of older individuals would, however, have the largest long-run impact on the sustainability of public finances.

Closely related to the labor force participation of older individuals, a key policy measure to improve the sustainability of public finances is the design of the average retirement age. If the retirement age remains at its present level, fulfilling the intertemporal budget constraint will be challenging. An increase in the average retirement age after 2030 will reduce the strain. The large impact of the retirement age on the long-run sustainability of public finances brings up the question of whether incentives for longer labor force participation—such as the 5 percent per year supplement for continued employment beyond the standard retirement age —are sufficient to induce a continued increase in the average retirement age, or whether the standard retirement age itself should also be adjusted. Adjustments may be designed flexibly, e.g., via fixing the target working years. In such a design, individuals who participate in the labor market earlier can retire earlier and vice versa.

We believe that important measures to consolidate the budget include reforming the pension systems, decreasing the budget shares of social expenditure, and cutting subsidies. First, there is an overwhelming consensus among economists that the current pension system is not sustainable (Blum et al. 2018 and 2020). In 2019 pension expenditures summed to about EUR 308 billion, which is more than all other federal government expenditures (EUR 273.5 billion) (BMF 2019). Several proposals exist on how to reform the current pension system. Some authors argue for fundamentally new financing models for the pension system such as the establishment of a funded German pension (Knabe and Weimann 2017) or a citizens' fund (Fuest et al. 2019b). Others provide proposals for short-term reforms. Several authors stress that it would not be advisable to retain the "Doppelte Haltelinie" adopted in 2018 beyond 2025 (Börsch-Supan 2020; Ragnitz et al., 2021) or discuss the pros and cons of the catch-up factor ("Nachholfaktor") (Boysen-Hogrefe et al., 2020).[7] Second, Germany has one of the highest shares of social expenditure relative to GDP and relative to other spending categories of all OECD countries. Clearly, when overall size of government continues to increase, decreasing budget shares of social expenditure would not even require decreasing expenditure on social affairs in absolute values. An important measure will be decreasing the share of tax-financed subsides to the German pension system. Reforms of the pension system would hence go hand in hand with a decrease in the share of social spending. Third, there is also scope for consolidating public budgets by cutting subsidies. The report on subsidies by the Kiel Institute suggests that the German government may well save some EUR 11 billion per year by cutting unwarranted and unnecessary subsidies (0.6 percent of total government spending in 2020).

REFERENCES

Afonso, A. and J.T. Jalles (2014), "Fiscal Composition and Long-term Growth", *Applied Economics* 46 (3), 349–358.

Alesina, A., O. Barbiero, C. Favero, F. Giavazzi, and M. Paradisi (2017), "The Effects of Fiscal Consolidations: Theory and Evidence", *NBER Working Paper* 23385.

Alesina, A., C. Favero, and F. Giavazzi (2015), "The Output Effect of Fiscal Consolidation Plans", *Journal of International Economics* 96, 519–542.

Auerbach, A. J., J. Gokhale, and L. J. Kotlikoff (1994), "Generational Accounting: A Meaningful Way to Evaluate Fiscal Policy", *Journal of Economic Perspectives* 8(1), 73–94.

[7] The "Doppelte Haltelinie" (English: "double stop line") holds that the net standard pension level before tax does not fall below 48 percent and at the same time the contribution rate does not rise above 20 percent. The "Nachholfaktor" (English: "catch-up factor") considers whether a rise in gross wages (which increases pension payments) is due to a cyclical catch-up or whether it is driven by an increasing trend in gross wages. The main point of this discussion is that catch-up effects do not reflect increases in well-being. Hence, their effects on pensions is controversially discussed.

Badinger, H. and W.H. Reuter (2017), "The Case for Fiscal Rules", *Economic Modelling* 60, 334–343.

Berg, A., J. D. Ostry, and Y. Yakhshilikov (2018), "Redistribution, Inequality, and Growth: New Evidence", *Journal of Economic Growth* 23(3), 259–305.

Bahnsen, L., T. Kohlstruck, B. Raffelhüschen, S. Seuffert, and F. Wimmesberger (2020), "Fiskalische und intergenerative Auswirkungen der Corona-Pandemie", *ifo Schnelldienst*, 73(09), 59–65.

Blankenau, W.F.; N.B. Simpson and M. Tomljanovich (2007), "Public Education Expenditures, Taxation and Growth: Linking Data to Theory", *American Economic Review* 97 (2), 393–397.

Blum, J., A. Dudel, M. Krause, and N. Potrafke (2018), "Zur Zukunft des Rentensystems in Deutschland", *ifo Schnelldienst*, 71(22), 47–53.

Blum, J., R. de Britto Schiller, N. Potrafke, J. Ragnitz, and M. Werding (2020), "Der Kompromiss zur Grundrente – erfüllt er die Erwartungen?", *ifo Schnelldienst* 73(1), 45–50.

BMF (2019), Vorläufiger Haushaltsabschluss 2018.

Bonfatti, A. and L. Forni (2019), "Fiscal Rules to Tame the Political Budget Cycle: Evidence from Italian Municipalities", *European Journal of Political Economy* 60, 1–20.

Börsch-Supan, A. (2020), "Alternativlose Rentenpolitik: Anpassung an die demografischen Veränderungen", Deutsche Rentenversicherung (online first), 1-2020, 77–91.

Boysen-Hogrefe, J., G. Felbermayr, S. Kooths, C. F. Laaser, A. Rosenschon, and U. Stolzenburg (2020), *Finanzpolitik mit Weitblick ausrichten* (No. 30), Kieler Beiträge zur Wirtschaftspolitik.

Büttner, T. and M. Werding (2021), *Optionen zur Stabilisierung der Einnahmesituation der Sozialversicherungen*, Gutachten, Bochum und Nürnberg.

Burret, H.T. and L.P. Feld (2014), "A Note on Budget Rules and Fiscal Federalism", *CESifo DICE Report* 12(1), 3–11.

Burret, H.T. and L.P. Feld (2018a), "Vertical Effects of Fiscal Rules: The Swiss Experience", *International Tax Public Finance* 25, 673–721.

Burret, H.T. and L.P. Feld (2018b), "(Un-)Intended Effects of Fiscal Rules", *European Journal of Political Economy* 52, 166–191.

Chen, B. (2006), "Economic Growth with an Optimal Public Spending Composition", *Oxford Economic Papers* 58 (1), 123–13.

Devarajan, S., V. Swaroop, and Zou, H. (1996), "The Composition of Public Expenditure and Economic Growth", *Journal of Monetary Economics* 37, 313–344.

Dorn, F. and C. Fuest (2021a), "Next Generation EU: Chancen und Risiken des europäischen Fonds für die wirtschaftliche Erholung nach der Corona-Krise", *Wirtschaftsdienst* 101(2), 78–81.

Dorn, F. and C. Fuest (2021b), "Next Generation EU: Gibt es eine wirtschaftliche Begründung?", *ifo Schnelldienst* 4(2), 3–8.

Dorn, F., C. Fuest, F. Neumeier, and M. Stimmelmayr (2021), "Wie beeinflussen Steuerentlastungen die wirtschaftliche Entwicklung und das Steueraufkommen?", *ifo Schnelldienst* 10.

Dorn, F. and C. Fuest (2021), "Next Generation EU: Chancen und Risiken des europäischen Fonds für die wirtschaftliche Erholung nach der Corona-Krise", *Wirtschaftsdienst* 101(2), 78–81.

Dörr, L., K. Gründler, M. Mosler, and N. Potrafke (2019), "Der Zusammenhang zwischen Verschuldung, Budgetzusammensetzung und volkswirtschaftlichem Wachstum", ifo-Forschungsberichte no. 107.

Easterly, W. and S. Rebelo (1993), "Fiscal Policy and Economic Growth. An Empirical Investigation", *Journal of Monetary Economics* 32, 417–458.

European Commission (2021), *Debt Sustainability Monitor 2021*, Brussels.

Feld, L. P. and W.H. Reuter (2021), "The German "Debt Brake": Success Factors and Challenges" (No. 21/10), *Freiburger Diskussionspapiere zur Ordnungsökonomik*.

Fuest, C., K. Gründler, and N. Potrafke (2019a), "Für eine nachhaltige Finanzpolitik mit der Schuldenbremse", *Wirtschaftsdienst* 99(5), 307–313.

Fuest, C., C. Hainz, V. Meier, and M. Werding (2019b), "Das Konzept eines deutschen Bürgerfonds", ifo Studie.

Gründler, K. and P. Scheuermeyer (2018), "Growth Effects of Inequality and Redistribution: What are the Transmission Channels?", *Journal of Macroeconomics* 55(C), 293–313.

Gründler, K. and N. Potrafke (2020), "Fiscal Rules: Historical, Modern, and Sub-national Growth Effects", *CESifo Working Paper* no. 8305.

Gründler, K. and N. Potrafke (2021), "Aging and Productivity: Causal Evidence and Transmission Mechanisms", *Working Paper.*

Hauptmeier, S., M. Heipertz, and L. Schuknecht (2007), "Expenditure Reform in Industrialised Countries: A Case-study Approach", *Fiscal Studies* 28(3), 293–342.

Heinemann, F., M. D. Moessinger, and M. Yeter (2018), "Do Fiscal Rules Constrain Fiscal Policy? A Metaregression-Analysis", *European Journal of Political Economy* 51, 69–92.

Ilzetzki, E., E.G. Mendoza, and C.A. Végh (2013), "How big (small?) are Fiscal Multipliers?", *Journal of Monetary Economics* 60, 239–254.

Knabe, A. and J. Weimann (2017), "Die Deutschlandrente: Ein Konzept zur Stärkung der kapitalgedeckten Altersvorsorge", *ifo Schnelldienst* 70(18), 25–33.

Kneller, R., M.F. Bleaney, and N. Gemmell (1999), "Fiscal Policy and Growth: Evidence from OECD Countries", *Journal of Public Economics* 74, 171–190.

Kotlikoff, L. J. and B. Raffelhuschen (1999), "Generational Accounting around the Globe", *American Economic Review* 89(2), 161–166.

Leeper, E.M., T.B. Walker, and S.S. Yang (2010), "Government Investment and Fiscal Stimulus" *Journal of Monetary Economics* 57, 1000–1012.

Ragnitz, J., F. Rösel, M. Thum and M. Werding (2021), "Rentenpolitik im Schatten der Babyboomer", ifo Studie.

Ricardo, D. (1817), "On the Principles of Political Economy and Taxation", Batoche Books, reprint 2001, Ontario.

Romero-Ávila, D. and R. Strauch (2008), "Public Finances and Long-term Growth in Europe: Evidence from a Panel Data Analysis", *European Journal of Political Economy* 24, 172–191.

Salvi, M., C. Schaltegger and L. Schmid (2020), "Fiscal Rules Cause Lower Debt: Evidence from Switzerland's Federal Debt containment Rule", *Kyklos* 73(4), 605–642.

Schuknecht, L. (2020), "Public Spending and the Role of the State: History, Performance, Risk and Remedies", Cambridge University Press.

Schuknecht, L. and V. Tanzi (2005), "Reforming Public Spending: Great Gain, Little Pain", Politeia.

Werding, M. (2016), "Modellrechnungen für den vierten Tragfähigkeitsbericht des BMF", FiFo-Berichte No. 20.

Werding, M., K. Gründler, B. Läpple, R. Lehmann, M. Mosler, and N. Potrafke (2020a), "Modellrechnungen für den Fünften Tragfähigkeitsbericht des BMF", *Studie im Auftrag des Bundesministeriums der Finanzen,* ifo Studie.

Werding, M., K. Gründler, B. Läpple, R. Lehmann, M. Mosler, and N. Potrafke (2020b), "Tragfähigkeit der öffentlichen Finanzen: Spielt sie noch eine Rolle?", *ifo Schnelldienst* 73(9), 53–58.