TABLES

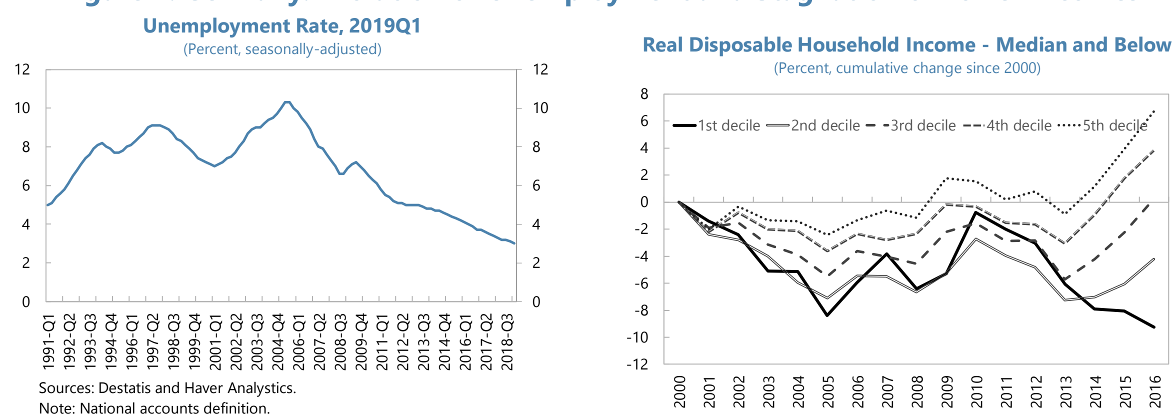
ANNEXES

CONTEXT

1. **Germany has experienced nearly a decade of solid growth and an unprecedented decline in unemployment**. This strong performance followed a series of labor market reforms in the mid-2000s, a long period of balance sheet repair in the non-financial corporate sector, sustained improvement in public finances, and continued high household saving. Germany also became deeply integrated into global value chains, particularly in Eastern Europe. The result of these trends has been a rapid decline in public and private debt and the lowest unemployment rate since reunification.

2. **The benefits of this strong economic performance have not been evenly shared, contributing to external imbalances**. German wage growth has been meager for much of the past 20 years and has accelerated only recently. Over this period, income growth has been more pronounced at the top of the income distribution while purchasing power has stagnated at the bottom. In addition, a rising share of national income took the form of savings inside the corporate sector, particularly in family-owned and -managed firms, whose ownership is highly concentrated among wealthier households (see Selected Issued Paper "Wealth Inequality and Private Savings in Germany"). This depressed private consumption, as higher-income households have a high propensity to save, and, together with fiscal consolidation, fueled the rise in the current account surplus (see Box 1).

Figure 1. Germany: Evolution of Unemployment and Stagnation of Lower Incomes



Sources: Destatis and Haver Analystics.
Note: National accounts definition.

Source: DIW SOEP.

3. **Germany faces significant medium-term challenges**. The labor force is about to decline as the population ages; productivity growth is low; and investment growth has been weak until very recently. All of these factors will weigh on potential output. Moreover, Germany will need to adapt to technological change as digitalization and innovation become increasingly important drivers of value added. Regarding energy transition, Germany is on track to meet its renewable energy target. But building the necessary internal electricity transmission capacity remains a challenge. At the same time, there is still uncertainty about how the ambitious goals to cut greenhouse gas emissions will be met.

OUTLOOK AND RISKS

Growth Slowdown Amid Sound Fundamentals

4. The economy slowed sharply in the second half of 2018, reflecting both temporary and structural factors. The slowdown reflected a mixture of special circumstances (e.g., disruptions in car production related to the rollout of new emission tests following the new *Worldwide Harmonized Light Vehicle Test Procedure* (WLTP), slower river transportation due to drought, etc.) and weak external demand, which hit Germany's export-dependent economy particularly hard. Net exports contributed negatively to growth in 2018 as the large drop in exports in Q3 was only partially made up in Q4. Investment in equipment and construction remained robust while private consumption softened in the second half of the year despite strong labor market conditions. GDP growth bounced back in 2019 Q1, driven by strong domestic demand (vehicle purchases returned to trend and investment was robust). However, the latest high frequency indicators are mixed as foreign demand remains lackluster.

5. Wage growth continued to pick up, but underlying inflation remained subdued. Despite stalled output growth in 2018H2, employment continued to rise, bringing the unemployment rate to new record lows, and reported labor shortages are widespread. The tight labor market pushed wage growth above 3 percent in the second half of the year. Reflecting the still relatively strong cyclical position and increasingly binding capacity constraints, real wages also grew faster than productivity, resulting in an uptick in the labor share. As in other advanced economies, inflation pressures remained subdued despite rising wage growth: core inflation has been hovering around 1½ percent.

6. In 2018, Germany recorded its largest fiscal surplus since reunification, marking the fifth consecutive year of surplus. The general government surplus rose to 1.7 percent of GDP, from 1 percent of GDP in 2017, reflecting once again revenue overperformance and underspending due in part to the delay in forming the coalition government. Public investment increased by almost 8 percent in nominal terms, but only by 0.1 percentage point of GDP due to the low base. As a result, the fiscal stance (measured by the change in structural primary balance) was moderately contractionary, instead of expansionary as projected in the 2018 Article IV report. Public debt fell to 60.9 percent of GDP at end-2018.

Large External Imbalances Adjusting Slowly

7. The current account (CA) surplus has gradually come down but remains substantially stronger than implied by medium-term fundamentals and desirable policy settings.

- The surplus fell by 0.7 ppt of GDP in 2018 to 7.3 percent of GDP, continuing a gradual downward trend from its 2015 peak of 8.5 percent of GDP. The underlying decline in net exports was broad-based across destinations, but more pronounced with respect to non-EU trading partners, reflecting slowing external demand and terms-of-trade worsening. Import

growth was robust on the back of higher investment. In cyclically-adjusted terms, the current account surplus remains 3.6–5.6 percentage points higher than the value implied by fundamentals and desirable policies (staff assesses the current account norm at 2–4 percent of GDP for Germany).

- Non-financial corporate (NFC) net lending (the difference between NFC saving and investment), responsible for most of the surge in Germany's current account since 2011, came down substantially since its 2015 peak while government net lending increased (see paragraph 15 for additional details).

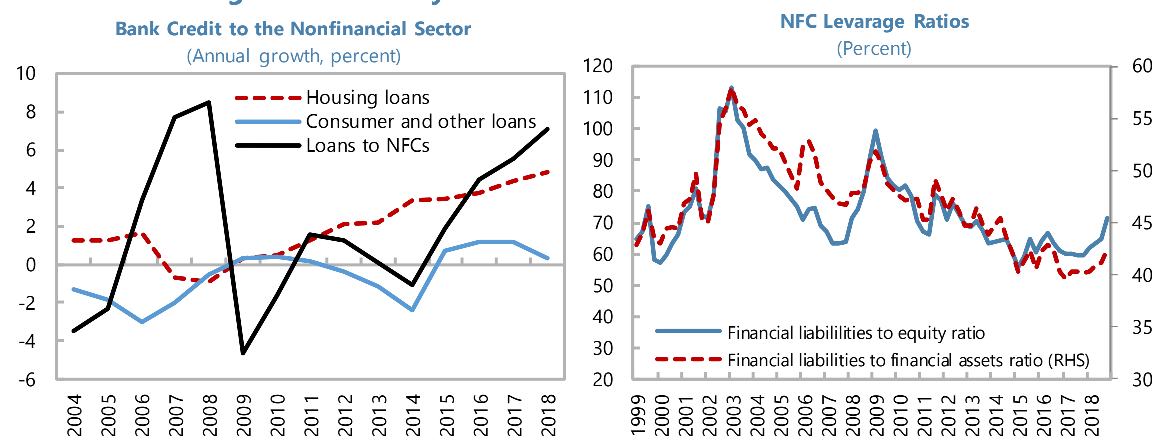
- The Net International Investment Position (NIIP) climbed to 60.6 percent of GDP at end-2018, with the rise relative to 2015 entirely explained by higher net portfolio investment.

- The real effective exchange rate remains 8–18 percent undervalued in 2018. It had appreciated by 2 percent in 2018 but depreciated by 1.3 percent in the months up to May 2019, reflecting exchange rate movements against the dollar and other major trading partners (see Annex I).

Financial Vulnerabilities on the Rise

8. Credit growth picked up moderately, supporting domestic demand. After a long period of corporate deleveraging and borrowing restraint by households, mortgage and NFC credit growth accelerated to a pace modestly faster than nominal GPD growth in 2018. For NFCs, this led to a slight rise in leverage after many years of decline (Figure 2). There is evidence that new credit to NFCs is increasingly channeled to relatively riskier firms[1], and lending standards have been eased, as suggested by the Bank Lending Survey (Figure 14, top right panel).

Figure 2. Germany: Bank Credit to the Nonfinancial Sector



Sources: Deutsche Bundesbank, Haver Analytics, and IMF staff calculations.
1/ Nonfinancial corporations' total liabilities divided by shares and other equity.

[1] See, for example, Figure 2.5.4. of the April 2018 Global Financial Stability Report.

9. The "low-for-long" interest rate environment is putting further pressure on the financial sector's profitability. Yields on German government bonds have turned negative/scarcely positive across maturities and the yield curve has flattened. This reflects both a more dovish outlook for policy interest rates as well as the increasing scarcity of German government bonds (the euro area's safe asset). With interest rates set to remain low for even longer, the profitability of banks and insurance companies—already challenged by high costs and slow progress with restructuring—is expected to come under renewed pressure.

Near-term Recovery with Risks Looming

10. The near-term outlook is for a gradual return of output to trend, but is subject to significant uncertainty. Staff's baseline assumes that the weak external environment will weigh on exports but that domestic demand will strengthen. Private consumption growth is expected to recover, supported by continued strong labor market conditions and fiscal measures (e.g., income tax relief, family support). Given high capacity utilization and replacement needs, private non-residential investment is expected to expand, but at a slower pace than last year. Investment in construction, both residential and commercial real estate, is expected to continue to be strong. Despite the growth slowdown, staff assesses the output gap to be moderately positive in 2019, reflecting several years of above-potential growth alongside still-low potential growth (as a result of both slowing potential labor force growth and slowing contributions from capital accumulation). The positive output gap is expected to lead to modest upward pressure on core and headline inflation. Recent bargaining agreements suggest that wages will continue to grow at a solid pace in the coming quarters. With low interest rates, alongside the banking system's large deposit base and ample liquidity, credit is expected to continue to expand to support economic growth.

11. Unfavorable demographics, low productivity growth, technological change, and the energy transition are expected to weigh on growth over the medium term. Growth is projected to decelerate to 1.1 percent by 2024 and the output gap is projected to gradually close. Both headline and core inflation should reach 2.2 percent by 2022. With the labor market expected to remain tight amid a declining labor force, wage growth should continue to accelerate.

12. The CA surplus is expected to continue narrowing but remain large over the medium term. The decline is expected to proceed at a slow pace as net exports continue to trend downward, underpinned by solid domestic demand and a gradual realignment of price competitiveness. In the medium term, the projected CA surplus would remain large, absent further policies to enhance investment and reduce excess saving. Consistent with the projected path for continued CA surpluses, the NIIP is expected to exceed 80 percent of GDP in the medium term.

13. Germany's export-dependence and financial openness make it particularly vulnerable to external shocks. Risks are tilted to the downside, especially given the uncertain external environment (see Annex II).

- A significant rise in global protectionism, a more pronounced China slowdown or a no-deal Brexit would hurt Germany's exports and FDI, possibly disrupt supply chains, and weigh on

domestic investment and productivity. Such disruptions could prove particularly harmful to the auto industry (see Box 2 on the impact of a US tariff on cars).

- Tighter global financial conditions and a return of sovereign debt concerns in the euro area may trigger sharp corrections in already stretched valuations across asset classes. While German government bonds may benefit from safe-haven flows, other asset classes (real estate, equity markets) would likely be adversely affected.

- Domestically, lack of progress in revamping bank business models could lead to financial distress in major banks, with potentially adverse external spillovers.

- On the upside, wage growth could pick up faster than currently anticipated, investment could again surprise positively, and fiscal policy could be more expansionary than anticipated in the next year, with some positive external spillover.

- In the longer term, risks revolve around structural challenges. Lack of progress in adapting to the technological and digital revolution could undermine Germany's position as an innovation leader. Specifically, German automakers' failure to shift to new technologies (e.g., hybrid and all electric models) could lead to an erosion of the global market share of German cars. A stalled structural reform agenda and unresolved bank legacy and profitability problems may also rekindle stress in the euro area and weigh on investment in Germany. Failure to durably reverse rising anti-euro/EU sentiment in Europe and anti-globalization forces worldwide could negatively affect growth.

Authorities' Views

14. The authorities broadly shared staff's assessment of the near-term macroeconomic outlook and risks. The predominant view is that the positive growth surprise in Q1 2019 should be seen as temporary. Manufacturing output stagnated in Q1. The authorities expect weakening foreign demand to continue to cloud the outlook, with recent international developments on trade policy interpreted as a sign that further escalation is likely. Recent estimates for growth in 2019 by the authorities are weaker than staff's, implying a more pronounced slowdown in the rest of the year. The authorities also share staff's assessment of risks and stressed that domestic demand could be affected by a prolonged exports slump given the very open nature of the German economy. Medium-term challenges for the automotive industry in a rapidly changing technological environment, and implications for the rest of the manufacturing sector were also seen as important.

POLICY DISCUSSIONS

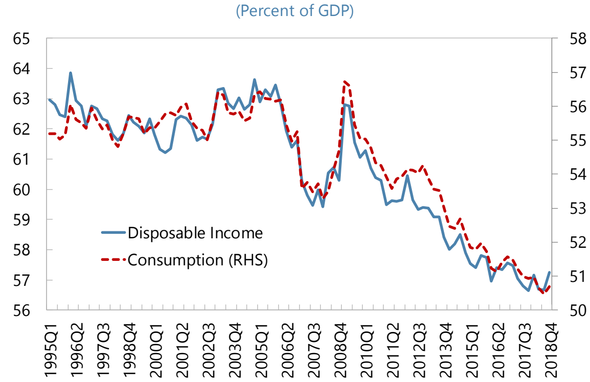
Germany's key economic challenge is to raise its long-term growth potential while rebalancing its economy. Projected demographic headwinds, low labor productivity growth, and a challenging energy transition call for raising investment in human and physical capital, promoting innovation and labor supply, and advancing structural reforms. After several years of stagnant real disposable income growth for low- and middle-income households, strong wage growth needs to continue to help the economy to rebalance. There is also scope to reduce the tax burden on labor income, which is particularly high in the lower-middle income brackets, to reduce disincentives to labor supply and boost household purchasing power. These multi-pronged policies would boost the country's productive capacity while at the same time supporting rebalancing and helping to ensure that the benefits of higher growth are shared more evenly.

A. Addressing External Imbalances by Restoring Household Purchasing Power

15. Sizable and growing corporate net lending, together with fiscal consolidation, has been a key contributor to Germany's rising current account surpluses. NFC net lending rose from -1.5 percent of GDP in 2001 to 3.8 percent in 2015 (the peak), contributing the bulk of the surge in the current account surplus since 2000. The increase in NFC net lending was driven by rising gross saving (notably by family-owned firms) as firms both reduced debt and increased holdings of cash and other liquid assets.[2] In turn, the surge in gross saving was initially driven by rising profits, on the back of wage restraint and a falling labor share. Since 2008, however, it mostly reflected falling dividend payout ratios amid stable profitability. After peaking in 2015, the NFC net lending position has come down substantially, driven by lower profitability (due in part to higher wage growth), higher dividend payout ratios, and a modest pickup in investment. Over the past decade, government net lending has also risen markedly as a result of fiscal consolidation.

16. Household disposable income has stagnated for households in the lower half of the income distribution, depressing consumption. In tandem with rising corporate net lending, household disposable income—while growing in real and nominal terms—has declined relative to GDP by about 6.2 percentage points since 2005 (see Selected Issues Paper). The decline in the household disposable income ratio is concentrated in the lower half of the income distribution (Figure 3), where the propensity to

Household Consumption and Disposable Income
(Percent of GDP)



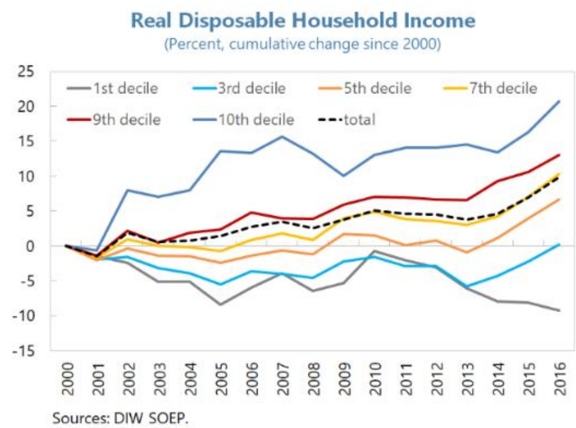
Sources: Deutsche Bundesbank, Destatis, and IMF staff calculations.

[2] Please see Annex VII of "Germany: Staff Report for the 2018 Article IV Consultation" and "The Rise of German Corporate Savings" (IMF working paper, forthcoming) for details on the sources and uses of German NFC saving.

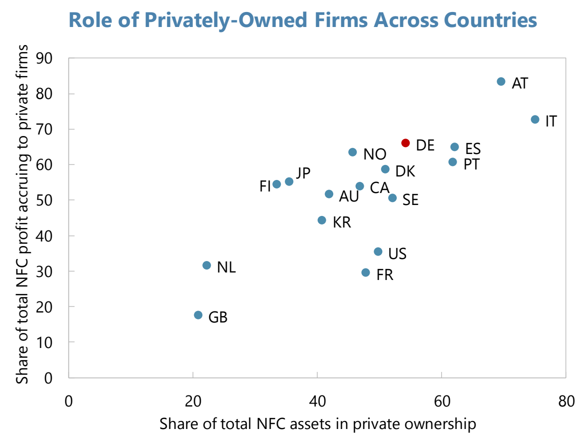
consume is the highest. As a result, private consumption as a share of GDP also dropped from about 55 percent on average between 1995 to 2005, to 51 percent at the end of 2017. Bringing household disposable income to GDP ratio back to its 2005 level (63 percent) through wage growth alone would require nominal wage growth to exceed annual nominal GDP growth by around 1.5 percentage points each year for over a decade.

Figure 3. Germany: Evolution and Distribution of Real Income

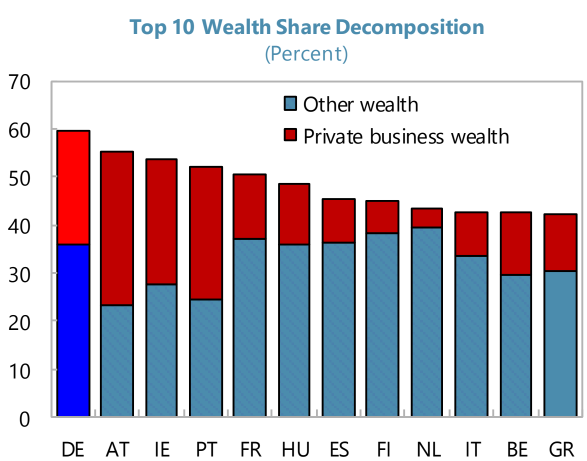
The erosion of household disposable income as a share of GDP has been primarily borne by the lower half of the distribution



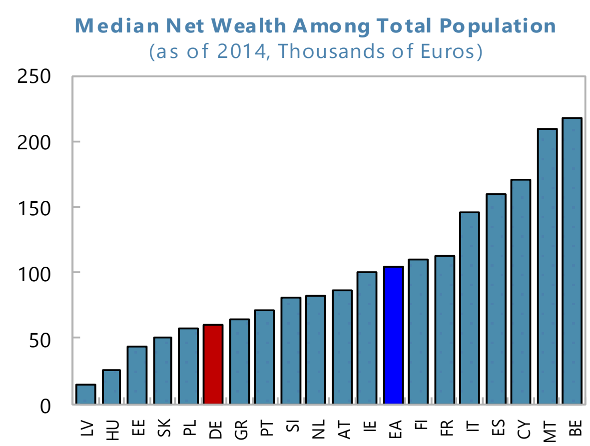
...who did not benefit from appreciating equity prices and higher profits.



Corporate profits, underlying the rise in the CA surplus, are accruing to the top of the wealth distribution



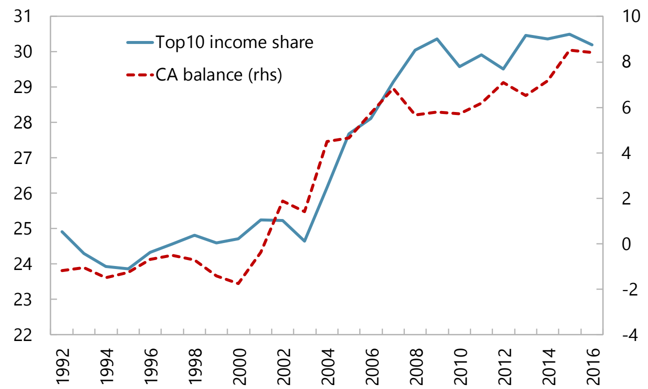
...leaving the median German household with low level of net wealth.



Sources: Eurostat, OECD, Thomson Reuters Worldscope; HFCS, IMF staff calculations.

17. Widening top income inequality may also help explain high private savings and the rising current account surplus (see Box 1). Home and equity ownership rates in Germany are the lowest in the euro area, particularly among middle- and lower-income households. At the same time, the large net wealth of German firms is highly concentrated among the top of the wealth distribution due to the dominance of family-ownership and -control of *Mittelstand* firms. High corporate savings, therefore, partly reflect savings of wealthy German households accumulated within firms due to preferential tax treatment.[3] Staff analysis shows that German firms owned (and managed) by a small number of families tend to save more than other firms, and more than similar private firms in the Euro area.[4] As the marginal propensity to save is very high among wealthy households, the rise in corporate profits has contributed to higher top income inequality, increasing private savings and boosting the current account surplus.

CA Balance and Top Income Inequality
(Percent)



Sources: World Inequality Database and Haver Analytics.

18. Policies that boost disposable incomes particularly among middle- and low-income households could help speed up external rebalancing, while also fostering more inclusive growth. Faster wage growth, which would be in line with the tight market conditions, would be the most direct way to boost disposable income. This would particularly benefit low- and middle-income households, who mainly rely on labor income to finance their consumption. Recent increases in wage growth are therefore welcome and the authorities should encourage robust wage growth in their public communications. Given the tightness of the labor market and the moderate level of the minimum wage, stronger increases in the minimum wage could also be contemplated at the next revision in 2021. Policies on the tax side can also be used to support the purchasing power of middle and lower-income earners (see below).

[3] This refers mainly to inheritance tax treatment of business wealth. The top personal income tax rate is very close to the combined corporate income and dividend tax rates (see Selected Issues Paper "Tax Pressures and Reform Options" accompanying this Staff Report).

[4] See "The Rise of German Corporate Savings", IMF working paper, forthcoming and Selected Issues Paper on "Wealth Inequality and Private Savings in Germany" accompanying this Staff Report.

Authorities' Views

19. **The authorities emphasized that the current account surplus had been declining (as a share of GDP) since 2016 and is expected to fall further**. At the same time, they view its relatively high level in the medium term as consistent with Germany's demographic structure. Non-financial corporate savings are not expected to rise further as equity and liquidity buffers have reached comfortable levels. The authorities acknowledged that increased dispersion in household disposable income had contributed to the large current account surplus and pointed to the recent pick up in wage growth as a welcome development in this context. Additionally, recent fiscal measures that offer social contribution and income tax relief, and increased family benefits, should have a positive effect on lower incomes and support household consumption. The authorities agreed on the need to promote the economy's long-run growth potential, especially by upgrading the digital infrastructure and fostering innovation.

20. **The authorities acknowledge the relatively high concentration of wealth and divergence of household incomes but pointed to other aspects of the German economy that are relevant in this context**. They pointed to latest survey data showing that the degree of wealth inequality has slightly declined, though it remains among the highest in the euro area. They viewed the concentration of business wealth as reflecting the stable ownership structure of the Mittelstand, which is often family-controlled, and is seen as the backbone of the German economy. Though wealth inequality is high, income redistribution is provided through the tax and benefit system.

B. Fiscal Policy to Boost Potential Growth and Support Rebalancing

21. **Fiscal policy is set to turn expansionary in 2019, yet fiscal space will remain substantial in the medium term.** The 2019 budget includes measures to increase family support and public investment, as well as income tax relief—in the form of a higher basic tax allowance and correction of bracket creep—worth 0.2 percent of GDP per year, resulting in a moderate fiscal expansion of about ⅔ percent of GDP. Looking farther ahead, staff projects that the structural surplus will decrease from 1.2 percent of GDP in 2018 to about ½ percent of GDP in 2021–22 on the basis of the package of fiscal measures agreed when the government coalition was formed last year. However, fiscal space in relation to the Stability and Growth Pact's (SGP) medium-term objective (MTO) remains substantial (more than 1 percent of GDP over the medium term). In contrast to the European rules, which set limits on the general government structural deficit, Germany's national rules ("debt brake") set limits on the structural net borrowing for the central and state governments. Budget surpluses in recent years have allowed the central and many state governments to build up reserves. By financing expenditures with these reserves, constraints from national rules will not be binding at least for some time, so the relevant constraint for now is the MTO. The public debt ratio is expected to cross the 60 percent of GDP benchmark this year and will continue to decline rapidly over the projection period (see Annex III).

Germany: General Government Operations, 2018–24

(Percent of GDP)

	2018	2019	2020	2021	2022	2023	2024
	Est.			Proj.			
Structural Balance							
Staff projection 1/							
2018 Article IV	0.8	0.5	0.5	0.1	0.1	0.2	0.2*
Current	1.2	0.7	0.7	0.4	0.4	0.7	0.8
Authorities' projection, latest	1.4	3/4	1/2	1/2	1/4	1/2	
SGP Medium Term Objective 2/	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Fiscal Buffer in Relation to the Fiscal Rules 3/	*1.7*	*1.2*	*1.2*	*0.9*	*0.9*	*1.2*	*1.3*
Primary Structural Balance	*2.2*	*1.5*	*1.5*	*1.1*	*1.0*	*1.2*	*1.3*
Implied Fiscal impulse 4/	*-0.2*	*0.6*	*0.0*	*0.4*	*0.0*	*-0.1*	*-0.1*

Sources: Ministry of Finance, Bundesbank, Federal Statistical Office, and IMF staff estimates and projections.

* Refers to 2023

1/ Staff's projections use the information of the latest available government medium term financial plan, adjusted for the differences in the IMF staff's macroeconomic framework.

2/ The current SGP's MTO until 2023, and the same MTO is assumed to remain in 2024.

3/ Calculated as the difference between the current staff projected structural balance and the SGP's MTO.

4/ Negative of the difference between the projected primary structural balance in each year and that of the year before.

22. Germany's fiscal space should be used to support potential growth and rebalancing. Using fiscal tools and resources to invest in physical and human capital, incentivize innovation, and bolster labor supply would help Germany confront its long-term challenges and support external rebalancing by stimulating domestic demand in the short term.

- There is scope to reform the tax system to make it more growth friendly. Germany's labor taxation (including the tax wedge) is high and a high marginal tax rate takes effect at relatively low wage levels. Further tax relief for low-income households could boost their disposable income and support domestic demand. In addition, reducing the high effective marginal tax rate for second earners, for example by replacing the current income splitting system with a tax allowance or credit for couples, can promote full-time female labor force participation.[5] Further expanding the provision of care for children under three years of age would also help women work longer hours. To compensate for revenue shortfalls, reforming property and inheritance taxes, could be considered. Such reforms would also help reduce excess saving and wealth concentration.

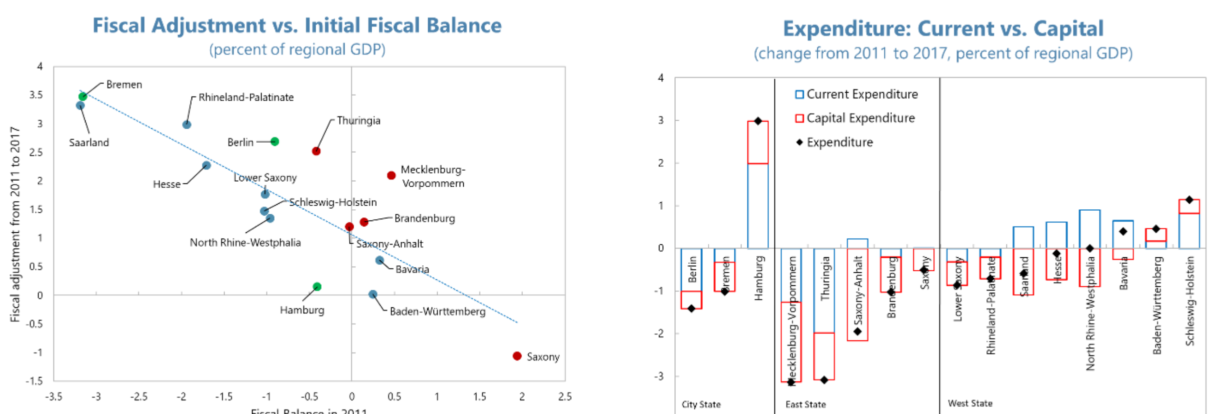
- Incentivizing R&D would also help long-term growth. The government is currently proposing a new tax incentive for R&D activities. According to this proposal, a tax credit up to €500,000 per

[5] See the Selected Issues Paper "Tax Pressures and Reform Options" accompanying this Staff Report for details.

year will be provided for 25 percent of R&D costs up to €2 million starting in 2020. R&D expenditures are widely seen as a key driver of productivity growth, and research has shown that direct tax incentives targeting R&D inputs are more effective and efficient than "patent box" regimes that offer a reduced tax rate on qualified income. A generous R&D tax credit would support innovation and generate positive growth spillovers. The total envelope, currently estimated at about €1¼ billion, could be further expanded.

- To address infrastructure gaps, particularly at the local government level, rebuilding planning capacity and enhancing coordination across levels of government will be critical. About two-thirds of public investment is executed by local governments. However, in the past, local governments prioritized fiscal consolidation at the expense of public investment (see Annex VI). More recently, budget surpluses have alleviated financial constraints in most localities. The ongoing reform of federal fiscal relations and financial support (such as the Municipal Investment Promotion Fund and Digital Infrastructure Fund), as well as technical support by Partnerschaft Deutschland have facilitated the execution of public investment at the municipal level. As a result, public investment growth accelerated in 2018 and the share of total government investment implemented by municipalities also picked up. However, capacity constraints and price pressures in the construction industry have emerged as new obstacles. Addressing these will require rebuilding planning capacity and stronger coordination across various government levels to ensure that larger and longer-term projects are implemented.

Figure 4. Germany: Fiscal Positions at Länder Level



Sources: Destatis

Sources: Destatis

23. Fiscal policy should play its role if downside risks materialize. In case of a more protracted economic downturn, the government should let automatic stabilizers operate fully and, in addition, fully use its fiscal space. In the event of a severe economic downturn, depending on the size and nature of the shock to the economy, invoking the escape clause under both European and national fiscal rules could be appropriate to expand fiscal space, support the German economy, and contribute to a synchronized fiscal expansion.

24. In the face of changes in the international tax environment, Germany should preserve the competitive corporate tax system while not engaging in damaging tax competition. Germany has been a leader in implementing anti-tax avoidance measures. There are, however, adjustments to various provisions—notably regarding controlled foreign corporations—which could be beneficial. Looking ahead, the Franco-German proposal of minimum tax will benefit Germany, with internationally coordinated solutions particularly powerful. However, its modalities need to be developed further and implementation issues need to be resolved, some of which are specific to Germany (see Selected Issues Paper).

Authorities' Views

25. The authorities argued that most of the space under the fiscal rules would be used; in the case of a severe downside scenario further fiscal stimulus would be considered. The authorities highlighted that their fiscal priorities, reflected in the government coalition agreement, are to boost productivity and growth potential through investment in infrastructure, education, and research. They also stressed that additional fiscal space would be limited, as their tax revenue projections for the coming years were much lower than staff's. On public investment, Ministry of Finance officials noted that the improved fiscal position of all Länder and most municipalities in recent years is now bearing fruit as consolidation is giving way to higher investment. They added that the recent amendment to the Basic Law, allowing the federal government to provide financial assistance to Länder in key investment areas, would further boost public investment in education and infrastructure. However, capacity constraints and strong price increases in the construction sector were limiting the speed of the progress. Some Länder governments, however, viewed the national fiscal rule as restricting their investment over the long term. In the event of a severe downturn, the authorities confirmed that they would not be constrained by the fiscal rules and would provide stimulus to the economy depending on the nature of the slowdown.

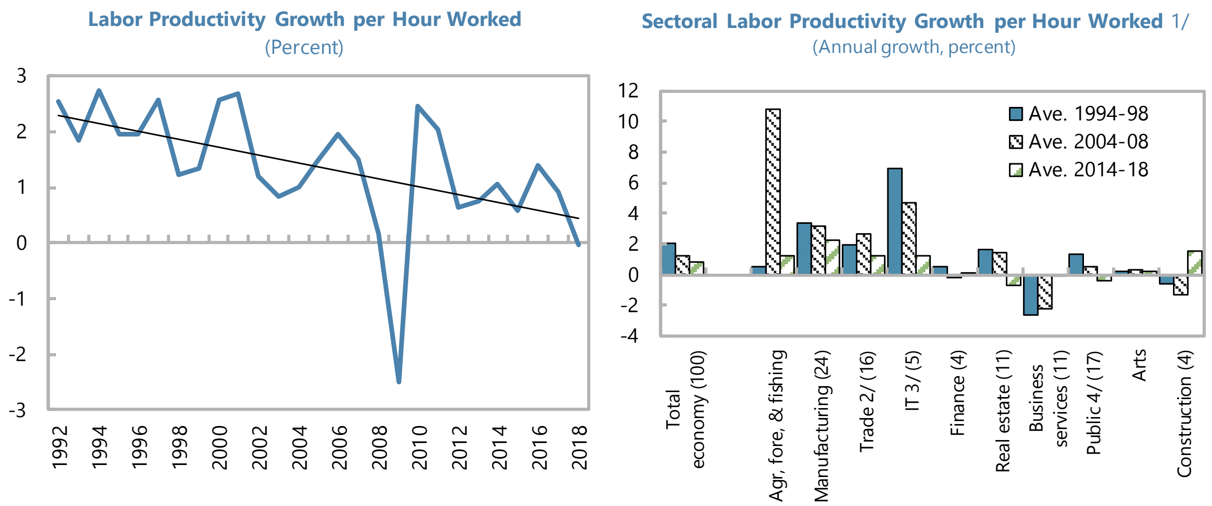
26. The authorities stressed their commitment to preserving Germany's competitive and socially equitable tax system. The government emphasized that several tax relief measures, including a higher basic tax allowance and compensation of bracket creep in 2019/2020 and the reduction in the solidarity surcharge from 2021, will boost disposable incomes particularly for low- and middle-income households. However, further reducing the labor tax wedge would be challenging given the increasing aging-related fiscal costs as well as government measures regarding the social security schemes. On corporate taxation, the authorities stressed that corporate tax reforms should ensure growth-friendly and fair conditions for all businesses, noting that the new R&D tax credit would help in this regard. At the current juncture, there are no plans to raise revenue by reforming property or inheritance taxes. However, work is underway on a revenue-neutral proposal to reform the immovable property tax regime by updating property valuations.

27. The authorities emphasized their commitment to seek collaborative solutions to international tax issues. They lamented harmful international tax competition and emphasized their commitment to improving anti-tax avoidance measures. They are seeking cooperation at the G20, OECD and EU level for the joint German-French minimum tax proposal, including fair and effective taxation of large digital companies.

C. Boosting Productivity Growth and Private Investment

28. As in other advanced countries, Germany's labor productivity growth has been declining over the last two decades (Figure 5, left panel). The decline is broad based, including in the manufacturing sector (Figure 5, right panel). Within the manufacturing sector, productivity growth has been relatively high in the automotive sector, where robot density has also intensified.[6] Productivity growth also tends to be higher among large firms compared to small- to medium-sized firms.

Figure 5. Germany: Labor Productivity Growth

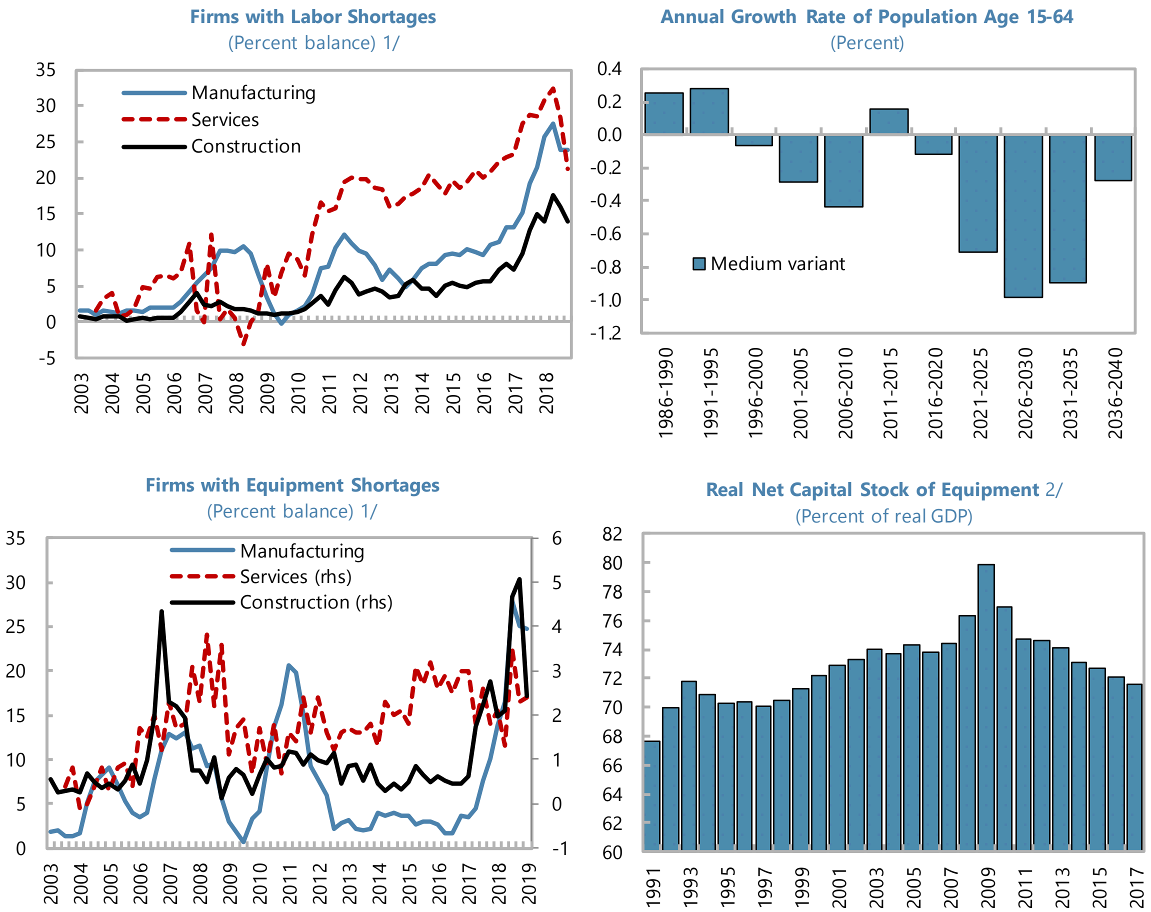


Sources: Destatis, Haver Analytics, OECD, and IMF staff calculations
1/ Numbers in parentheses indicate the shares of individual sectors' GVA in total economy GVA.
2/ Trade, transportation, and hotels.
3/ Information and communications.
4/ Public service, education, and health.

29. Supply-side constraints—both in labor and capital—seem to be increasingly binding. Reported labor shortages are widespread amid a declining working-age population (15–64 years old) (Figure 6, top panels). A new immigration law, which aims to attract skilled labor from outside of the EU, can provide some relief. However, more policy action is needed to prolong working lives and encourage labor force participation. Supply-side constraints are also evident in high capacity utilization rates amid a decline in of the stock of machinery and equipment in percent of GDP (Figure 6, bottom panels). The level of business investment in Germany is lower than that in peers—possibly reflecting concerns about future growth, red tape, and lack of skilled workers (see Annex VII).

[6] "German Robots – The Impact of Industrial Robots on Workers" (Institute for Employment Research, 2017).

Figure 6. Germany: Supply-Side Constraints



Sources: Destatis; European Commission, "Business and Consumer Surveys;" Haver Analytics; United Nations, "World Population Prospects: The 2017 Revision;" and IMF staff calculations.

1/ The difference between the percentages of respondents giving positive and negative replies.

2/ Estimated based on the ratio of nominal net capital stock to nominal GDP in 1991, which is extended with the growth rates of real capital stock of equipment and real GDP.

30. Upgrading the digital infrastructure, pushing ahead with the e-Government project, and reducing uncertainties about energy transition are key to raising productivity and domestic investment while supporting external rebalancing.

- *Upgrade nationwide digital infrastructure.* Germany has so far made little progress in expanding the coverage of high-speed fiber-optic internet at the national level, constraining productivity growth. SMEs remain slow adopters of digital technologies. For example, only 5 percent of SMEs in Germany use big-data analytics, compared to 10 percent in the EU as a whole. To accelerate the upgrade, the government is committed to allocating up to €12 billion to build a nationwide fiber-optic network by 2025. Regarding mobile communication, the ongoing auctioning of 5G licenses (2 and 3.6 GHz) and expected allocation of the 88MHz spectrum in 2025 are expected to improve coverage. Auction proceeds of €6.5 billion will be added to the Digital Infrastructure fund, which was created in 2018. In other areas, the government has

implemented a welcome initiative to provide SMEs with consultancy services to advance their IT security, digital marketing, and digital processes. In August 2018, the government also created the Agency for Innovation in Cybersecurity to develop new technologies to defend Germany's digital infrastructure from cyberattacks.

- *Push ahead with e-Government.* Cumbersome procedures to start a business and high compliance costs are among the key challenges to entrepreneurship. The government should further streamline regulations, while fully implementing the National e-Government Strategy. Once implemented, the e-Government platform will provide public services at the federal and local government levels on one interface, substantially reducing administrative burdens.

- *Reduce uncertainties about energy transition*. Although Germany has made admirable progress in some aspects of its energy transition, uncertainty about the strategy for completing the transition seems to be adversely affecting business sentiment. Under current policies, Germany is unlikely to meet its 2020 target on reducing greenhouse gas output. A carbon tax could be a useful part of a comprehensive strategy, which the government is preparing.[7] Concerning electricity from renewables, Germany is on track to reach its 2020 renewable energy target. Yet, the rising share of renewables in electricity production in the absence of sufficient internal transmission capacity is creating challenges for network management. To overcome this issue, the Grid Expansion Acceleration Act was adopted in April 2019, simplifying the procedure for grid expansion projects. The government has also introduced competitive auctions for renewable energy aiming to help stabilize costs.

31. The government should also continue its support to promote innovation, enhance competition, and expand the quality and quantity of labor supply.

- *Promote innovation.* With a range of government initiatives, venture capital investment has been rising over the last few years, returning to the pre-GFC level. Investment in start-ups by non-venture capital companies, or investment in the form of venture debt has also been on a rise. However, the relatively small size of venture capital funds continues to hinder the capital-intensive scale-up stage. The government should continue its efforts to encourage scale-up of funds, including through promoting fund-of-funds to attract institutional investors and encouraging cross-border investment in the context of the EU-wide Capital Markets Union. Introduction of generous incentives for R&D would also help entrepreneurship and innovation.[8]

- *Increase competition in business services and regulated professions*. Liberalizing these sectors can reduce the cost of doing business using these business services as inputs. In 2019, the government plans to undertake a review of regulations in professional services, with the goal of reforming the Professional Law in this area. Other professions, such as accountants, architects,

[7] See "Fiscal Policies for Paris Climate Strategies – From Principle to Practice", IMF Policy Paper: Washington DC.

[8] The coalition agreement envisages at least 3.5 percent of GDP funding on R&D over 2019–22 but details are yet to be decided.

and engineers are also in need of reform. Competition in the railway sector is increasing in freight and regional passenger trains, but the market share of new entrants for long distance passenger train services remains low due to high track-access charges. To promote further competition, the government plans to evaluate the Railway Regulation Act.

- *Expand quality and quantity of labor supply.* Increasing investment in education and life-long learning can help ensure that Germany's labor force is equipped with the necessary skills in the face of rapid technological change, as well as extend work lives. Addressing teacher shortages—in vocational education and training, and primary education—is therefore urgent. At 71 percent, Germany's old-age employment rate is relatively high. Yet, pension reforms to explicitly link the statutory retirement age with life expectancy can further increase old-age labor force participation by extending working years as life expectancy increases. According to the EC, adjusting the pensionable age by two-thirds of the increase in life expectancy would maintain the current ratio of 1:2 regarding the average time spent in retirement versus time spent working, without reducing pension levels.[9] Refugee integration is gaining momentum, with the employment rate of refugees from the top eight countries reaching about 33 percent in November 2018, up by nearly 8 ppt from a year earlier.[10] Continuing support to refugees to improve German language proficiency and gain experience in German labor market norms, as well as making selected qualifications transferrable would further accelerate integration.

Authorities' Views

32. The authorities emphasized progress achieved in implementing their digital agenda and in the transition to renewable energy.

- Regarding the digital infrastructure, the government has set out a clear strategy and allocated financial resources to support a nationwide fiber-based gigabit network. Investment-friendly regulation, in accordance with the European Electronic Communications Code, to incentivize private investments is to be implemented by end-2020. The authorities highlighted severe capacity constraints in the construction sector as a key challenge to implementation. The government is preparing a master plan to expand mobile coverage and deploy 5G.

- Important government initiatives have been taken to accelerate energy transition. Among others, the government published the Electricity Grid Action Plan in August 2018, laying out strategy to expand the power grid by optimizing the capacity utilization of the existing grids while expanding the grids. The government has also introduced measures to promote green tech and reduce the cost of renewable energy. The forthcoming National Energy and Climate Plan for 2021–30 will include concrete measures to attain the 2030 target on reducing

[9] The Pension Commission is expected to provide a range of recommendations to enhance the sustainability of the public pensions system while addressing pension adequacy by March 2020.

[10] The eight countries comprise Afghanistan, Eritrea, Iraq, Iran, Nigeria, Pakistan, Somalia, and Syria. The employment rate reflects the proportion of a) workers in employment covered by social protection as well as those in marginal employment, divided by b) number of people aged 15-64.

greenhouse gas output, while steps to phase out of coal-fired power generation by 2038 are under preparation. A carbon tax is under discussion in the government.

33. The authorities also highlighted ongoing efforts to support innovation and venture capital. Government initiatives are guided by the "High-Tech Strategy 2025," which lists six priority areas (digital economy, sustainable economy and energy, innovative work environment, healthy living, intelligent mobility, and civil security). To support innovation, especially of SMEs, the government is drafting a bill on R&D tax credits. With a number of government initiatives, inter alia jointly with the European Investment Fund and KfW Capital, venture capital investment has been rising to pre-GFC levels, and the size of funds has also been growing. To further support venture capital, the government plans to continue its co-investment strategy to crowd in private investment, especially by institutional investors.

D. Shoring up Financial-Sector Profitability while Preventing Buildup of Financial Risks

34. The continued "low-for-long" environment is exacerbating the profitability challenges of German banks and life insurance companies.

- Low profitability continues to weigh on the banking sector, eroding banks' ability to generate capital organically and putting them at risk in the event of adverse earnings shocks. Large German banks continue to underperform European peers in market valuation, reflecting high operating costs, outdated IT systems, provisions for compliance violations, and in some cases legacy costs from exposure to the shipping industry. Leverage remains very high, particularly at the German global systemically important bank (G-SIB) and some Landesbanken. For small and medium-sized banks, the low interest rate environment has continued to weigh on profitability as they lag peers in developing alternative sources of income. The full adoption of Basel III—especially the introduction of an output floor for internal risk models—is expected to substantially increase German banks' minimum capital requirement.

- As of mid-2018, most German life insures' solvency ratios were well above the 100 percent threshold set by supervisors, although around two-thirds of them relied on transitional measures and the dispersion was large. The prolonged low interest rate environment is forcing life insurers to shift away from guaranteed-return products, yet such products are expected to remain dominant in the next decade. At the same time, diversification of insurers' investment portfolios is proceeding only slowly, suggesting that the low interest rate environment will continue to weigh on profitability for some time.

35. Supervisors should continue monitoring interest rate risk and press for faster progress in implementing restructuring plans in both banking and insurance sectors. To boost profitability, more decisive cost cuts—for example, by reducing branches and promoting

digitization—are necessary for both banks and insurers. For large banks, restructuring plans are in place but need faster implementation. Savings and cooperative banks should continue to develop fee-based income and pursue further consolidation. Life insurers should continue to reduce the share of guaranteed products while diversifying investment, for example in infrastructure projects or foreign assets.

36. Real estate prices continue to rise rapidly while aggregate credit growth remains in check.

- House prices in major cities have continued to rise rapidly, moving further into overvaluation territory. Staff analysis suggests that house prices were overvalued in Germany's main cities, from 10–15 percent in Stuttgart and Dusseldorf to 25–30 percent in Hannover, Frankfurt and Hamburg and more than 40 percent in Munich in 2017.[11] The government has stepped up efforts to increase housing supply, including by allocating €2 billion to build 100,000 new social housing units during 2020–21, selling federally-owned properties to local authorities at reduced prices to build affordable housing, and providing a special depreciation allowance for new rental housing construction. The impact on house prices, however, is expected to be limited.

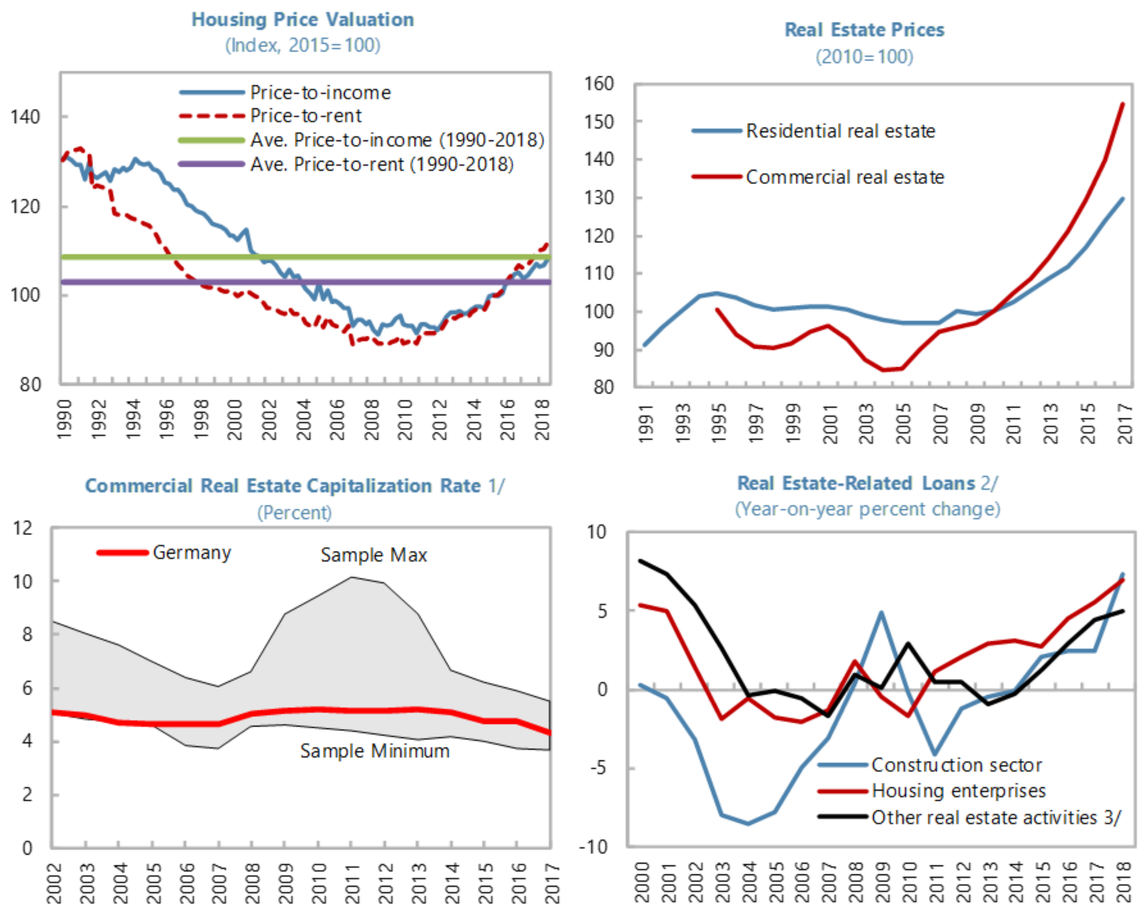
- Commercial real estate (CRE) prices have risen even faster than house prices (Figure 7, top right panel) with a moderate decline in the yield on CRE investment (Figure 7, bottom left panel). Price increases have been particularly large in the office sub-segment and banks' exposure to the sector has risen over the last three years, despite the sizable share of equity-based and foreign-financed investment.

- These rapid price increases have not yet been accompanied by strong increases in credit growth at the aggregate level. Credit growth accelerated to a pace slightly exceeding nominal GDP growth, but the credit-to-GDP ratio remains low from a historical perspective and compared with other advanced economies. Bank lending to CRE-related activities also appears relatively small compared to the EU average, yet the impact of a sharp decline in CRE prices on bank balance sheets could still be important as defaults on CRE tend to be higher than those on residential real estate.[12]

[11] Annex IX of the staff report for the 2018 Article IV Consultation for Germany.

[12] The European Systemic Risk Board's "Report on vulnerabilities in the EU commercial real estate sector" (November 2018) indicates that German banks' lending for real estate activities and construction is about 6 percent of GDP in Q4 2017, which is around half of the EU average.

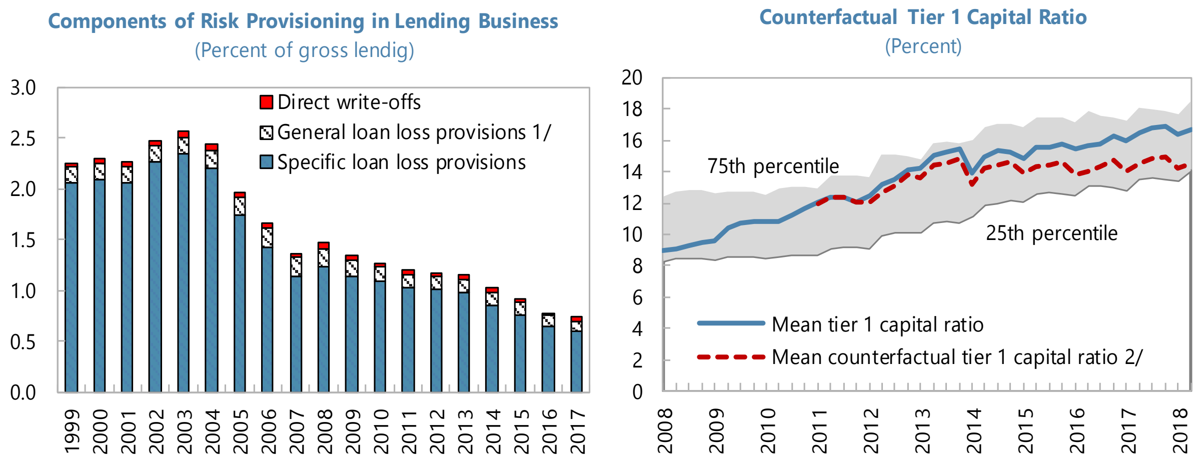
Figure 7. Germany: Residential and Commercial Real Estate Indicators



Sources: BulwienGesa AG, Deutsche Bundesbank, MSCI, and IMF staff calculations.
1/ Defined as net operating income to property asset value. Sample includes Australia, Canada, Denmark, Finland, France, Germany, Ireland, Japan, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, the UK, and the US.
2/ Based on the classification proposed by the ESRB. The growth rate for 2009 is distorted due to the reclassification of property developers' loans from housing and real estate activities to the construction sector.
3/Purchase, sale and management of commercial real estate, facility management enterprises.

37. Macro-financial vulnerabilities are mounting nonetheless. Low default rates have led to a decline in banks' loan loss provisioning (Figure 8, left panel). According to the Bundesbank's analysis, German banks' average tier 1 capital ratio would be lower by around 2 percentage points if they used historical level of risk provisioning (Figure 8, right panel). At the same time, banks that rely on internal models to calculate regulatory capital have reduced risk weights and there is evidence of "search for yield" behavior. These trends, alongside rising real estate prices and weak bank profitability, point to a rise in macro-financial vulnerabilities.

Figure 8. German Banks' Risk Provisioning and Tier 1 Capital Ratio



Source: Duetsche Bundesbank
1/ Including generalized specific loan loss provisions.
2/ Assuming credit risk provisioning for each institution remains at the average for 1999-2010.

38. Activation of the counter-cyclical capital buffer (CCyB) is welcome. Given the build-up of macro-financial vulnerabilities, a tightening of macroprudential policies is appropriate to enhance resilience in the banking system. In May, the Financial Stability Committee recommended to raise the CCyB by 0.25 percent and banks have 12 months from the beginning of Q3 2019 to meet the new requirement. The relatively small increase in the CCyB should have limited impact on credit supply which is only now recovering after nearly two decades of deleveraging.

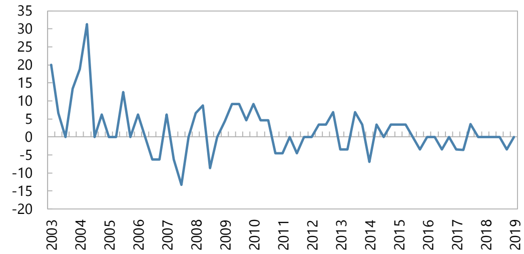
39. Additional macroprudential action is needed to guard against imbalances in the real estate sector.

- *Urgently address data gaps.* The Bank Lending Survey suggests that LTV ratios for new mortgage loans have been relatively stable on an aggregate basis (Figure 9), yet lack of granular loan information hinders a full assessment of potential financial stability risks in specific market segments. It is essential that these data gaps be addressed.

- *Consider prompt activation of the existing borrower-based measures.* Absent granular data alongside the prolonged rise in house prices, the authorities should consider implementing an LTV cap and amortization requirements on mortgages.

- *Expand the macroprudential toolkit.* Germany currently lacks income-based instruments for residential and CRE lending or other borrower-based instruments for CRE lending.[13] The authorities should consider introducing income-based instruments, such as a debt-to-income or debt-service-to-income cap. In addition, appropriate instruments for CRE should also be considered, taking into account diverse financing structures. As the government is currently reviewing the effectiveness of existing instruments, this is a right time to consider expanding the toolkit.

Figure 9. Germany: Change in LTV for New Mortgage Loans
(Percent balance) 1/



Source: Bundesbank.
1/ The difference between the sum of the percentage of responses for tightened considerably and tightened somewhat minus the sum of the percentage of responses for eased considerably and eased somewhat.

40. In line with the 2016 FSAP recommendations, the authorities are strengthening AML/CFT supervision, including for banks with cross-border operations. BaFin (the AML/CFT supervisor for all German financial institutions) has appointed a "Special Representatives" to sit on-site in one of the major banks to carry out audit functions. The representative reports directly to BaFin and may be granted additional powers to take remedial actions within the bank, as deemed appropriate. Within BaFin, specialized units have been set up to focus on the supervision of high-risks banks (i.e. major banks with cross-border operations) which are subject to continuous AML/CFT monitoring. Regarding cross-border operations, BaFin assesses, together with the external auditors, implementation of group-wide policies by foreign branches and subsidiaries. Progress in this area should continue, taking into account recently identified AML/CFT weaknesses across the Europe, including by considering further integration of AML/CFT supervision at the European Union level.

Authorities' Views

41. The authorities shared the view that risks to financial stability are building up, yet did not see acute systemic risks. The prolonged favorable economic conditions and low-for-long interest rate environment have increased the risk of underestimating credit risk, which is one of the reasons why the German Financial Stability Committee has recently recommended the activation of the CCyB from the third quarter of 2019. Based on the indicators and information available at this point in time, the authorities saw no substantial increase in risks to financial stability stemming from the flow of new housing loans which would require an activation of sector-specific demand-side macroprudential policy tools, such as the LTV cap and amortization requirement. The authorities are to review their macroprudential toolkit, and the need to introduce household income-based instruments would be considered in this context. Appropriate borrower-based instruments for CRE loans would need to reflect diverse CRE financing structures. The authorities agreed on the urgency of closing data gaps. However, the currently ongoing ad hoc survey on real estate lending and

[13] The existing instruments—i.e., LTV cap and amortization requirement—can be applied to commercial residential properties, but not to other forms of commercial properties.

corporate credit underwriting standards was expected to provide some valuable information on possible financial risks in specific segments of the economy.

42. The authorities broadly shared the view that banks and life insurance companies need to accelerate their restructuring to boost profitability. Given the limited scope for higher revenue under the low interest rate environment and intense competition, the authorities saw room for restructuring and consolidation within the banking sector. At the same time, smaller banks needed to consider increasing their fee and commission income. The German supervisory authorities shared the view that the low interest rate environment presents challenges to the life insurance sector but took comfort in the long transitional period (through 2031) for the full adoption of Solvency II. They were of the view that the needed reduction in guaranteed products was proceeding slowly due to the large stock and long maturity of such products. They also highlighted the importance of diversifying insurers' investment portfolios—for example, in infrastructure projects. The authorities indicated that efforts are underway to transpose the 5th EU Money Laundering Directive into national law and prepare for the AML/CFT comprehensive assessment of Germany by the Financial Action Task Force (FATF) in 2020, which may entail additional revisions to the AML/CFT legal framework. The authorities welcome the advancement of AML/CFT supervisory colleges at the EU level but see challenges in setting up a more centralized European supervisory framework for AML/CFT.

E. Tackling the Supply-Side of Corruption

43. Germany has taken strong anti-bribery enforcement actions. The 2018 report of the OECD Working Group on Bribery in International Business Transactions (OECD WGB)[14] recognized Germany as one of the highest enforcers of the OECD's Anti-Bribery Convention, having sanctioned 328 individuals and 18 companies in a total of 67 foreign bribery cases since 1999. Authorities have been able to detect instances of foreign bribery through a range of sources, and in particular through information provided by tax authorities. Investigative authorities have applied a broad range of investigative tools and techniques, including mutual legal assistance, coordinated investigations with tax authorities and joint investigative teams in multijurisdictional cases. In addition, the authorities have taken a pragmatic approach to enforcement actions by using alternative offences and a range of proceedings, including conditional resolutions with natural persons. In addition, the OECD WGB commended Germany for the creation of a Federal Debarment Register with mandatory debarment from public procurement.

44. The OECD WGB encouraged the authorities to continue with these efforts and recommended strengthening enforcement actions against legal persons involved in foreign bribery cases. The OECD WGB expressed concerns about insufficient and inconsistent enforcement actions taken against legal persons, and encouraged efforts to take more effective, proportionate and dissuasive sanctions against legal persons, including by going forward with the 2018 Coalition

[14] The information contained herein does not prejudice the Working Group's monitoring of the implementation of the OECD Anti-Bribery Convention.

Agreement Commitment to tie punitive fines more closely to the turnover of a legal person. It also recommended that the authorities review their overall approach in holding companies liable, including the principle of prosecutorial discretion of legal persons, the introduction of clear guidance for self-reporting by companies and the possibility to introduce a system of conditional resolution for legal persons. The OECD WGB also recognized the need to improve compilation of statistics at either the Federal level or across regions to better monitor enforcement. Finally, the OECD WGB emphasized the need to clarify the criteria for using non-trial resolution tools and, in line with data protection rules, make their main elements public. A more comprehensive framework for whistleblower protection should also be developed. Fund staff agrees with these recommendations and urges the authorities to move forward in implementing them. The text above was prepared based on a summary of the OECD WGB's Phase 4 Report of Germany in June 2018.[15]

Authorities' Views

45. The authorities welcomed the IMF's initiative to address supply side issues of corruption. They noted that they had volunteered to be part of this assessment. Germany will be presenting its Phase 4 two-year written follow-up report on progress in implementing the WGB's recommendations at the WGB Plenary in June 2020. The authorities will continue to strengthen their enforcement actions in relation to foreign bribery cases.

STAFF APPRAISAL

46. Germany's economic performance has been strong over the last decade, but its benefits have been unevenly shared. The sharp decline in unemployment has been an important success. However, as wage growth lagged behind, lower incomes stagnated, and a rising share of national income took the form of savings inside the corporate sector. These trends, together with fiscal consolidation after 2011, led to a sharp rise in the current account surplus.

47. More recently, Germany's large imbalances started to slowly unwind, but further strong wage growth is key for the economy to continue to rebalance. With the tight labor market, wage growth picked up, and the labor share in national income began to recover. The introduction of the national minimum wage in 2015 also bolstered wages for unskilled workers. The current account surplus has fallen below its 2015 peak but remains well above the level consistent with fundamentals in the medium-term. Faster wage growth, which would be consistent with the very tight labor market, would help accelerate real exchange rate appreciation and speed up external rebalancing, while also ensuring that the benefits of growth are widely shared.

48. The short-term outlook is for a gradual return of growth to trend, but risks are on the downside. Real GDP growth slowed sharply in the second half of 2018, reflecting a mixture of weak external demand and special circumstances, but the underlying momentum of domestic demand is

[15] Germany will be presenting its Phase 4 two-year written follow-up report on progress implementing the WGB's recommendation at the WGB Plenary in June 2020.

still robust, driven by low unemployment, solid wage increases and investment, and supportive fiscal policy. As a result, growth is expected to return to trend by the end of 2019. However, risks are significant, including further escalation of trade tensions, a more pronounced China slowdown, a disorderly Brexit, and renewed stress in the euro area.

49. Unfavorable demographics, weak productivity growth, and the challenges of the energy transition will continue to weigh on long-term growth potential. As in other advanced countries, Germany's labor productivity growth has been declining over the last two decades. On the energy front, Germany is on track to meet its renewable energy target. At the same time, there is still uncertainty about how the ambitious goals to cut greenhouse gas emissions will be met.

50. Remaining space under the fiscal rules should be used to strengthen the economy's growth potential. Including all of this year's budget measures as well as additional measures in the coalition agreement, Germany's fiscal position is expected to remain well within the limits imposed by the national and European fiscal rules, while the public debt ratio will continue to decline rapidly. These budgetary resources should be deployed from 2020 onwards to strengthen the economy by promoting innovation, expanding labor supply to counter population aging, and continuing to fill infrastructure gaps.

51. There is scope to reform the tax system to make it more growth friendly and inclusive, while incentivizing targeted business investment. Additional tax relief for low-income households would, alongside continued wage growth, boost their disposable income and consumption, supporting rebalancing. In addition, reducing the high effective marginal tax rate for secondary earners could help promote full-time female labor force participation. Further expanding childcare and after-school programs would also be important in this regard. Budgetary room for these plans, if needed, could be created by reforming property and inheritance taxes. The government's new proposal of tax credits for R&D is welcome, but the total envelope could be usefully expanded. In the face of changes in the global international tax environment, Germany should maintain its position of leadership in implementing anti-tax avoidance measures and preserve the competitive corporate tax system while not engaging in damaging tax competition.

52. Continuing to address infrastructure gaps, particularly at the local government level, will require rebuilding planning capacity and better coordination across levels of government. In the past, local governments (Länder and municipalities) prioritized fiscal consolidation at the expense of investment. More recently, budget surpluses have alleviated financial constraints in most localities, but capacity constraints and price pressures in the construction industry have emerged as new obstacles. Stronger coordination across various government levels would help ensure that larger and longer-term projects get under way. Local governments should work to rebuild planning capacity.

53. Further policy action is needed to address medium-term challenges and lift long-term growth potential. Initiatives to upgrade the digital infrastructure should be strengthened, and the "National E-Government Strategy" should be implemented rapidly. There is scope for further scaling

up venture capital by attracting institutional investors and encouraging cross-border investment in the context of the EU-wide Capital Markets Union. A clearer strategy for curbing greenhouse gas emissions would help reduce uncertainty about the energy transition. The introduction of a carbon tax could be part of the solution.

54. It is imperative that banks and life insurance companies accelerate their restructuring to boost profitability and resilience. The banking sector would benefit from further consolidation, cost-cutting, and continued development of fee-based income. In the life insurance sector, low interest rates challenge the sector's resilience, and the replacement of conventional guaranteed return products with other types of products needs to proceed faster. In this context, supervisors should continue monitoring interest rate risk and progress in implementing restructuring plans in both banking and insurance sectors.

55. As macro-financial vulnerabilities are building up, the recent activation of the counter-cyclical capital buffer is welcome and additional action should be considered. Additional actions to enhance resilience in the banking system and guard against potential imbalances in the real estate market could include:

- Urgently addressing data gaps to enable a fuller assessment of possible financial stability risks. The ongoing one-off bank survey on real estate lending and corporate credit underwriting standards is a step in the right direction, but regular collection of granular data is needed for effective macroprudential policy-making.

- Early implementation of the existing borrower-based measures (cap on the loan-to-value ratio and amortization requirements) on residential mortgage lending to prevent the buildup of vulnerabilities in the residential real estate sector.

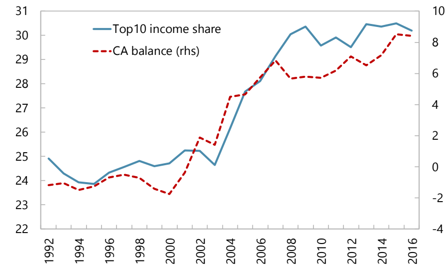
- Expanding the toolkit by introducing income-based instruments (e.g., cap on debt-service-to-income, cap on debt-to-income) residential loans and appropriate borrower-based measures for CRE loans.

56. It is recommended that the next Article IV consultation take place on the regular 12-month cycle.

Box 1. Corporate Saving, Top Income and Wealth Inequality, and External Imbalances[1]

The surging German CA surplus over the last two decades was accompanied by a sharp rise in top income inequality. The correlation coefficient between the CA surplus and the share of national income accruing to the top 10 percent of the income distribution is 0.95 over 1992–2016. As the CA increased by 9 percent of GDP, the top income share climbed by 6 percentage points, with the sharpest increase in both series occurring in the early-mid 2000. Since 2009, the top income share appears to have flattened, while corporate savings rose rapidly, further boosting the current account surplus. These retained earnings and other types of capital income, however, are not properly captured as income of ultimate shareholders and thus the measured top income share since 2009. If business ownership is highly concentrated at the top of the income distribution, then appropriate attribution of corporate savings to their ultimate shareholders would lead to a continued rise in the top income share after 2009, which does not appear in the data.

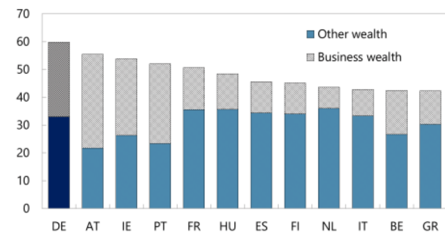
CA Balance and Top Income Inequality
(Percent)



Sources: World Inequality Database and Haver Analytics.

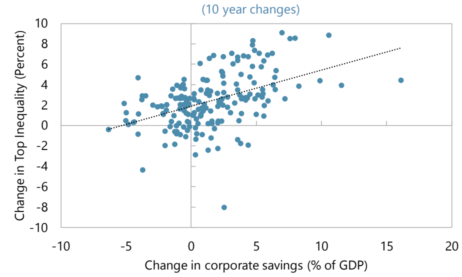
Rising corporate profits—increasingly saved in firms owned by the wealthiest households— therefore supported the rise in top income inequality. Business ownership is indeed highly concentrated among the wealthiest households in Germany. The 10 percent wealthiest households own 60 percent of the aggregate net wealth in the economy – the highest level in the euro area, and most of the wealth at the top of the distribution is business wealth. Thus, the increase in corporate profits and retained earnings in recent years in Germany has likely disproportionately boosted incomes and net worth of the richest households. Indeed, as capital income is unevenly distributed in every country, we find a strong relationship between rising NFC saving/profits and rising top income inequality over the medium-long term across a panel of advanced economies over the last two decades. This relationship is particularly strong in countries with high wealth inequality, such as Germany. Indeed, the rise in corporate saving, coupled with the high wealth inequality, can explain about half of the rise in top income inequality over the period 2000–2015 in Germany.

Top 10 Wealth Share - Decomposition
(Percent)



Sources: Household Finance and COnsumption Survey (HFCS) 2017, Bloomberg,Federal Reserve Bank of St. Louis.

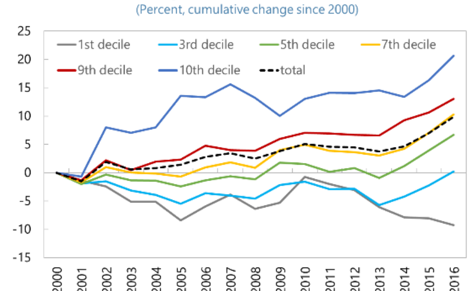
Correlation Between Corporate Saving and Top Income Inequality
(10 year changes)



Sources: World Inequality Database, OECD National Accounts Statistics.

As wealthier households tend to have a higher propensity to save, widening income inequality boosted aggregate saving and depressed aggregate consumption, resulting in a rising current account surplus. Survey data show that the lower/median income households in Germany tend to have a propensity to consume close to one. The persistent decline/stagnation of lower incomes and rising top incomes therefore contributed to the compression in the aggregate consumption to GDP ratio, with the mirror image being a rise in the aggregate saving rate and current account surplus (see text chart in paragraph 16). Finally, persistent, concentrated increases in private saving among top income households exacerbates wealth inequality over time. The interaction between wealth inequality and corporate saving therefore goes both ways and is mutually reinforcing.

Real Disposable Household Income
(Percent, cumulative change since 2000)



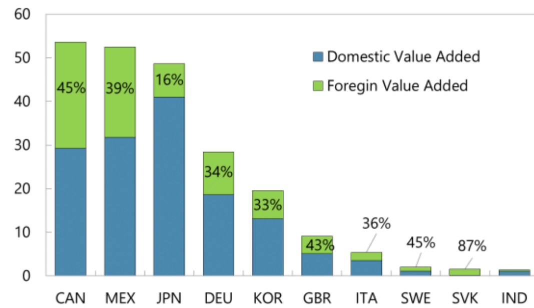
Sources: DIW SOEP.

[1] For more details, see Selected Issues Paper "Wealth inequality and private savings in Germany".

Box 2. The Impact of Potential US Auto Tariffs on Germany

Germany was one of the major car and car parts exporters to the United States in 2017, along with Canada, Mexico, and Japan. Five European countries, including Germany, the UK, Italy, Sweden, and the Slovak Republic, were among the top 10 exporters, which together accounted for 99 percent of the car exports to the US. These export values, however, embodied the value-added created not only by the exporting countries but also by other countries in their supply chains. About ⅔ of the value of German car exports is domestically generated while ⅓ of the value can be attributable to other countries in its supply chain.

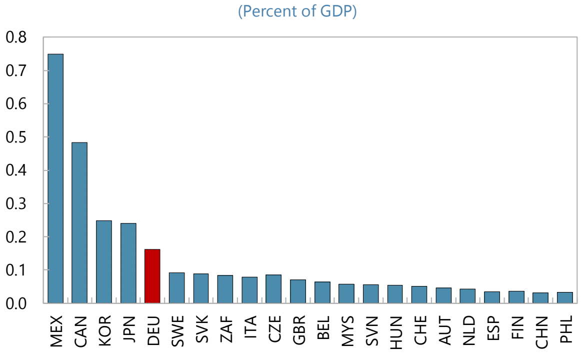
Top-10 Car Exporters to United States (2017), Breakdown by Source of Value Added
(Billions of US Dollars)



Source: EORA database, UNComtrade, and IMF staff calculations.

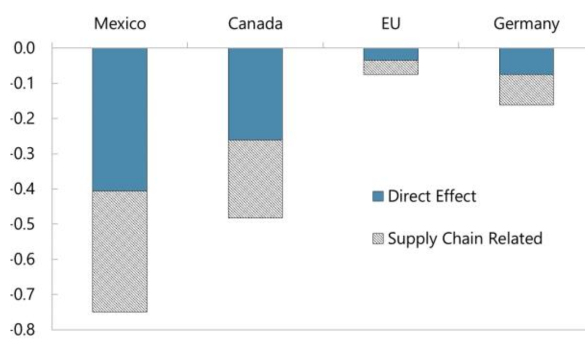
The estimated trade-channel impact on Germany of a 25 percent US tariff on autos and auto parts is around 0.15 percent of GDP when GVCs are fully considered.[1] Network analysis that aims to estimate the trade-channel impact of such a trade shock through GVC linkages suggests that the imposition of US tariffs on autos and auto parts would affect a broader group of countries than gross export data indicates.[2] The analysis finds that, within Europe, Germany, Sweden, and Slovakia would be most adversely affected by the US tariff shock (figure below left panel). For Germany, half of the impact is due to the direct effect of lower car exports to the US and half is due to lower exports of intermediate goods used in car production in third countries. The latter reflects Germany's strong GVC linkages (figure below right panel).[3] Output losses can be significantly larger for all countries once confidence effects and financial channels are taken into account (see October 2018 WEO).

Estimated Trade-Channel Impact of Tariffs on U.S. Car Imports
(Percent of GDP)



Sources: EORA database, UNComtrade, and IMF staff calculations.

Impact of Tariffs on US Car Imports
(Percent of GDP)



Sources: EORA database, UNComtrade, and IMF staff calculations.

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[1] The impact does not take into account confidence effects, retaliation, or trade diversion.

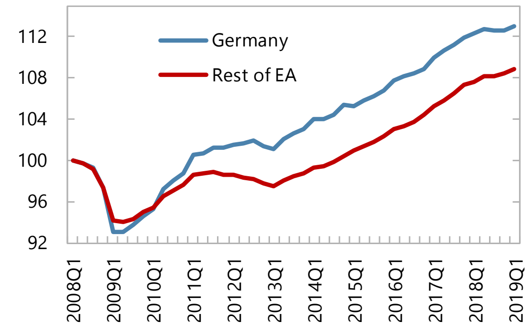
[2] GVC data are from the Eora global supply chain database,

[3] See IMF (2019) "Trade Tensions, Global Value Chains and Spillovers: Insights for Europe", Departmental Paper.

Figure 10. Germany: Growth Developments

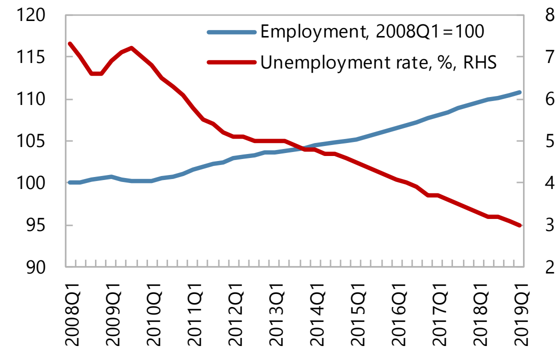
Growth softened in the second half of 2018...

Selected Economies: Real GDP
(2008Q1=100)



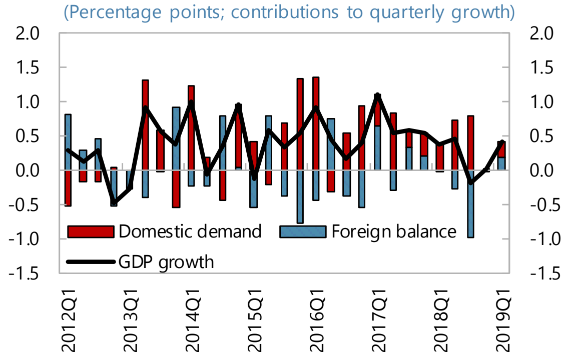
...yet the labor market has continued to strengthened.

Employment and Unemployment Rate 1/



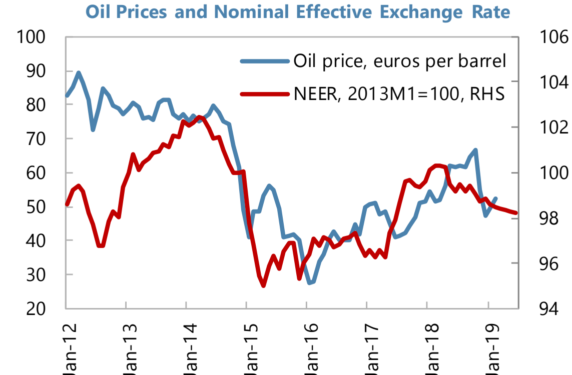
Foreign demand contributed the most to the growth slowdown in 2018H2.

Demand Components of GDP Growth
(Percentage points; contributions to quarterly growth)



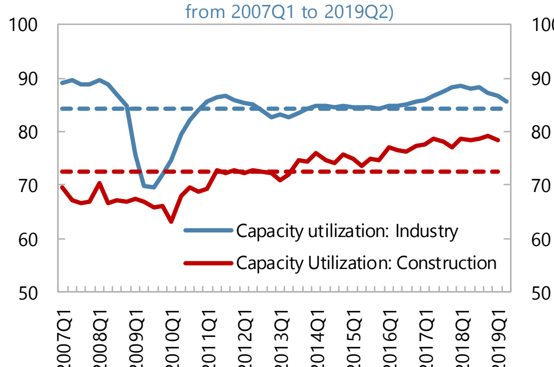
Following a 63 percent increase since mid-2017, oil price declined in Q4 2018, while NEER has been depreciating since early 2018.

Oil Prices and Nominal Effective Exchange Rate



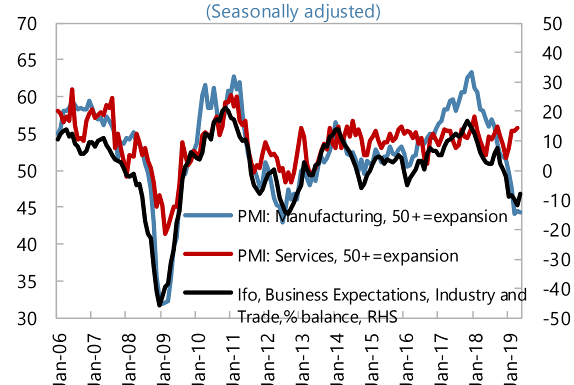
Capacity utilization rates are peaking out, although remain above historical averages...

Indicators of Capacity Utilization
(Percentage points; dotted lines denote averages from 2007Q1 to 2019Q2)



... while key activity indicators have retreated from recent highs.

Business Survey Results
(Seasonally adjusted)

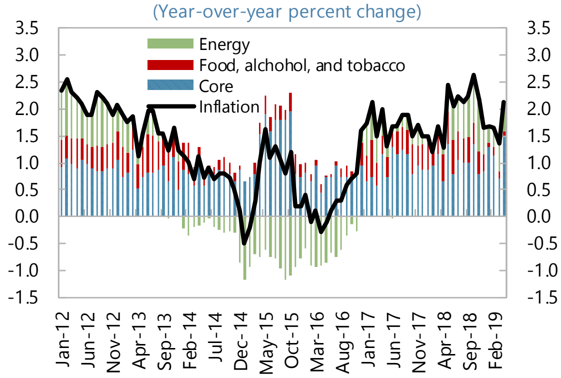


Sources: Destatis, Haver Analytics, IFO Institute, INS, IMF *World Economic Outlook*, Markit, and IMF staff calculations.
1/National Accounts Concepts.

Figure 11. Germany: Prices and Labor Market

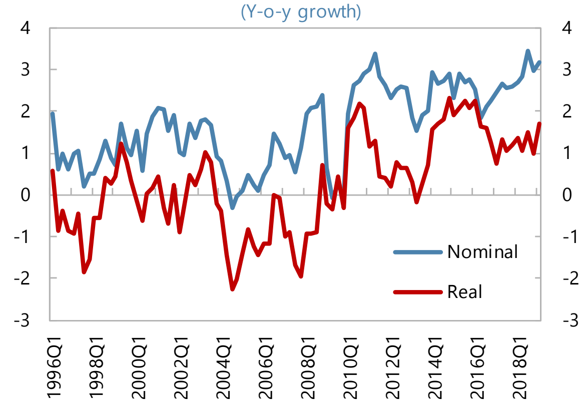
Inflation temporary ebbed due to a lower contribution of oil and food prices.

Contributions to Headline Inflation
(Year-over-year percent change)



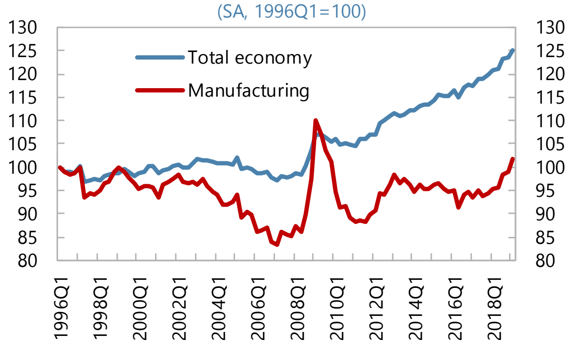
Nominal wage growth is picking up and real wage is growing above productivity...

Compensation Per Employee
(Y-o-y growth)



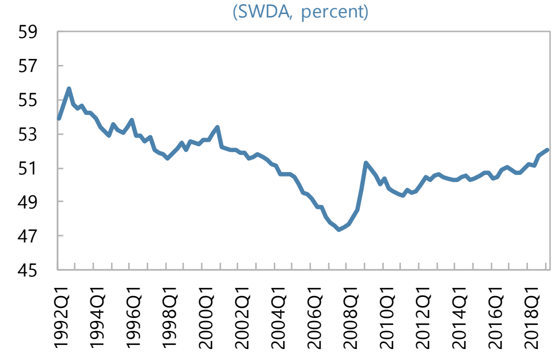
...leading to a further increase in the unit labor costs...

Unit Labor Costs
(SA, 1996Q1=100)



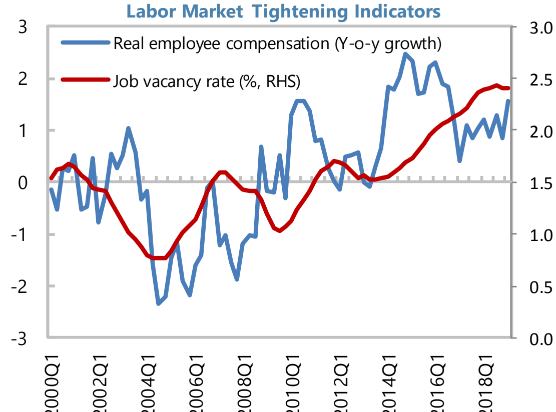
... and a gradual rise in the the labor share.

Labor Share in GDP
(SWDA, percent)



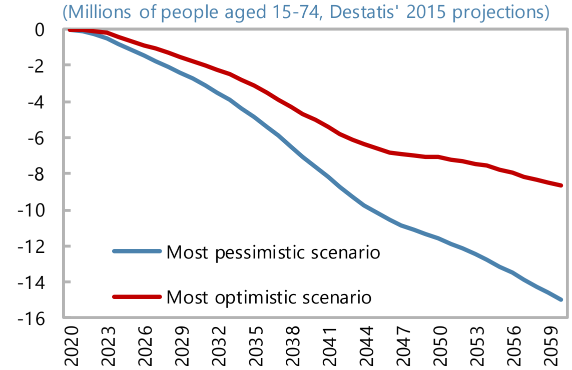
Labor market tightness should continue to boost wage pressures.

Labor Market Tightening Indicators



The working age population would drop quickly, if net immigration flows subside.

Working Age Population Change from 2020
(Millions of people aged 15-74, Destatis' 2015 projections)

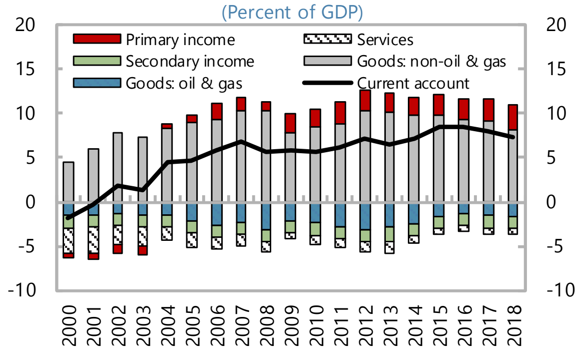


Sources: Bundesbank, Federal Statistical Office, Federal Statistical Office's 13th Coordinated Population Projection, Eurostat, Haver Analytics, and IMF staff calculations.

Figure 12. Germany: Balance of Payments

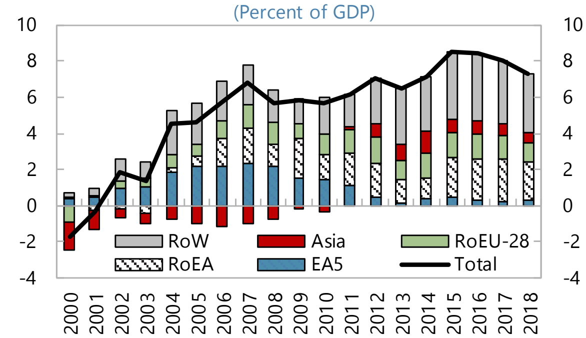
The current account (CA) continued to edge down in 2018 to 7.3% of GDP.

Current Account Balance Breakdown
(Percent of GDP)



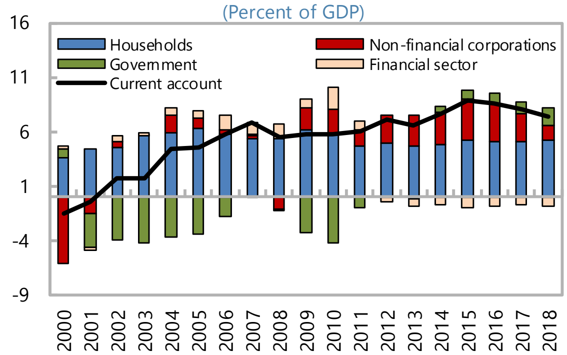
The rebalancing was broad-based.

Current Account Balance by Region
(Percent of GDP)



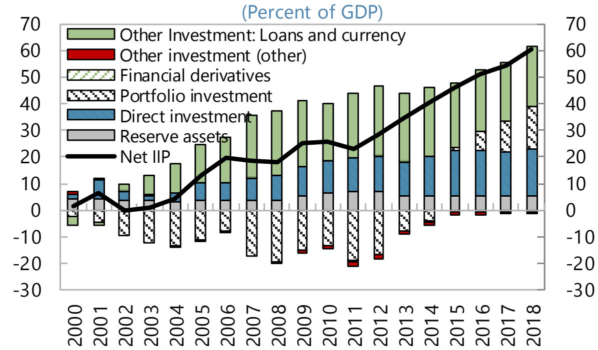
NFCs' savings declined in part due to higher labor cost, while the government and households increased savings.

Current Account and Sectoral Saving-Investment Balances
(Percent of GDP)



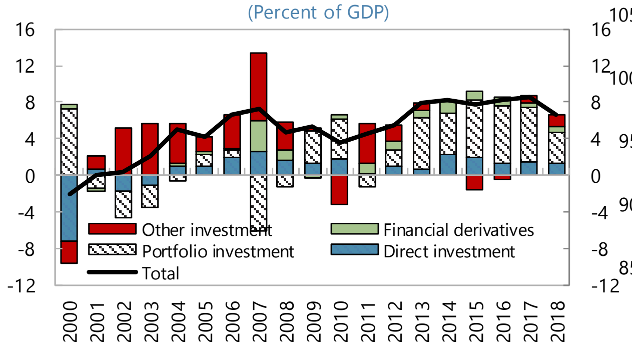
The Net International Investment Position reached almost 61 percent of GDP by end-2018.

Net International Investment Position by Instrument
(Percent of GDP)



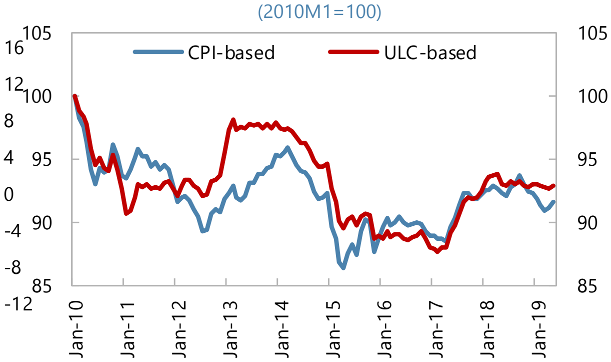
Decline in CA surplus mirrored a reduction in portfolio investment, while other direct investment edged up.

Financial Account
(Percent of GDP)



Following a moderate appreciation in 2017, the REER broadly remained unchanged in 2018.

REER 1/
(2010M1=100)

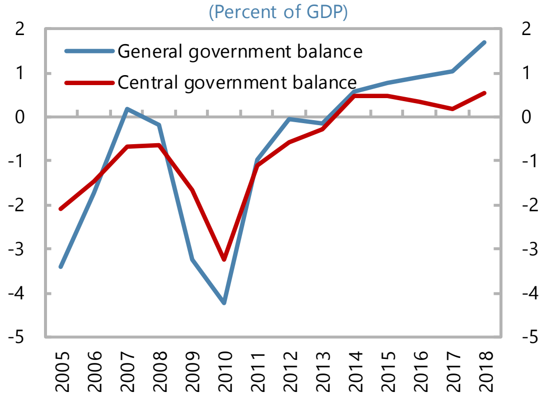


Sources: Bundesbank, DOTS, GDS, Haver Analytics, IMF *World Economic Outlook*, and IMF staff calculations.
1/ The ULC-based REER is measured using ULC statistics for the manufacturing sector in Germany and 37 trading partners, using the OECD System of Unit Labor Cost Indicators.
Note: EA5= Euro area economies (Greece, Ireland, Italy, Portugal, Spain) with high borrowing spreads during the 2010-11 sovereign debt crisis.

Figure 13. Germany: Fiscal Developments and Outlook

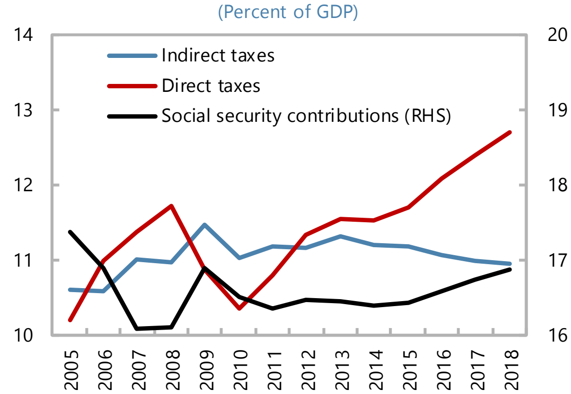
In 2018, the general government surplus reached the highest since reunification…

General and Central Government Balances
(Percent of GDP)



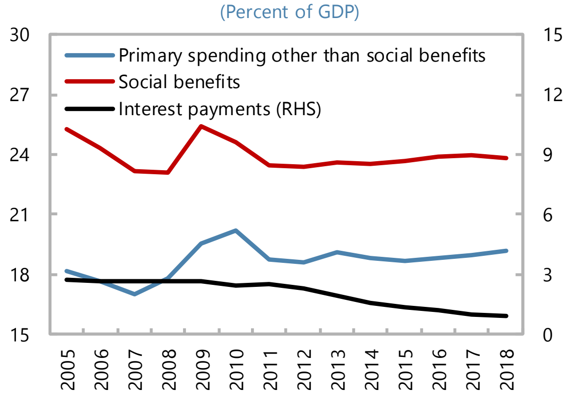
…supported by continued increases in direct taxes..

Tax Revenue and Social Security Contributions
(Percent of GDP)



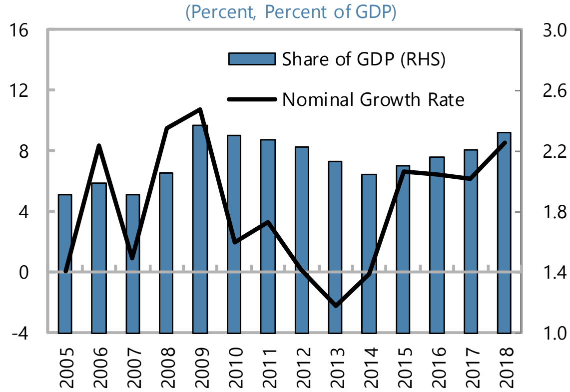
…budget under-execution, and declining interest payments.

General Government Spending
(Percent of GDP)



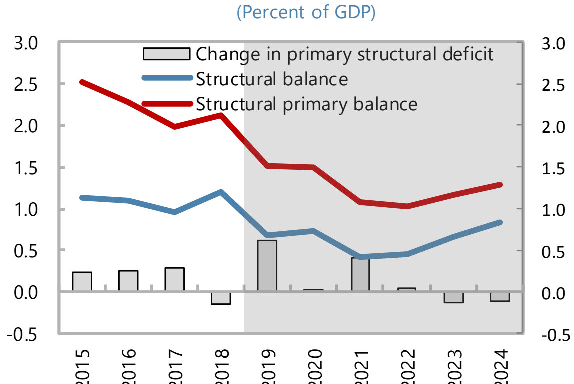
Public investment is picking up but from a low base.

General Government Gross Fixed Capital Formation
(Percent, Percent of GDP)



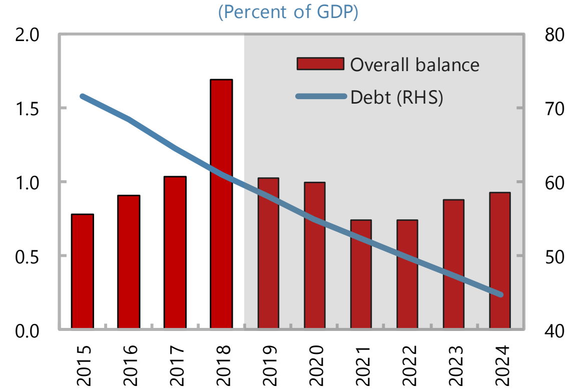
Fiscal policy is expected to be expansionary during 2019-21…

General Government Structural Balances, Staff Projection
(Percent of GDP)



…yet general government debt is expected to come down to below 45 percent of GDP by 2024.

General Government Fiscal Outlook, Staff Projection
(Percent of GDP)

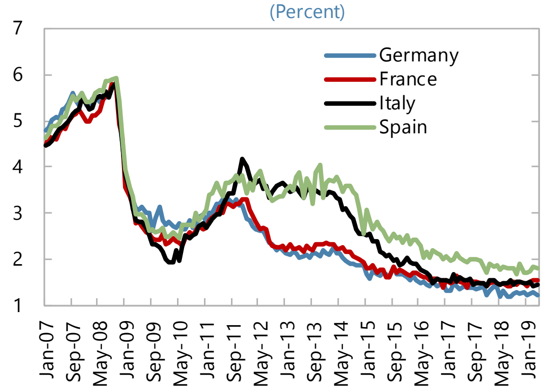


Sources: Federal Statistical Office, Ministry of Finance, and IMF staff calculations and projections.

Figure 14. Germany: Credit Conditions and Asset Prices

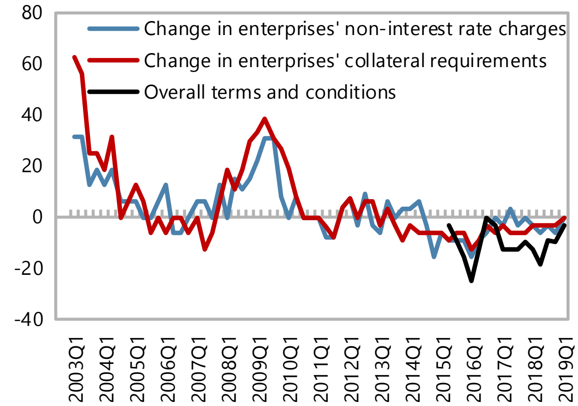
Continued favorable lending rates...

Lending Rates on New Loans to Non-financial Corporations
(Percent)



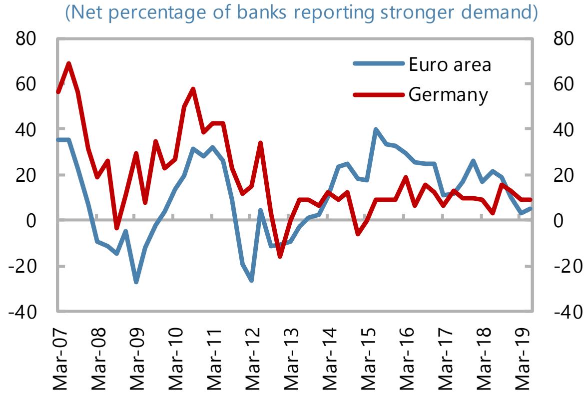
... and looser lending standards ...

Change in Bank Lending Standards, past 3 months
(Net percentage balance; negative indicates looser standard)



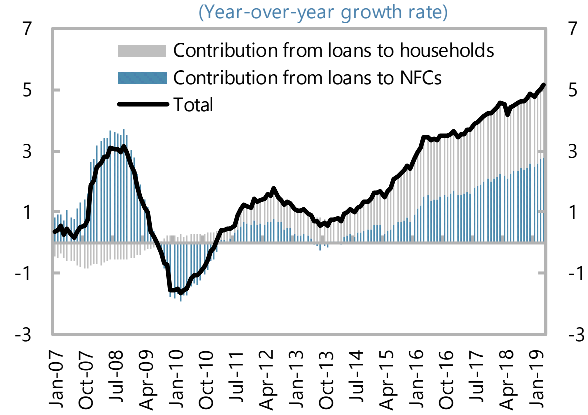
... together with higher demand for corporate credit ....

Change in Credit Demand by Enterprises in the Next 3 Months
(Net percentage of banks reporting stronger demand)



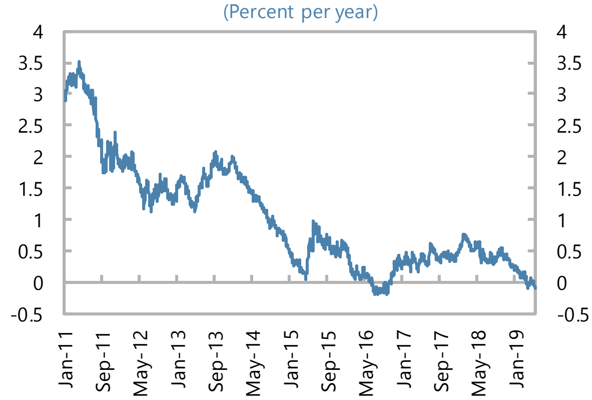
... led to a continued pickup in credit growth in 2018.

Germany: Lending by Monetary Financial Institutions
(Year-over-year growth rate)



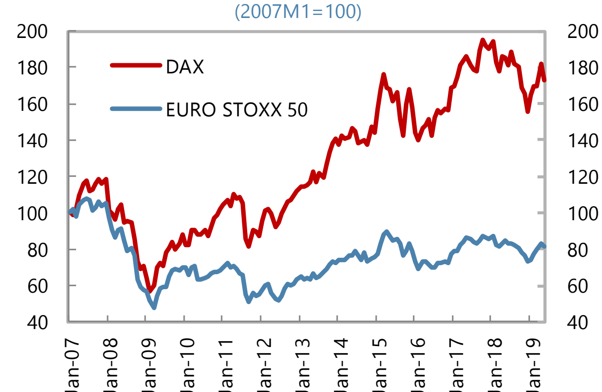
German government bond yields remain very low and declining further...

10-year Bond Yield: May 20, 2019
(Percent per year)



...while German equities experienced a correction in 2018, following a six-year winning streak.

Stock Market Indices
(2007M1=100)

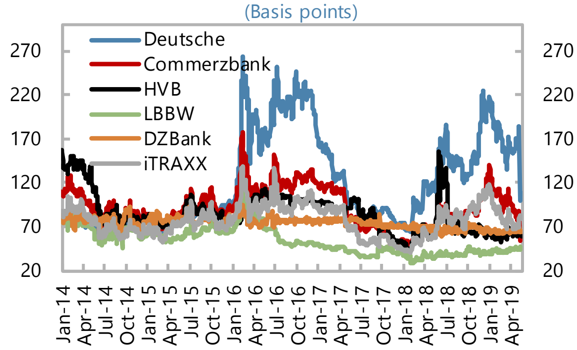


Sources: Bundesbank, Bloomberg Finance L.P, ECB, Haver Analytics, and IMF staff calculations.

Figure 15. Germany: Recent Developments in the German Banking Sector

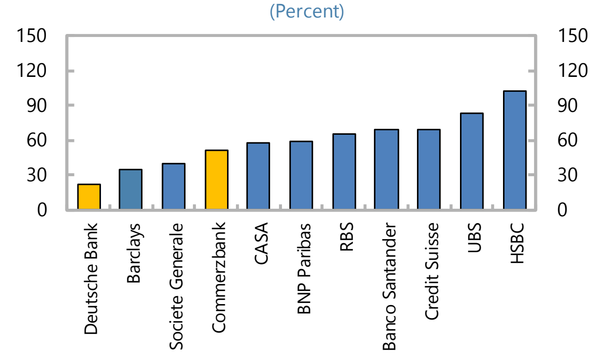
Investor sentiment towards Deutsche Bank deteriorated, raising the bank's funding cost.

German Banks 5-Year CDS Spreads
(Basis points)



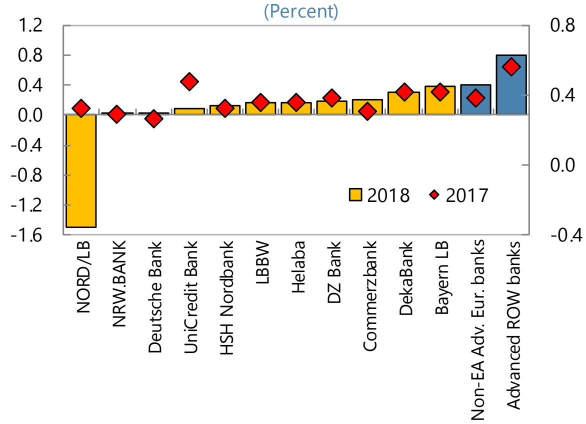
The two largest banks keep trading at a discount to European peers, ...

Price to Book Ratio, May 20, 2019
(Percent)



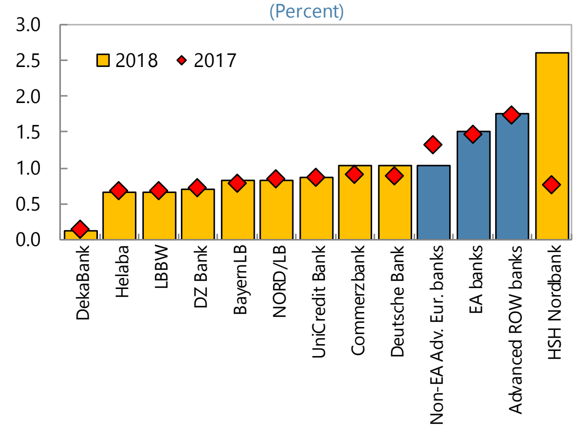
... on the back of low profitability, albeit with some improvement...

Return on Assets
(Percent)



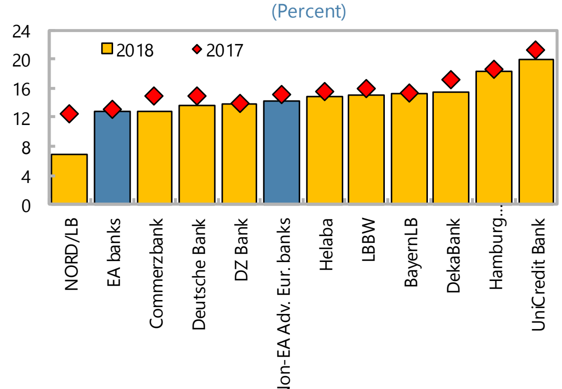
...reflecting high cost and low interest rate margins compared to European peers.

Net Interest Margin
(Percent)



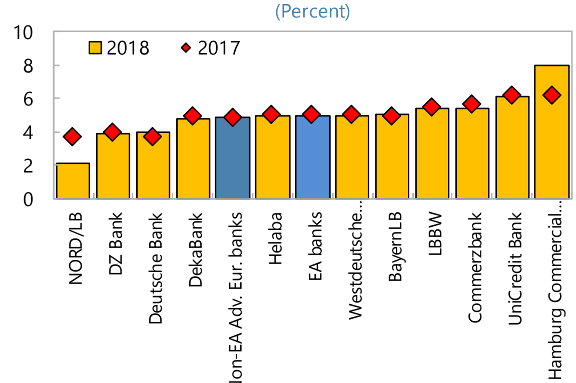
Risk-weighted capital buffers are generally comfortable...

(Phase in) Common Equity Tier 1 Ratio
(Percent)



... but leverage remains generally higher than European peers.

Leverage Ratio 1/
(Percent)

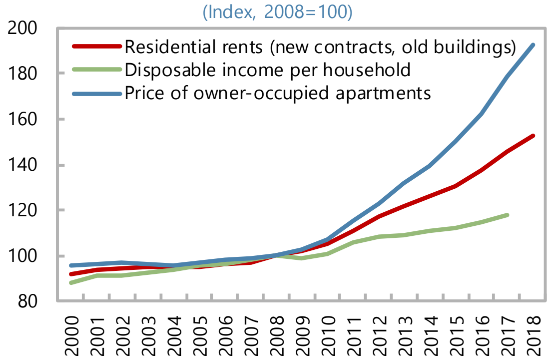


Sources: Bloomberg Finance L.P., ECB, IFS, S&P Global Market Intelligence, and IMF staff calculations.
1/ Leverage ratio is defined as common equity net of intangibles as a percent of total assets net of intangibles.

Figure 16. Germany: Housing Market Developments

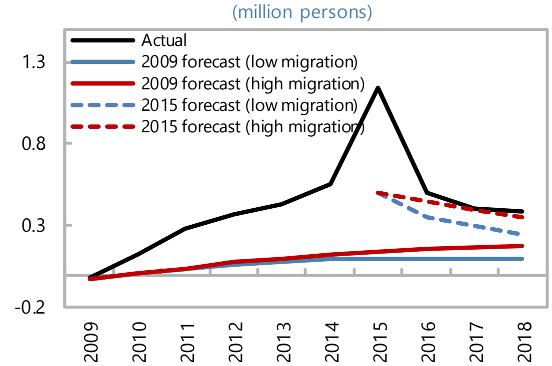
Since 2010, residential prices have been rising faster than income and rent, ...

Residential Rents and Housing Prices
(Index, 2008=100)



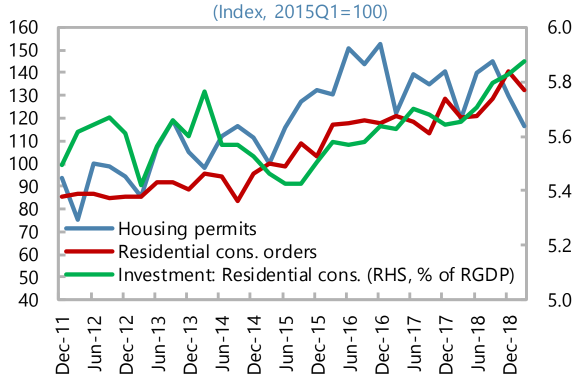
..., in part due to an unexpected surge in immigration.

Net Immigration: Forecast versus Actual, 2009-2018 1/
(million persons)



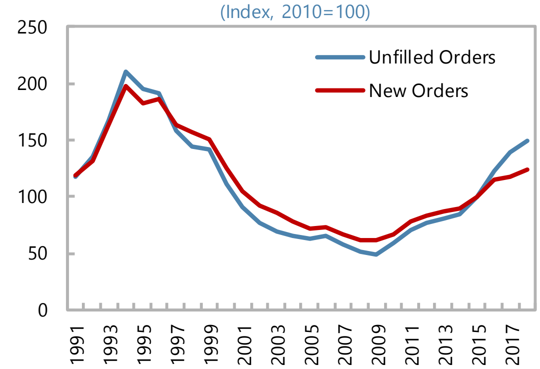
Residential investment picked up in 2018, ...

Real Estate Supply Indicators, December 2018
(Index, 2015Q1=100)



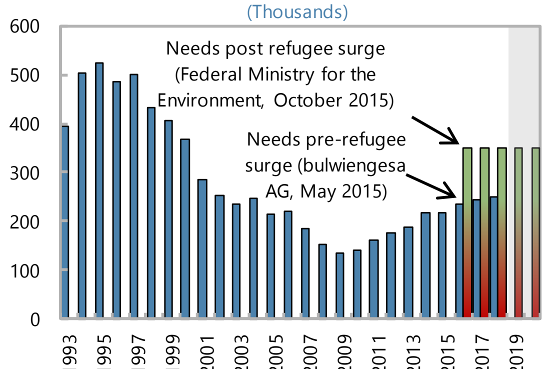
yet unfilled orders continued to rise amid a further increase in new orders...

New Orders and Unfilled Orders Construction
(Index, 2010=100)



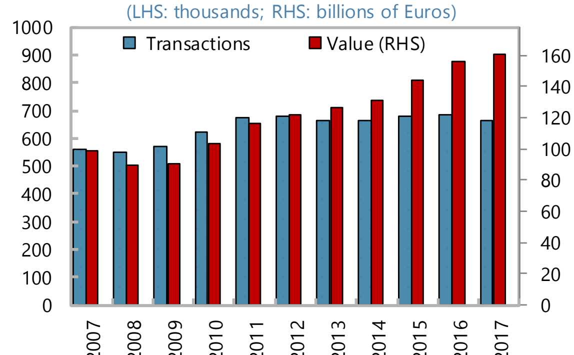
...as housing supply remains short of the demand.

New Residential Housing Units
(Thousands)



Total transaction values are trending up, but the number of transactions has been stable since 2011.

Total Transactions Value 2/
(LHS: thousands; RHS: billions of Euros)

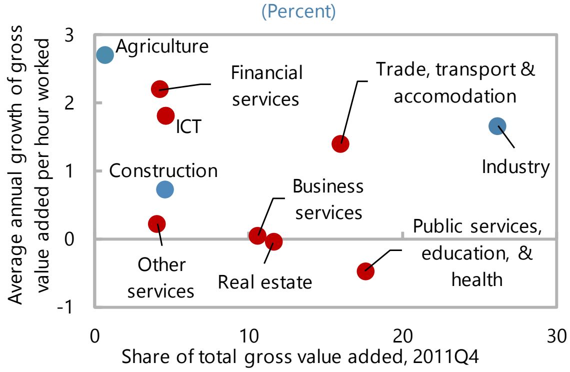


Sources: bulwiengesa AG, Destatis, Federal Ministry of the Interior, Building and Community, vdpResearch, Local Real Estate Surveyor Comission, Haver Analytics, and IMF staff calculations.
1/The scenarios refer to those described in the 12th and 13th Coordinated Population Projections, published respectively in 2009 and 2015.
2/ Includes condominiums, family houses, and land for housing construction.

Figure 17. Germany: Product Market Competition, Innovation, and Digitalization

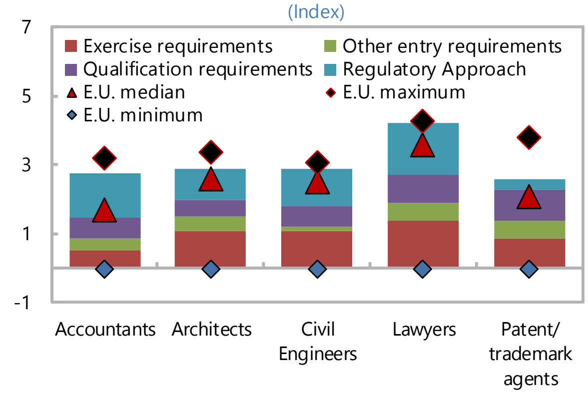
Productivity growth in non-financial non-ICT services have been low...

Germany: Sectoral Labor Productivity Growth, 2011Q4-2018Q3
(Percent)



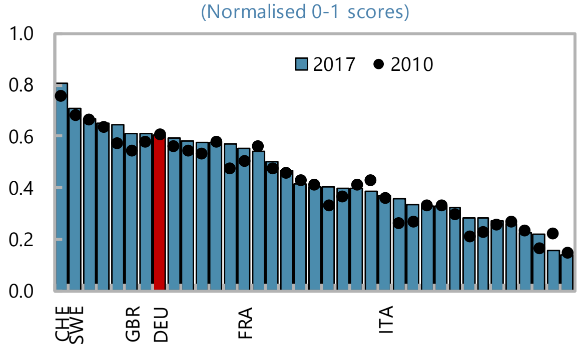
...with some professions remain more regulated than in peer European countries.

Germany: E.C. Restrictiveness Indicators, 2016
(Index)



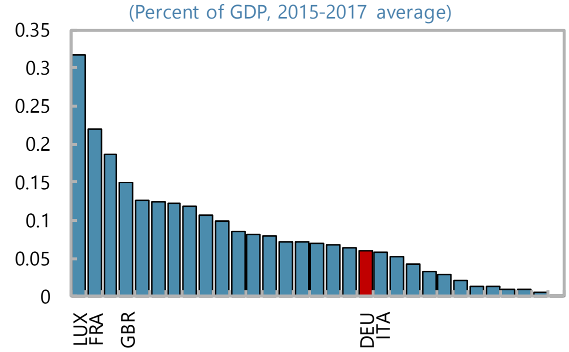
Germany remains an innovation leader in Europe, although lowering its relative position since 2010...

EU and EFTA: Summary Innovation Index, 2010-2017
(Normalised 0-1 scores)



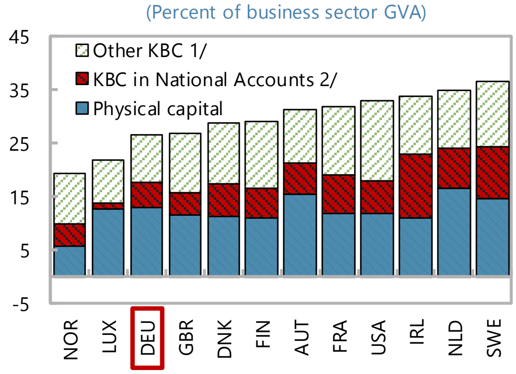
...with a relatively small venture capital...

EU Venture Capital
(Percent of GDP, 2015-2017 average)



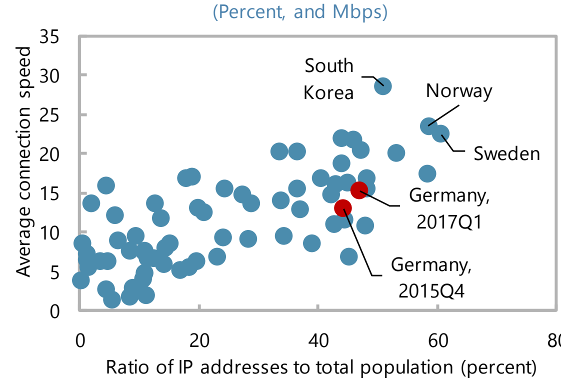
...low business investment in knowledge-based capital...

Business Investment in Physical and Knowledge-Based Capital, 2015
(Percent of business sector GVA)



...and slow average internet connection speed....

Advanced and Emerging Economies: Internet Access and Connection Speed, 2017Q1
(Percent, and Mbps)



Sources: Akamai's State of the Internet 2017Q1 Report, Conference Board, Destatis, European Commission, OECD, and IMF staff calculations.
1/ Includes new product development in the financial service industry, new architectural and engineering designs, brand equity, training, and organizational capital.
2/ Includes software, databases, R&D, mineral exploration, artistic originals (copyrights and licenses).

Table 1. Germany: Selected Economic Indicators, 2016–20

	2016	2017	2018	*Projections* 2019	2020
National accounts	(Percent change, working-day adjusted)				
GDP	2.2	2.5	1.5	0.7	1.3
Private consumption	1.9	2.0	1.1	1.4	1.0
Public consumption	4.0	1.6	1.0	1.3	1.5
Gross fixed investment	3.4	3.6	2.7	2.9	2.9
Construction	3.5	3.8	2.5	2.9	2.9
Machinery and equipment	2.1	4.6	4.4	2.6	3.1
Final domestic demand	2.6	2.3	1.4	1.7	1.5
Inventory accumulation 1/	0.3	-0.1	0.5	-0.4	0.0
Total domestic demand	2.9	2.2	1.9	1.3	1.6
Exports of goods and services	2.1	5.3	2.2	1.7	3.6
Imports of goods and services	4.0	5.3	3.4	3.0	4.3
Foreign balance 1/	-0.6	0.4	-0.3	-0.5	-0.1
Output gap (percent of potential GDP)	-0.1	0.8	1.1	0.6	0.5
	(Percent change, non-adjusted)				
GDP	2.2	2.2	1.4	0.7	1.7
Private consumption	2.1	1.8	1.1	1.3	1.4
Public consumption	4.0	1.6	1.0	1.3	2.0
Gross fixed investment	3.5	2.9	2.6	3.1	3.4
Construction	3.8	2.9	2.4	4.3	3.6
Machinery and equipment	2.2	3.7	4.2	2.7	3.5
Final domestic demand	2.8	2.0	1.4	1.7	2.0
Inventory accumulation 1/	0.2	0.1	0.5	-0.4	0.0
Total domestic demand	3.0	2.0	1.9	1.3	2.0
Exports of goods and services	2.3	4.6	2.0	1.6	4.0
Imports of goods and services	4.1	4.8	3.3	2.9	4.8
Foreign balance 1/	-0.5	0.3	-0.4	-0.5	-0.1
Unemployment	(Percent)				
Unemployment rate 2/	4.2	3.8	3.4	3.2	3.1
Unemployment rate 3/	3.9	3.5	3.2		
Prices and incomes	(Percent change)				
GDP deflator	1.4	1.5	1.9	2.0	1.9
Consumer price index (harmonized)	0.4	1.7	1.9	1.4	1.8
Consumer price index (harmonized), core	1.1	1.3	1.4	1.5	1.7
Compensation per employee (total economy)	2.2	2.6	3.0	3.3	3.4
Unit labor cost (total economy)	1.3	1.9	2.8	3.2	2.1
Real disposable income 4/	2.2	1.8	1.7	1.3	1.3
Household saving ratio (percent)	9.8	9.9	10.4	10.5	10.3

Table 1. Germany: Selected Economic Indicators, 2016–20 (concluded)

				Projections	
	2016	2017	2018	2019	2020
Public finances			(Percent of GDP)		
General government					
Overall balance 5/	0.9	1.0	1.7	1.0	1.0
Structural balance	1.1	1.0	1.2	0.7	0.7
General government debt	68.5	64.5	60.9	58.0	55.0
Federal government					
Overall balance 5/	0.4	0.2	0.5	0.4	0.2
Balance of payments			(Percent of GDP)		
Current account	8.4	8.0	7.3	7.1	6.7
Trade balance 6/	8.0	7.7	6.5	6.5	6.3
Services balance	-0.7	-0.7	-0.6	-0.5	-0.4
Primary income balance	2.4	2.4	2.7	2.4	2.2
Secondary income balance	-1.3	-1.5	-1.4	-1.3	-1.3
Monetary data			(Percent change)		
Money and quasi-money (M3) 7/ 8/	5.7	4.3	4.5		
Credit to private sector 7/	3.5	4.2	4.9		
Interest rates			(Period average in percent)		
Three-month interbank rate 7/	-0.3	-0.3	-0.3		
Yield on ten-year government bonds 7/	0.2	0.4	0.4		
Exchange rates					
Euro per US$	0.90	0.89	0.85		
Nominal effective rate (2005=100) 9/	98.6	100.1	102.5		
Real effective rate (2005=100) 10/	92.7	93.8	95.7		
Memorandum Items:					
Nominal GDP (billions of euros)	3159.8	3277.3	3386.0	3477.6	3604.6
Population growth (percent)	0.8	0.4	0.3		
GDP per capita (thousands of euros)	38.4	39.6	40.8		

Sources: Deutsche Bundesbank, Federal Statistical Office, IMF staff estimates and projections.

1/ Contribution to GDP growth.

2/ ILO definition.

3/ National Accounts Concepts.

4/ Deflated by national accounts deflator for private consumption; not SWDA.

5/ Net lending/borrowing.

6/ Excluding supplementary trade items.

7/ Data refer to end of December.

8/ Data reflect Germany's contribution to M3 of the euro area.

9/ Nominal effective exchange rate, all countries.

10/ Real effective exchange rate, CPI based, all countries.

Table 2. Germany: General Government Operations, 2016–24
(Percent of GDP)

	2016	2017	2018	2019	2020	2021	2022	2023	2024
				Projections					
Revenue	44.8	45.0	45.6	45.6	45.6	45.3	45.3	45.4	45.4
Taxes	23.2	23.4	23.7	23.7	23.8	23.5	23.5	23.5	23.5
Indirect taxes	11.1	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Direct taxes	12.1	12.4	12.7	12.7	12.8	12.5	12.5	12.5	12.5
Social contributions	16.6	16.7	16.9	17.0	17.0	17.1	17.1	17.2	17.2
Grants	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Other current revenue	4.9	4.7	5.0	4.8	4.7	4.6	4.5	4.5	4.5
Expense	43.9	44.0	44.0	44.6	44.6	44.6	44.5	44.5	44.4
Compensation of employees	7.5	7.5	7.6	7.6	7.6	7.6	7.6	7.6	7.6
Goods and services	4.8	4.8	4.8	5.0	4.9	4.9	4.8	4.7	4.7
Interest	1.2	1.0	0.9	0.8	0.8	0.7	0.6	0.5	0.5
Subsidies	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8
Social benefits	23.9	23.9	23.8	24.2	24.2	24.5	24.7	24.9	24.9
Social benefits in kind	8.5	8.5	8.5	8.6	8.6	8.8	8.8	8.9	8.9
Social transfers	15.4	15.4	15.4	15.6	15.6	15.8	15.9	16.0	16.0
Pensions	8.9	8.8	8.8	9.0	8.9	9.0	9.0	9.1	9.1
Child benefits	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7
Unemployment benefits	1.3	1.3	1.2	1.2	1.2	1.1	1.1	1.0	1.0
Other social transfers	4.6	4.7	4.7	4.9	4.9	5.0	5.0	5.1	5.2
Other expense	5.7	5.9	6.0	6.2	6.3	6.1	6.1	6.0	6.0
Gross public investment	2.2	2.2	2.3	2.4	2.5	2.4	2.4	2.4	2.4
Net acquisition of nonfinancial assets	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net lending/borrowing	0.9	1.0	1.7	1.0	1.0	0.7	0.7	0.9	0.9
Primary balance	2.1	2.1	2.6	1.9	1.8	1.4	1.3	1.4	1.4
Memorandum items:									
Structural balance	1.1	1.0	1.2	0.7	0.7	0.4	0.4	0.7	0.8
Change in structural balance	*0.0*	*-0.1*	*0.3*	*-0.5*	*0.1*	*-0.3*	*0.0*	*0.2*	*0.2*
Structural primary balance	2.3	2.0	2.1	1.5	1.5	1.1	1.0	1.2	1.3
Change in structural primary balance	*-0.2*	*-0.3*	*0.1*	*-0.6*	*0.0*	*-0.4*	*0.0*	*0.1*	*0.1*
Public gross debt (Maastricht definition)	68.5	64.5	60.9	58.0	55.0	52.4	49.8	47.2	44.7

Sources: Bundesbank, Federal Statistical Office, Ministry of Finance, and IMF staff estimates and projections.

Table 3. Germany: Medium Term Projections, 2016–24

	2016	2017	2018	2019	2020	2021	2022	2023	2024
				Projections					
Real sector	(Percentage change unless otherwise indicated, working-day adjusted)								
Real GDP	2.2	2.5	1.5	0.7	1.3	1.5	1.4	1.3	1.1
Total domestic demand	2.9	2.2	1.9	1.3	1.6	1.8	1.6	1.4	1.3
Private consumption	1.9	2.0	1.1	1.4	1.0	1.5	1.3	1.2	1.1
Households saving ratio (in percent)	9.8	9.9	10.4	10.5	10.3	10.3	10.2	10.1	10.1
Foreign balance (contribution to growth)	-0.6	0.4	-0.3	-0.5	-0.1	-0.2	-0.1	-0.1	-0.1
Output gap (percent of potential GDP)	-0.1	0.8	1.1	0.6	0.5	0.6	0.6	0.5	0.2
	(Percentage change unless otherwise indicated, non-adjusted)								
Real GDP	2.2	2.2	1.4	0.7	1.7	1.5	1.4	1.3	1.1
Total domestic demand	3.0	2.0	1.9	1.3	2.0	1.8	1.6	1.4	1.3
Private consumption	2.1	1.8	1.1	1.3	1.4	1.5	1.3	1.2	1.1
Households saving ratio (in percent)	9.8	9.9	10.4	10.5	10.3	10.3	10.2	10.1	10.1
Foreign balance (contribution to growth)	-0.5	0.3	-0.4	-0.5	-0.1	-0.2	-0.1	-0.1	-0.1
Output gap (percent of potential GDP)	0.3	0.9	1.2	0.6	0.9	1.0	1.0	0.9	0.7
	(Percentage change unless otherwise indicated)								
Employment (millions of persons)	41.1	41.5	41.7	42.0	42.2	42.3	42.3	42.2	42.2
Labor productivity (per employed person)	0.9	0.7	0.1	0.1	1.3	1.3	1.4	1.4	1.2
Consumer prices	0.4	1.7	1.9	1.4	1.8	1.9	2.2	2.2	2.2
Consumer prices (core)	1.1	1.3	1.4	1.5	1.7	1.9	2.2	2.2	2.2
Compensation per employee	2.2	2.5	3.0	3.3	3.4	3.5	3.6	3.7	3.7
External sector	(Percent of GDP)								
Current account balance	8.4	8.0	7.3	7.1	6.7	6.4	6.2	6.1	6.1
Trade balance (goods and services)	7.3	7.1	6.0	6.0	5.9	5.6	5.4	5.4	5.3
Net international investment position	50.8	54.4	60.6	66.9	70.4	73.7	76.8	79.7	82.5
General government									
Overall balance	0.9	1.0	1.7	1.0	1.0	0.7	0.7	0.9	0.9
Gross debt	68.5	64.5	60.9	58.0	55.0	52.4	49.8	47.2	44.7

Sources: Federal Statistical Office, Bundesbank, and IMF staff estimates.

Table 4. Germany: Balance of Payments, 2016–24

(Percent of GDP)

	2016	2017	2018	2019	2020	2021	2022	2023	2024
				Projections					
Current account	8.4	8.0	7.3	7.1	6.7	6.4	6.2	6.1	6.1
Trade balance	7.3	7.1	6.0	6.0	5.9	5.6	5.4	5.4	5.3
Trade in goods	8.0	7.7	6.5	6.5	6.3	6.0	5.9	5.8	5.6
Exports	37.3	38.3	38.2	38.7	38.9	39.1	39.3	39.4	39.6
Imports	29.3	30.6	31.6	32.2	32.6	33.1	33.4	33.7	34.0
Trade in services	-0.7	-0.7	-0.6	-0.5	-0.4	-0.4	-0.4	-0.4	-0.3
Exports	8.3	8.6	8.6	8.8	9.0	9.1	9.3	9.4	9.6
Imports	9.0	9.3	9.2	9.3	9.4	9.5	9.7	9.8	9.9
Primary income balance	2.4	2.4	2.7	2.4	2.2	2.1	2.1	2.1	2.1
Receipts	6.7	6.5	6.4	6.0	5.6	5.2	5.3	5.5	5.7
Payments	4.4	4.0	3.7	3.6	3.4	3.1	3.2	3.4	3.6
Secondary income balance	-1.3	-1.5	-1.4	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
Capital and Financial Account	8.3	8.6	6.8	7.1	6.7	6.4	6.2	6.1	6.1
Capital account	0.1	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Financial account	8.2	8.6	6.8	7.1	6.7	6.4	6.2	6.1	6.1
Direct Investment	1.3	1.5	1.3	1.4	1.4	1.3	1.4	1.4	1.3
Abroad	3.1	3.7	3.9	3.6	3.7	3.7	3.7	3.7	3.7
Domestic	1.8	2.3	2.6	2.2	2.4	2.4	2.3	2.4	2.4
Portfolio investment balance	6.3	6.1	3.3	4.7	4.2	3.8	3.9	3.8	3.8
Financial derivatives	0.9	0.4	0.7	0.6	0.5	0.5	0.5	0.5	0.5
Other financial transactions	-0.4	0.8	1.4	0.5	0.7	0.7	0.5	0.5	0.5
Change in reserve assets	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net errors and omissions	-0.3	0.7	-0.6	0.0	0.0	0.0	0.0	0.0	0.0

Sources: Bundesbank, Federal Statistical Office, IMF Statistics Department, and IMF staff estimates.

Note: Based on Balance of Payments Manual 6.

Table 5. Germany: International Investment Position, 2010–18

(Percent of GDP)

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Assets	253.5	253.4	264.7	245.8	260.8	258.9	261.5	255.3	252.9
Direct investment	47.4	48.5	53.0	53.7	55.9	59.0	59.3	59.2	61.5
Portfolio investment	74.1	68.1	75.8	79.1	86.2	87.5	89.4	89.5	85.1
Equity and investment fund shares	21.5	18.5	20.5	23.6	26.3	28.7	30.3	32.8	29.6
Debt securities	52.7	49.6	55.3	55.5	59.9	58.9	59.1	56.8	55.5
Financial derivatives (other than reserves) and employee stock options	30.4	33.9	34.6	22.3	26.9	21.8	19.3	14.5	12.6
Other investment	95.3	96.1	94.4	85.7	86.3	85.3	87.9	87.0	88.6
Reserve assets	6.3	6.8	6.8	5.1	5.4	5.2	5.6	5.1	5.1
Liabilities	227.9	230.2	236.2	211.3	220.1	212.5	210.7	200.9	192.3
Direct investment	35.1	35.8	39.8	41.0	41.2	41.9	42.2	42.4	43.6
Portfolio investment	87.5	87.1	92.3	87.2	90.0	86.4	82.6	77.8	69.2
Equity and investment fund shares	19.4	16.2	19.3	22.1	21.3	22.1	21.6	22.6	17.9
Debt securities	68.1	70.9	73.0	65.1	68.6	64.3	61.0	55.2	51.3
Financial derivatives (other than reserves) and employee stock options	30.5	34.4	34.4	21.9	27.7	22.3	20.3	14.9	13.2
Other investment	74.8	73.0	69.7	61.2	61.3	61.9	65.6	65.8	66.4
Net International Investment Position	25.6	23.2	28.5	34.5	40.6	46.4	50.8	54.4	60.6
Direct investment	12.3	12.7	13.2	12.7	14.8	17.1	17.1	16.9	17.9
Portfolio investment	-13.3	-19.0	-16.5	-8.1	-3.8	1.2	6.8	11.7	15.9
Financial derivatives (other than reserves) and employee stock options	-0.1	-0.5	0.2	0.4	-0.8	-0.5	-0.9	-0.4	-0.5
Other investment	20.5	23.2	24.7	24.4	25.0	23.4	22.3	21.2	22.2

Sources: Deutsche Bundesbank, IMF Statistics Department, and IMF staff calculations.
Note: Based on Balance of Payments Manual 6.

Table 6. Germany: Core Financial Soundness Indicators for Banks, 2013–18

(Percent)

	2013	2014	2015	2016	2017	2018
Capital adequacy						
Regulatory capital to risk-weighted assets	19.2	18.0	18.3	18.8	19.4	18.9
Commercial banks	18.9	17.2	17.3	17.9	18.8	18.1
Landesbanken	21.3	18.4	19.4	21.4	22.3	20.2
Savings banks	16.4	16.6	16.7	16.9	17.4	17.6
Credit cooperatives	16.6	17.4	17.6	17.7	17.6	17.5
Regulatory Tier I capital to risk-weighted assets	15.6	15.4	15.7	16.3	16.9	16.6
Commercial banks	16.1	15.5	15.5	16.0	16.7	16.0
Landesbanken	16.9	14.7	15.6	16.6	17.5	15.6
Savings banks	13.4	14.5	14.8	15.2	15.8	16.2
Credit cooperatives	12.0	13.5	14.1	14.5	14.8	15.0
Asset composition and quality						
Sectoral distribution of loans to total loans						
Loan to households	28.5	28.7	29.0	28.5	28.6	29.1
Commercial banks	22.9	22.3	22.2	20.9	20.8	21.4
Landesbanken	5.8	5.6	5.5	5.4	5.0	4.2
Savings banks	57.4	57.0	58.2	57.8	57.1	55.3
Credit cooperatives	69.3	69.8	68.8	68.2	67.0	66.0
Loans to non-financial corporations	15.6	15.2	15.2	14.9	15.1	15.7
Commercial banks	12.3	12.0	12.0	11.0	11.4	12.6
Landesbanken	22.4	22.5	23.5	24.1	23.3	22.2
Savings banks	22.0	21.7	22.4	23.1	24.0	25.1
Credit cooperatives	16.0	16.6	16.8	17.4	18.3	19.0
NPLs to gross loans	2.7	2.3	2.0	1.7	1.5	...
Commercial banks	1.8	1.4	1.2	1.2	1.1	...
Landesbanken	4.8	4.8	4.5	3.6	3.2	...
Savings banks	2.8	2.3	1.9	1.6	1.3	...
Credit cooperatives	2.8	2.4	2.0	1.8	1.6	...
NPLs net of provisions to capital	25.0	21.3	17.4	14.7	11.9	...
Commercial banks	13.3	8.5	6.9	9.2	5.5	...
Landesbanken	49.4	53.6	42.2	30.7	30.1	...
Savings banks	27.6	23.1	19.7	16.3	13.6	...
Credit cooperatives	26.8	22.6	19.5	17.3	15.9	...

Table 6. Germany: Core Financial Soundness Indicators for Banks, 2013–18 (concluded)

(Percent)

	2013	2014	2015	2016	2017	2018
Earnings and profitability						
Return on average assets (after-tax)	0.2	0.2	0.2	0.2	0.2	...
Commercial banks	0.1	0.1	0.1	0.1	0.1	...
Landesbanken	-0.1	-0.1	0.1	-0.1	0.1	...
Savings banks	0.5	0.5	0.5	0.6	0.6	...
Credit cooperatives	0.8	0.6	0.6	0.7	0.6	...
Return on average equity (after-tax)	3.5	4.0	4.0	4.3	4.1	...
Commercial banks	3.5	3.5	2.2	3.2	2.8	...
Landesbanken	-1.6	-1.5	1.9	-2.0	1	...
Savings banks	7.3	6.7	6.5	7.4	6.7	...
Credit cooperatives	11.0	8.6	7.4	8.4	7.1	...
Interest margin to gross income	71.9	75.4	75.0	71.2	69.5	...
Commercial banks	63.0	66.4	67.0	63.4	60.7	...
Landesbanken	78.5	89.9	82.5	74.9	73.9	...
Savings banks	80.0	79.8	78.2	76.4	73.9	...
Credit cooperatives	78.6	79.2	78.4	76.5	75.3	...
Trading income to gross income	4.9	2.9	2.9	2.4	4.5	...
Commercial banks	8.0	5.8	5.3	2.6	8	...
Landesbanken	12.5	1.2	5.4	10.2	11.5	...
Savings banks	0.1	0.0	0.0	0.0	0	...
Credit cooperatives	0.0	0.0	0.0	0.0	0	...
Noninterest expenses to gross income	69.1	69.2	70.4	69.3	71.9	...
Commercial banks	72.8	73.4	75.6	74.3	79.4	...
Landesbanken	61.8	70.9	69.1	63.6	72.5	...
Savings banks	67.2	68.3	68.9	67.8	67.1	...
Credit cooperatives	64.6	65.9	66.6	66.6	65.7	...
Liquidity						
Liquid assets to total short-term liabilities	140.5	145.5	146.5	146.6	151.3	151.7
Commercial banks	125.1	128.3	128.4	127.9	131.4	140.3
Landesbanken	138.5	139	139.2	146.4	150.8	126.0
Savings banks	234.6	238.9	246.3	253.7	263.6	198.6
Credit cooperatives	231.8	233.3	241.7	246.9	242.2	162.2
Sensitivity to market risk						
Net open positions in FX to capital	3.8	4.0	4.6	4.0	3.7	3.2
Commercial banks	1.8	1.9	1.8	1.9	2.1	2.2
Landesbanken	5.3	7.3	10.6	6.4	4.0	3.1
Savings banks	7.7	4.8	4.8	4.4	4.3	3.5
Credit cooperatives	8.0	7.7	7.9	7.9	8.2	7.4

Source: Deutsche Bundesbank. The authorities provide annual data only and disseminate them once a year.

Table 7. Germany: Additional Financial Soundness Indicators, 2013–18

(Percent, unless otherwise indicated)

	2013	2014	2015	2016	2017	2018
Deposit-taking institutions						
Capital to assets	5.5	5.6	5.9	6.0	6.3	6.5
Commercial banks	4.9	5	5.2	5.1	5.6	5.7
Landesbanken	5.0	4.9	5.4	5.7	5.4	5
Savings banks	7.5	7.9	8.3	8.6	9	9.1
Credit cooperatives	7.0	7.4	7.7	7.9	8.2	8.3
Geographical distribution of loans to total loans						
Germany	76.8	74.6	75.9	76.6	78.7	78.0
EU-member countries	16	15.8	15.1	14	12.6	13.2
Others	7.2	9.6	9	9.4	8.7	8.8
FX loans to total loans	10	11.5	11.4	11.2	9.8	9.7
Personnel expenses to noninterest expenses	51.9	51.5	51.1	50.3	50.4	...
Commercial banks	44.7	42.7	42.8	42.7	42.5	...
Landesbanken	48.4	50.2	50.6	45.1	46	...
Savings banks	62.3	63.4	63.1	62.6	63.3	...
Credit cooperatives	59.8	60.1	60.3	60	59.7	...
Trading and fee income to total income	28.1	24.6	25	28.8	30.5	...
Commercial banks	37	33.6	33	36.6	39.3	...
Landesbanken	21.5	10.1	17.5	25.1	26.1	...
Savings banks	20	20.2	21.8	23.6	26.1	...
Credit cooperatives	21.4	20.8	21.6	23.5	24.7	...
Funding						
Customer deposits to total (non-interbank) loans	84.5	86.9	85.0	82.1	80.6	81.8
Commercial banks	104.5	109.2	101.7	90.5	84.9	88.3
Landesbanken	41.6	40.2	43.7	39.8	40	32.8
Savings banks	108.5	110	109.5	109.5	108	107.5
Credit cooperatives	116.9	117.5	116.9	117.7	116.2	115.2
Deposits/total assets	64.6	63.9	65.8	66.8	68.8	69.1
Commercial banks	65.6	63.3	66.2	68.5	72.9	73.3
Landesbanken	55.4	55.1	58.6	58.4	60.3	59.9
Savings banks	86.7	86.7	86.6	86.5	86.2	85.9
Credit cooperatives	86.8	87	87.1	87.2	87.1	87.1
Interbank assets/total assets	35.0	33.9	33.7	34.9	36.2	35.6
Commercial banks	35.9	34.8	36.4	39.3	41	39.4
Landesbanken	34.8	32.6	30.8	30.7	35.5	38.2
Savings banks	21.2	20.3	18.2	17.9	17.3	17.7
Credit cooperatives	24.2	22.7	21.6	21.2	20.4	20.2
Interbank liabilities/total assets	21.5	21.7	21.6	21.9	21.9	21.2
Commercial banks	22.6	23.6	23.9	26	26.8	25.3
Landesbanken	28.0	27.9	28.1	27	27.5	30.8
Savings banks	14.1	13.1	11.9	11.1	10.7	10.2
Credit cooperatives	13.2	13.1	12.7	12.3	12.6	12.4
Securitized funding/total assets	...	...	...	...	...	...
Commercial banks	...	...	...	...	...	...
Landesbanken	...	...	...	...	...	...
Savings banks	...	...	...	...	...	...
Credit cooperatives	...	...	...	...	...	...
Loans/assets	40.3	39.5	41.1	41.6	42.8	44.3
Commercial banks	30.0	28.1	29.3	29.7	32	34.7
Landesbanken	39.5	40.5	43.9	46.1	44.9	44.6
Savings banks	63.7	63.9	65.1	65.5	66.1	66
Credit cooperatives	60.6	61.2	61.8	62	62.6	63.1
Securities holdings/assets	19.4	19	18.5	17.4	16.7	16.2
Commercial banks	13.0	12.8	12.6	11.9	11.3	10.7
Landesbanken	21.7	20.9	19.9	18.2	16.9	15.7
Savings banks	25.2	25.2	25.2	24.6	23.7	23.2
Credit cooperatives	27.4	27.8	26.9	26.8	26	25.4
Off-balance sheet operations to total assets	...	...	...	...	...	...
of which : interest rate contracts	...	...	...	...	...	...
of which : FX contracts	...	...	...	...	...	...
Spread between highest and lowest interbank rates 1/	3.88	4.09	8.90	3.51	4.13	...
Spread between reference loan and deposit rates 2/	325	318	301	280	260	242

Table 7. Germany: Additional Financial Soundness Indicators, 2013–18 (concluded)

(Percent, unless otherwise indicated)

	2013	2014	2015	2016	2017	2018
Insurance sector						
Solvency ratio, Life	162.0	162.5	159.3	343.7	401.5	...
Solvency ratio, Non-life (without reinsurance and health insurance)	317.0	325.6	322.6	285.5	291.8	...
Return on average equity, Life 3/	6.1	5.0	3.1	2.2	3.7	...
Return on average equity, Non-life 3/ (without reinsurance and health insurance)	3.8	3.5	3.3	3.9	4.6	...
Market liquidity						
Average bid-ask spread in the securities market (government bills)	0.01059	0.00682	0.00472	0.00475	0.00485	0.00474
Average bid-ask spread in the securities market (corporate securities)	0.01	0.01	0.0	0.0	...	...
Corporate sector						
Total debt to equity 4/	84.5	81.3	79.9	80.6	76.0	...
Total debt to GDP 5/	131.1	129.9	...	...	...	...
Return on invested capital 6/ 7/	9.1	...	...	...	...	...
Earnings to interest and principal expenses 4/ 8/	1489.0	1534.5	1771.6	2126.5	2152.7	...
Number of applications for protection from creditors 4/ 9/	14344.0	13480.0	13056.0	12056.0	11967	...
Households						
Household debt to GDP 4/	54.9	53.5	52.5	52.7	52.4	...
Household debt service and principal payments to income 4/ 8/	2.0	1.7	1.5	1.3	1.2	...
Real estate markets						
Real estate prices, new dwellings 10/	114.6	121.2	130.2	141.1	154.5	166.8
Real estate prices, resale 10/	114.9	121.3	130.5	142.4	155.4	168.7
Real estate prices, new and resale 10/	114.8	121.3	130.5	142.2	155.3	168.5
Real estate prices, long time series 11/	108.7	111.9	117.1	124.1	129.8	136.3
Real estate prices, commercial property 12/	114.0	121.0	129.5	139.8	154.6	162.6
Residential real estate loans to total loans	18.3	19.0	19.2	18.5	18.6	19.4
Commercial real estate loans to total loans	5.9	5.8	5.8	5.6	5.6	5.9

Source: Deutsche Bundesbank. The authorities provide annual data only and disseminate them once a year.

1/ Spread between highest and lowest three month money market rates as reported by Frankfurt banks (basis points).

2/ Spread in basis points.

3/ Profits after tax devided by equity.

4/ Indicator compiled according to definitions of the Compilation Guide on FSIs.

5/ Total debt to corporate gross value added.

6/ Return defined as net operating income less taxes, where net operating income and taxes are compiled according to the FSI Compilation Guide.

7/ Invested capital estimated as balance sheet total less other accounts payable (AF.7 according to ESA 1995).

8/ Excluding principal payments.

9/ Resident enterprises that filed for bankruptcy.

10/ Residential property price index (yearly average, 2011 = 100); source: Bundesbank calculations based on price data provided by bulwiengesa AG for 127 towns and cities, weighted by transactions.

11/ Residential property price index (yearly average, 2010 = 100, long time series); source: Bundesbank calculations based on varying data providers (until 2005: bulwiengesa AG, from 2006 onwards: vdpResearch, from 2014 onwards: Federal Statistical Office); varying composition of regions and housing types.

12/ Commercial property price index (office and retail property, yearly average, 2010 = 100), source: capital growth data provided by bulwiengesa AG for 127 towns and cities; separate indices are calculated for office property and retail property.

<table>
<tr><th></th><th>Germany</th><th>Overall Assessment</th></tr>
<tr><td>Foreign asset and liability position and trajectory

2018 IIP (% GDP)</td><td>Background. Germany's positive net international investment position (NIIP) reached 61 percent of GDP in 2018; more than twice the 2012 level. The net rise in foreign assets over this period has however fallen short of the accumulation of current account (CA) surpluses. The NIIP of financial corporations other than MFIs is large and positive (57 percent of GDP), while that of the general government is large and negative (25 percent of GDP), partly reflecting Germany's safe-haven status. The NIIP is expected to exceed 80 percent of German GDP by 2023, as the projected CA surplus remains sizable through the medium term but is expected to be partly offset by valuation changes. Foreign assets are well diversified by instrument. The stock of Germany's TARGET2 claims on the Eurosystem has been on an upward trend since 2015, but has stabilized and started declining, standing at €934 billion in May 2019 (27 percent of GDP), down from of over €976 billion in mid-2018.

Assessment. With the implementation of quantitative easing measures by the ECB, Germany's exposure to the Eurosystem remains large.

NIIP | 60.6 | Gross Asset | 252.9 | Debt Assets | 89.8 | Gross Liab. | 192.3 | Debt Liab. | 143.2</td><td rowspan="5">Overall Assessment:

The external position in 2018 was substantially stronger than implied by medium-term fundamentals and desirable policies. Staff projects a modest narrowing in the medium run, supported by a gradual realignment of price competitiveness, and continued solid domestic demand. As Germany is part of the euro area, the nominal exchange rate does not flexibly adjust to the country's external position, but stronger wage growth relative to euro area trading partners is expected to contribute to realigning price competitiveness within the monetary union. The projected adjustment is, however, partial, and additional policy actions will be necessary to make further progress on external rebalancing.

Potential policy responses:

A more growth-oriented fiscal policy that promotes potential growth, structural reforms to foster entrepreneurship (e.g. expanding access to venture capital, stronger tax incentives for R&D and more investment in digital infrastructure), as well as additional tax relief for lower-income households, boosting their purchasing power, and pension reforms prolonging working lives would help reduce excess saving, stimulate investment, and reduce external imbalances.</td></tr>
<tr><td>Current account

CA Assessment 2018</td><td>Background. The CA surplus has widened significantly since 2001, peaking at 8.5 percent of GDP in 2015 and falling gradually since then. In 2018, the CA surplus declined to 7.3 percent of GDP (from 8.0 percent of GDP in 2017), driven by a decline in net exports (partly due to higher energy prices) and reflecting a narrowing of the CA balance vis-à-vis most major trading partners (though concentrated among oil exporters). The bulk of the CA surplus reflects large saving-investment surpluses of non-financial corporations (NFCs) and households, with rising savings of NFCs and continued fiscal consolidation accounting for the upward trend.

Assessment. The cyclically-adjusted CA balance reached 7.6 percent of GDP in 2018, 0.7 percentage point below the 2017 level. Staff assesses the CA norm at 2-4 percent of GDP, with a midpoint ½ percent of GDP above the CA norm implied by the EBA model of 2.5 percent. Such upward adjustment reflects uncertainty over the demographic outlook and the impact of the recent large-scale immigration on national savings. Taking these factors into account, staff assesses the 2018 CA gap to be in the range of 3.6 to 5.6 percent of GDP. [1/ 2/]

Actual CA | 7.3 | Cycl. Adj. CA | 7.6 | EBA CA Norm | 2.6 | EBA CA Gap | 5.1 | Staff Adj. | -0.45 | Staff CA Gap | 4.6</td></tr>
<tr><td>Real exchange rate</td><td>Background. The yearly average CPI-based and ULC-based real effective exchange rates (REER) appreciated 2.3 and 3.3 percent in 2018, respectively, reflecting the nominal appreciation of the euro against the currencies of key trading partners – most notably the US Dollar, the Yen and the Swiss Franc – and the relative pick-up in labor costs. Estimates through May 2019 show that the REER has depreciated by 1.3 percent relative to the 2018 average.

Assessment. The EBA REER Level model yields an undervaluation of 16 percent, while the undervaluation implied by the assessed CA gap using standard trade elasticities is in the range of 12–27 percent. 3/ Taking these estimates into consideration and the 2018 real appreciation, staff assesses the 2018 REER to have been undervalued in the range of 8-18 percent.</td></tr>
<tr><td>Capital and financial accounts: flows and policy measures</td><td>Background. In 2018, net portfolio outflows constituted over ¾ of the capital and financial accounts balance, with direct investment being the second largest item (1/5 of total). From a destination basis, 80 percent of the outflows went to European countries, with about 6 percent going to the Americas (mostly the US). Meanwhile the source of gross inflows is different, with only 14 percent of inflows originating from the EU, due to falling investment by non-euro EU countries (UK, Denmark), while investment by emerging markets (especially Turkey) and North America picked up considerably. Foreign direct investment inflows and outflows continued to recover, after a drop in 2016, coming/going mostly from/to euro area countries.

Assessment. Safe-haven status and the strength of Germany's current external position limit risks.</td></tr>
<tr><td>FX intervention and reserves level</td><td>Background. The euro has the status of global reserve currency.

Assessment. Reserves held by euro area countries are typically low relative to standard metrics. The currency is freely floating.</td></tr>
</table>

	Germany (concluded)		
Technical Background Notes	1/ For Germany, the bulk of the EBA-estimated gap for 2018 reflects the regression's residual rather than gaps in the policies variables included in the EBA model. 2/ The estimated norm reflects changes in the credit gap estimates to better reflect the German financial cycle. Staff assesses the credit-to-GDP to be currently lower than its long-term equilibrium, and that gradually closing of such gap will help support investment over the medium term. 3/ The EBA REER Index model implies that the REER is close to equilibrium. However, the EBA REER Index model has an unusually poor fit for Germany.		

Annex II. Risk Assessment Matrix

Source of Risks	Relative Likelihood	Impact	Policy Response
Risks to the economic outlook			
I. Rising protectionism and retreat from multilateralism. Escalating and sustained trade actions threaten the global trade system, regional integration, as well as global and regional collaboration.	H	H With its high degree of trade openness, Germany is especially susceptible to fluctuations in global demand; fiscal buffers are comfortable.	• Continue support for the multilateral rules-based trading system, trade liberalization, and free trade agreements. • Let automatic stabilizers fully operate. • Consider a discretionary fiscal expansion. If the output gap widens significantly, depending on the size and nature of the shock to the economy, invoke the escape clause under the national debt brake rule could be appropriate to support the German economy.
II. A disorderly Brexit	H	H Significant disruptions, including border delays and a sudden increase in tariff and non-tariff costs, and long-term efficiency losses from a disorderly Brexit.	• Contingency planning and collaboration between U.K. and EU authorities to reduce cliff-edge effects and disruptions. • Let automatic stabilizers fully operate. If the output gap widens significantly, invoke the escape clause under the national debt brake rule could be appropriate to support the German economy.
III. A shift in market sentiment against some high-debt euro area countries. Policy slippages with weak growth outturns in some high-debt euro area countries could raise concerns over debt sustainability, while disregard for the common fiscal rules and rising yields test the euro area policy framework in the medium term.	H	M Rise in sovereign yields may have knock-on effects on the broader financial sector and affect German banks. Germany is also especially susceptible to fluctuations in global demand;	• The authorities should ensure that banks liquidity and capital buffers are adequate, engage in contingency planning, and put in place coordination mechanisms among the relevant authorities involved. • To the extent that financial stress translates in lower foreign demand, let automatic stabilizers work. If the output gap widens significantly, invoke the escape clause under the national debt brake rule could be appropriate to support the German economy.

Source of Risks	Relative Likelihood	Impact	Policy Response
IV. **Weaker than expected global growth.** The global growth slowdown could be synchronized as weakening outlooks in the U.S., Europe, and China feed off each other and impact on earnings, asset prices and credit performance.	M	H With its high degree of trade openness, Germany is especially susceptible to fluctuations in global demand; fiscal buffers are comfortable	• The authorities should ensure that structural reforms aimed at increasing potential growth are conducted in a timely manner in Germany, helping to reorient growth drivers toward domestic sources. • They should also let automatic stabilizer work to offset the slowdown in foreign demand.
Risks to the financial sector			
V. **Further pressure on traditional bank business models.** Legacy problems, structurally high cost of bank operations, and high competition curtail banks' profitability, which could lead to financial distress in one or more major banks.	M	H This may have knock-on effects on the broader financial sector and on sovereign yields in vulnerable economies.	• Improve profitability through completion of restructuring plans, consolidation, and cost-cutting is essential. • The authorities should ensure that liquidity buffers are adequate, engage in contingency planning, and put in place coordination mechanisms among the relevant authorities involved.

Annex III. Public Debt Sustainability Analysis

Public debt falls rapidly and is expected to continue to decrease in the medium term due to projected high primary surpluses and a favorable interest rate-growth differential. Under the current macroeconomic outlook, the public debt-to-GDP ratio is expected to fall below the 60 percent mark this year, from 60.9 percent in end 2018. A negative growth shock represents the largest risk to the debt outlook. Also, the realization of contingent liabilities related to financial sector support would push debt up by about 3 percent of GDP. In both cases, gross financing needs would remain below 10 percent of GDP, and debt would swiftly return to a firm downward path after the shock.

A. Baseline Scenario

1. Macroeconomic assumptions. Real GDP growth is expected at an average of 1.3 percent over the next three years, supported by continued strong labor market conditions and fiscal measures. In the medium run, growth should converge to its potential level, estimated at 1.1 percent per year. Inflation—measured by the GDP deflator—should be 1.9 percent in 2018, and steadily rise thereafter, reaching 2.3 percent by 2024. Sovereign interest rates remain low and are currently negative up to a 10-year maturity. Thus, average interest rates are expected to continue falling, from 1.5 percent in 2018 to 1.0 percent in 2024.[1]

2. Germany's high level of government debt calls for using the higher scrutiny framework. Public gross debt is still above the indicative DSA threshold for high scrutiny of 60 percent of GDP. Debt increased significantly over 2009–10, reaching a peak of 82.5 percent of GDP, reflecting sizable fiscal stimulus, large financial sector support and euro zone crisis-related lending. Since the peak, it has declined gradually on the back of fiscal consolidation and a favorable interest rate-growth differential. Estimated gross financing needs are however already below 11 percent of GDP and should continue to fall through the forecast horizon.

3. Realism of baseline assumptions. The forecasts of macro-fiscal variables affecting debt dynamics have been on the conservative side. The median forecast error for real GDP growth during 2009–17 is 0.13 percent, suggesting that there is slight downward bias in the staff projections, but the forecast bias is in line with other surveillance countries. Similarly, the median forecast error for inflation (GDP deflator) is 0.54 percent, suggesting that the staff underestimated inflation in the past (particularly post-2009). The median forecast bias for the primary balance is 0.53 percent of GDP, relatively conservative for surveillance countries.

4. Cross-country experience suggests that the projected fiscal adjustment is feasible. Both the maximum 3-year adjustment in the cyclically-adjusted primary balance (CAPB) over the projection period (0.5 percent of GDP) and 3-year average cyclically adjusted primary balance

[1] The interest rate on new borrowing is derived from forecasts of the real interest rate and inflation, and it does not necessarily match market-based interest rate forecasts. Using market-based forecasts would make little difference to the debt sustainability analysis.

(1.5 percent of GDP) are not ambitious in cross-country comparison. Germany was able to deliver larger fiscal consolidations in the past, notably in 2011 and 2012.

B. Shocks and Stress Tests through the Medium Term

5. Germany's government debt should remain below 61 percent of GDP under plausible macro-fiscal shocks, while gross financing needs would remain below 10 percent of GDP. Under all considered macro-fiscal stress tests, both the debt-to-GDP ratio and gross financing needs either continue to fall or swiftly return to a downward path after the shock. Temporary shocks to real GDP growth, a combined macro-fiscal shock, or a contingent fiscal shock would nonetheless drive a temporary increase in debt and/or gross financing needs. Given the historical variability of growth, debt dynamics in Germany is most sensitive to growth shocks (detailed results below).

List of shocks and stress tests[2]

- **Growth shock**. Under this scenario, real output growth rates are lower than in the baseline by one standard deviation over 2020–21, i.e. 2.7 percentage points. The assumed decline in growth leads to lower inflation (0.25 percentage points per 1 percentage point decrease in GDP growth) and the interest rate is assumed to increase 25 basis points for every 1 percent of GDP worsening of primary balance. Debt (gross financing needs) would peak at 60.7 (9.2) percent of GDP in this case and converge to 52.6 (5.2) percent of GDP by 2024.
- **Primary balance shock**. This scenario examines the effect of a dual shock of lower revenues and rise in interest rate, leading to a cumulative 1.4 percent deterioration in the primary balance over 2020–21 (one standard deviation shock to the primary balance). The shock would result in a modest deterioration of debt dynamics.
- **Interest rate shock**. This scenario assumes an increase of 365 basis points increase in debt servicing costs throughout the forecast horizon, mimicking the historical maximum interest rate experienced since 2009. The effect on public debt and gross financing needs would also be relatively modest.
- **Additional stress test: Combined macro-fiscal shock**. This test combines shocks to growth, the interest rate, and the primary balance; while avoiding double-counting the effects of individual shocks. The impact on debt dynamics is slightly worse than that of a growth shock.
- **Additional stress test: Contingent fiscal shock**. This scenario assumes a cumulative 3 percent of GDP (about 100 billion euros) additional support to the financial sector over 2020–21, similar to the fiscal support to financial institutions during the global financial crisis. While a sizable shock, the impact on the debt ratio is relatively limited, and the debt-to-GDP ratio remains below 60 percent and continues to fall rapidly. Gross financing needs would remain comfortably below 10 percent

[2] Given that virtually all outstanding sovereign debt is denominated in euros, the scenario of a real exchange rate shock would not have a relevant effect on debt and is therefore not discussed.

Figure A1. Germany: Public Sector Debt Sustainability Analysis (DSA)—Baseline Scenario

(in percent of GDP unless otherwise indicated)

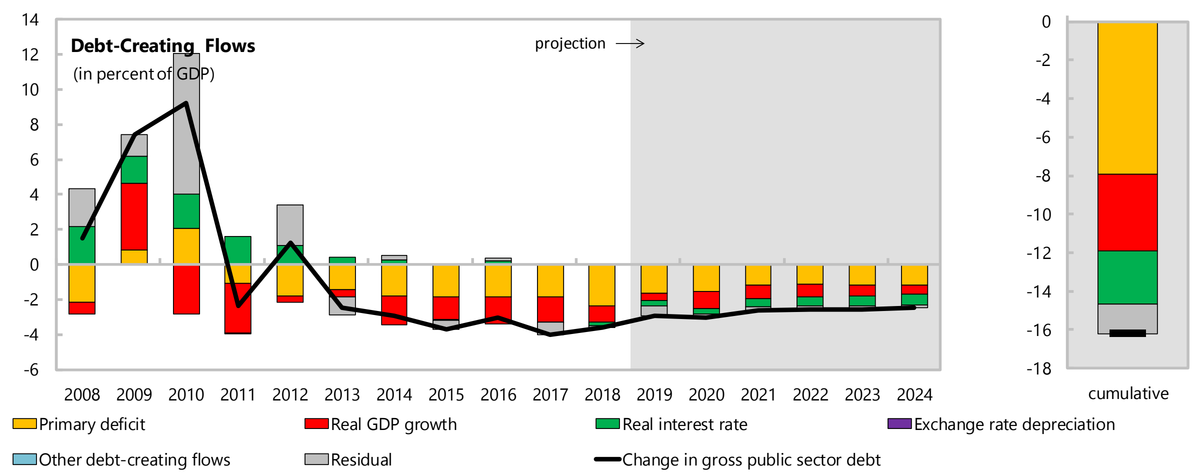
Debt, Economic and Market Indicators [1/]

	Actual			Projections					
	2008-2016 [2/]	2017	2018	2019	2020	2021	2022	2023	2024
Nominal gross public debt	74.8	64.5	60.9	58.0	55.0	52.4	49.8	47.2	44.7
Public gross financing needs	16.0	12.1	10.7	10.3	7.5	5.4	5.0	4.7	4.5
Real GDP growth (in percent)	1.1	2.2	1.4	0.7	1.7	1.5	1.4	1.3	1.1
Inflation (GDP deflator, in percent)	1.4	1.5	1.9	2.0	1.9	2.0	2.2	2.2	2.3
Nominal GDP growth (in percent)	2.6	3.7	3.3	2.7	3.7	3.5	3.6	3.5	3.4
Effective interest rate (in percent) [4/]	2.9	1.6	1.5	1.5	1.4	1.2	1.2	1.1	1.0
10-year bond yield	2.0	0.4	0.4	0.0	0.1	0.2	0.4	0.6	0.8

As of May 28, 2019		
Sovereign Spreads		
EMBIG (bp) 3/		0
5Y CDS (bp)		11
Ratings	Foreign	Local
Moody's	Aaa	Aaa
S&Ps	AAA	AAA
Fitch	AAA	AAA

Contribution to Changes in Public Debt

	Actual			Projections							
	2008-2016	2017	2018	2019	2020	2021	2022	2023	2024	cumulative	debt-stabilizing primary balance [9/]
Change in gross public sector debt	0.5	-4.0	-3.6	-2.9	-3.0	-2.6	-2.6	-2.6	-2.5	-16.2	
Identified debt-creating flows	-0.9	-3.3	-3.5	-2.4	-2.8	-2.4	-2.4	-2.4	-2.3	-14.7	
Primary deficit	-1.0	-1.9	-2.4	-1.7	-1.6	-1.2	-1.1	-1.2	-1.2	-7.9	-1.1
Primary (noninterest) revenue and grants	43.8	44.8	45.4	45.4	45.4	45.1	45.1	45.2	45.2	271.4	
Primary (noninterest) expenditure	42.8	42.9	43.0	43.8	43.9	43.9	44.0	44.0	44.0	263.5	
Automatic debt dynamics [5/]	0.1	-1.4	-1.1	-0.7	-1.3	-1.2	-1.2	-1.2	-1.1	-6.7	
Interest rate/growth differential [6/]	0.1	-1.4	-1.1	-0.7	-1.3	-1.2	-1.2	-1.2	-1.1	-6.7	
Of which: real interest rate	1.0	0.0	-0.3	-0.3	-0.3	-0.4	-0.5	-0.6	-0.6	-2.7	
Of which: real GDP growth	-0.9	-1.4	-0.9	-0.4	-1.0	-0.8	-0.7	-0.6	-0.5	-4.0	
Exchange rate depreciation [7/]	0.0	0.0	0.0	...	...	...	...	...	...	...	
Other identified debt-creating flows	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Privatization/Drawdown of Deposits (negative)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Contingent liabilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Please specify (2) (e.g., ESM and Euroarea loans)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Residual, including asset changes [8/]	1.4	-0.7	-0.1	-0.5	-0.2	-0.2	-0.2	-0.2	-0.2	-1.5	



Source: IMF staff.

1/ Public sector is defined as general government.

2/ Based on available data.

3/ Long-term bond spread over German bonds.

4/ Defined as interest payments divided by debt stock (excluding guarantees) at the end of previous year.

5/ Derived as [(r - π(1+g) - g + ae(1+r)]/(1+g+π+gπ)) times previous period debt ratio, with r = interest rate; π = growth rate of GDP deflator; g = real GDP growth rate; a = share of foreign-currency denominated debt; and e = nominal exchange rate depreciation (measured by increase in local currency value of U.S. dollar).

6/ The real interest rate contribution is derived from the numerator in footnote 5 as r - π (1+g) and the real growth contribution as -g.

7/ The exchange rate contribution is derived from the numerator in footnote 5 as ae(1+r).

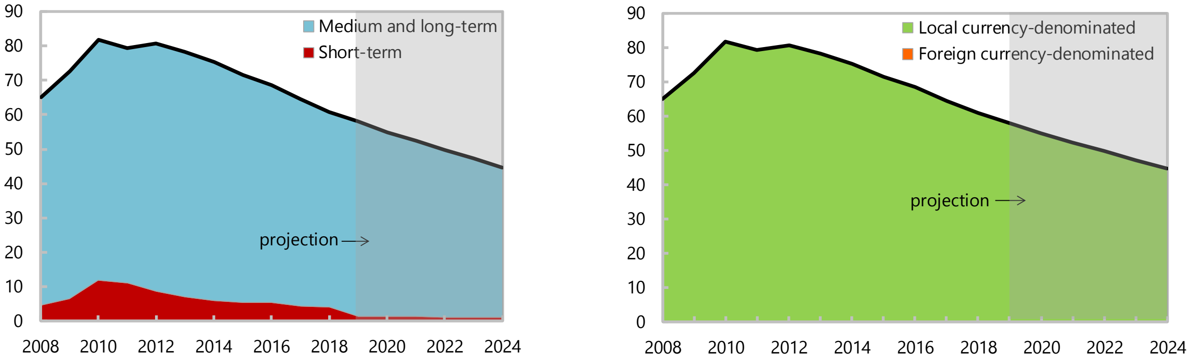
8/ Includes asset changes and interest revenues (if any). For projections, includes exchange rate changes during the projection period.

9/ Assumes that key variables (real GDP growth, real interest rate, and other identified debt-creating flows) remain at the level of the last projection year.

Figure A2. Germany: Public DSA—Composition of Public Debt and Alternative Scenarios

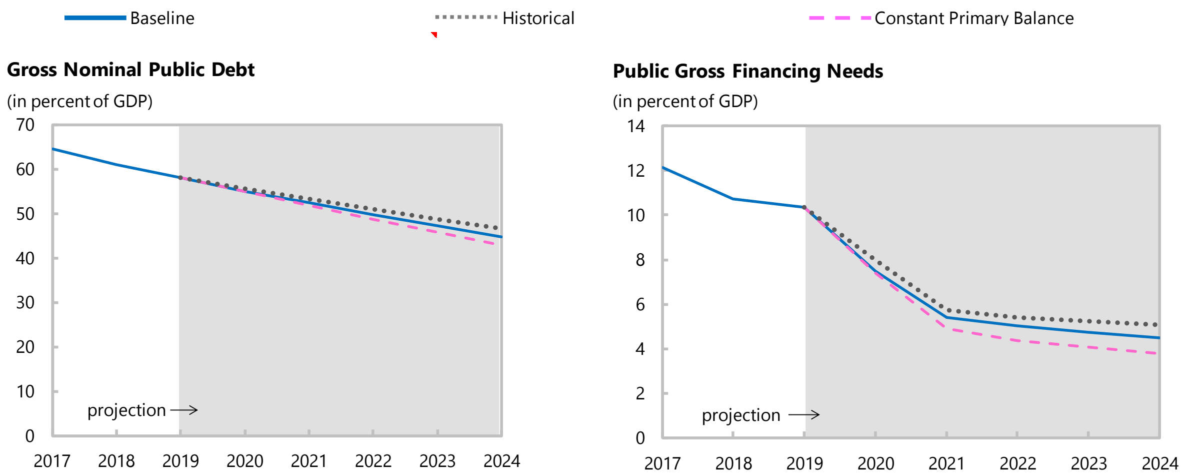
Composition of Public Debt

By Maturity (in percent of GDP) | **By Currency** (in percent of GDP)



Alternative Scenarios

Gross Nominal Public Debt (in percent of GDP) | **Public Gross Financing Needs** (in percent of GDP)



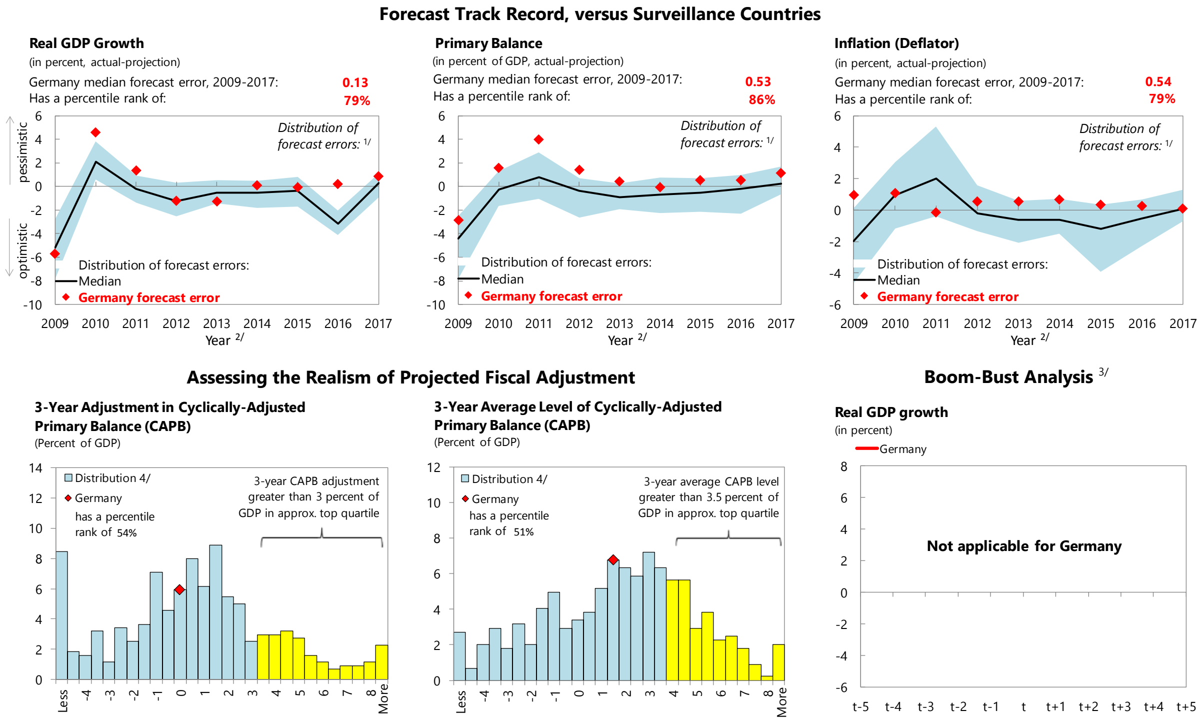
Underlying Assumptions
(in percent)

Baseline Scenario	2019	2020	2021	2022	2023	2024
Real GDP growth	0.7	1.7	1.5	1.4	1.3	1.1
Inflation	2.0	1.9	2.0	2.2	2.2	2.3
Primary Balance	1.7	1.6	1.2	1.1	1.2	1.2
Effective interest rate	1.5	1.4	1.2	1.2	1.1	1.0
Constant Primary Balance Scenario						
Real GDP growth	0.7	1.7	1.5	1.4	1.3	1.1
Inflation	2.0	1.9	2.0	2.2	2.2	2.3
Primary Balance	1.7	1.7	1.7	1.7	1.7	1.7
Effective interest rate	1.5	1.4	1.2	1.2	1.1	1.0

Historical Scenario	2019	2020	2021	2022	2023	2024
Real GDP growth	0.7	1.3	1.3	1.3	1.3	1.3
Inflation	2.0	1.9	2.0	2.2	2.2	2.3
Primary Balance	1.7	1.1	1.1	1.1	1.1	1.1
Effective interest rate	1.5	1.4	1.5	1.5	1.6	1.6

Source: IMF staff.

Figure A3. Germany: Public DSA—Realism of Baseline Assumptions



Source : IMF Staff.

1/ Plotted distribution includes surveillance countries, percentile rank refers to all countries.

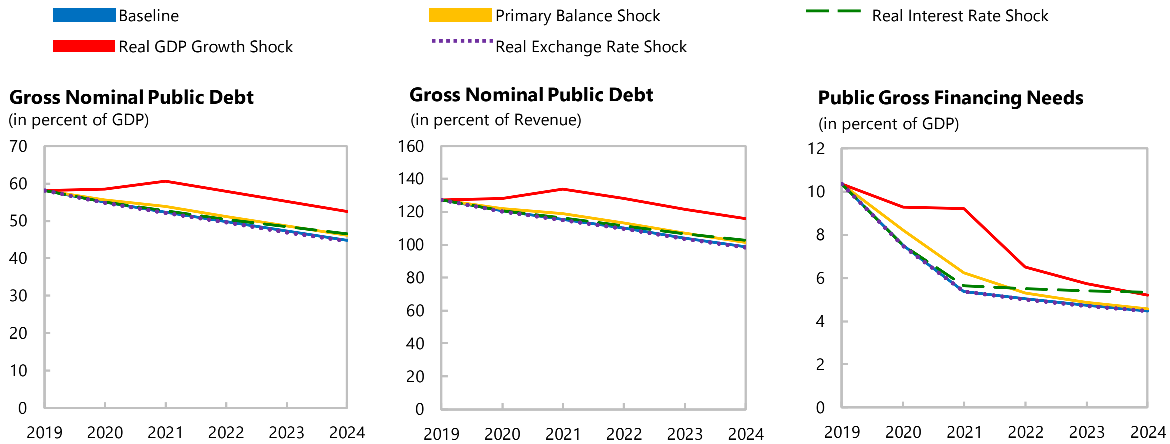
2/ Projections made in the spring WEO vintage of the preceding year.

3/ Not applicable for Germany, as it meets neither the positive output gap criterion nor the private credit growth criterion.

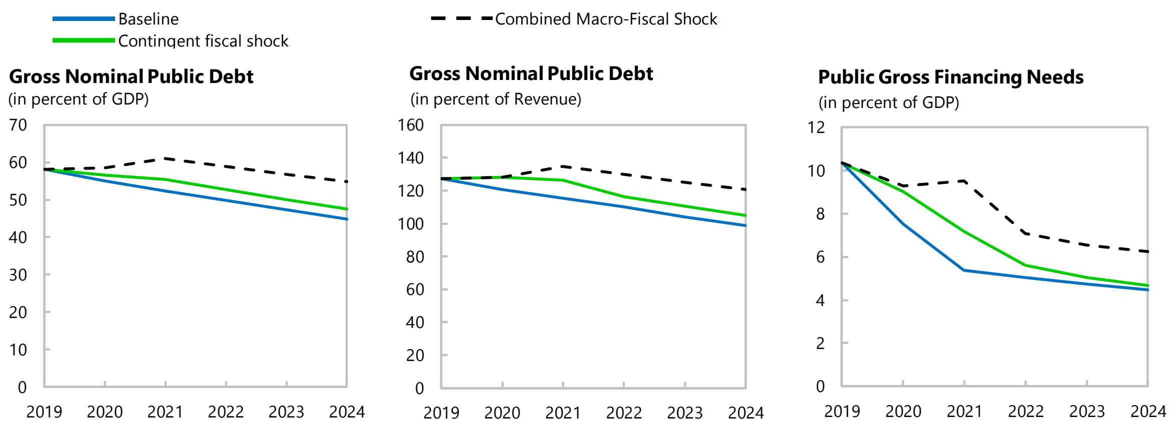
4/ Data cover annual obervations from 1990 to 2011 for advanced and emerging economies with debt greater than 60 percent of GDP. Percent of sample on vertical axis.

Figure A4. Germany: Public DSA—Stress Tests

Macro-Fiscal Stress Tests



Additional Stress Tests



Underlying Assumptions

(in percent)

Primary Balance Shock	2019	2020	2021	2022	2023	2024
Real GDP growth	0.7	1.7	1.5	1.4	1.3	1.1
Inflation	2.0	1.9	2.0	2.2	2.2	2.3
Primary balance	1.7	0.8	0.5	1.1	1.2	1.2
Effective interest rate	1.5	1.4	1.3	1.2	1.1	1.0
Real Interest Rate Shock						
Real GDP growth	0.7	1.7	1.5	1.4	1.3	1.1
Inflation	2.0	1.9	2.0	2.2	2.2	2.3
Primary balance	1.7	1.6	1.2	1.1	1.2	1.2
Effective interest rate	1.5	1.4	1.7	2.0	2.1	2.3
Combined Shock						
Real GDP growth	0.7	-1.0	-1.2	1.4	1.3	1.1
Inflation	2.0	1.2	1.3	2.2	2.2	2.3
Primary balance	1.7	0.1	-1.8	1.1	1.2	1.2
Effective interest rate	1.5	1.4	1.8	2.1	2.3	2.5

Real GDP Growth Shock	2019	2020	2021	2022	2023	2024
Real GDP growth	0.7	-1.0	-1.2	1.4	1.3	1.1
Inflation	2.0	1.2	1.3	2.2	2.2	2.3
Primary balance	1.7	0.1	-1.8	1.1	1.2	1.2
Effective interest rate	1.5	1.4	1.3	1.2	1.1	1.1
Real Exchange Rate Shock						
Real GDP growth	0.7	1.7	1.5	1.4	1.3	1.1
Inflation	2.0	2.3	2.0	2.2	2.2	2.3
Primary balance	1.7	1.6	1.2	1.1	1.2	1.2
Effective interest rate	1.5	1.4	1.2	1.2	1.1	1.0

Source: IMF staff.

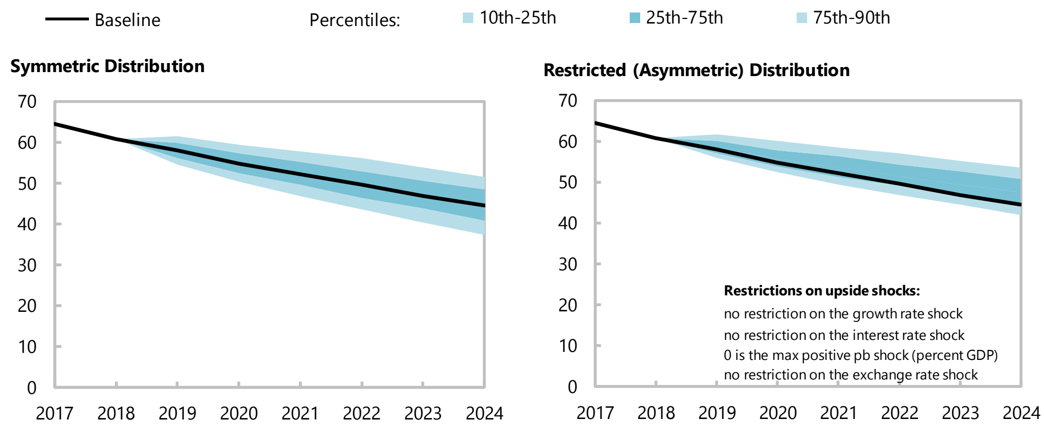
Figure A5. Germany: Public DSA Risk Assessment

Heat Map

Debt level 1/	Real GDP Growth Shock	Primary Balance Shock	Real Interest Rate Shock	Exchange Rate Shock	Contingent Liability shock
Gross financing needs 2/	Real GDP Growth Shock	Primary Balance Shock	Real Interest Rate Shock	Exchange Rate Shock	Contingent Liability Shock
Debt profile 3/	Market Perception	External Financing Requirements	Change in the Share of Short-Term Debt	Public Debt Held by Non-Residents	Foreign Currency Debt

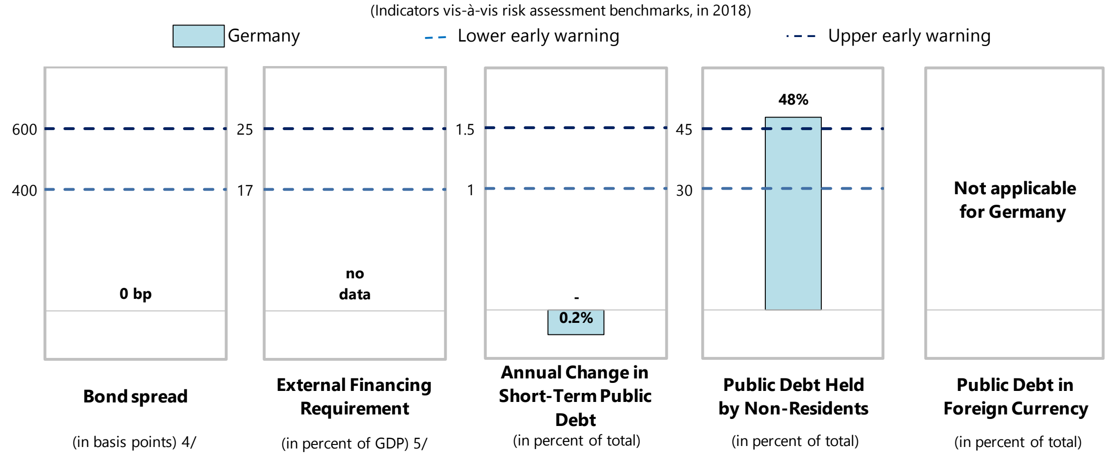
Evolution of Predictive Densities of Gross Nominal Public Debt

(in percent of GDP)



Debt Profile Vulnerabilities

(Indicators vis-à-vis risk assessment benchmarks, in 2018)



Source: IMF staff.

1/ The cell is highlighted in green if debt burden benchmark of 85% is not exceeded under the specific shock or baseline, yellow if exceeded under specific shock but not baseline, red if benchmark is exceeded under baseline, white if stress test is not relevant.

2/ The cell is highlighted in green if gross financing needs benchmark of 20% is not exceeded under the specific shock or baseline, yellow if exceeded under specific shock but not baseline, red if benchmark is exceeded under baseline, white if stress test is not relevant.

3/ The cell is highlighted in green if country value is less than the lower risk-assessment benchmark, red if country value exceeds the upper risk-assessment benchmark, yellow if country value is between the lower and upper risk-assessment benchmarks. If data are unavailable or indicator is not relevant, cell is white.
Lower and upper risk-assessment benchmarks are:

400 and 600 basis points for bond spreads; 17 and 25 percent of GDP for external financing requirement; 1 and 1.5 percent for change in the share of short-term debt; 30 and 45 percent for the public debt held by non-residents.

4/ Long-term bond spread over German bonds, an average over the last 3 months, 27-Feb-19 through 28-May-19.

5/ External financing requirement is defined as the sum of current account deficit, amortization of medium and long-term total external debt, and short-term total external debt at the end of previous period.

Annex IV. Authorities' Response to Past IMF Policy Recommendations

IMF 2018 Article IV Recommendations	Authorities' Response
Fiscal Policy	
• Fiscal space should be used fully to raise the growth potential by encouraging investment, promoting labor supply, and boosting productivity. • Address capacity constraints and improve investment prioritization at the municipal level. Implement pension reforms to make it more attractive to extend work lives. • Expand full-day primary education and early childhood education, boost investment in life-long learning.	• The 2019 budget includes measures to boost public investment and provide income tax relief. • Almost 94 percent of the first tranche (€3.5 billion) of the government's Municipal Investment Promotion Fund (MIPF) created in 2015 was earmarked as of June 2018, while 12 percent of the second tranche (€3.5 billion) of MIPF was earmarked as of March 2018. • Partnerschaft Deutschland (PD)—Germany's public consulting company—is providing advisory services on planning and procurement to an increasing number of public investment projects at the municipality level. • The amendment to the Basic Law on public finances in areas such as educational infrastructure, social housing, and public rail transport entered into force on 4 April 2019. • In addition to the program (2015–2018) for childcare places, the government is currently running another program (2017–2020) for childcare places with a financial volume of €1.126 billion.
Financial Sector Policy	
• Expand the macroprudential toolkit with income-based instruments to better prevent excessive build-up of household debt when house prices rise rapidly.	• No new macroprudential regulation was adopted since the publication of the 2018 Article IV Staff Report. However, the authorities are currently undertaking the review of macroprudential policy instruments.
• Address data gaps that are hindering full assessment of possible financial stability risks in specific segments of the economy.	• The authorities are conducting a bank survey on real estate lending and corporate credit underwriting standards. The results are scheduled to be published in September 2019. The authorities intend to regularize the survey.
• Consider early activation of existing macroprudential tools to prevent the build-up of macro-financial vulnerabilities when granular data is lacking.	• On May 27, 2019, the Financial Stability Committee took a decision to raise the counter-cyclical capital buffers by 0.25%. Banks must meet the new required capital by end-June 2020. The authorities did not see a need to activate sector-specific macroprudential instruments (i.e., LTV caps, amortization requirements).
	• For progress on the implementation of outstanding FSAP recommendations see Annex V.
Structural Reforms	
• Consider pension and labor market reforms that make it attractive to extend working lives.	• *Pension and labor market reforms:* No new action taken. The Act to Flexibilize the Transition from Working Life to Retirement and to Strengthen Prevention and Rehabilitation in Working Life, which came in force in 2017, has led to a rise in old-age labor force participation. The government plans to review the law in 2022.

• Expand investment in digital infrastructure, in particular a nationwide fiber-optic network.	• *Digitalization:* the government has set out a clear strategy and has plans to allocate up to EUR 12 billion to support a nationwide fiber-based gigabit network. Investment-friendly regulation, in accordance with the European Electronic Communications Code, to incentivize private investments is to be implemented by end-2020. The government is also preparing a master plan to expand mobile coverage and deploy 5G.
• Foster entrepreneurship and expand e-government services.	• *Entrepreneurship and e-government services:* To support innovation, especially of SMEs, the government is drafting a bill on R&D tax credit. To further support venture capital, the government plans to continue its co-investment strategy to crowd in private investment, especially by institutional investors. The government is making progress in implementing the National e-Government Strategy.
• Introduce greater competition in product markets, notably in network industries and professional services.	• *Competition:* no action has been taken so far. However, in 2019, the government plans to undertake a review of regulations in professional services, with an intension of reforming the Professional Law for lawyers. In addition, to further promote competition in the railway sector, the government also plans to evaluate the Railway Regulation Act.

Annex V. Authorities' Response to FSAP 2016 Recommendations

Germany: FSAP Key Recommendations[1/]		
Recommendations	**Time Frame[2]**	**Status**
Financial stability policy framework		
Establish a core set of readily-available, consistent data for banks and non-banks to strengthen financial stability and macroprudential policy analysis.	Short term	Bundesbank is integrating selected granular supervisory and statistical data of banks, insurance companies, and investment funds to build a "house of microdata (HoM)," which will be used for financial stability and macroprudential policy analysis along with other information sources. Currently the HoM contains 8 datasets with 130 million timeseries data, including those for MFIs. Bundesbank is in the process of integrating bank supervisory microdata according to the common reporting framework (COREP), Germany security holding statistics, centralized securities database, and German transactions of TARGET2.
Develop the legal basis for real estate-related macroprudential tools.	Short term	On March 30, 2017, the Bundestag passed legislation that implements part of the FSC's recommendation of June 2015 and entered into force on June 10, 2017. The law introduced new instruments for residential real estate loans (does not cover non-residential CRE loans), allowing for capping LTV ratios and setting amortization requirements for financial stability purposes. The requirements are meant to apply to all financial institutions if activated. The law omits complementary DTI and DSTI ratio instruments, which had also been recommended by the FSC in 2015, and does not address important data requirements for the effective operation of the real estate-related macroprudential instruments. The ongoing one-off bank survey on real estate lending and corporate credit underwriting standards is expected to provide valuable information on possible financial risks in specific segments of real estate markets.
Banking oversight		
Implement measures to strengthen the oversight role of the banks' supervisory board.	Short term	Within the German two-tier system, the supervisory board's role is passive and restricted to a pure control function. The authorities consider the current system compliant with the requirements of Basel Core Principle 14, thus do not plan to amend the legal framework.
Provide guidance on risk management and other supervisory requirements, e.g. regarding loan portfolio management, concentration and related party risk, and operational risk.	Short term	Bundesbank and BaFin are currently following-up on the 2016 FSAP recommendations when reviewing relevant provisions in MaRisk. The authorities consider that concentration risk is sufficiently covered by MaRisk, and further guidance has not been issued.
Increase granularity and coverage of bank supervisory data	Short term	Since June 2017, all LSIs have to report using FINREP templates, increasing the granularity and comprehensiveness of the information available to supervisors. The new reporting standard will also allow to access data at a consolidated level (e.g., NPLs). The requirements have been set on a harmonised basis throughout the SSM-covered countries. However, national regulatory reporting will remain in place as a necessary complement from a German banking supervisory perspective.
Increase the effectiveness of the AML/CFT supervisory framework over cross-border banks.	Short term	Since the 2016 FSAP, BaFin's AML Department has hired 32 new staff for the two new divisions established for AML/CFT banking supervision, which focus on banks with higher risk and need for intense supervision (i.e., major banks with cross-border operations). The additional staff conducts AML/CFT audits (rather than external auditors). BaFin has also set up in one case an inhouse "special representative" in a major bank to conduct audit functions and ongoing AML/CFT monitoring of this bank. The AML/CFT legal framework was revised in June 2017, in line with the 4th EU Money Laundering Directive, with efforts underway to transpose the 5th EU Money Laundering Directive.

Germany: FSAP Key Recommendations (concluded)		
Recommendations	**Time Frame[2]**	**Status**
Insurance oversight		
Prepare a communication strategy ahead of the publication of Solvency II indicators	Short term	BaFin conducted bilateral discussions with life insurance (LI) companies ahead of the publication date of May 21, 2017, but no common communication strategy was decided.
Extend the application of G-SII toolkit on a risk-based basis to other large groups, including recovery and resolution planning, enhanced supervision and regular stress tests	Medium term	• BaFin has extended the requirement for recovery plans to two other groups headquartered in Germany, beyond the country's single G-SII. The supervisory teams responsible for the respective groups are in the process of defining the elements of the plans and will review them once they are finalized. BaFin does currently not intend to further extend this requirement to other groups. • Germany also participates in the EIOPA stress testing exercises. In 2016, 20 life insurers covering three quarters of the market participated. The fourth EU-wide stress text exercise in 2018 included 5 large German insurance groups. Furthermore, insurers are required to perform additional stress tests on their own as part of their risk and solvency analysis (according to the Insurance Supervision Act, section 27). Those results are also part of the narrative reporting to BaFin.
Communicate supervisory expectations based on the ORSA (Own Risk Solvency Assessment) review more systematically; use Solvency II framework to impose capital add-ons	Medium term	• BaFin gives feedback to insurance firms based on the ORSA review, especially when those do not seem to hold sufficient own funds over and above the SCR to comply with capital requirements on a continuous basis. BaFin has also been encouraging insurers to improve the quality of ORSA reports, especially in the areas where BaFin identifies as weak in the 2017 assessment (e.g., depth of information; assessment of overall solvency needs, continuous compliance with the regulatory capital requirements and technical provisions, and risk profile's deviation from the SCR assumptions; quality of stress tests). • At the IAIS level, discussions are ongoing as to the future framework for addressing systemic risk in the insurance sector, which would have to be taken into account • Capital add-ons are not a first resort measure, but the supervisor is ready to set capital add-ons on a case by case basis when pre-conditions are found to be in place under Solvency II.
Require action plans for companies facing difficulties in meeting Solvency II requirements, including stress testing to ensure that they would be met even after a plausible shock	Medium term	BaFin monitors companies' progress towards compliance with solvency capital requirements without Solvency II transition measures, and assesses the plausibility and appropriateness of the companies' plans on a yearly basis. BaFin is also thoroughly reviewing internal models, including by developing a new stochastic approach (BSM—Branchensimulationsmodell) that better accounts for embedded options and guarantees of typical LI products.
Asset management oversight		
Intensify frequency of on-site inspections and enhance risk classification methodology	Short term	BaFin revised the risk classification methodology for supervised asset managers, and, since 2018, uses improved impact criteria. BaFin also substantially increased the frequency of on-site inspections.
Introduce stronger rules on reporting of pricing errors and investor compensation rules	Short term	BaFin published the "Mindestanforderungen an das Risikomanagement von Kapitalverwaltungsgesellschaften" (KAMaRisk) in January 2017, which is a circular on, inter alia, the minimum requirements for the risk-management of investment managers. According to chapter 6, no. 3 v) and w) of the KAMaRisk, asset management companies are required to have policies in place (1) to inform depositaries of material pricing errors and (2) to compensate investors in the event of material pricing errors.

1/ Includes only recommendations to German authorities.
2/ Short term is one year, while medium term is 2-3 years.

Annex VI. Regional Fiscal Differences and Implications for Public Investment[1]

Despite recent increases, public investment in Germany has remained around 2–2½ percent of GDP, comparatively low among advanced economies. This Annex explores factors that may have held back public investment by looking beyond developments at the central government level, as two-thirds of public investment is executed by local governments (Länder and municipalities). The analysis shows that in recent years local governments prioritized fiscal consolidation and debt reduction to meet Germany's national fiscal rule (known as the "Debt Brake"), which resulted in a reduction in public investment spending until very recently.

1. **Public investment in Germany is relatively low in international comparison.** While differences in the perimeter of the general government across countries make international comparisons imprecise, public investment as a share of GDP in Germany has hovered around 2-2½ percent of GDP, considerably lower than that of other advanced economies (IMF 2018). Moreover, Germany's federal system means that implementation of public investment projects is dispersed between the Bund (central government), Länder (federal states), and municipalities. For instance, a large (albeit declining) share of public investment is executed by municipalities: the share of municipal government investment in total public investment fell from 40 percent in 2005 to 33 percent in 2017, and slightly increased to 35 percent in 2018.

2. **Investment needs in Germany remain significant**. The relatively low public investment over the past two decades has led to a deterioration of infrastructure in Germany. For example, the decline in public investment since 2011 has led to a considerable deterioration of the degree of modernization in the East Länder, and the capital stock in the West Länder has a much lower degree of modernization.[2] Moreover, in terms of capital stock per capita, most Länder still lag behind Bavaria, Baden-Württemberg, and Hamburg: the average capital stock per capita, at replacement cost, in Bavaria, Baden-Württemberg, and Hamburg was about €145,000 in 2015, about €40,000 higher than that in the East Länder and Berlin and €45,000 higher than that in North Rhine-Westphalia. For Germany as a whole, the German development bank (KFW, 2018) estimates a public investment backlog at close to €159 billion (about 5 percent of GDP), with particularly large gaps in educational facilities (€48 billion) and transport infrastructure (€39 billion). It is also widely agreed that the digital infrastructure needs to be upgraded, though this is partly a task for the private sector.

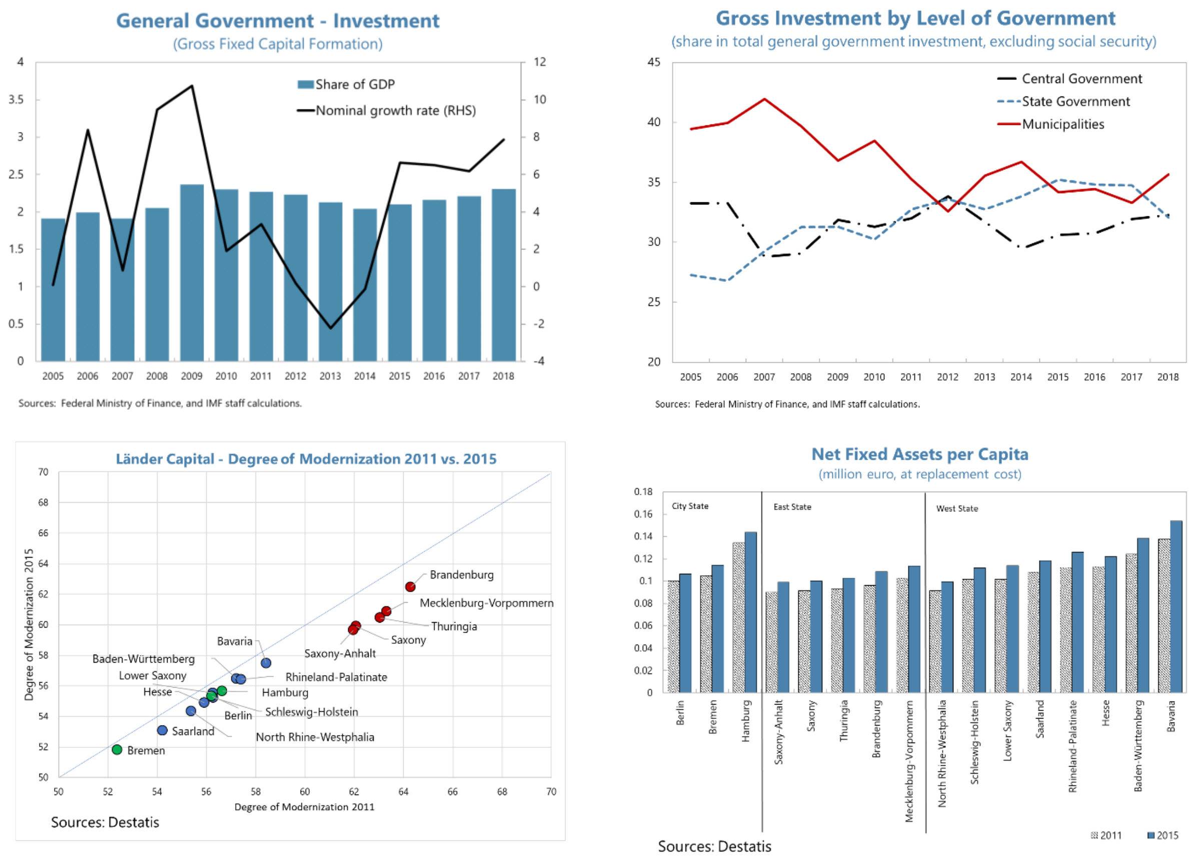
3. **Länder and municipal governments have prioritized fiscal consolidation and debt reduction at the expense of public investment**. At the aggregate level, both Länder and municipal governments have been running budget surpluses over the past several years, and the Federal

[1] Prepared by Ruo Chen.

[2] The degree of modernization is the ratio of net assets to gross fixed assets. This measure indicates how many percent of assets have not yet been written off and thus provides information on the aging process of fixed assets.

government has been allocating more funds to support local governments. However, the improved budget conditions have not significantly boosted public investment, particularly at the local government levels, despite the large investment needs.

Figure A1. Germany: Public Investment and Capital Stock



4. **The Länder have made significant improvements to their budget positions to meet the national fiscal rule and reduce debt.** The national fiscal rule, introduced in 2009, generally prohibits structural borrowing by any Länder starting in 2020. Therefore, Länder with higher fiscal deficits or debt have implemented larger fiscal consolidations. For example, Bremen, Rhineland-Palatinate, and Saarland, which had the highest fiscal deficits or debt in 2011, have implemented the largest fiscal consolidations since then. Fiscal consolidation efforts over this period, together with the economic upswing and low interest rates, led to all Länder registering budget surpluses in 2018. Indeed, all Länder have used the budget surpluses in recent years to build up reserves and off-budget entities (special funds), which can be used to supplement budgetary resources in the future without resorting to new borrowing (Bundesbank 2018).

Figure A2. Germany: Fiscal Adjustment by Länder

5. In the West Länder and city states, fiscal consolidation was largely achieved through improved revenue, but capital expenditure cuts also contributed. Capital expenditure cuts were particularly pronounced in Länder with larger consolidation needs (i.e., higher fiscal deficits in 2011) (Figure A3). Seitz (2000) explained that, given the limited revenue autonomy at the Länder and municipal level,[3] subnational governments primarily pursue expenditure smoothing policies. In other words, the Länder do not raise expenditures in the face of higher revenue, essentially treating higher revenue as temporary. In addition, a large part of expenditures, such as social transfers, are regulated by Federal law and therefore not discretionary.

6. In the East Länder, the expected phasing out of federal grants prompted cautious expenditure management, including cuts to capital expenditures. The fiscal positions of the East Länder in 2011 did not significantly deviate from a balanced structural budget. However, the

[3] Most taxes are collected by the states but are legislated by federal law. The Länder governments participate the legislative procedure through the upper chamber (Bundesrat) but cannot change the parameters of the taxes once the legislation is passed. Very few taxes are legislated at subnational level, such as property acquisition tax (Länder) and business tax (Municipality).

expected phasing out of federal grants by 2019 under the Solidarity Pact II led to significant expenditure cuts, particularly capital expenditures, even though that higher tax revenue partly compensated for lower grants.[4] Conservative tax revenue projections in recent years also contributed to cautious expenditure planning.

Figure A3. Germany: Contribution to Länder Fiscal Adjustment

7. Fiscal consolidation at the Länder level also contributed to lower capital expenditures at the municipal level. All non-city states have their own equalization systems for redistributing revenue from the Länder to the municipalities. In general, two types of redistribution take place within each Länder: (i) a fixed percentage of state tax revenue is distributed to municipalities; and (ii) additional general and special purpose funds are transferred to municipalities based on their needs. Due to strong tax revenue in recent years, the first type of redistribution resulted in higher municipal revenue overall.[5] However, larger consolidation needs in some West Länder and lower Federal grants to the East Länder led to reduced capital transfers to municipalities in these regions. This contributed to capital expenditure cuts at the municipal level. For example, in the East Länder, municipal capital revenue and expenditure declined by 0.5 percent and 0.3 percent of Länder GDP, respectively, since 2011. Thus, although municipalities received higher tax revenue to meet their

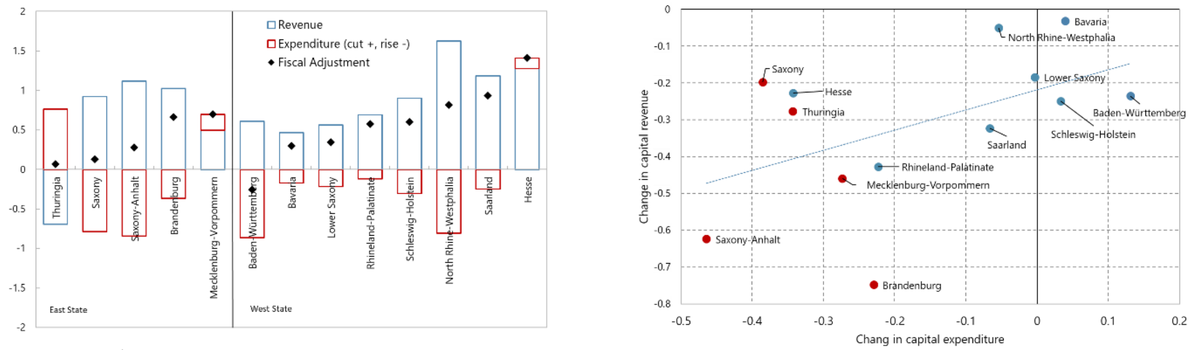
[4] The Solidarity Pact II provided €156 million support to the East Länder for rebuilding their infrastructure between 2005 and 2019.
[5] The analysis in this section is based on aggregated municipal fiscal accounts by each Länder.

current expenditure needs, lower capital transfers forced them to cut capital expenditures, particularly in the East Länder and some West Länder with larger consolidation needs.

Figure A4. Germany: Capital Expenditure in Municipalities

Municipal Fiscal Adjustment: Expenditure vs. Revenue
(change from 2011 to 2017, percent of Länder GDP)

Municipality: Change in Capital Expenditure and Revenue
(percent of Länder GDP, 2011-2017)



Sources: Destatis

Sources: Destatis

Key Findings:

- In an effort to meet the national fiscal rule and reduce debt, local governments have prioritized fiscal consolidation at the expense of public investment. This has occurred at both the Länder and municipal levels.
- In the West Länder, despite higher revenue, capital expenditures were cut to facilitate consolidation.
- In the East Länder, the loss of grants (a relatively stable source of revenue) prompted cautious expenditure planning, including cuts to capital expenditures.
- Fiscal consolidation at the Länder level also led to capital expenditure cuts at the municipal level through lower discretionary capital transfers.

Annex VII. Business Investment in Germany[1]

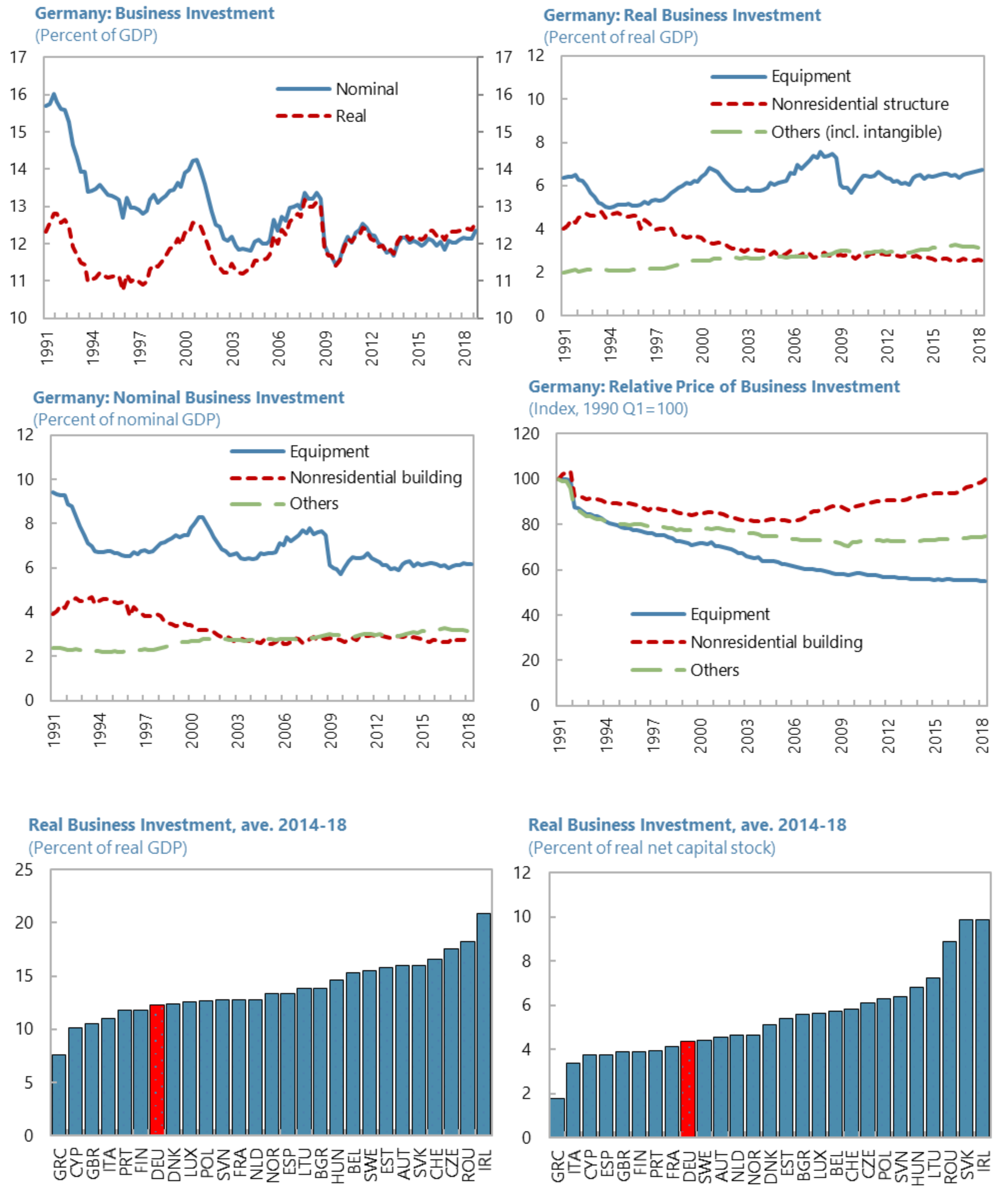
This Annex studies the dynamics of aggregate private nonresidential investment ("business investment" thereafter) in Germany. The analysis suggests that the recent level of business investment in Germany is broadly in line with past developments in aggregate demand and income, nonfinancial corporations' profits, funding cost, financial conditions, and Tobin's Q. But business investment in Germany is lower than in its European peers due mainly to its relatively low growth prospects.

1. Since the early 1990s, Germany's nominal business investment has declined by around 4 percentage points of nominal GDP, contributing to the improvement in the external balance (Figure A1, top left). The decline was driven by a decrease in nominal investment in machinery and equipment (by 3¼ percentage points of nominal GDP), on the back of a substantial decline in the relative price of machinery and equipment—defined as prices of machinery and equipment relative to consumption prices (Figure A1, middle right panel). The decline in the relative price of "other" investment (e.g., intellectual property products, cultivated biological resources) was less significant while that of nonresidential construction has returned to the level in the early 1990s, following a moderate decline through the mid-2000s. The large decline in the relative price of machinery and equipment has been observed across advanced, emerging markets, and developing economies over the past three decades (IMF, 2019). The literature attributes the decline in the relative price of investment goods to faster productivity growth in capital goods production and deepening trade integration.

2. Real business investment has returned to the level seen in the early 1990s but is low compared to European peers (Figure A1, top left). Following a decline to around 11 percent of GDP in the mid-1990s, Germany's real business investment has been moving around 12–13 percent of real GDP since then, albeit with cyclical ups and downs. This is at the bottom quartile of the European country peers (Figure A1, bottom panels). Real business investment in relation to real capital stock is also relatively low. Compositionally, a decline in real investment in non-residential structure following reunification was offset by a rise in "other" investment and a small increase in investment in machinery and equipment.

[1] Prepared by Aiko Mineshima.

Figure A1. Germany's Business Investment



Sources: AMECO, Destatis, Have Analytics, and IMF staff calculations.

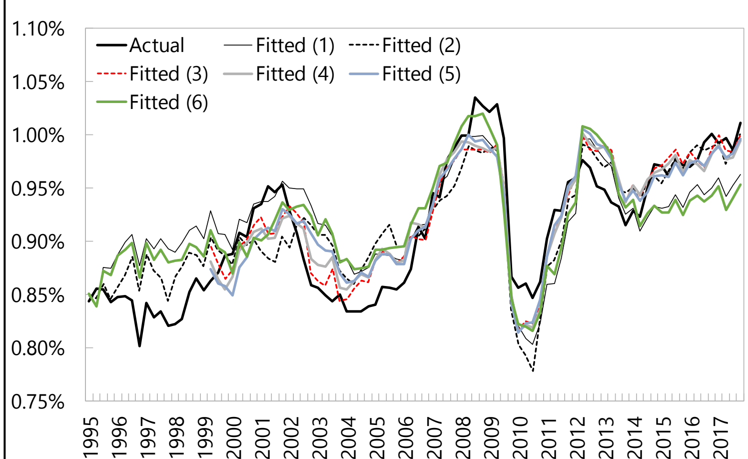
3. To explain the dynamics of business investment, we estimate an "accelerator" model augmented with nonfinancial corporations' profits, funding cost, financial conditions, and Tobin's Q. The basic accelerator model assumes that business investment increases when aggregate demand or income increases, and in an uncertain world, past demand or income growth is assumed to signal future demand or income.[2] The basic model is then augmented by nonfinancial corporations' financing cost (i.e., real interest rate), financial conditions (i.e., leverage ratio), profits, and Tobin's Q[3], as well as the relative price of business investment. The econometric estimation is conducted with quarterly data for 1992 Q1-2017 Q4 (or the longest available timeseries data), and standard errors are computed with the Newey-West procedure. Following IMF (2015), the analysis includes 12 lags of the changes in output (N = 12), also a conventional choice. It also follows the literature in normalizing the equation by the lagged capital stock, K_{t-1}, to address concerns of non-stationarity.

$$\frac{I_t}{K_{t-1}} = \frac{\propto}{K_{t-1}} + \sum_{i=1}^{12} \beta_i \frac{\Delta GVA_{t-i}}{K_{t-1}} + X_{t-1} + \delta + \varepsilon_t \textit{ where X is a set of NFCs' financial conditions}$$

4. The results suggest that recent levels of real business investment do not significantly deviate from model projections (Figure A2). As expected, positive real output growth in the past tend to be associated with higher real business investment (Table A1, specification 1). The inclusion of nonfinancial corporations' funding cost, financial conditions, profits, and Tobin's Q further improve the fit of the estimation (Table A1, specification 2-5) and have the expected sign: higher real interest rate and corporate leverages tend to be associated with lower business investment, while higher profits and Tobin's Q tend to be associated with higher business investment. The inclusion of the relative price of business investment does not much improve the model fit (Table A1, specification 6), although the negative sign for the coefficient—meaning a decline in the relative price of business investment increases real business investment—is the expected one.

Figure A2. Germany's Actual and Fitted Real Business Investment

(Percent of real net capital stock)



Sources: IMF staff esimates.

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[2] Jorgenson and Siebert (1968) provide a derivation of the accelerator model. Based on the theory underlying the model, the empirical specification is typically estimated as in Oliner and others (1995).

[3] Following IMF (2015), Tobin's Q is constructed as the ratio of nonfinancial corporations' equity liabilities to their total financial assets.

Table A1. Regression Results [1/]

Dependent Variable: Real Private Nonresidential Investment in % of Real Net Capital Stock

	(1) 2/	(2) 2/	(3) 2/	(4) 2/	(5) 2/	(6) 2/
Reverse of capital stock (t-1)	-19.995 **	-19.771 ***	-51.977 ***	-57.515 ***	-61.321 ***	23.386
Accelerator (t-1)	-0.015	-0.072	-0.112	-0.078	0.000	-0.027
Accelerator (t-2)	-0.029	-0.100	-0.128	-0.109	-0.064	-0.004
Accelerator (t-3)	0.166 ***	0.140 ***	0.123 ***	0.131 **	0.179 ***	0.209 ***
Accelerator (t-4)	0.185 ***	0.103	0.202 ***	0.208 ***	0.229 ***	0.195 ***
Accelerator (t-5)	0.218 ***	0.172 **	0.166 **	0.174 **	0.199 ***	0.221 ***
Accelerator (t-6)	0.238 ***	0.216 **	0.162 ***	0.177 ***	0.219 ***	0.231 ***
Accelerator (t-7)	0.221 ***	0.217 ***	0.172 ***	0.176 ***	0.196 ***	0.243 ***
Accelerator (t-8)	0.164 **	0.149 ***	0.147 ***	0.166 ***	0.177 ***	0.167 ***
Accelerator (t-9)	0.185 **	0.128 *	0.101 *	0.109 *	0.114 **	0.196 **
Accelerator (t-10)	0.167 **	0.097 *	0.104 ***	0.117 ***	0.104 ***	0.177 **
Accelerator (t-11)	0.127 *	0.085 *	0.070	0.076 *	0.104 **	0.143 **
Accelerator (t-12)	0.196 **	0.125 **	0.100 *	0.117 **	0.135 ***	0.215 ***
Constant	0.011 ***	0.012 ***	0.016 ***	0.015 ***	0.016 ***	0.013 ***
Real interest on corporate bonds (t-1)		-0.0002 ***				
NFC leverage ratio (t-1)			-0.00001 ***			
NFC Tobin's Q (t-1)				0.00002 *		
NFC Profit (t-1)					0.00000	
Relative price of business investment (t-1)						-0.00687 *
R-squared	*0.505*	*0.704*	*0.828*	*0.803*	*0.786*	*0.550*
Adjusted R-squared	*0.433*	*0.657*	*0.788*	*0.757*	*0.736*	*0.478*
S.E. of regression	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
F-statistic	*7.056*	*14.927*	*20.612*	*17.499*	*15.715*	*7.678*
Prob(Wald F-statistic)	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Observations	*104*	*103*	*75*	*75*	*75*	*103*

1/ Estimated with the Newey-West robust standard error approach, which is a covariance estimator that is consistent with the presence of both heteroskedasticity and autocorrelation of unknown form.

2/ "*", "**" and "***" denote significance at 10, 5, and 1 percent levels, respectively.

5. **To explore key factors behind Germany's relatively low real business investment compared to European peers, a panel regression approach is used.** In this panel analysis, the augmented basic accelerator model estimated for Germany is broadened to include additional explanatory variables, namely: (i) projected medium-term growth rates vis-à-vis the rest of the world and (ii) output per worker vis-à-vis the average of Germany, Japan, and the U.S. (to account for catch-up needs). A fixed effect estimation method, similar to the one employed in EC (2017), is applied to an annual unbalance panel dataset for 1995-2017 to data for 27 European countries.[4]

$$\frac{I_{i,t}}{K_{i,t-1}} = \frac{\propto}{K_{i,t-1}} + \beta * Accelerator_{i,t-1} + \gamma * Profit_{i,t-1} + \delta * real\ interest\ rate_{i,t} + \theta * MT\ growth\ diff_{i,t-1}$$

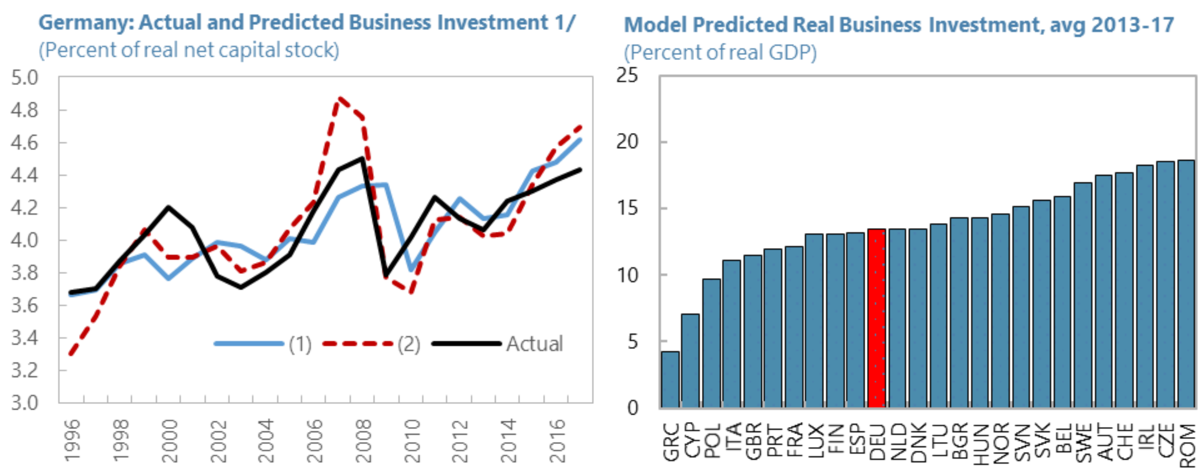
$$+\rho * Productivity\ diff_{i,t-1} + \omega_i + \sigma$$

where, $Accelerator_{i,t} = \frac{\Delta GVA_{i,t}}{K_{i,t-1}}$; $Profit_{i,t} = \frac{Gross\ Operating\ Blanace_{i,t}}{K_{i,t-1}}$

[4] Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Germany, Denmark, Estonia, Finland, France, Greece, Hungary, Ireland, Italy, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, and the United Kingdom.

6. The results suggest that future growth prospects matter for business investment decisions (Table A2). Similar to the results for the above regression analysis for Germany, higher past output growth and nonfinancial corporations' profits tend to be associated with higher real business investment, while higher real interest rates tend to be associated with lower business investment. At the same time, the results also suggest that countries with higher medium-term growth prospects vis-à-vis the rest of the world tend to have higher real business investment. The negative coefficient for output per worker suggests that countries with relatively low labor productivity have higher real business investment (either because of catch-up need or lower labor cost). The results suggest that recent levels of Germany's business investment is slightly below what is predicted by the model. At the same time, the model predicts that business investment in Germany should be slightly below the sample median, although above some key major economies, such as France, Italy, and the UK (Figure A3).

Figure A3. Panel Regression Results



Source: IMF staff estimates.
1/ (1) and (2) refer to the specification (1) and (2) in Table 2, respectively.

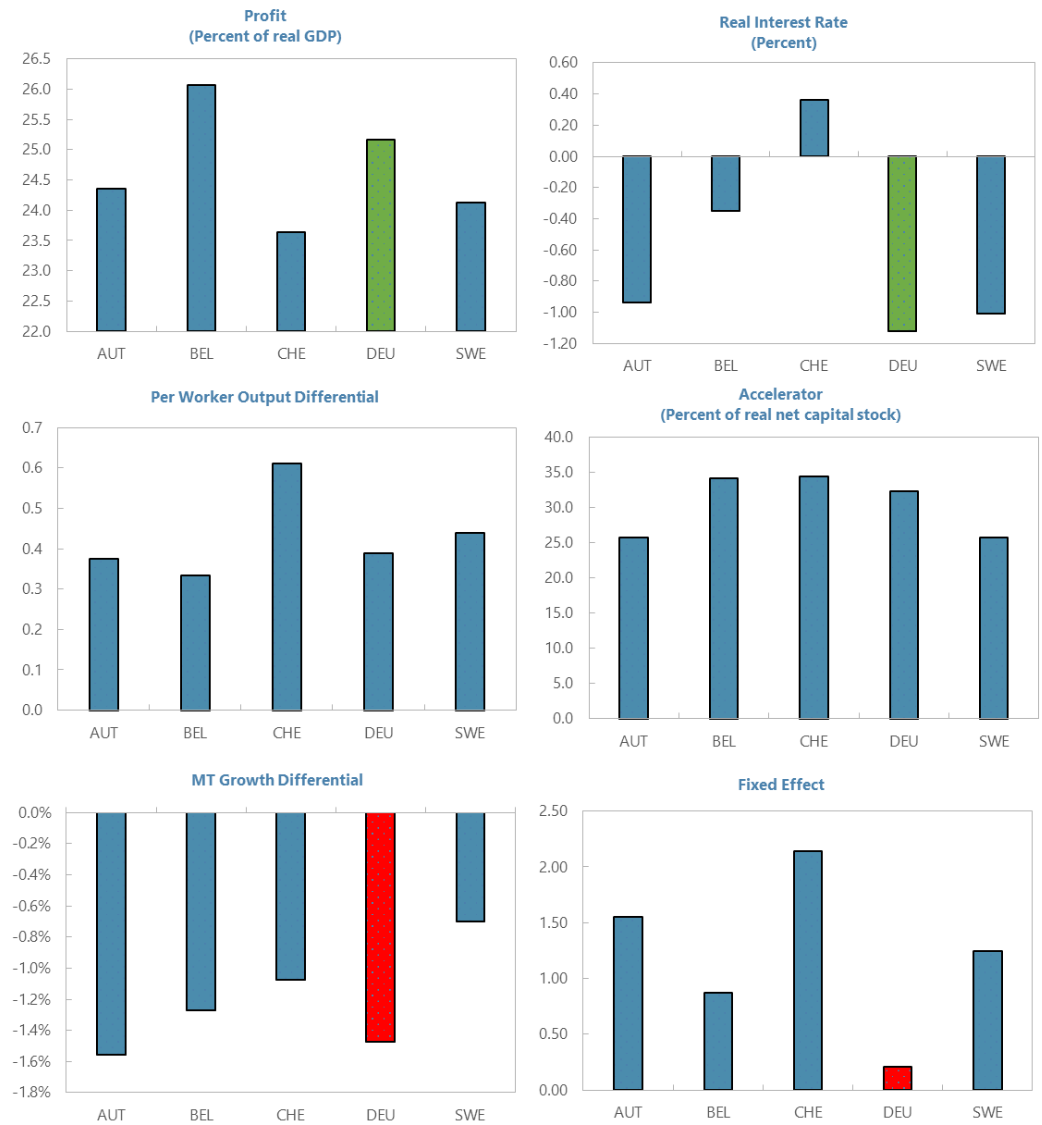
Table A2. Panel Regression Results 1/

	(1) 2/	(2) 2/	(3) 2/	(4) 2/
Reverse of capital stock (t-1)	-38.90 ***	-41.79 **	-43.10 *	-42.87
Accelerator (t-1)	0.12 ***	0.12 ***	0.11 ***	0.11 ***
Profit (t-1)	0.19 ***	0.20 ***	0.26 **	0.26 **
Real interest rate (t)	-0.06 ***	-0.07 ***	-0.06 ***	-0.06 **
MT growth differential (vis-à-vis ROW) (t-1)	10.76 ***	9.83 ***	14.66 *	14.71 **
Productivity differential (vis-à-vis DEU, JPN, USA) (t-1)	-2.76 ***	-2.68 ***	-3.49 ***	-3.50 ***
Relative price of business investment	...	0.44	...	-0.06
Constant	-0.13	-0.53	-0.19	-0.12
R-squared	*0.9098*	*0.9099*	*0.8938*	*0.8938*
Adjusted R-squared	*0.9042*	*0.9041*	*0.8820*	*0.8818*
S.E. of regression	*0.6861*	*0.6873*	*0.6882*	*0.6889*
F-statistic	*160.4812*	*155.5296*	*75.8972*	*74.3650*
Prob(F-statistic)	*0.0000*	*0.0000*	*0.0000*	*0.0000*
Country FE	*y*	*y*	*y*	*y*
Time FE	*n*	*n*	*y*	*y*
Observations	*542*	*542*	*542*	*542*

1/ The table presents the results based on robust covariances estimated with the White diagonal method. Results remain generally unchanged when the White cross-section (period clustered) or White-period (cross section clustered) methods are used. The specifications without time fixed effects are adjusted for cross-sectional heteroskedasticity.
2/ "*", "**" and "***" denote significance at 10, 5, and 1 percent levels, respectively.

7. **Key factors behind Germany's relatively low business investment compared to the European peers that have high business investment are less favorable growth prospects and fixed effects** (Figure A4). Comparing Germany with advanced European peers with high business investment (i.e., Austria, Belgium, Switzerland, and Sweden), Germany's lower medium-term growth prospects and fixed effects appear to be pushing down Germany's business investment. Although the interpretation of fixed effects involves significant uncertainties as they capture the time-invariant characteristics of the countries, fixed effects may be linked to general investment environment (e.g., ease of starting a business, product market regulations, digital infrastructure, availability of skilled labor, etc). Germany is generally ranked high for these indicators, yet there remains scope for narrowing gaps with respect to frontier countries. Meanwhile, Germany's relatively high profits and low real interest rates are supporting business investment compared to peers.

Figure A4. Germany and Peers: Factors behind Business Investment



Key Takeaways

- Recent levels of Germany's real business investment do not seem to be low from a historical perspective, given the demand and nonfinancial corporations' profits and financial conditions.

- However, from a cross-country perspective, Germany's real business investment is relatively low due mainly to its relatively low future growth prospects.

- To lift real business investment, Germany should boost growth prospects, for example by investing more in human capital and increasing labor supply, expanding digital infrastructure, and reducing uncertainties about energy transition. The low-interest rate environment would support business investment.