INTERNATIONAL MONETARY FUND

IMF Country Report No. 18/208

GERMANY

2018 ARTICLE IV CONSULTATION—PRESS RELEASE; STAFF REPORT; AND STATEMENT BY THE EXECUTIVE DIRECTOR FOR GERMANY

July 2018

Under Article IV of the IMF's Articles of Agreement, the IMF holds bilateral discussions with members, usually every year. In the context of the 2018 Article IV consultation with Germany, the following documents have been released and are included in this package:

- A **Press Release** summarizing the views of the Executive Board as expressed during its June 29, 2018 consideration of the staff report that concluded the Article IV consultation with Germany.
- The **Staff Report** prepared by a staff team of the IMF for the Executive Board's consideration on June 29, 2018 following discussions that ended on May 14, 2018, with the officials of Germany on economic developments and policies. Based on information available at the time of these discussions, the staff report was completed on June 15, 2018.
- An **Informational Annex** prepared by the IMF staff.
- A **Statement by the Executive Director** for Germany.

The IMF's transparency policy allows for the deletion of market-sensitive information and premature disclosure of the authorities' policy intentions in published staff reports and other documents.

Copies of this report are available to the public from

International Monetary Fund • Publication Services
PO Box 92780 • Washington, D.C. 20090
Telephone: (202) 623-7430 • Fax: (202) 623-7201
E-mail: publications@imf.org Web: http://www.imf.org
Price: $18.00 per printed copy

International Monetary Fund
Washington, D.C.

INTERNATIONAL MONETARY FUND
COMMUNICATIONS DEPARTMENT

Press Release No. 18/276
FOR IMMEDIATE RELEASE
July 5, 2018

International Monetary Fund
700 19th Street, NW
Washington, D. C. 20431 USA

IMF Executive Board Concludes 2018 Article IV Consultation with Germany

On June 29, 2018, the Executive Board of the International Monetary Fund (IMF) concluded the Article IV consultation[1] with Germany.

Germany's economic performance was strong in 2017, underpinned by solid domestic demand and a rebound in exports in the second half of the year. Despite a slowdown in public consumption due to the stabilization of refugee-related expenditures, real GDP grew by 2.5 percent. Already-high capacity utilization continued to rise and the labor market tightened further putting incremental pressure on wages. Reflecting this, headline and core inflation reached 1.5 percent at the end of 2017. The general government surplus reached 1.2 percent of GDP, the highest level since reunification, but the fiscal stance remained broadly neutral. The current account surplus declined to 8 percent in 2017, from 8.5 percent in 2016, as both the trade and income balances deteriorated.

The financial system was characterized by moderate credit growth and weak profitability. Total credit accelerated in 2017, as households and firms took advantage of the low interest rate environment, but it remained broadly in line with nominal GDP growth. Against the backdrop of continued urbanization, an inelastic housing supply, and easy financing conditions, house prices accelerated further in dynamic urban areas. In the banking sector, regulatory capital remained adequate, but profitability continued to be weak, reflecting structural factors, some crisis legacies, and the low interest rate environment. Some banks remain under close supervisory scrutiny. The low interest rate environment also forced some restructuring in the life insurance sector where profitability remains an issue due to the extensive reliance on guaranteed products.

The outlook is for the expansion to continue in the near term but slow markedly over the medium to long term, reflecting unfavorable demographics and productivity trends. Short-term risks are substantial, as a significant rise in global protectionism, a hard Brexit, or a reassessment of sovereign risk in the euro area, leading to renewed financial stress, could affect Germany's exports and investment.

[1] Under Article IV of the IMF's Articles of Agreement, the IMF holds bilateral discussions with members, usually every year. A staff team visits the country, collects economic and financial information, and discusses with officials the country's economic developments and policies. On return to headquarters, the staff prepares a report, which forms the basis for discussion by the Executive Board.

Executive Board Assessment[2]

The Executive Directors commended Germany's strong economic performance and welcomed the prospects for continued solid growth in the near term, underpinned by robust domestic demand amid a tight labor market and accelerating wages. They noted, however, that external imbalances remain sizable and important risks are clouding the outlook. Rising protectionist trends, geopolitical uncertainty, or a reassessment of sovereign risk in the euro area could lead to bouts of financial turbulence, negatively affect export prospects, and weigh on investment.

Directors stressed that the positive near-term economic outlook provides an opportunity for Germany to more forcefully address its long-term challenges. Given unfavorable demographic prospects, they agreed that Germany's policies should focus on bolstering potential growth. In this regard, Directors recommended further expanding public investment in physical and human capital, and prioritizing measures that incentivize labor supply and help improve the environment for private investment. Such measures would bolster productivity growth, further lift long-term output, and reduce Germany's large current account surplus.

In this context, Directors welcomed the new government's initiatives to support long-term growth. Many Directors urged using Germany's fiscal space to further raise public investment (while alleviating bottlenecks at the municipal level), expand childcare and after-school programs, reduce the labor tax wedge, and provide additional funding for primary education and life-long learning. A number of Directors, however, emphasized a need to balance spending to raise potential growth with maintaining strong buffers for potential economic risks and upcoming demographic challenges. Directors also stressed that pension and labor market reforms that make it more attractive to extend working lives would lower the public pension bill, raise growth, and reduce the need to save.

Directors noted the slow labor productivity growth and a declining trend in entrepreneurship. They recommended further improving access to venture capital, providing tax incentives for R&D to small- and medium-size enterprises, and reducing administrative burdens. They also urged the authorities to ensure that incentives, regulations, and funding availability are appropriate to complete Germany's digital transformation. Directors also renewed calls for accelerating competition-enhancing reforms in parts of the services sector and network industries.

Directors emphasized that accelerating house prices in Germany's most dynamic cities deserve close monitoring. They noted that the lack of granular data at the city level prevents a full

[2] At the conclusion of the discussion, the Managing Director, as Chairman of the Board, summarizes the views of Executive Directors, and this summary is transmitted to the country's authorities. An explanation of any qualifiers used in summing up can be found here: http://www.imf.org/external/np/sec/misc/qualifiers.htm.

assessment of developments. In this context, they recommended strengthening the macroprudential toolkit and urgently addressing data gaps to guard against the risk that pockets of financial vulnerability might emerge.

Directors noted that profitability in the bank and life insurance sectors remains low and that restructuring efforts must be accelerated to durably strengthen resilience and reduce risks. They stressed the importance of continued supervisory attention to progress in implementing restructuring plans and reducing interest rate risk in banking and insurance.

Germany: Selected Economic Indicators, 2016–19

			Projections	
	2016	2017	2018	2019
Output				
Real GDP growth (%)	1.9	2.5	2.2	2.1
Total domestic demand growth (%)	2.4	2.4	2.2	2.4
Output gap (% of potential GDP)	0.2	0.9	1.3	1.6
Employment				
Unemployment rate (%, ILO)	4.2	3.7	3.6	3.5
Employment growth (%)	2.4	1.1	0.6	0.4
Prices				
Inflation (%)	0.4	1.7	1.8	1.7
General government finances				
Fiscal balance (% of GDP)	1.0	1.2	1.4	1.4
Revenue (% of GDP)	45.0	45.1	45.3	45.2
Expenditure (% of GDP)	44.0	44.0	43.9	43.8
Public debt (% of GDP)	68.2	64.1	60.0	56.1
Money and credit				
Broad money (M3) (end of year, % change) 1/	5.7	4.3		
Credit to private sector (% change)	3.5	4.2		
10-year government bond yield (%)	0.2	0.4		
Balance of payments				
Current account balance (% of GDP)	8.5	8.0	8.3	8.1
Trade balance (% of GDP)	7.9	7.6	7.6	7.3
Exports of goods (% of GDP)	37.9	38.9	39.4	40.0
Volume (% change)	2.3	5.0	4.9	4.9
Imports of goods (% of GDP)	29.4	30.8	31.3	32.0
Volume (% change)	3.8	5.9	5.2	5.9
FDI balance (% of GDP)	1.0	1.3	1.5	1.2
Reserves minus gold (billions of US$)	59.6	59.4		
External Debt (% of GDP)	148.0	140.5		
Exchange rate				
REER (% change)	1.2	1.4		
NEER (% change)	1.7	1.5		
Real effective rate (2005=100) 2/	92.4	93.6		
Nominal effective rate (2005=100) 3/	98.6	100.1		

Sources: Deutsche Bundesbank, Eurostat, Federal Statistical Office, Haver Analytics, and IMF staff calculations.

1/ Reflects Germany's contribution to M3 of the euro area.

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

3/ Nominal effective exchange rate, all countries.

INTERNATIONAL MONETARY FUND

GERMANY

STAFF REPORT FOR THE 2018 ARTICLE IV CONSULTATION

June 15, 2018

KEY ISSUES

The Germany economy has performed very well in recent years, supported by prudent economic management and past structural reforms. Growth is robust, employment is rising, and the unemployment rate has fallen to levels not seen in decades. Inflation remains low but wage growth is picking up, reflecting the strength of the labor market. Looking beyond these positive cyclical developments, unfavorable demographics will soon weigh on potential growth and put pressure on public finances. Having already accumulated sizable buffers through savings, Germany should now prioritize domestic investment in physical and human capital to prepare for the future. The new government's coalition agreement contains several welcome measures in this direction, but more forceful actions to boost labor supply and increase labor productivity would help stimulate domestic investment and reduce Germany's large current account surplus.

Key policy recommendations

- Fully use the ample available space within the fiscal rules to enhance the growth potential of the economy by further increasing public investment in physical and human capital and fostering labor supply.
- Reinvigorate competition-enhancing reforms in network industries and professional services and enhance the environment for entrepreneurship and venture capital. This would help boost productivity growth and further spur private domestic investment.
- Consider pension and labor market reforms to lengthen working lives, which would increase labor force participation of older workers, reduce aging-related fiscal pressures, mitigate the need for workers to save as much for retirement, and lower risks of old-age poverty.
- Complete the toolkit for managing financial stability risks and urgently address data gaps. For banks and insurance companies, continued supervisory attention to interest rate risk and restructuring plans remains appropriate.

Approved By
Enrica Detragiache (EUR) and Tamim Bayoumi (SPR)

Discussions took place in Berlin, Bonn, Frankfurt, and Nuremberg during May 2–14. The staff team comprised Ms. Kozack (head), Mses. Chen, Mineshima, and Pereira, Mr. Natal (all EUR), and Mr. Kemoe (STA). The team was supported from headquarters by Ms. Ordonez-Baric and Mr. Musayev (both EUR). Mr. Merk (OED) participated in the discussions. The mission met with State Secretary of the Federal Ministry of Finance Schmidt, Bundesbank President Weidmann, officials from the Federal Chancellor's office, the Finance, Economic Affairs, Labor, and Environment Ministries, the Bundesbank, the Federal Office for Migration and Refugees, representatives from the social partners, the banking and insurance sectors, think tanks, and academics.

CONTENTS

TABLES

ANNEXES

IMPRESSIVE RECENT ECONOMIC PERFORMANCE

1. The economy surprised on the upside in 2017. Real GDP growth picked up sharply, reaching 2.5 percent, as exports rebounded and triggered a much-awaited pickup in investment. Strong private consumption, supported by a robust labor market, was offset by a slowdown in public consumption as refugee-related expenditures stabilized. Although both exports and imports grew strongly, the contribution of net exports turned positive again. The labor market continued to tighten: even though employment grew more slowly than in previous years, reflecting diminished migrant inflows, job creation was strong enough to bring the unemployment rate to a new post-reunification low of 3.6 percent (Figure 4).[1] In the first quarter of 2018, growth slowed to 0.3 percent (qoq), reflecting a normal correction following unusually strong growth in late 2017 and temporary factors (strikes, a particularly nasty flu outbreak, and early Easter holidays), but the labor market continued to perform strongly.

2. Inflation and wage growth picked up somewhat. Headline and core inflation reached about 1.5 percent by end-2017 and picked up further in the first several months of 2018 (Figure 5). Nominal wage growth increased moderately in 2017 and early 2018. Staff analysis suggests that nominal wage growth in Germany has been consistent with subdued productivity growth and inflation expectations over the past few years, and that immigration has not had a significant impact (Annex VI).[2]

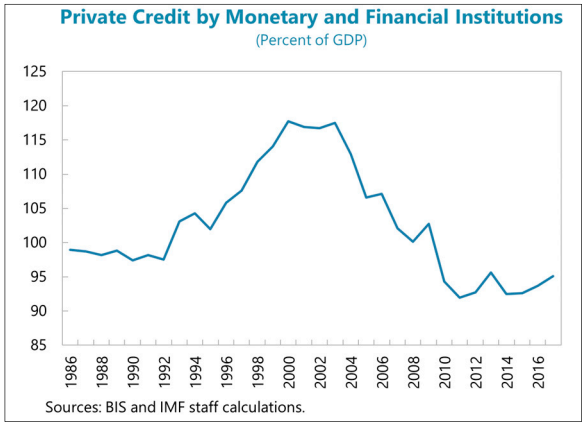
3. The fiscal position strengthened further in 2017, mostly reflecting cyclical effects. The general government surplus rose to 1.2 percent of GDP (from 1 percent of GDP in 2016), the highest level since reunification and about ¾ percentage point higher than initially planned in the 2017 Stability Program (Figure 7).[3] The fiscal overperformance mainly reflected the surprise acceleration of GDP in 2017, leading to a lower expenditure-to-GDP ratio, while revenue-to-GDP performed largely as expected. Public investment increased by about 5 percent in nominal terms, or 0.1 percent of GDP. The fiscal stance, measured by the change in the structural primary balance, was broadly neutral in 2017, and the overall structural balance was flat at 1 percent of GDP. The public debt ratio decreased to 64.1 percent of GDP at end-2017, paving the way for it to reach the 60 percent of GDP benchmark this year.

[1] This unemployment figure is based on the European Labor Force Survey and differs from that based on the national definition (see Table 1).

[2] The impact of the 2015–16 surge in refugees is generally not considered in the analysis since very few refugees had entered the labor market during the period under investigation (2012–16).

[3] The headline fiscal balance was revised up by about 0.2 percent of GDP per year from 2014 to 2017 due to removing capital costs from bond repurchases from interest payments (above the line), in accordance with the "Maastricht Notification" issued by Eurostat in April 2018.

4. Credit growth increased moderately. The overall private credit-to-GDP ratio remained broadly constant at around 100 percent of GDP—a historical low and below that of advanced economy peers. Credit to non-financial corporates (NFCs) showed a welcome pick-up in 2017, reflecting both stronger business investment and easy financial conditions. Mortgage lending also accelerated but, like credit to NFCs, it is still growing broadly in line with nominal GDP (Figure 8).

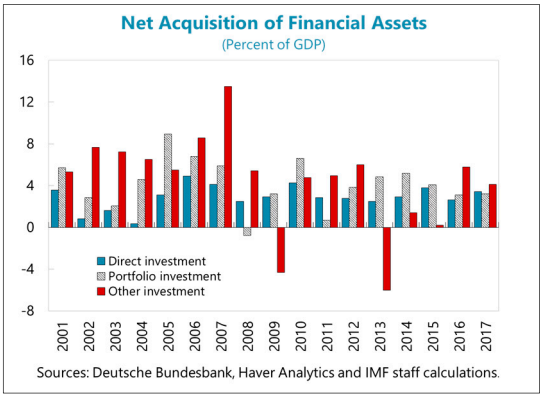


5. The current account (CA) surplus remained very high, despite narrowing to 8 percent of GDP from record highs in 2015–16. Recent data updates—mostly from revised foreign direct investment (FDI)-related earnings—reveal higher surpluses in 2015 and 2016 than previously estimated, by ¼ to ½ percentage point of GDP (Figure 6). In 2017, unfavorable terms of trade due to higher oil and raw material prices, as well as euro appreciation, pushed the trade balance down, despite its improvement in real terms. A one-off payment pushed the secondary income balance down. Overall, the CA surplus with euro area countries continued to rise and is now back at 2011 levels, but its composition has shifted from the high-debt countries to other euro area countries. The Net International Investment Position (NIIP) climbed to 60 percent of GDP at end-2017, with the rise relative to 2015 entirely explained by higher net portfolio investment (see Table 5 and Box 1). In the first quarter of 2018, the CA surplus rebounded to 8.5 percent of GDP, in part as the secondary income balance normalized. The real effective exchange rate appreciated by 1.4 percent in 2017 relative to 2016, and by a further 2 percent in the months up to May 2018, reflecting exchange rate movements against the dollar and other major trading partners.

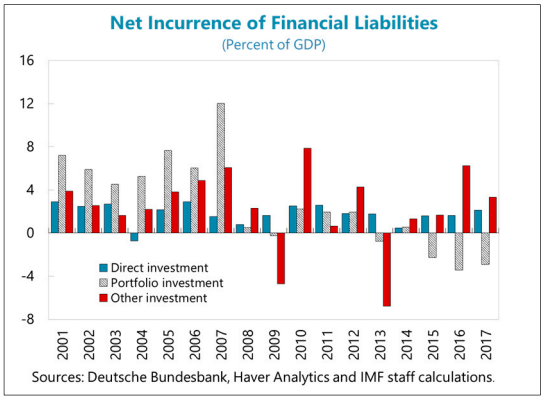
6. Rising corporate net saving—alongside fiscal consolidation—is behind the rise in Germany's external surplus. Household saving has remained high, but stable, over time, while government saving increased by 4 percentage points of GDP since 2001, and NFC net lending by about 5 percentage points of GDP from 2001 to 2015. NFC saving has trended up since the early 2000s, leading to a sustained decline in leverage from its peak in 2001 (Figure 1). Staff analysis suggests that, in the pre-crisis period, rising NFC saving reflected growing profitability amid wage moderation and declining debt service (Annex VII). Since the global financial crisis (GFC), declining dividend payout rates have become the most important driver of rising NFC saving, while the labor share reverted to its 2001 level and net profits stabilized as a share of GDP. In terms of saving rates, the increase is most obvious among small- and medium-sized firms, while family-owned businesses tend to have higher saving rates overall. Several factors may explain the rise in NFC saving, including corporate tax reforms in 2000 and 2008 which reduced incentives for debt financing, precautionary savings motives following a period of tight financial conditions during the GFC, or a need to build up cash buffers to finance R&D spending (especially given the dearth of venture capital—see Policy Discussions, Section D). The decline in interest rates may also have reduced pressure to pay out dividends at the same rate as in the past.

Box 1. The Evolution of the Balance of Payment's (BoP) Financial Account

Germany's financial account balance has trended up since 2001, mirroring the current account surplus (Figure 6 and Table 4).[1] Net portfolio investment (PI) has been its largest component since the GFC, while prior to that "other investment" (OI) flows were more important. These net flows, however, mask important developments in gross investments into and out of Germany.



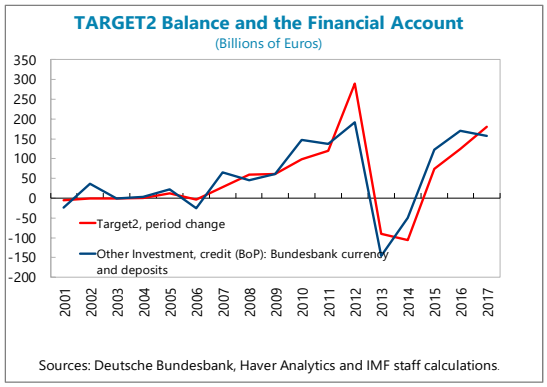
Sources: Deutsche Bundesbank, Haver Analytics and IMF staff calculations.



Sources: Deutsche Bundesbank, Haver Analytics and IMF staff calculations.

The nature of cross-border PI flows has changed considerably over time. Before the GFC, the net PI balance was relatively small, but gross in- and outflows were notoriously large. German investors in particular stepped up holdings of euro area sovereign bonds through this period, while foreigners were investing both in German long-term government debt and private sector securities. Gross PI flows peaked in 2007, reflecting the pre-crisis environment of ample global liquidity and significant cross-border lending. Following a pause in 2008–09, outward PI recovered to pre-crisis levels. However, inward PI remained low and turned negative in recent years, as foreign investors sold German sovereign bonds to the Bundesbank in the context of the European Central Bank (ECB)'s Asset Purchase Program (APP). The implication is that net PI has turned large and positive, reflecting the reduced foreign investment in German sovereign bonds.

Quantitative easing by the ECB has also affected OI patterns. Up to 2009, OI outflows essentially followed German banks' lending and accumulation of deposits abroad. This was sharply reversed in 2009, and hasn't noticeably resumed since as German banks especially have reduced cross-border exposures. Instead, after the GFC, OI outflows were strongly driven by changes in the TARGET2 balance of the Bundesbank, which is recorded as a capital outflow in the BoP. In 2010–12, for example, shifts in market sentiment during the European debt crisis led to "safe-haven" investment in Germany. Liquidity provided by central banks elsewhere in the euro area partially ended up deposited in Germany (flight to safety), giving rise to new claims of the Bundesbank on the ECB. After 2014, the growing TARGET2 balance was instead related to the ECB's APP: as foreign investors sold non-German bond holdings to a non-German central bank in the euro area, and deposited the proceeds in a German bank, the Bundesbank TARGET2 claims rise. Nevertheless, while changes in TARGET2 balances have a gross (OI) flow correspondence in the financial account, the net impact is lower as a liability of domestic banks towards foreign depositors is also created.



Sources: Deutsche Bundesbank, Haver Analytics and IMF staff calculations.

Direct investment (DI) abroad and foreign DI in Germany have fluctuated around 3 and 2 percent of GDP, respectively (with some interim post-GFC decline in inward DI). German corporates have traditionally acquired equity (including through retained earnings) in Europe and in the US, and lent to controlled companies in lesser amounts. Inward investment originates mostly in the Euro Area, and reflects in part lending to parent (German) companies (reverse investment).

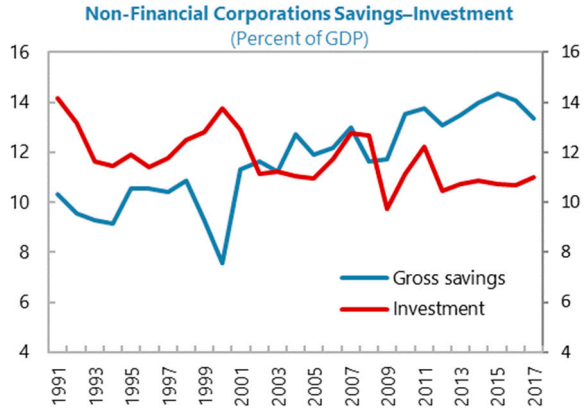
---

[1] The balance of the capital account is close to zero as a share of GDP.

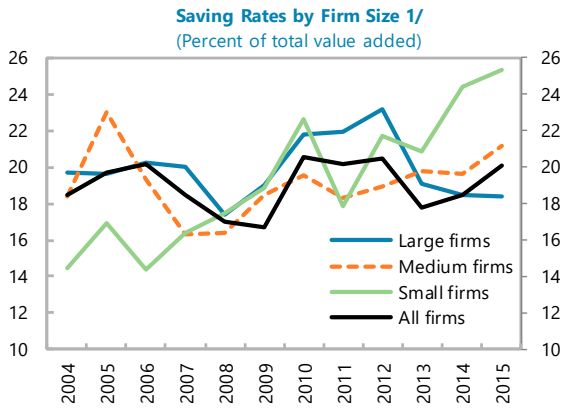
[2] The March 2012, March 2016, and December 2017 Bundesbank Monthly reports discuss the relation between unconventional monetary policies of the ECB, Target2 balances and the BoP in greater detail.

Figure 1. Savings by Non-Financial Corporations

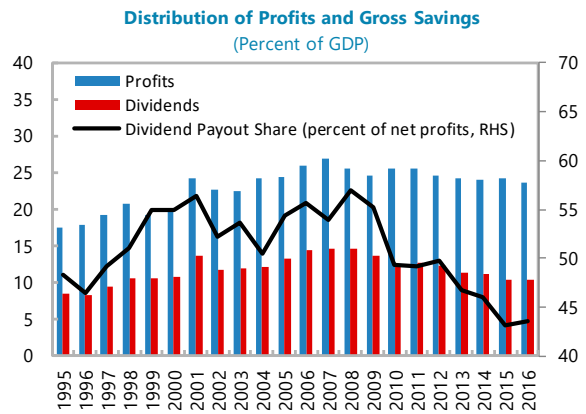
Since 2002, corporate saving rates have persistently trended up, …



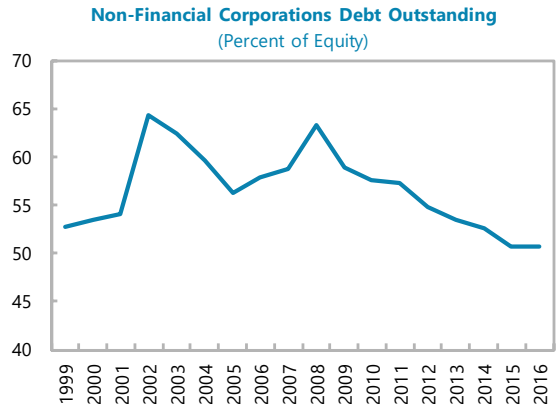
… particularly among small and medium-sized firms.



Increasing saving reflects high profits amid declining dividend payments.

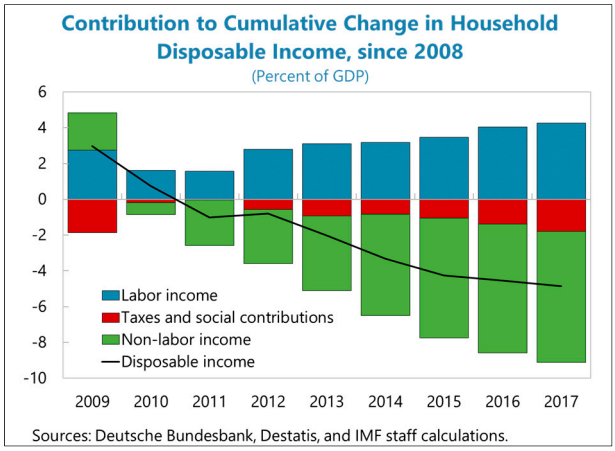


Leverage among corporates is at a historical low.

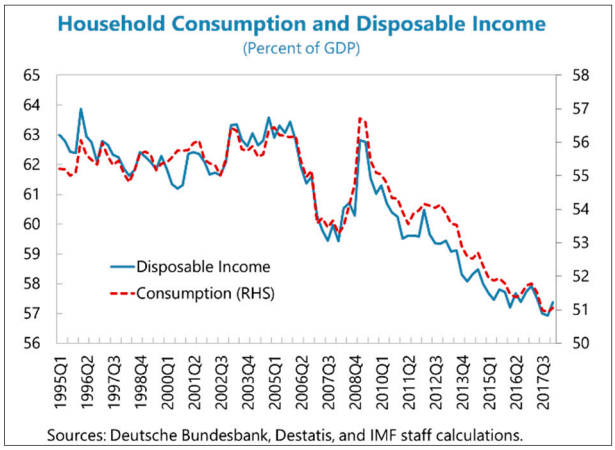


Sources: Deutsche Bundesbank, Destatis, Eurostat, Haver Analytics, Orbis, and IMF staff calculations.
1/ includes dividends.

7. At the aggregate level, increased saving by the government and NFCs have curtailed household purchasing power. Disposable income—while growing in real and nominal terms—has declined by about 4 percentage points of GDP since 2010, reflecting lower capital income (on account of lower dividend payments and interest income) and, to a lesser extent, higher tax payments. As German households consume a relatively constant share of current income, 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 back household consumption to its 2005 level in terms of GDP (55 percent) would mechanically decrease the current account by about 1.4 percentage points of GDP.

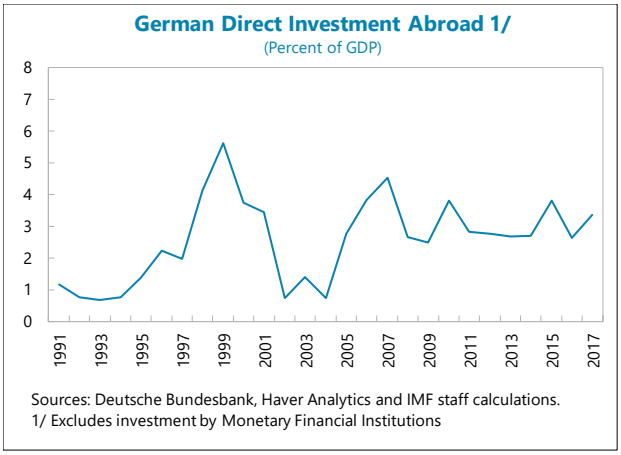


Sources: Deutsche Bundesbank, Destatis, and IMF staff calculations.



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

8. Despite comfortable profits, business investment has remained low in Germany. A poor demographic outlook, relatively low productivity growth, and the lack of skilled labor seem to have been holding firms back.[4] Business investment declined from around 13 percent of GDP in the 1990s to 11 percent of GDP in recent years. Although German companies have increased direct investment abroad since the mid-1990s, including to build supply chains, outward FDI has remained broadly stable over the last decade (at about 3 percent of GDP) (see also Box 1). Financing constraints do not seem to have been a factor.



Sources: Deutsche Bundesbank, Haver Analytics and IMF staff calculations.
1/ Excludes investment by Monetary Financial Institutions

[4] See the 2017 Selected Issues Paper "The profitability of German Firms: Location versus ownership" for an analysis of comparative returns on investment by German firms in Germany and in the rest of Europe.

SOLID EXPANSION IN NEAR-TERM; LOOMING MEDIUM-TERM CHALLENGES

9. The near-term outlook is for continued solid expansion, but growth is expected to slow markedly over the medium term.

- GDP growth in 2018 is projected to be somewhat lower than last year due to a disappointing first quarter. Following a soft patch, private consumption is expected to rebound on the back of the tightening labor market. Business investment is expected to remain robust, gradually making up for the 2015/2016 slowdown. Construction activity should continue to be supported by a large backlog of orders, but capacity limits and labor shortages are expected to dampen future growth.

- Over the medium term, Germany's unfavorable demographics and weak productivity growth are expected to weigh on output, with potential growth estimated at 1.3 percent. Staff's medium-term projection is for growth to slow to potential and for the output gap to narrow, but remain positive, by 2023. The persistence of the positive output gap over the medium term reflects the asynchronous business cycles among euro area member states amid accommodative monetary conditions for the euro area as a whole.

10. Core inflation and nominal wage growth should gradually pick up. The positive output gap is expected to put upward pressure on prices, pushing both headline and core inflation to 2.5 percent by 2023. With unemployment below most estimates of natural rate, high job vacancy rates, and shortages of skilled workers in an increasing number of professions, wage growth is expected to accelerate steadily and exceed 3.5 percent in 2019 based on staff analysis of the wage-Phillips curve (Annex VI). Indeed, the latest wage bargaining rounds in the manufacturing, construction, and public sectors suggest significant acceleration in 2018 already.

11. Fiscal policy is expected to be moderately expansionary in the coming years, but fiscal space under the European fiscal rules would remain substantial. Based on the government's 2018 Stability Program and the revised 2018 Federal budget—which reflect the new government's fiscal commitments—staff forecasts that the overall general government balance would increase to 1½ percent of GDP this year and next, before declining to about ¾ percent of GDP over the medium term. In structural terms, the impact of the new government's policies should be marginal in 2018: the structural primary balance would deteriorate by ¼ percentage point of GDP, reflecting higher spending on health and families, as well as a modest increase in public investment. However, fiscal measures of 1½ percent of 2017 GDP are foreseen over 2019–21. The public debt ratio is projected to decline to 45 percent of GDP by 2023 (Annex III).

12. A high CA surplus is expected through the medium term under current policies. In the short term, the rebound in global demand, partly driven by U.S. fiscal stimulus, will support German exports and the high trade surplus, despite increasing imports from higher energy prices. Over time, a gradual realignment of price competitiveness within the euro area—supported by the acceleration

of wage growth and inflation in Germany—and continued strong domestic demand (helped by the moderate fiscal expansion and higher business investment) should drive a modest trade rebalancing. However, returns on the growing NIIP would keep the current account surplus large. In all, a modest ¾ percentage point of GDP decline in the current account surplus is expected between 2018 and 2023 under current policies. The recently imposed U.S. tariffs on steel and aluminum should have a minor adverse direct effect on exports, although an escalation in trade disputes would have more sizable implications (Annex II).

13. Risks to the outlook are tilted to the downside. Due to its very open and interconnected economy, Germany is particularly vulnerable to increased protectionism and rising anti-EU or anti-globalization sentiment (Annex II).

- A significant rise in global protectionism or a hard Brexit would hurt Germany's exports and FDI, possibly disrupt supply chains, and weigh on domestic investment and productivity.
- A reassessment of sovereign risk in the euro area triggered by policy uncertainty or faltering reforms could lead to a renewed bout of financial stress, with adverse implications for investment, growth, and the banking system in Germany. In the longer term, failure to durably reverse rising anti-euro/EU and anti-globalization sentiment could adversely affect long-term growth, notably if prolonged uncertainty dampened the investment climate.
- A stalled structural reform agenda and unresolved bank legacy and profitability problems may also rekindle stress in the euro area and weigh on exports, productivity, and investment in Germany.
- The withdrawal of exceptional monetary stimulus in the US, Japan, and Europe may trigger sharp corrections in already stretched valuations across all asset classes, while legacy banking and fiscal issues in parts of Europe may reignite sovereign bond market tensions. These could, in turn, trigger financial turbulence in Germany and potentially important second round adverse outward spillovers because of the systemic and interconnected nature of Germany's largest financial institutions.
- Domestically, lack of progress in revamping bank business models and implementing restructuring plans could lead to financial distress in major banks. The new and untested framework for bank recovery and resolution may complicate the policy response.

Authorities' Views

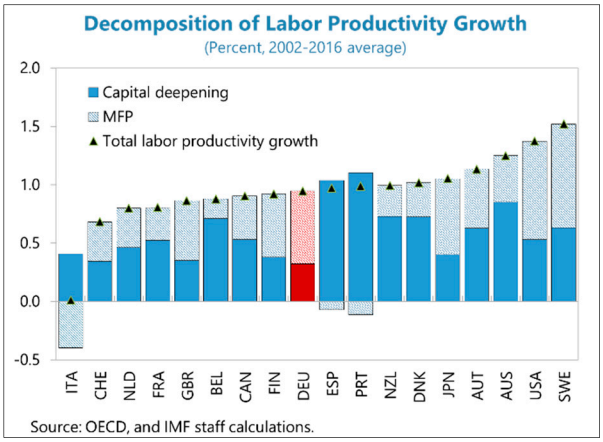
14. The authorities shared staff's relatively favorable assessment of the near-term macroeconomic outlook, and stressed that potential growth is likely to slow over the medium term. They emphasized that private investment was picking up and that low interest rates would probably continue to support both housing market and the construction sector, although the latter would be constrained by labor shortages. The tightening labor market should lead to higher wage growth and inflation, but the authorities project a more gradual increase than staff, partly due to the

continuing downward pressure on wages related to migration. In the medium to long term, there was agreement that the main challenge arises from Germany's demographic profile. The authorities expect potential growth to drop after 2020 if immigration is not able to compensate for the decline in native working age population. The authorities also shared staff's assessment of the risks to the outlook, seeing the main risks as coming from external factors.

POLICY DISCUSSIONS

A. An Opportunity to Address Challenges and Support Rebalancing

15. Germany's key economic challenge is to raise its long-term growth potential, which would stimulate investment and help reduce the large CA surplus. Germany's workforce is expected to begin shrinking in 2020 even after accounting for immigration. High domestic savings have helped prepare for future demographic costs and improved balance-sheets. However, this has occurred alongside low investment growth, which has weighed on the country's productive capacity. Productivity growth has been lackluster, especially in the services sector. Moreover, high government and NFC saving have been a factor in the decline in disposable income and household consumption as a share of GDP, which has also contributed to the large CA surplus.



16. Germany's external position remains substantially stronger than implied by medium-term fundamentals and desirable policy settings. The cyclically adjusted CA surplus stood at 8¼ percent of GDP in 2017, modestly lower than in 2016 and 3¼–6¼ percent of GDP above the interval assessed as being consistent with economic fundamentals and desirable policy settings of 2–4½ percent of GDP (the norm). The estimated norm is somewhat lower than in previous years, due to refinements to the Fund's External Balance Assessment model and data updates.[5] Part of the resulting CA gap (0.8 percentage point of GDP) is attributed to domestic policy distortions: 0.4 percentage point is due to domestic fiscal policy and 0.4 percentage point is due to the low credit-to-GDP ratio in Germany, which partly reflects relatively low investment (Annex VIII). The real effective exchange rate (REER) is estimated to remain undervalued by 10–20 percent, consistent with the large current account gap.

17. Recent wage increases are welcome and should support rebalancing. Higher wage growth would underpin stronger private consumption and imports. Further rises in wage and price inflation—reflecting Germany's strong cyclical position—would help lift inflation in the euro area,

[5] See Annex I and forthcoming 2018 External Sector Assessment Report for details.

facilitate the normalization of monetary policy, and contribute to external rebalancing. The authorities could usefully emphasize this in their public communications, while respecting the autonomy of the social partners.

18. Fiscal consolidation and public debt reduction have created substantial fiscal space under the European fiscal rules. Given long-term fiscal pressures deriving from an aging population, staff views the Stability and Growth Pact's medium-term objective (MTO) as appropriate under current policies. Even after taking into account the new government's fiscal plans, staff estimates that the general government fiscal buffer in relation to the MTO remains large, at about 1–1¼ percent of GDP in 2018–2020 and about ¼–¾ percent of GDP in 2021–2023. However, at the central government level, the structural balance would fall to about –¼ percent of GDP in 2019–2020 under staff's baseline forecast, close to the -0.35 percent floor imposed by Germany's national fiscal rule ("debt brake"), implying that fiscal space would primarily exist at the state and municipal government levels.[6] This shift of fiscal space from the central to state and local governments is partly due to the reorganization of financial relations between the federal government and Länder agreed in 2016, under which a larger share of value-added tax (VAT) revenue and higher federal grants will be given to Länder starting in 2020.

Germany: General Government Operations 1/

	2016	2017	2018 Proj.	2019 Proj.	2023 Proj.
Net Lending/Borrowing 2/	1.0	1.2	1.4	1.4	0.7
Structural Primary Balance	2.2	2.1	1.8	1.4	0.9
Structural Balance					
Staff projection	1.1	1.0	0.8	0.5	0.2
of which, Central Government	0.4	0.3	0.0	-0.2	0.0
Outlook using the authorities' output gap 3/	1.1	1.3	0.7	0.8	1.4
of which, Central Government	0.3	0.3	0.1	0.1	0.1
SGP Medium Term Objective (General Government) 4/	*-0.5*	*-0.5*	*-0.5*	*-0.5*	*-0.5*
Debt Brake Floor (Central Government) 5/ 6/	*-0.35*	*-0.35*	*-0.35*	*-0.35*	*-0.35*
Fiscal Buffer in Relation to the Fiscal Rules, Staff Projection 7/	…	…	*1.3*	*1.0*	*0.3–0.7*
Public gross debt (Maastricht definition)	68.2	64.1	60.0	56.1	45.1

1/ Based on the European System of Accounts (ESA).
2/ General government balances include the priority measures in the coalition agreement, based on the preliminary implementation plan outlined in the revised 2018 federal budget, and staff assumes most measures stay in 2022 will continue in 2023. Staff also assumes that €10 billion digital infrastructure investment will be equally implemented during 2019-2022.
3/ The 2023 output gap is assumed to remain at the same level as in 2022, as the authorities' January 2018 projections do not include an estimate for the 2023 output gap.
4/ The SGP's MTO is currently set at -0.5 percent of GDP until 2019. It is assumed that it will remain at such level in 2020–23.
5/ Compliance with the debt brake rule is assessed based on public accounting—different from ESA—but financial transactions are excluded from revenues and expenditures so as to ensure that the structural balance measure is as close as possible that of the Maastricht definition (based on ESA).
6/ From 2020 onwards, state governments will be bound by a zero structural deficit ceiling, acceding to the national debt brake. Local governments and social security funds are subject to stringent borrowing constraints, but may run occasional deficits. The debt brake rule therefore does not impose a precise floor to the general government structural balance, but should imply that it remains close or above -0.35 percent of GDP over time.
7/ Calculated as the difference between the projected structural balance and the SGP's MTO. For 2023 the interval is defined by the differences to the debt brake floor (see footnote 5) and to the MTO.
Sources: Ministry of Finance, Bundesbank, Federal Statistical Office, and IMF staff estimates and projections.

[6] The national fiscal rule does not include the political commitment of no new net borrowing by the federal government (the so-called "black zero").

19. More forceful policy action will be needed to decisively address Germany's medium-term challenges and facilitate external rebalancing. Although the new government is taking some welcome measures to continue to address these challenges, the current cyclical upswing presents a golden opportunity for bolder action (Box 2). Policies aimed at boosting potential growth—by increasing productivity growth, labor supply and investment—would help offset the effects of aging on long-term living standards. A multi-pronged approach that involves the use of the entire fiscal space to support growth-enhancing policies alongside structural reforms to boost productivity growth and incentives for private investment is therefore needed. Concerted policy action that increases productivity growth and labor supply can improve expectations of future growth and provide greater incentives for domestic investment in Germany, which in turn would facilitate external rebalancing and have positive outward spillovers for Germany's trading partners.[7] Key priorities include: investing more in physical and human capital; boosting labor supply; supporting entrepreneurship; and structural reforms to increase productivity growth and improve incentives for domestic private investment. Many of these priority policy areas are under the purview of the state and municipal governments, where the fiscal space primarily exists.

Authorities' Views

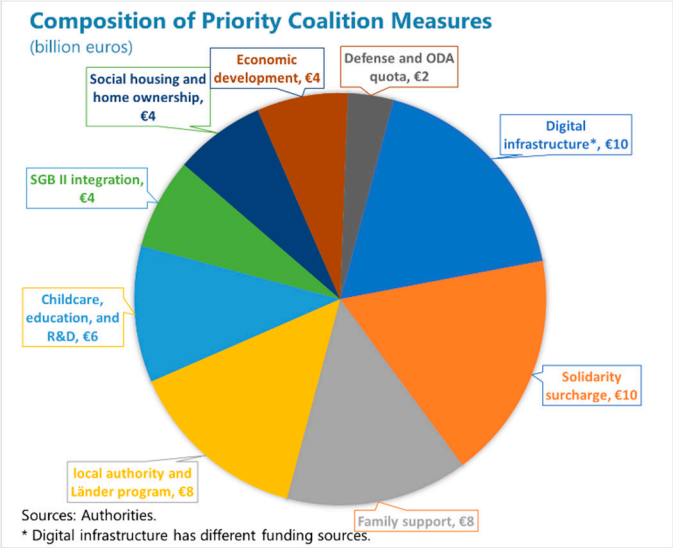
20. The authorities view the CA surplus as the result of private sector decisions and not of domestic policy distortions, but concurred with staff on the desirability of promoting higher domestic investment. They reiterated the importance of demographic factors in explaining Germany's high savings rates, alongside differences in expected growth domestically and abroad and the economy's export-oriented industrial structure. Like staff, they expect the CA surplus to remain large over the next few years, but to decline especially as the baby boomers retire. To reduce the current account surplus, the authorities agreed that policies should aim at raising domestic investment, but noted that the government has already implemented various measures in this direction in the previous legislature, and more is foreseen in the new coalition agreement. The authorities and staff agreed that trading partners policies will also affect Germany's current account. The Bundesbank currently assesses the REER to be close to equilibrium, both based on price competitiveness and relative productivity indicators of the German economy.[8]

[7] Box 1 in the 2017 Germany Staff Report discusses further how specific policies would support rebalancing. International spillovers are further discussed in "Which Policies Can Boost German Growth and Reduce the Current Account Surplus", *Selected Issues Paper*, IMF country report No. 14/217, and "Macroeconomic Effects of Labor Supply Policies", *Selected Issues Paper*, IMF country report No. 16/203.

[8] To assess Germany's price competitiveness, the Bundesbank considers both long term averages of the REER and the evolution of labor productivity relative to trading partners.

Box 2. The New Government's Budget Proposal

The new government's budget proposal includes several welcome measures to support long-term growth and address poverty risk. A package of €46 billion (about 1½ percent of 2017 GDP) in additional spending and tax cuts, spread over the next four years, was announced in the new government's coalition agreement. Spending measures include the expansion of the high-speed internet network (financed by auctioning 5G licenses); investment in all-day childcare and after-school programs; additional housing support and training for refugees; and support for education, vocational training, and R&D activities. The phasing out of the solidarity tax surcharges for low- and middle-income households, starting in 2021, will help trim the labor tax wedge. In addition, increases in targeted benefits—such as the supplementary allowance to combat child poverty and additional support for the long-term unemployed—should help reduce poverty risks. Tax revenue overperformance is to be allocated to addressing "bracket creep" in the tax system and further supporting digitalization.



The impact of the government's new budget proposals on GDP, public indebtedness, and the current account is estimated to be moderate. Relying on usual multipliers for public investment, consumption tax and transfers (both targeted and non-targeted).[1] The government's fiscal package of about 1½ percent of 2017 GDP (an accumulative fiscal impulse of 1 percent of GDP) would boost GDP by about ½ percent over 4 years, would increase the public debt-to-GDP ratio by about 1¼ percent of GDP and decrease the current account by about ¼ percentage point of GDP. Normal implementation lags, especially for investment (almost half of the new measures), suggests that the bulk of the effect is expected in 2019–21.

Cumulative Effect of the Government Program (2018 - 2021)

	2018	2019	2020	2021	Cumulative effect
(in percent of GDP)					
Revenue	0.0	0.0	0.0	-0.3	
Expenditure	0.0	0.3	0.3	0.4	
Effect on GDP (%)					**0.4**
Effect on CA (%)					**-0.3**
Effect on Debt (% of GDP)					**1.3**

[1] See "Das Public Kapital: How Much Would Higher German Public Investment Help Germany and the Euro Area?", IMF Working Paper No. 14/227.

B. Investing in Physical and Human Capital

Germany's ample fiscal space should be used to further increase investment in physical and human capital.

21. Recent increases in public investment are welcome, but further efforts are needed. Public investment has declined since the 1990s, driven by municipalities, leading to a stagnant public capital stock.[9] Although cross-country comparisons of public investment are complicated by the range of modalities used by different countries to support investment in public goods, Germany's government investment appears to be below that of other advanced economies even after accounting for investment grants and public-private partnerships (Annex VIII). Investment activity at the municipal level has recently picked up, supported by financial relief (through the Municipal Investment Promotion Program) and investment promotion measures (through Partnerschaft Deutschland (PD)—Germany's public consulting company) taken by the federal government and the Länder.

22. Addressing capacity constraints and improving investment prioritization at the municipal level are essential. Despite the government's measures, noted above, to support investment at the municipal level, regional disparities regarding both funding and planning capacities and lengthy administrative procedures remain major impediments to faster advancement of infrastructure projects. Staffing constraints continue to hinder investment planning at the municipal level and PD itself is reaching capacity constraints. Therefore, consideration should be given to prioritizing the provision of PD's services to municipalities where public investment has been delayed the most, or to providing additional financial support for the hiring of external consultants on a competitive basis. To help prioritize investment, a comprehensive investment plan—covering all levels of government—should be prepared. Moreover, to accelerate investment in transport, the Federal Transport Agency should be operationalized without delay.

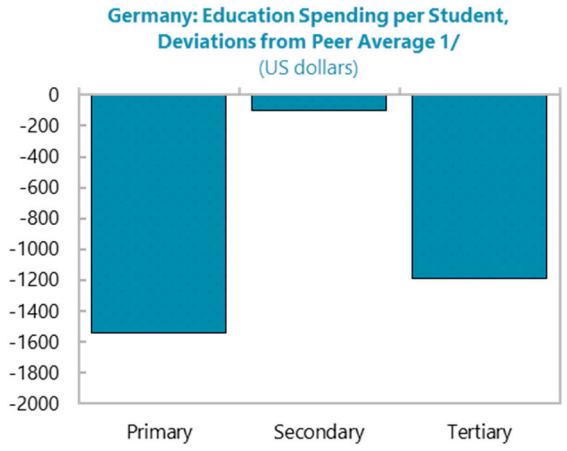
23. Boosting investment in human capital, including lifelong learning, is also key to raising long-term growth potential. Germany's education is of high quality, yet still trails the best-performing countries (Figure 2). Notably, compulsory instruction time for primary education in Germany is significantly shorter than that in peer countries.[10]

[9] The general government net capital stock is defined as the sum of the written-down values of all fixed assets still in use. It is estimated by the German Federal Statistical Office in real terms with 2010 as the base year. In Germany, the general government's consumption of fixed capital (depreciation) has hovered around 2.1-2.3 percent of GDP per year since the mid-1990s.

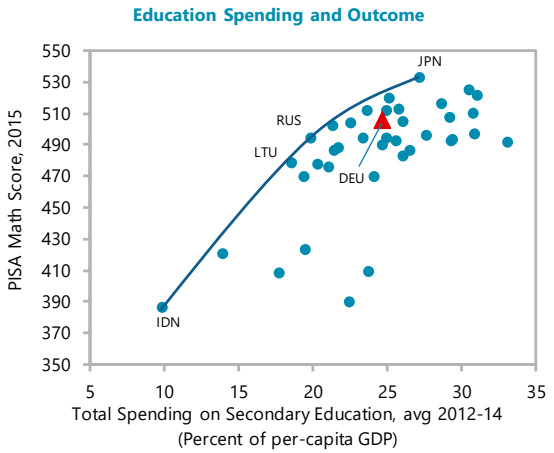
[10] Compulsory instruction time for primary education is 2,822 hours in Germany, compared to 4,626 hours for the OECD average and 4,339 hours for the EU22 average ("Education at a Glance 2017," OECD).

Figure 2. Investment in Human Capital

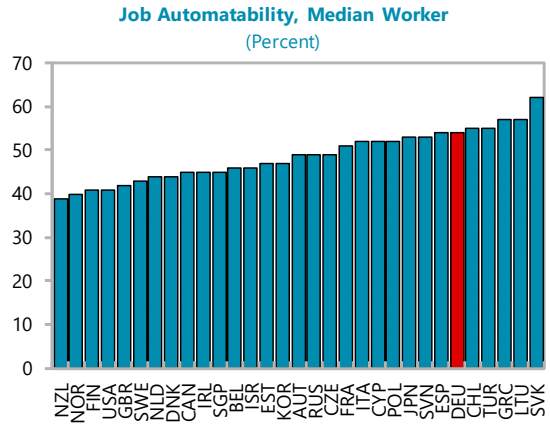
Germany's total education spending per student trails peers, especially for the primary education…



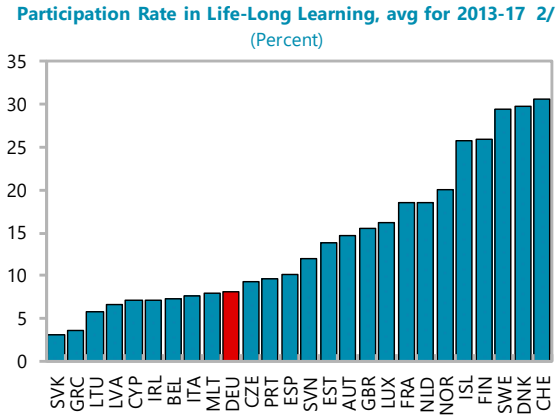
…although the efficiency of education spending is high.



The probability that the median job is automated is high in Germany…



…while the Germans participate less in life-long learning.



Sources: Eurostat, OECD; Nedelkoska and Quintini (2018), "Automation, skills use and training," and IMF staff estimates.
1/ Includes public and private education spending. Calculated as the deviations from the fitted values estimated with the coefficients from cross-sectional regressions of education spending per student and per-capita income in U.S. dollar for 2012–14.
2/ Participation rate of population aged 25–64 in education and training during the last four weeks.

- There is scope for expanding education spending. The new government's plans to provide full-day primary education to all students by 2025 through enhanced collaboration between the Federal government and the Länder is a welcome and important step.[11] Further expanding full-day primary education and further enhancing the provision of high-quality early childcare and early childhood education would not only strengthen basic skills, but also enhance the integration of students with migrant backgrounds, support poverty reduction, and promote the labor participation of women.
- Recent studies suggest that a large share of German jobs, notably those concentrated in middle-skill occupations with a high content of routine tasks, are vulnerable to skill-based technological change.[12] However, the digital skills of German adults and participation rates in life-long learning trail peers. To better prepare for the future of work with new and changing skills, providing workers with lifelong learning opportunities in collaboration with employers will be crucial.

Authorities' Views

24. The authorities agreed on the priorities for fiscal policy, but disagreed on fiscal space. Ministry of Finance officials argued that there is no space at the federal government level due to both the "black zero" (an informal fiscal guidepost aimed at no new debt at the Federal level) and Germany's national fiscal rule. They reiterated that the "black zero" provided a very important anchor for fiscal policy and that spending increases on long-term growth-enhancing measures should be financed through a reduction of other public expenditures. Regarding public investment, the authorities stressed the issue of comparability, noting that the perimeter of the general government differs across countries. That said, they agreed that further increases in public investment are needed to lift Germany's growth potential, and that bottlenecks at the municipal level need to be addressed. It is part of the new government's priorities to tackle this issue. Regarding digital infrastructure, the government reaffirmed the view that public funds should not crowd out private investment. Regarding education, the authorities reiterated that education policy was the remit of the Länder in Germany, but saw scope for enhancing the quality of, and budget allocation for, education. They hoped that the 2017 constitutional changes that enabled the federal government to provide funding to financially weak municipalities could help improve the situation.

C. Increasing Labor Supply

Use of fiscal space and structural reforms should aim to boost the labor supply of women, older workers, and migrants.

[11] Research commissioned by Federal Ministry of Education and Research finds that high-quality full-day school can strengthen social and emotional skills, enhance the integration of students with migrant backgrounds, and support labor participation especially of parents (Das Konsortium der Studie zur Entwicklung and von Ganztagsschulen (StEG) (2016), Ganztagsschule: Bildungsqualität und Wirkungen ausserunterrichtlicher Angebote).

[12] "Transformative Technologies and Jobs of the Future," OECD, 2018.

25. Given the unfavorable demographic outlook, there is scope to use fiscal space to further boost labor supply. In 2017, 65 percent of women with children below the age of 7 worked part-time. Further expanding childcare and after-school programs would provide greater opportunities for women to pursue full-time employment.[13] Reducing the labor tax wedge on low-income households and secondary earners would also improve incentives for greater labor force participation. Because income is taxed at the household level and healthcare coverage is provided cost-free for non-working spouses, the effective marginal tax rate for second earners is high, discouraging full-time female labor participation. In this context, the new government's plan to equalize health insurance contributions between employees and employers and to reduce the unemployment insurance contribution by 0.3 percentage point are welcome steps to reducing the labor tax wedge.

26. Important progress is being made on refugee integration. The backlog of pending asylum applications has been reduced substantially and most refugees are now participating in language and culture classes. Some refugees have already entered the labor market. The new government has committed to continue funding refugee programs, enhancing opportunities for entry into the labor market and reducing poverty risks.

27. Pension and labor market reforms that make it more attractive to extend working lives would reduce poverty risks, support long-term growth, and help external rebalancing. Unfavorable demographics will soon put pressure on public finances. Public pension expenditure is expected to rise by 1.9 percentage point of GDP between 2016 and 2040 (compared with an average of 0.8 percentage point of GDP increase in the EU) and pension replacement rates are projected to decrease, increasing the risks of old-age poverty in the future. The coalition agreement includes measures to cap the pension contribution rate at 20 percent and set a floor on replacement rates (under the national definition) at 48 percent until 2025.[14] This measure is expected not to have a large fiscal cost up to 2025, but would be burdensome if it were to stay in place afterwards. Reforms to encourage higher participation rates among older workers, and longer working lives overall (as life expectancy is rising), would be a more durable and growth-friendly way to support adequate replacement rates. Savings rates would likely fall, as there would be less need to save for retirement, helping to reduce the large current account surplus.

Authorities' Views

28. The authorities agreed that tax reforms should provide incentives for labor force participation. They emphasized that the reduction in the solidarity surcharge and the unemployment contributions would reduce the tax wedge. But they noted that further measures, such as reducing bracket creep, were being contemplated. They reiterated their commitment to

[13] "OECD Economic Surveys Germany," OECD, 2016.

[14] The replacement rate in the coalition agreement is based on a national definition, which is different from the gross replacement rate in the ageing report. The national definition of the replacement rate is the level of pensions in retirement relative to earnings for a standard pensioner who earns average income for 45 years and pays in 45 contribution points. In the ageing report, the gross average replacement rate at retirement is the ratio of the first pension of those who retire in a given year over the average wage at retirement.

promote as rapid an integration of refugees in the labor market as possible, and to assess the effectiveness of current policies down the road.

29. The authorities noted that, to effectively prolong working lives, structural reforms should focus on incentives to work. The government explained its view that it would be politically challenging to further increase the statutory retirement age, which they deem as already high at 67, without implementing simultaneous labor market reforms aimed at fostering the hiring of older workers by firms. The government is exploring new avenues in this area, such as incentives for life-long learning.

D. Boosting Productivity Growth and Private Investment

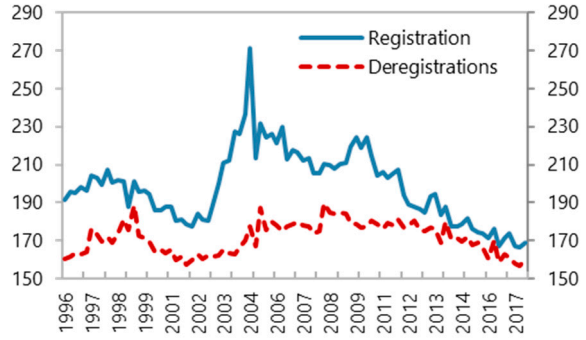
Structural reforms should aim to enhance the environment for private investment and increase productivity growth. Priority areas include supporting entrepreneurship and venture capital, completing Germany's digital transformation, advancing energy transition, and embracing competition-enhancing structural reforms.

30. Policies that foster entrepreneurship in Germany would enhance productivity growth and investment. Expanding venture capital would support entrepreneurial activity as well as investment in intangible assets (including R&D), where banks are traditionally less active, potentially reducing the need for firms to save and thereby facilitating external rebalancing. New business creation in Germany has been on a declining trend for a decade, which suggests that entrepreneurial activity—essential for technological diffusion and productivity growth—is limited (Figure 3). Although the German government provides substantial support for early-stage financing, the relatively small size of venture capital funds cannot sufficiently support start-ups at the growth stage. Thus, the government should further explore ways to encourage the provision of scale-up capital, including in the context of the EU-wide capital markets union. The government's ongoing initiatives to simplify tax administration and plans to introduce tax incentives for R&D for small- and medium-size enterprises should also support entrepreneurship. Expanding e-government services, where Germany trails peers, would also help reduce administrative burdens for entrepreneurs.

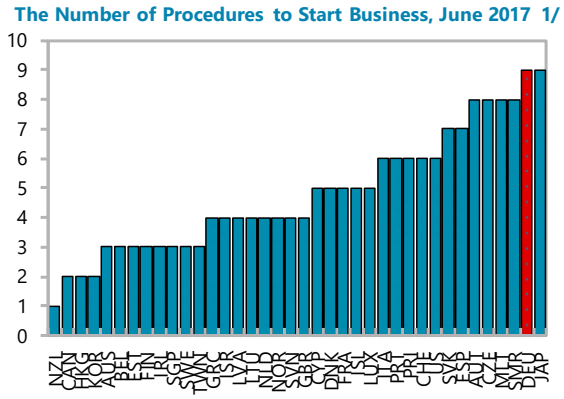
31. Investment in digital infrastructure is essential to prepare for tomorrow's challenges. The government's monitoring report "DIGITAL Economy 2017" indicates that digitalization in the corporate sector is picking up pace, especially in small and medium enterprise sector. However, high-speed nation-wide internet connections and higher information and communication technology (ICT) capital per worker—where Germany is still lagging peers—are necessary if Germany is to keep its position as an innovation leader in tomorrow's digital world. The new government's plans to increase investment in digital infrastructure are therefore welcome and should be implemented without delay. Completing Germany's digital transformation will require additional investment from the private sector and the government should ensure that incentives and regulations are appropriately supportive and that funding is available where needed.

Figure 3. Key Challenges to Entrepreneurship

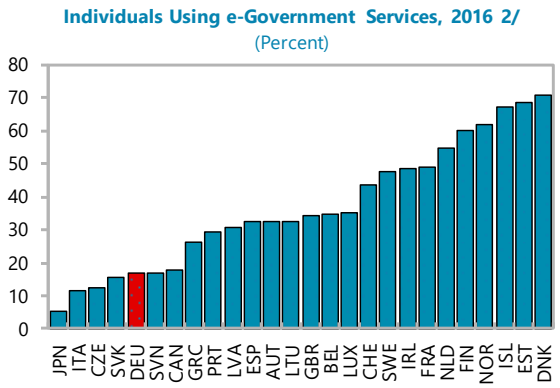
New business creation in Germany has been on a declining trend for a decade.



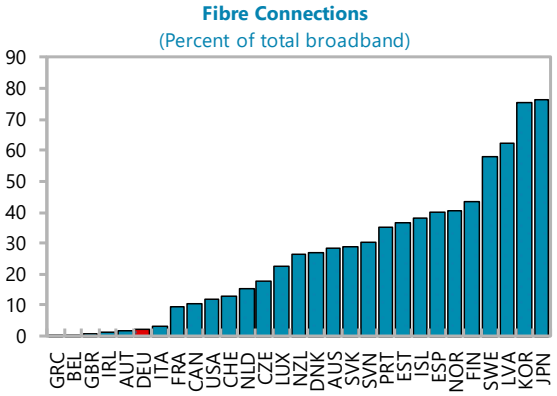
Key challenges to entrepreneurship include cumbersome procedures to start businesses…



Relatively limited e-Governance service provision…



…and poor access to high-speed internet, partly due to low fibre penetration.



Sources: Destatis, Haver Analytics, OECD, World Bank, and IMF staff calculation.
1/ The number of procedures to create a limited liability company (GmbH-Gesellschaft mit beschränkter Haftung-for Germany).
2/ The share of individuals who send filled forms online.

32. Germany's energy transformation is underway, and a clear strategy for reducing greenhouse gas emissions would help reduce uncertainty. Germany is on track to meet its renewable energy (RE) target. At the same time, the government has set ambitious goals to cut greenhouse gas emissions—some of which will be missed. To help reduce uncertainty about future energy costs and transition, a clear and credible strategy for meeting greenhouse gas emissions targets should be articulated. Elements of strategy could include measures to promote public transportation, support the use of electric vehicles, and phase out coal-fired power production. The creation of a commission to establish a process for phasing out coal is welcome.

33. Increased competition in network industries and professional services would boost productivity and stimulate private investment. Efficiency-boosting reforms in network industries and professional services—which are important inputs in a large number of activities—may have an

important and positive impact on productivity, investment, and long-term growth.[15] Since the last consultation, however, there has been limited progress in enhancing competition in the railways or postal services where the incumbents' dominant positions are largely unchanged. In both areas, the regulator should make use of its powers to avoid discrimination against new entrants, and corrective regulatory measures should be taken were the status quo to persist.[16] Moreover, staff continues to view professional services as overregulated in Germany, where exclusive rights, compulsory chamber membership, and regulation on prices and fees stifle competition. A National Action Plan to reform the regulatory environment for lawyers, patent attorneys, tax advisors and auditors was submitted to the EC in 2016, but progress has been very limited since then.[17]

Authorities' Views

34. The authorities highlighted various ongoing initiatives that would support entrepreneurship and education. While acknowledging the importance of entrepreneurship and venture capital for innovation and investment, the authorities were less concerned about the declining trend of new business creation, indicating that it may only reflect strong labor market conditions (and therefore less need to pursue self-employment). They also mentioned that funding for early-stage startups was adequate, and that the funding environment for the growth-stage of new businesses had also improved, although large deals remained rare. The authorities agreed that there is a scope for reducing the administrative burden through simplifying procedures and providing more government services via electronic platforms.

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

- While they acknowledged that cross-country comparisons suggested that Germany was lagging peers in terms of connectivity, download speed and ICT density, they argued that cross-country comparisons could be misleading as they may not appropriately measure the quality of services and the differences in product sophistication. The government reiterated its goal to make Germany a lead market for 5G application by 2025, noting that one of the main impediments to a faster and widespread adoption of digital technology was the lack of skilled labor. They plan to enhance the promotion of digitalization and ICT competences in small and medium-sized enterprises (SMEs), including through regional advisory competence centers.
- The government stressed progress in implementing its energy policy, which has helped reduce uncertainty. For example, the 2017 RE Sources Act has substituted the old "feed-in" tariff system (which guaranteed a sale price for suppliers) with a competitive auction system that allows the production of electricity by wind, solar and biomass to be handled by the most competitive firms.

[15] Duval and Furceri, 2018; Hijzen, A. and P. N. Gal, 2016.

[16] See Monopolies Commission, August and December 2017.

[17] The infringement procedures initiated by the EC in 2015 regarding the minimum compulsory tariffs of architects and engineers have been deferred to the European Court of Justice in 2017.

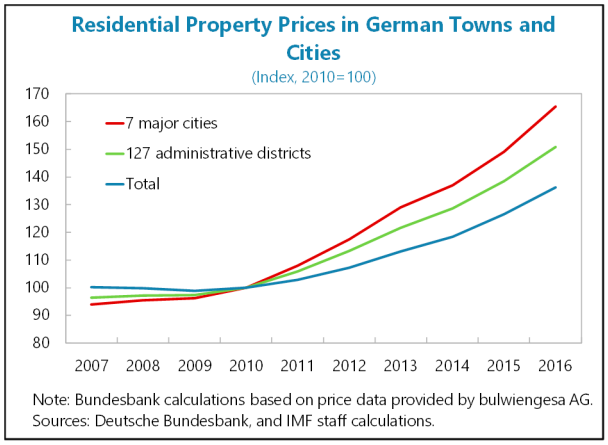
This has helped contain the cost of electricity for consumers and allowed the government to retake control of the RE supply.

- The authorities agreed that the pace of reforms in some professional services was slow, but argued that many of the existing regulations could be justified by legitimate concerns against potential deterioration of quality and consumer protection standards.

E. Housing Market: Preventing Financial Excesses

Urgently addressing data gaps and considering early activation of macroprudential tools would help safeguard financial stability.

36. Staff analysis suggests that house prices have risen faster than can be explained by demand and supply fundamentals in Germany's major cities. House prices are rising moderately at the aggregate level, but have increased at double-digit rates in some hot spots where they appear overvalued. Housing demand is driven by rising household income, large immigration flows in recent years, and low interest rates (Figure 10). On the supply side, stringent zoning restrictions (including for environmental protection) and high and rising capacity utilization (including labor shortages) in the construction sector prevent a more agile response of supply to price developments. House prices are most overvalued in Munich, Hamburg, Hannover, and Frankfurt, and are estimated to be more than 20 percent above their fundament level on average in major German cities (Annex IX). The Bundesbank obtains similar overvaluation estimates for some German cities in its latest assessment.[18] As recommended in the past, lowering the effective burden of tax on new construction and reexamining zoning restrictions, in particular where demand is not likely to abate, would help mitigate price pressures.



Note: Bundesbank calculations based on price data provided by bulwiengesa AG.
Sources: Deutsche Bundesbank, and IMF staff calculations.

37. New housing policies, aimed at improving affordability, are not expected to have a noticeable impact on prices. The government foresees spending €2 billion in renewed support for social housing in 2020–21, expanding the land available at a discount for social housing construction, and creating tax incentives to build on unused land. It also plans to allocate €2 billion to families with children acquiring a first home.[19] Other measures are still being contemplated, including tax subsidies for rental housing, public loan guarantees and real estate tax exemptions to reduce equity requirements for owner-occupied houses, and strengthening rent controls. As these

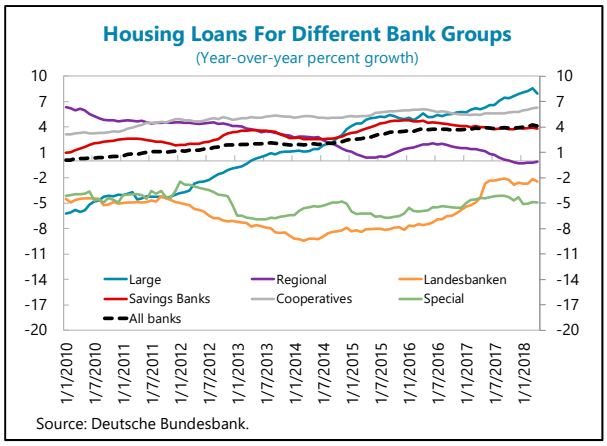
[18] Bundesbank Monthly Report, February 2018.

[19] The subsidy amounts to €1200 per child per year, in the first 10 years after purchased, for families with combined annual income no higher than the sum of €75,000 and €15,000 per child. Staff assumes a total cost of €2 billion over 2018–22.

measures have counteracting effects on housing supply and demand, the overall impact on housing prices is likely to be small.

38. Mortgage growth at the aggregate level has been moderate so far. Housing loans have grown only marginally faster than GDP in recent years. German households are not highly leveraged (household debt stood at 53 percent of GDP at end-2017) and the overall debt-service-to-income ratio is low and declining (Table 7). Mortgage lending spreads have compressed due to high competition among banks, but no widespread deterioration of lending conditions has been observed. Mortgage credit is recourse and based on fixed interest rates.

39. However, data gaps prevent a full assessment of financial stability risks in the housing sector and should be urgently addressed. The absence of regional credit statistics and granular loan information prevents a full assessment of potential financial stability risks in specific market segments. The distribution of housing credit growth by type of bank, for instance, suggests that there could be important differences between major urban centers and the rest of the country. Given this, it is increasingly urgent that data gaps should be addressed.



Source: Deutsche Bundesbank.

40. The macroprudential toolkit should be strengthened. New tools—loan to value (LTV) caps and amortization requirements—were legally created in 2017, a welcome development. However, income-based instruments, such as the debt-to-income ratio and the debt-service-to-income ratio, are not included in the legislation. These tools, which can help prevent an excessive build-up of debt by households when house prices are rising rapidly, should be added.

41. Given rapidly rising house prices in some cities alongside data gaps that hinder a full assessment of risks, early activation of macroprudential tools should be considered. As noted in the 2016 Financial Sector Assessment Program (FSAP), international experience suggests that macroprudential tools should be deployed early to be most effective. It is therefore important that the macroprudential framework is sufficiently nimble such that instruments can be utilized preventatively to avoid the build-up of vulnerabilities. In Germany, early activation would help preserve financial stability by dampening risks of excessive leverage, especially in the context of insufficient data to assess whether pockets of vulnerability are arising. To the extent that vulnerabilities are not present, macroprudential measures—such as application of LTV caps and amortization requirements—would not likely be binding anyway. On this basis, consideration should be given to early activation of the existing macroprudential tools.

Authorities' Views

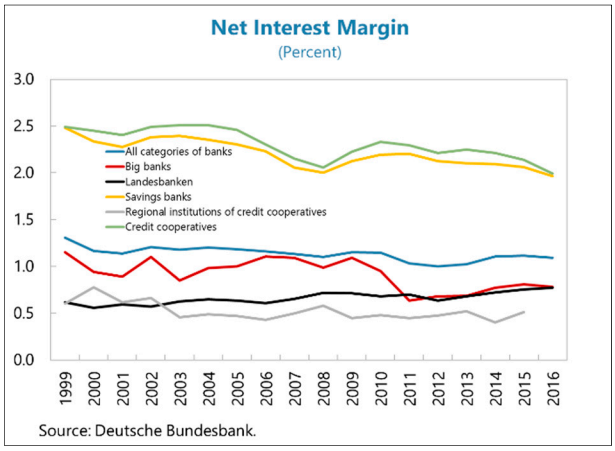
42. The Bundesbank monitors developments in the real estate markets closely, and authorities assess corresponding financial stability risks to be low. An early activation of borrower-based macroprudential tools is deemed unjustified at this stage and would face legal obstacles. They saw overvaluation concerns as localized and the lack of substantial credit growth or deterioration of credit standards, alongside households' strong balance-sheets, as reassuring. They therefore saw no need for activation of LTV caps or amortization requirements at the present juncture. They fully shared staff's concern over the information gaps which prevent a fuller assessment of risks. The authorities highlighted that microprudential tools are available and can be effectively used to address bank-specific concerns.

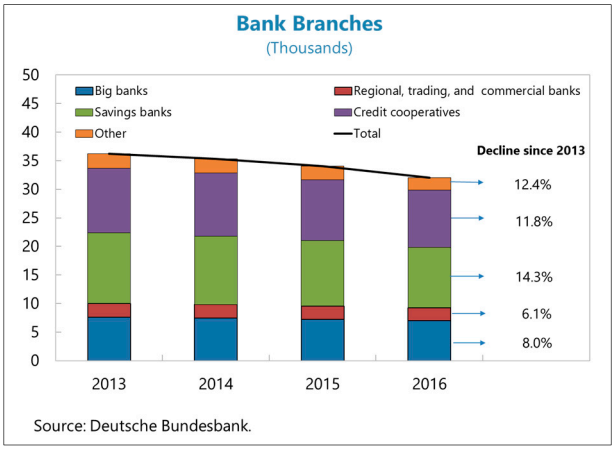
F. Financial Sector Policies: Shoring up Profitability and Monitoring Risks

Continued supervisory attention to financial sector risks and restructuring plans is crucial.

43. Multiple factors weigh on profitability in the banking sector.

- Large German banks continue to underperform relative to European peers (Figure 9), with a relatively low return on equity reflecting high operating costs, outdated IT systems, provisions for compliance violations, and in some cases legacy costs from exposure to the shipping industry. Continued weak profitability erodes banks' ability to generate capital organically. Leverage ratios, characteristically low in Germany, improved somewhat in most large banks in 2017, but remain a relative weakness for some (Figure 9). To keep up with cost reduction targets, the German global systemically important bank (G-SIB) presented an updated restructuring strategy to refocus activities in Europe and reduce personnel costs by shrinking its investment banking business. However, the bank remains under supervisory scrutiny and market pressure.
- Among small and medium-sized banks, the low interest environment and strong competition in a highly fragmented market weigh on net interest margins. High operational costs further dent profitability, notwithstanding progress in consolidation in recent years, particularly among savings banks and cooperatives where the number of bank branches has declined by over 10 percent since 2013.





- Nevertheless, risk-weighted capital stood at comfortable levels, supported by favorable macroeconomic conditions and declining risk weighted asset density, and is improving for all categories except large banks.[20] Non-performing loans (NPLs) continue to decline overall, and provisioning for impaired shipping loans is leveling off.

44. The completion of Basel III, as well as other recent regulatory changes, may have important implications for large German banks. After a long period of favorable economic conditions, banks' internal risk models may underestimate risk weights. The introduction of the 72.5 percent "output floor" is aimed at limiting the effects on bank capital of sharp re-assessments of risks. As the use of internal models is more pervasive in large banks, the measure will affect mostly this group.[21] However, it will be important for affected banks (some of which have low and declining risk weight density) to use the extensive phase-in period (through 2027) to de-risk portfolios and adapt business models. The Markets in Financial Instruments Directive (MiFiD) II that came into force in January 2018 aims at increasing transparency and efficiency in financial trading, but may also add regulatory compliance costs in the larger banks (which produce market research and are more engaged in wealth management and financial trading). The EU's 2017 MREL[22] policy sets targets that are binding only for larger/more complex banks in the Single Resolution Board remit, while smaller and medium-sized institutions are not yet affected.

45. Low interest rates and the introduction of Solvency II are forcing some restructuring in the life insurance (LI) sector. Average investment yields are trending down, catching up with (long term) guaranteed returns. LIs have responded by slowly shifting away from guaranteed-return products to more flexible ones (to transfer interest rate risk to policy holders), reducing duration gaps (to compensate for the decline in yields), and consolidating (to increase efficiency). Nonetheless, the transition to more flexible products lags European peers and guaranteed-return products are expected to remain dominant through the next decade. Solvency ratios according to Solvency II have improved overall alongside the increase in long-term yields since late 2016. But a majority (some 70 percent) of LIs rely on transitional measures to calculate their solvency capital requirement. As noted in the Bundesbank's 2017 Financial Stability Report, 14 LIs would not meet the Solvency II minimum requirement as of end of 2016 without transition measures.

46. Accelerating restructuring, restoring profitability and reducing interest rate risk remain the key priorities in the banking and LI sectors. To boost profitability, more aggressive cost cuts are necessary across the banking industry. For large banks, this requires faster implementation or completion of ongoing restructuring plans. For savings and cooperative banks, consolidation and development of further fee-based revenues is paramount. For all banks, but

[20] Bundesbank 2017 Financial Stability Report.

[21] Consistent with the EBA's Impact Assessment of Basel III reforms for the collective European banks, based on 2017 data. Responding to a request from the European Commission, the EBA will prepare this year a more granular assessment of the impact of Basel III in the banking industry and the macroeconomy.

[22] Minimum requirement for own funds and eligible liabilities (for loss absorption).

especially small and medium-sized ones, net interest margins are expected to remain under pressure. The 2017 Bundesbank Interest Risk survey[23] shows an expected 16 percent decline in return of assets for small and medium-size banks through 2021 under expected interest rates, and a much larger fall under constant interest rates. Maturity transformation has helped banks and LIs sustain profit margins, but exposes them to heightened interest rate risk. An abrupt normalization of interest rates would raise margins in the medium run but lead to valuation losses in the short run, and may drive insurance policyholders to surrender their policies and pursue other investment opportunities. Continued supervisory attention to interest rate risk and implementation of restructuring plans, including through Pillar II measures, remains essential.

Authorities' Views

47. Despite concerns over interest rate risk and declining profitability, the financial sector was generally seen as resilient. Financial market stress is assessed to be low, capital buffers in the banking and LI sectors are deemed comfortable, and restructuring is ongoing, albeit slowly. Few banks are expected to face funding shortfalls to meet MREL target, and subordination requirements are facilitated by recent changes to the German Banking Act.[24] Interest rate sensitivity of some German significant institutions at least to present value changes remains slightly elevated. The German supervisory authorities share the view that the low interest rate environment presents a high risk to the LI sector, but take comfort in the long transitional period (through 2031) for reliance on transitional measures, which allows insurers to adapt.

STAFF APPRAISAL

48. The German economy is performing well. The short-term outlook is for continued robust growth, on the back of solid consumption, investment, and exports. Looking ahead, growth is expected to revert toward its long-term potential, which is limited by Germany's unfavorable demographics and still-low productivity growth. Headline and core inflation, which are still low, are expected to pick up, reflecting tight market conditions. Risks are tilted to the downside: a rise in protectionism, geopolitical uncertainty, or a reassessment of sovereign risk in the euro area may negatively affect export prospects, weigh on investment, and rekindle financial stress. Domestically, lack of progress in revamping bank business models could lead to financial distress in major banks.

49. The unemployment rate has reached post-reunification lows, resulting in a welcome rise in wage growth. Further rises in wage and price inflation would help lift inflation in the euro area and facilitate the normalization of monetary policy. The authorities could usefully emphasize this in their public communications, while respecting the autonomy of the social partners.

[23] The presentation of the Bundesbank 2017 Interest Rate Risk Survey is available on https://www.bundesbank.de/Redaktion/EN/Pressemitteilungen/BBK/2017/2017_08_30_joint_press_release.html.

[24] Since January 2017, creditors of certain unsecured, non-structured debt instruments issued by banks are ranked junior to other non-subordinated liabilities that previously belonged to the same creditor class.

50. Continued higher wage growth would help reduce Germany's large current account surplus, but the adjustment will be limited without further policy action. The current account surplus remained very high in 2017, at 8 percent of GDP, reflecting positive net savings by households, non-financial corporations, and the general government. Based on current policies and higher projected demand in trading partners, the current account surplus is expected to remain high, especially in the near term, before declining by ¾ percentage point of GDP by 2023. Staff assesses the external position to be substantially stronger than implied by medium-term fundamentals and desirable policies.

51. Germany's fiscal position strengthened further in 2017 and the public debt ratio is rapidly declining, resulting in substantial fiscal space. The general government surplus rose to 1.2 percent of GDP in 2017—its highest level since reunification—on the back of favorable cyclical tax revenues and a declining interest bill. In 2018, fiscal policy at the general government level is expected to be mildly expansionary, reflecting already-budgeted increases in spending on health and families, as well as a moderate increase in public investment. The impact of the measures outlined in the new government's coalition agreement is expected to be marginal in 2018, but would lead to a moderate fiscal stimulus in the following years. Even taking into account these measures, the public debt ratio is expected to decline to well below 50 percent of GDP by 2023, preserving Germany's substantial fiscal space within the European rules.

52. The positive near-term economic outlook provides an opportunity for Germany to more forcefully address its long-term challenges and prepare for the future. Germany's demographic outlook remains unfavorable and the labor force is expected to begin shrinking already in 2020 even after accounting for immigration. Productivity growth has been lackluster, especially in the service sector, and investment growth has been low. At the same time, Germany's high labor tax wedge creates disincentives to work and, while female labor force participation is relatively high, about half of women work only part-time. Taken together, these factors weigh on long-term growth.

53. The new government's coalition agreement contains several welcome measures to support long-term growth while also addressing poverty risk among some groups. The planned expansion of high-speed internet and the 5G network to improve digital infrastructure should boost productivity growth and enhance returns to domestic investment. The phasing out of the solidarity tax surcharges for low- and middle-income households would reduce the labor tax wedge moderately. Plans to invest in all-day childcare and all-day schooling would make it easier for women to work full-time. Initiatives to continue and expand housing and training for refugees would help them integrate into the labor force. The agreement also provides additional modest support and incentives for schools, vocational training, and R&D activities. These are important steps to prepare Germany for the future. Some of the targeted social benefit increases—such as the supplementary allowance to combat child poverty and additional support for the long-term unemployed—would help reduce poverty risks.

54. Further policy action is needed to more decisively boost domestic investment, which would also support external rebalancing. Measures to increase public investment, labor supply, and productivity growth would lift long-term growth directly, through higher inputs, and indirectly, by improving the environment for private investment.

- The still sizable fiscal space should be used to raise public investment which requires alleviating bottlenecks at the municipal level (including actively promoting PD's services to municipalities where public investment has been delayed the most and addressing staffing shortages); further expand childcare and after-school programs (to provide greater opportunities for women to pursue full-time employment); further reduce the labor tax wedge (to reduce disincentives to work); and provide additional funding for primary education and life-long learning (to enhance skills in today's and tomorrow's workforce). To accelerate investment in transport, the Federal Transport Agency should be operationalized without delay.

- Pension and labor market reforms that make it more attractive to extend working lives would reduce the need to save, lower the public pension bill, and raise growth. Future pension replacement rates could thus be sustained at levels consistent with a reduced risk of old-age poverty with less budgetary support. Improving the transparency of future pension payouts at the household or individual level would reduce uncertainty about future pension income and could help reduce household precautionary savings.

- Fostering entrepreneurship and venture capital can increase productivity growth and investment. Improving access to venture capital, especially at growth stages for new companies, can make it easier to pursue entrepreneurial activities. Moreover, venture capital can support investment in intangible assets. Initiatives to simplify tax administration and provide tax incentives for R&D to small- and medium-size enterprises are steps in the right direction. Expanding e-government services would further reduce administrative burdens.

- Investing in digital infrastructure is essential, and the new government's plans in this area are welcome and should be implemented without delay. Expanding the nationwide fiber optic network will be crucial to ensuring that Germany is well positioned to take advantage of productivity-improving technologies. Completing Germany's digital transformation will require additional investment and the government should ensure that incentives, regulations, and funding availability are appropriately supportive.

- Introducing greater competition in product markets, notably in network industries and professional services, would raise productivity growth and promote private investment. Progress in this area has been limited and should be accelerated.

55. House prices remain in line with fundamentals at the aggregate level but appear overvalued in some major cities. Given recent immigration, rising incomes, and the low interest rate environment amid supply constraints, some growth in house prices is to be expected. However, in some large cities, house price growth seems stronger than warranted by these fundamentals. The government has committed funds to increase social housing. Additional measures are needed to

expand supply, including reconsidering zoning restrictions or reducing the effective tax burden on new construction.

56. Given rapidly rising house prices in some cities, addressing data gaps and completing the macroprudential toolkit are increasingly urgent. Although the increase in house prices is not accompanied by rapid credit growth or a significant easing of credit standards at the aggregate level, the lack of granular data prevents a full assessment of developments—a deficiency which must be addressed. The creation of macroprudential tools focused on real estate—loan-to-value (LTV) and amortization requirements—in 2017 was a welcome step. However, these tools should be complemented with income-based instruments. Taken together, the rapid increase in house prices in some hot spots alongside data gaps and an incomplete macroprudential toolkit suggest that consideration should be given to early implementation of supervisory measures, including LTV caps or amortization requirements, to help preserve financial stability.

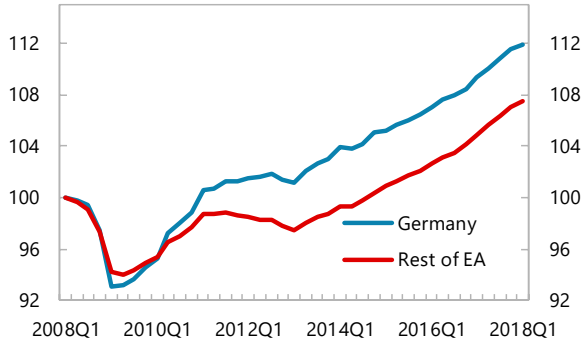
57. The German banking and life insurance sectors must accelerate their restructuring to bolster profitability and reduce risks. In the banking sector, the regulatory capital ratio has increased, but the cost-to-income ratio and leverage remain high. The high cost structure, alongside low net interest margins and provisions for compliance violations continue to weigh on profitability. Restructuring is ongoing in the banking sector, but the process must be accelerated through faster implementation of restructuring plans, continued development of fee-based income, and further consolidation. In the life insurance sector, low interest rates have dented solvency ratios, and further progress is needed to reduce reliance on guaranteed return products. In this context, continued supervisory attention to progress in implementing restructuring plans and interest rate risk both in banking and insurance is essential.

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

Figure 4. Germany: Growth Developments

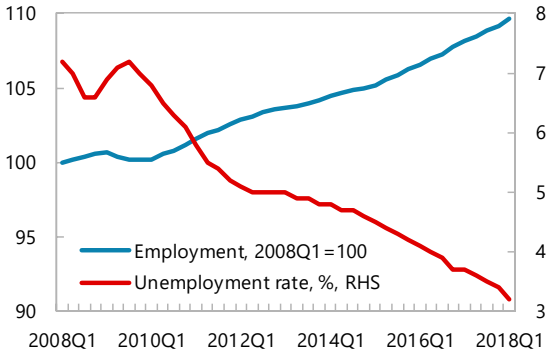
The German economy remains on an uptrend ...

Selected Economies: Real GDP
(2008Q1=100)



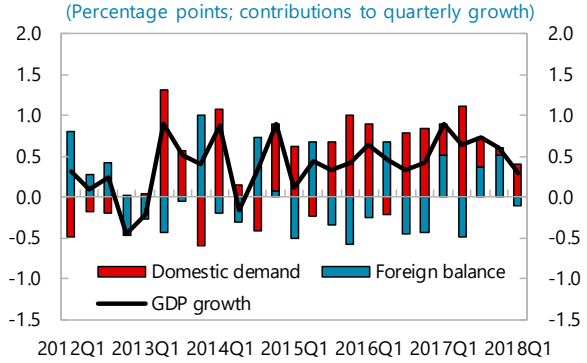
...and the labor market continues to be strong.

Employment and Unemployment Rate 1/



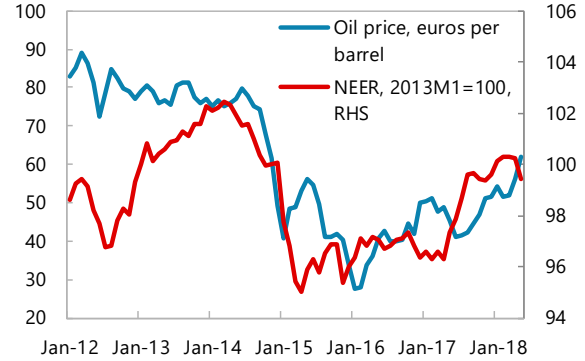
Both domestic and foreign demand contributed to growth in 2017.

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



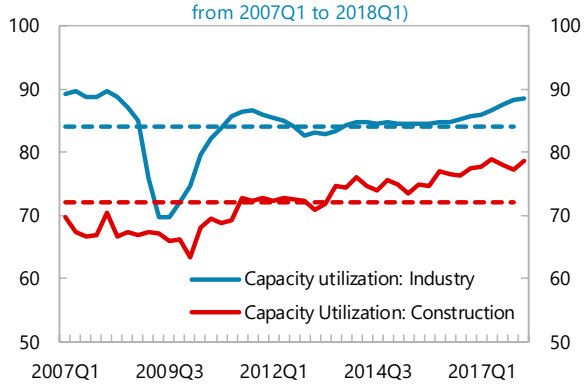
Oil prices increased and the exchange rate appreciated.

Oil Prices and Nominal Effective Exchange Rate



Capacity utilization rates are above historical averages ...

Indicators of Capacity Utilization
(Percentage points; dotted lines denote averages from 2007Q1 to 2018Q1)



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

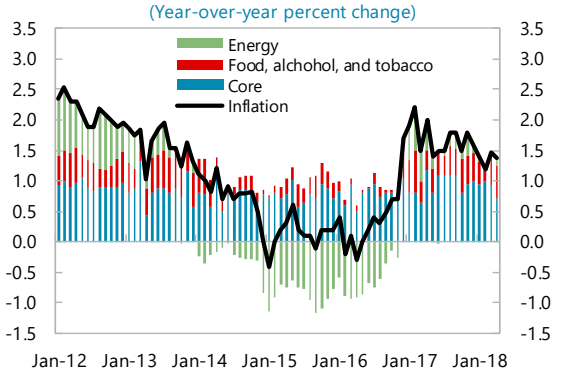
Business Survey Results
(Seasonally adjusted)

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

Figure 5. Germany: Prices and Labor Market

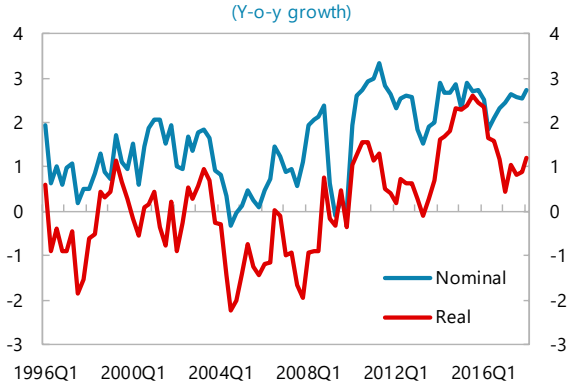
Inflation temporary ebbed due to a lower contribution of oil and food prices ...

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



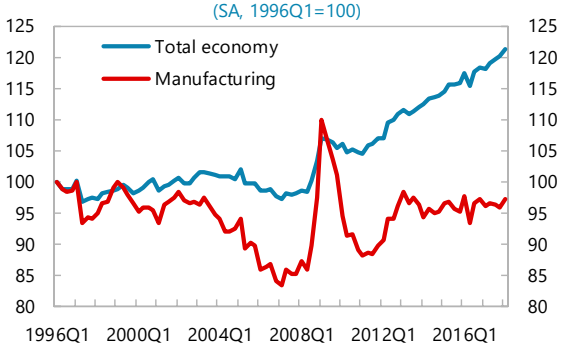
... while nominal wage growth has remained above productivity growth...

Compensation Per Employee
(Y-o-y growth)



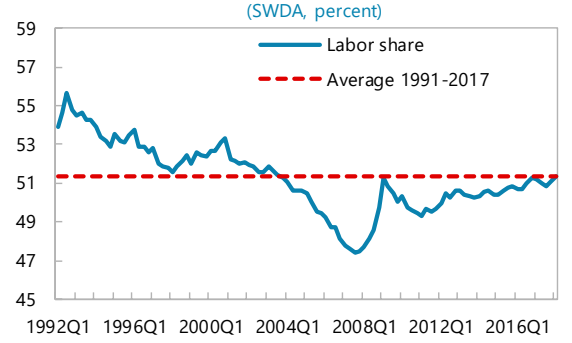
...raising unit labor costs...

Unit Labor Costs
(SA, 1996Q1=100)



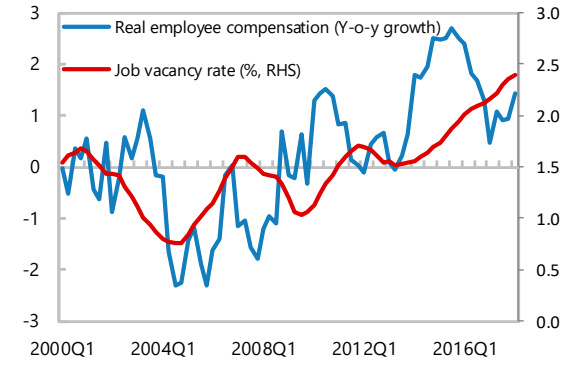
... and helping to normalize the labor share.

Labor Share in GDP
(SWDA, percent)



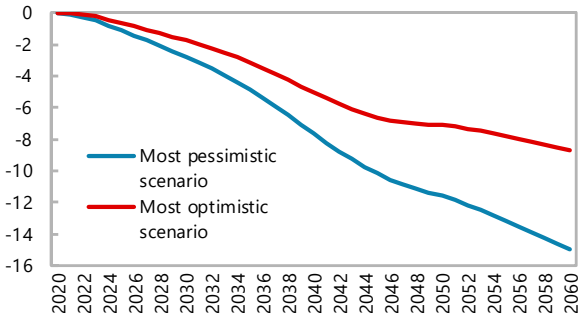
Labor market tightness should boost wage pressures.

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)

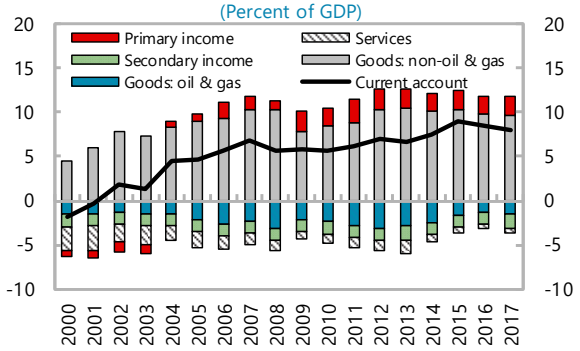


Sources: Bundesbank, Federal Statistical Office, Federal Statistical Office's 13th Coordinated Population Projection, Eurostat, Haver Analytics, and IMF staff calculations.

Figure 6. Germany: Balance of Payments

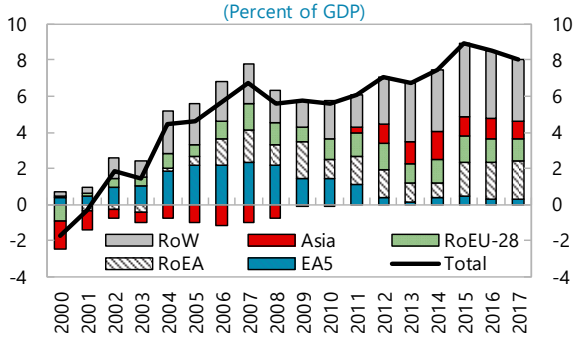
The current account (CA) edged down in 2017, as in the previous year.

Current Account Balance Breakdown
(Percent of GDP)



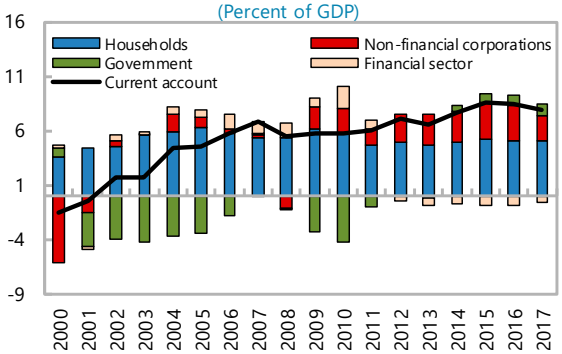
The rebalancing vis-à-vis the euro area (EA) halted in 2015-17 mostly due to a lower energy deficit with the Netherlands.

Current Account Balance by Region
(Percent of GDP)



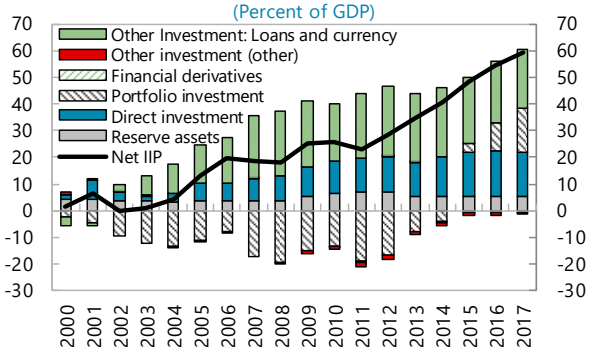
Rising net lending by corporates and the government underpinned the upward trend in the CA.

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



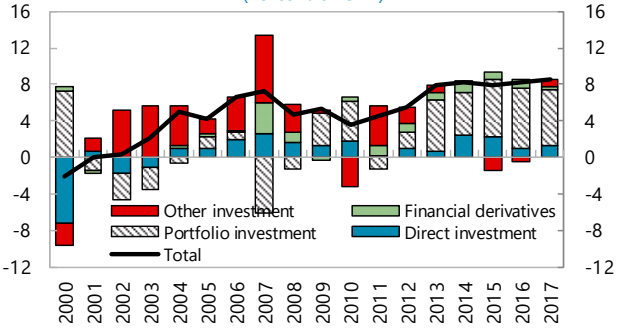
The Net International Investment Position reached 60 percent of GDP.

Net International Investment Position by Instrument
(Percent of GDP)



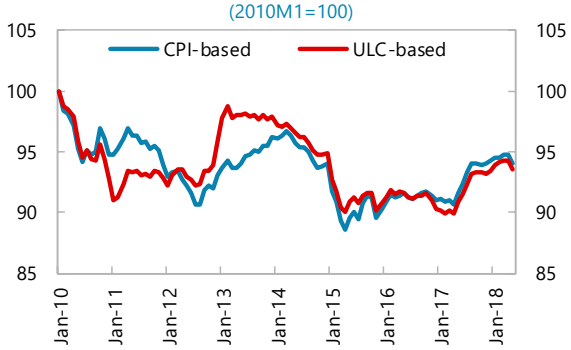
External savings are mostly financing a net increase in portfolio investment, while direct investment is edging down.

Capital and Financial Account
(Percent of GDP)



The REER appreciated in 2017 in line with the strenghtening of the euro.

REER 1/
(2010M1=100)

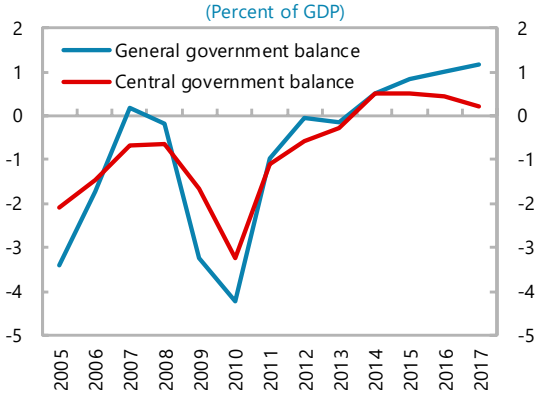


Sources: Bundesbank, DOTS, GDS, Haver Analytics, IMF *World Economic Outlook*, and IMF staff calculations.
1/ The ULC-based REER is measured using ULC statistics for the manufacturing sector in Germany and 37 trading partners, using the OECD System of Unit Labor Cost Indicators.
Note: EA5= Euro area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

Figure 7. Germany: Fiscal Developments and Outlook

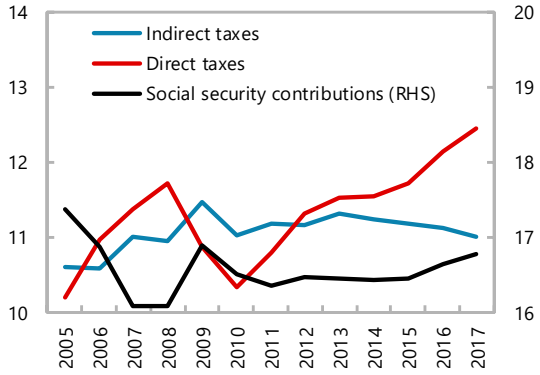
The general government surplus reached a historical high in 2017...

General and Central Government Balances
(Percent of GDP)



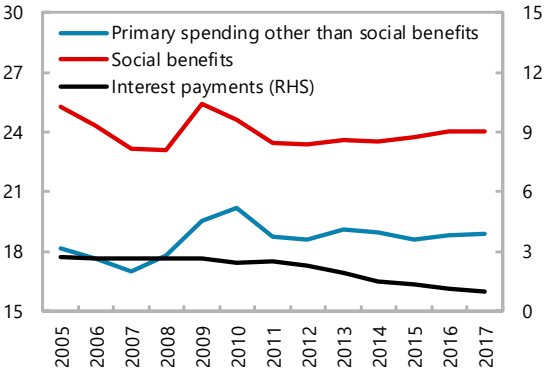
...supported by continued increases in direct taxes...

Tax Revenue and Social Security Contributions
(Percent of GDP)



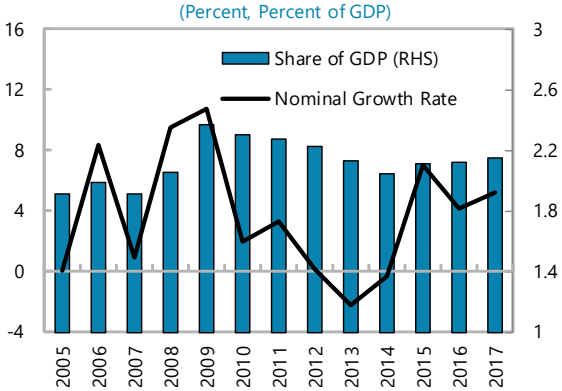
...and declining debt service.

General Government Spending
(Percent of GDP)



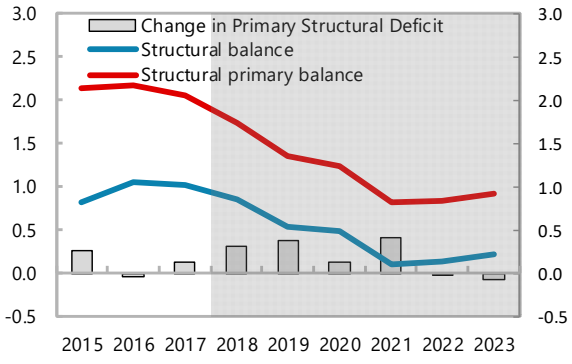
Public investment is picking up but from a low base.

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



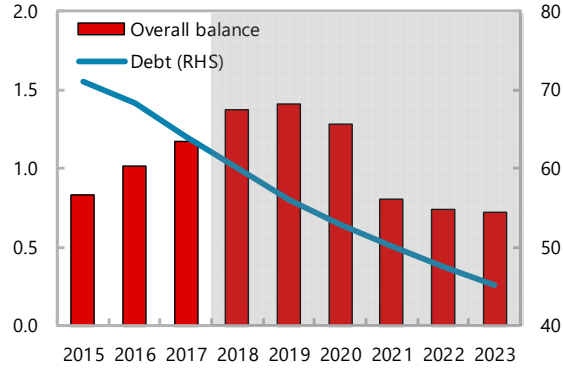
Fiscal policy is expected to be expansionary over 2018-21.

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



Fiscal surpluses are expected to push debt down to 45 percent of GDP by 2023.

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

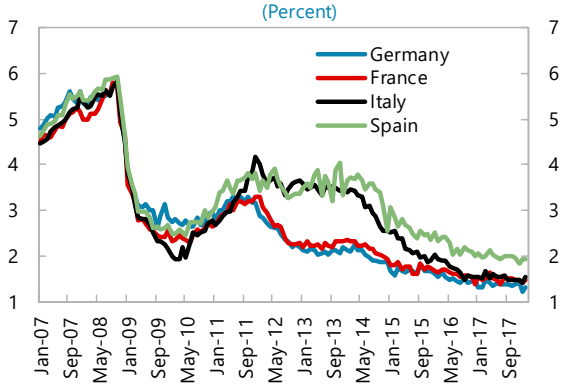


Sources: Bloomberg Finance L.P., Federal Statistical Office, Ministry of Finance, and IMF staff calculations and projections.

Figure 8. Germany: Credit Conditions and Asset Prices

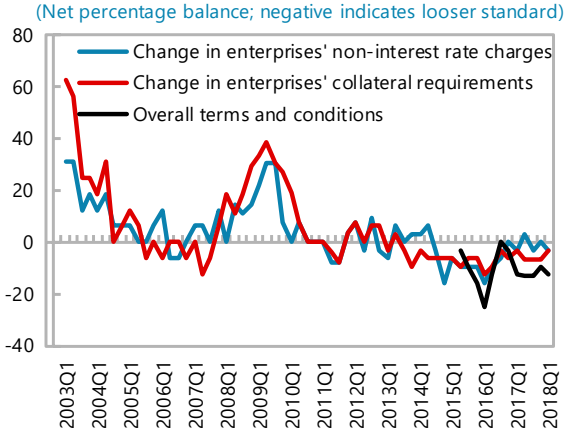
Increasingly favorable lending rates...

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



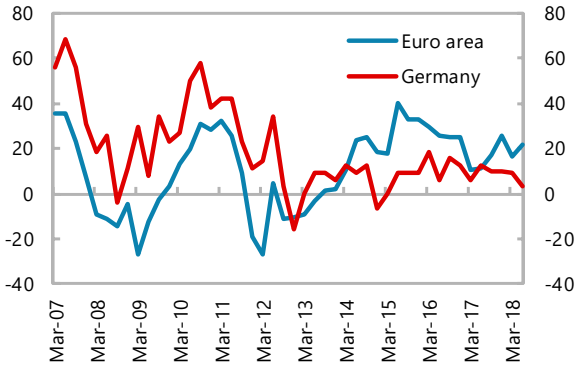
... and slightly looser lending standards ...

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



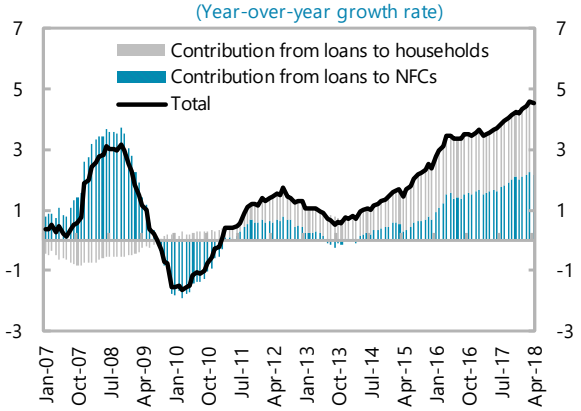
... together with higher demand for corporate credit ....

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



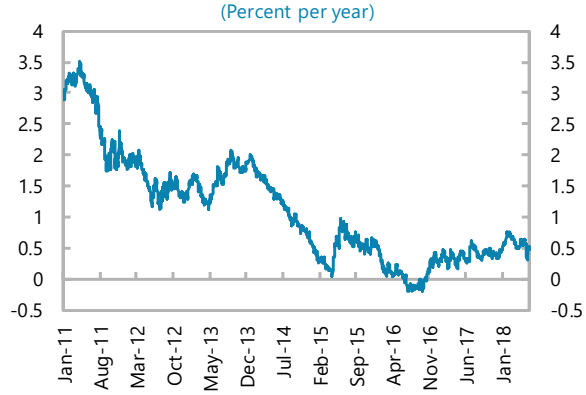
... led to a pickup in NFCs contribution to credit growth.

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



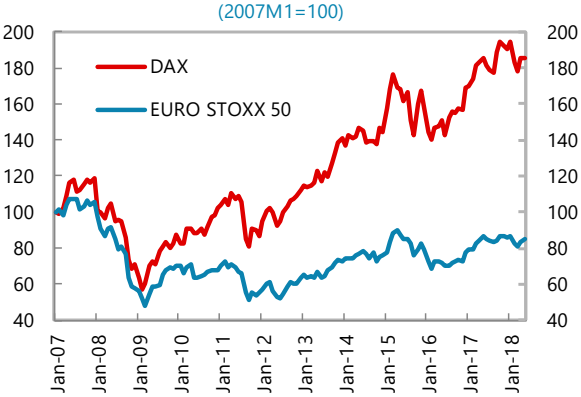
German government bond yields remain very low and...

10-year Bond Yield: June 12, 2018
(Percent per year)



...German equities continue to outperform other European indices.

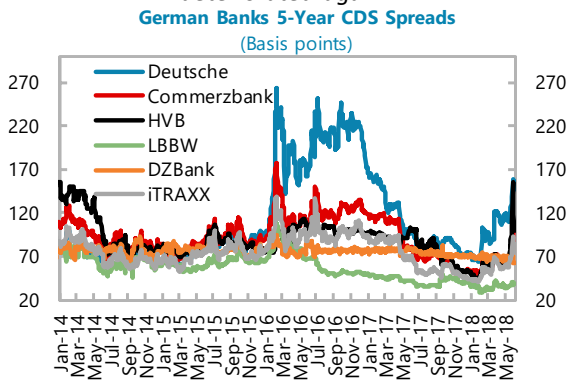
Stock Market Indices
(2007M1=100)



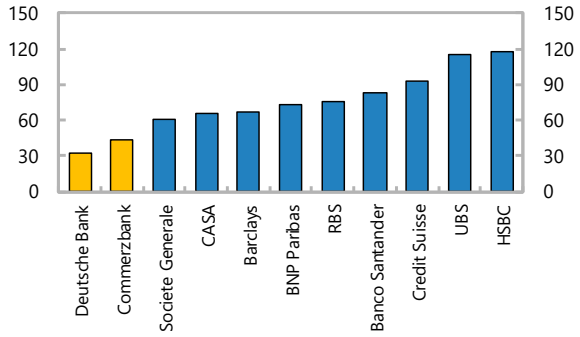
Sources: Bundesbank, ECB, Haver Analytics, and IMF staff calculations.

Figure 9. Germany: Recent Developments in the German Banking Sector

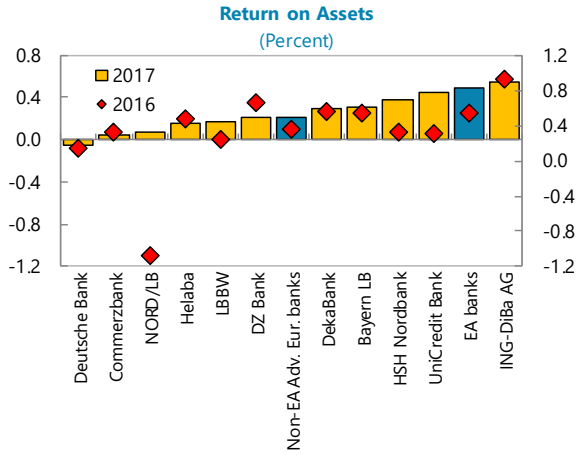
Investor sentiment towards Deutsche Bank deteriorated again.



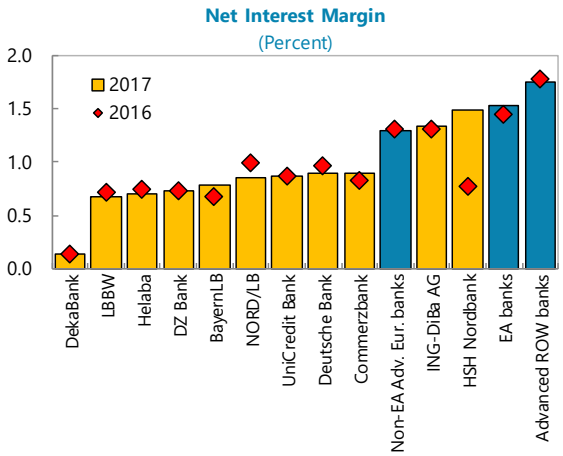
The two largest banks keep trading at a discount to European peers,...



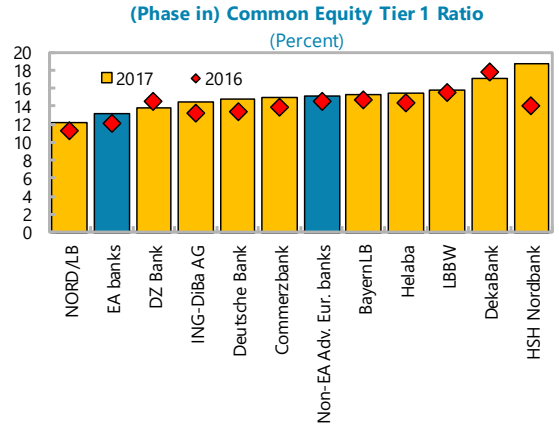
... showing low profitability...



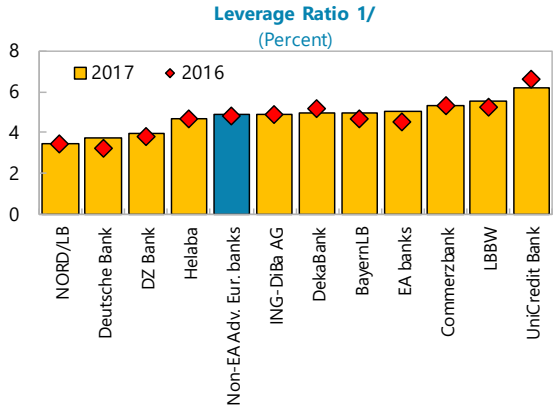
...reflecting high cost and low interest rate margins.



Risk-weighted capital buffers are generally comfortable...



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

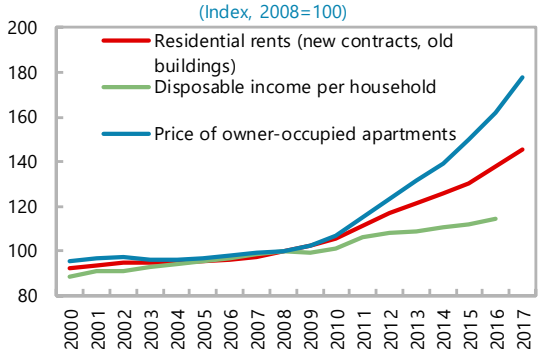


Sources: Bloomberg Finance L.P., ECB, IFS, S&P Global Market Intelligence, and IMF staff calculations.
1/ Leverage ratio is defined as common equity net of intangibles as a percent of total assets net of intangibles.

Figure 10. Germany: Housing Market Developments

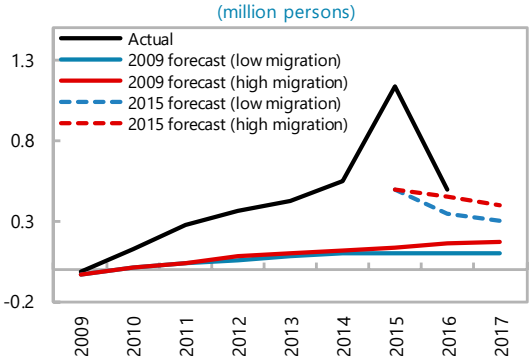
Residential prices and rents have been rising faster than income since 2010, ...

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



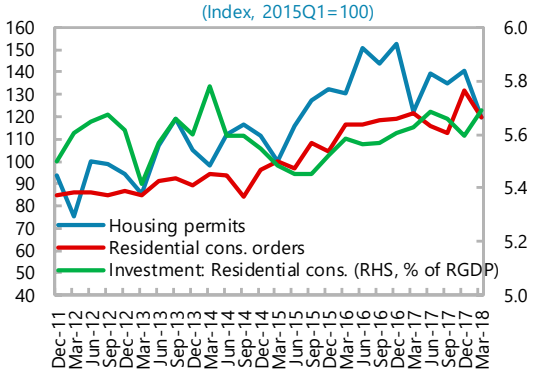
..., in part due to an unexpected surge in immigration.

Net Immigration: Forecast versus Actual, 2009-2017 1/
(million persons)



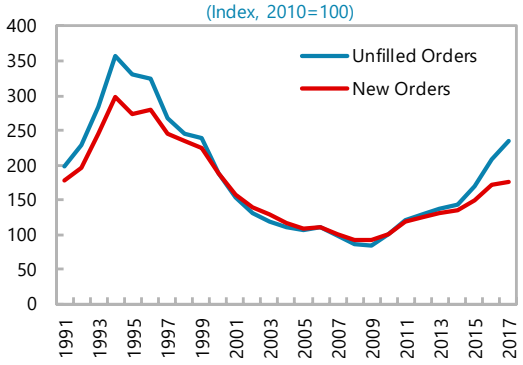
Residential investment slowed in 2016-17, ...

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



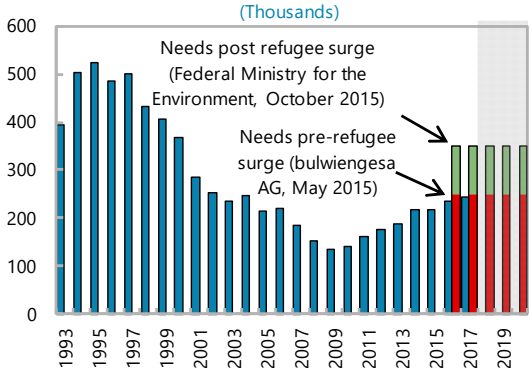
..., suggesting capacity constraints,...

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



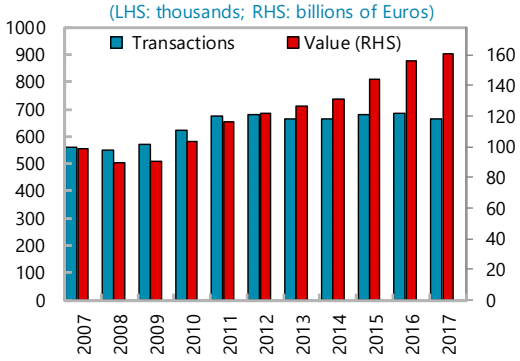
...and adding to the demand backlog.

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)



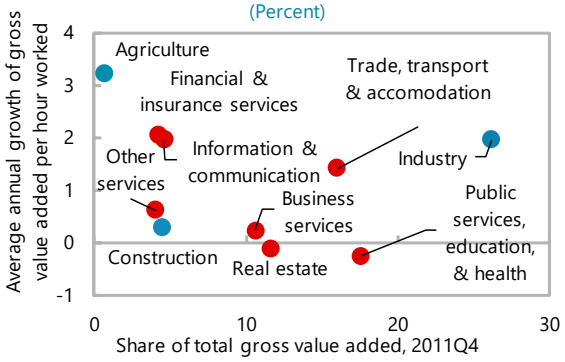
Sources: bulwiengesa AG, Destatis, Federal Ministry of the Interior, Building and Community, vdpResearch, Local Real Estate Surveyor Comission, Haver Analytics, and IMF staff calculations.
1/The scenarios refer to those described in the 12th and 13th Coordinated Population Projections, published respectively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

Figure 11. Germany: Product Market Competition, Innovation and Digitalization

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

Germany: Sectoral Labor Productivity Growth, 2011Q4-2017Q4

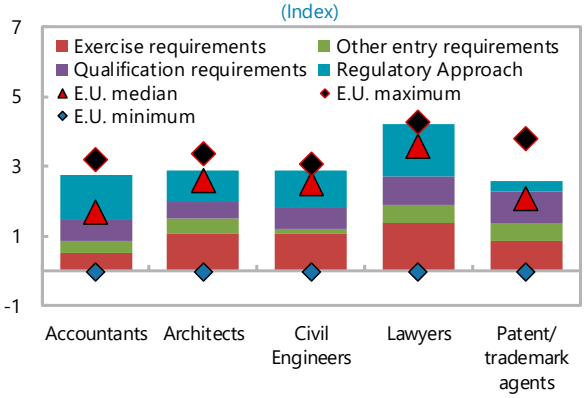
(Percent)



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

Germany: E.C. Restrictiveness Indicators, 2016

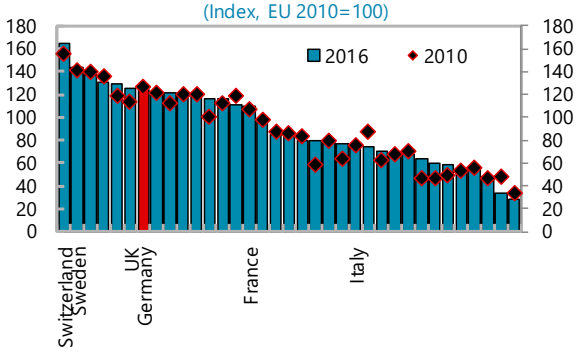
(Index)



Germany is an innovation leader...

EU: Summary Innovation Index, 2010-2016

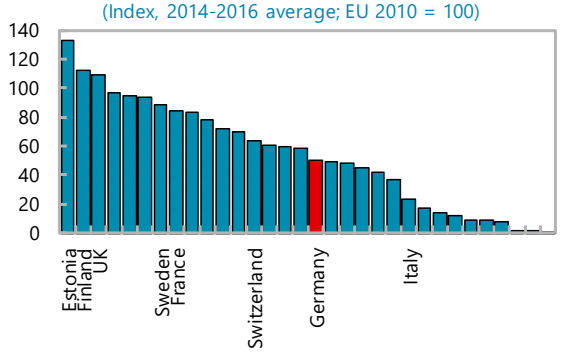
(Index, EU 2010=100)



...with a relative weakness in venture capital.

EU Venture Capital, 2014-2016

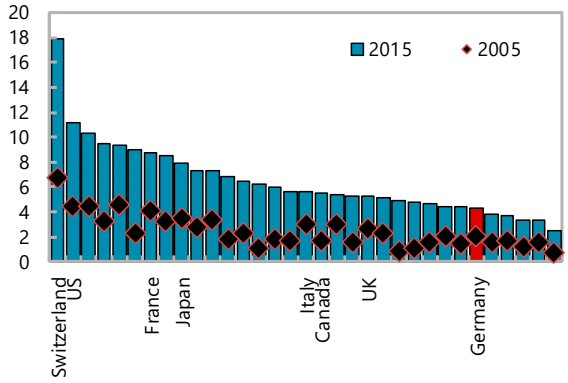
(Index, 2014-2016 average; EU 2010 = 100)



ICT capital per worker is low relative to other advanced economies.....

Advanced Economies: ICT Capital per worker, 1995-2015

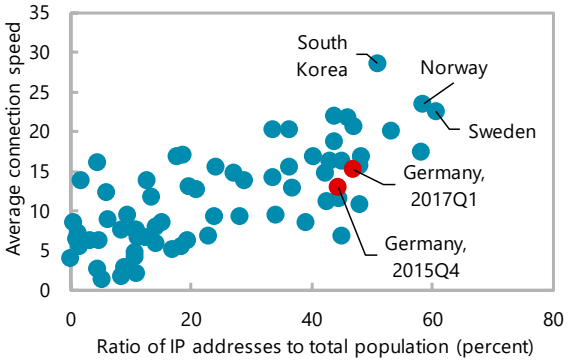
(Thousands of 2015 US dollars)



... as is 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 and IMF staff calculations.

Table 1. Germany: Selected Economic Indicators, 2015–19

				Projections	
	2015	2016	2017	2018	2019
National accounts 1/		(Percent change)			
GDP	1.5	1.9	2.5	2.2	2.1
Private consumption	1.6	1.9	2.1	1.3	1.6
Public consumption	2.9	3.7	1.6	2.0	1.9
Gross fixed investment	1.1	2.9	4.0	3.3	4.0
Construction	-2.0	2.5	3.5	2.1	3.3
Machinery and equipment	3.0	2.0	4.9	4.7	5.4
Final domestic demand	1.8	2.5	2.4	1.8	2.2
Inventory accumulation 2/	-0.3	-0.1	0.0	0.3	0.2
Total domestic demand	1.5	2.4	2.4	2.2	2.4
Exports of goods and services	4.7	2.4	5.3	4.9	4.9
Imports of goods and services	5.2	3.8	5.6	5.2	5.9
Foreign balance 2/	0.1	-0.4	0.2	0.2	-0.1
Output gap (percent of potential GDP)	0.1	0.2	0.9	1.3	1.6
Employment and unemployment 3/	(In millions of persons, unless otherwise indicated)				
Labor force	42.0	42.8	43.1	43.3	43.4
Employment	40.1	41.1	41.5	41.7	41.9
Unemployment	1.9	1.8	1.6	1.6	1.5
Unemployment rate (percent)	4.6	4.2	3.7	3.6	3.5
Unemployment rate (percent) 4/	4.4	3.9	3.6		
Prices and incomes		(Percent change)			
GDP deflator	2.0	1.3	1.5	1.6	1.7
Consumer price index (harmonized)	0.1	0.4	1.7	1.8	1.7
Compensation per employee (total economy)	2.6	2.2	2.6	3.3	3.5
Compensation per employee (manufacturing)	2.5	2.1	1.9	3.6	3.8
Unit labor cost (total economy)	1.8	1.6	1.8	1.6	1.7
Unit labor cost (manufacturing)	1.0	0.3	-0.4	1.1	1.2
Real disposable income 5/	1.9	2.1	2.1	1.4	1.5
Household saving ratio (percent)	9.6	9.7	9.9	10.0	9.9
Public finances	(Billions of euros, unless otherwise indicated)				
General government					
Expenditure	1,328.8	1,382.4	1,435.1	1,489.9	1,543.3
(percent of GDP)	43.7	44.0	44.0	43.9	43.8
Revenue	1,354.3	1,414.2	1,473.3	1,536.6	1,593.0
(percent of GDP)	44.5	45.0	45.1	45.3	45.2
Overall balance 6/	25.4	31.9	38.2	46.7	49.8
(percent of GDP)	0.8	1.0	1.2	1.4	1.4
Structural balance	24.8	33.0	33.2	28.8	18.9
(percent of GDP)	0.8	1.1	1.0	0.8	0.5
General government debt	2,161.8	2,145.5	2,092.6	2,034.5	1,974.7
(percent of GDP)	71.0	68.2	64.1	60.0	56.1
Federal government					
Overall balance 6/	15.7	13.6	7.1	8.3	3.0
(percent of GDP)	0.5	0.4	0.2	0.2	0.1

Table 1. Germany: Selected Economic Indicators, 2015–19 (concluded)

				Projections	
	2015	2016	2017	2018	2019
	(Billions of U.S dollars, unless otherwise indicated)				
Balance of payments					
Current account	301.1	297.5	296.4	336.4	341.8
(percent of GDP)	8.9	8.5	8.0	8.3	8.1
Trade balance 7/	289.8	296.6	299.6	331.8	336.2
Services balance	-18.8	-22.1	-18.2	-23.2	-28.1
Primary income balance	74.6	67.1	76.1	83.8	93.0
Net private transfers	-17.8	-16.6	-34.4	-26.6	-28.7
Net official transfers	-26.6	-27.5	-26.7	-29.5	-30.6
Foreign exchange reserves (EUR billion, e.o.p.) 8/	33.4	35.0	31.2		
Monetary data		(Percent change)			
Money and quasi-money (M3) 8/ 9/	9.2	5.7	4.3		
Credit to private sector 8/	2.4	3.5	4.2		
Interest rates		(Period average in percent)			
Three-month interbank rate 8/	0.0	-0.3	-0.3		
Yield on ten-year government bonds 8/	0.6	0.2	0.4		
Exchange rates					
Euro per US$	0.90	0.90	0.89		
Nominal effective rate (2005=100) 10/	97.0	98.6	100.1		
Real effective rate (2005=100) 11/	91.3	92.4	93.6		
Memorandum Items:					
Nominal GDP (billions of euros)	3043.7	3144.1	3263.4	3391.4	3523.0
Population growth (percent)	0.9	0.8	0.4		
GDP per capita (thousands of euros)	37.3	38.2	39.5		

Sources: Deutsche Bundesbank, Federal Statistical Office, IMF staff estimates and projections.
1/ Seasonally and working day adjusted (SWDA).
2/ Contribution to GDP growth.
3/ ILO definition, unless otherwise indicated.
4/ National Accounts Concepts.
5/ Deflated by national accounts deflator for private consumption; not SWDA.
6/ Net lending/borrowing.
7/ Excluding supplementary trade items.
8/ Data refer to end of December.
9/ Data reflect Germany's contribution to M3 of the euro area.
10/ Nominal effective exchange rate, all countries.
11/ Real effective exchange rate, CPI based, all countries.

Table 2. Germany: General Government Operations, 2015–23

(Percent of GDP)

				Projections					
	2015	2016	2017	2018	2019	2020	2021	2022	2023
Revenue	44.5	45.0	45.1	45.3	45.2	45.2	44.9	44.8	44.8
Taxes	22.9	23.3	23.5	23.7	23.9	24.0	23.8	23.8	23.8
Indirect taxes	11.2	11.1	11.0	11.1	11.2	11.2	11.2	11.2	11.2
Direct taxes	11.7	12.2	12.5	12.6	12.7	12.8	12.5	12.5	12.5
Social contributions	16.5	16.7	16.8	16.7	16.5	16.6	16.6	16.6	16.6
Grants	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1
Other current revenue		4.9	4.7	4.7	4.6	4.5	4.4	4.3	4.3
Expense	43.7	44.0	44.0	43.9	43.8	43.9	44.1	44.0	44.0
Compensation of employees	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Goods and services	4.7	4.8	4.8	4.8	4.8	4.6	4.5	4.5	4.5
Interest	1.3	1.1	1.0	0.9	0.8	0.7	0.7	0.7	0.7
Subsidies	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0
Social benefits	23.7	24.0	24.0	23.9	23.8	24.0	24.3	24.3	24.4
Social benefits in kind	8.3	8.5	8.5	8.5	8.5	8.6	8.7	8.7	8.7
Social transfers	15.4	15.5	15.5	15.4	15.3	15.5	15.6	15.6	15.7
Pensions	8.8	8.9	8.9	8.8	8.8	8.8	8.9	8.9	8.9
Child benefits	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Unemployment benefits	1.4	1.3	1.3	1.3	1.2	1.2	1.1	1.1	1.1
Other social transfers	4.6	4.6	4.7	4.7	4.7	4.8	4.9	5.0	5.0
Other expense	5.6	5.7	5.8	5.8	5.9	6.0	6.0	6.0	6.0
Gross public investment	2.1	2.1	2.2	2.2	2.3	2.3	2.4	2.4	2.3
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	0.8	1.0	1.2	1.4	1.4	1.3	0.8	0.7	0.7
Primary balance	2.2	2.1	2.2	2.3	2.2	2.0	1.5	1.4	1.4
Memorandum items:									
Structural balance	0.8	1.1	1.0	0.8	0.5	0.5	0.1	0.1	0.2
Change in structural balance	*0.0*	*0.2*	*0.0*	*-0.2*	*-0.3*	*-0.1*	*-0.4*	*0.0*	*0.1*
Structural primary balance	2.1	2.2	2.1	1.7	1.4	1.2	0.8	0.8	0.9
Change in structural primary balance	*-0.3*	*0.0*	*-0.1*	*-0.3*	*-0.4*	*-0.1*	*-0.4*	*0.0*	*0.1*
Public gross debt (Maastricht definition)	71.0	68.2	64.1	60.0	56.1	52.8	50.1	47.5	45.1

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

Table 3. Germany: Medium Term Projections, 2015–23

				Projections					
	2015	2016	2017	2018	2019	2020	2021	2022	2023
Real sector			(Percentage change unless otherwise indicated)						
Real GDP	1.5	1.9	2.5	2.2	2.1	1.6	1.5	1.3	1.1
Total domestic demand	1.5	2.4	2.4	2.2	2.4	1.8	1.8	1.5	1.4
Private consumption	1.6	1.9	2.1	1.3	1.6	1.5	1.7	1.4	1.3
Households saving ratio (in percent)	9.6	9.7	9.9	10.0	9.9	9.9	9.8	9.7	9.7
Foreign balance (contribution to growth)	0.1	-0.4	0.2	0.2	-0.1	-0.1	-0.2	-0.2	-0.2
Output gap (percent of potential GDP)	0.1	0.2	0.9	1.3	1.6	1.5	1.3	1.1	0.9
Employment (millions of persons)	40.1	41.1	41.5	41.7	41.9	42.0	42.1	42.1	42.1
Labor productivity (per employed person)	0.8	0.6	0.8	1.7	1.8	1.3	1.2	1.2	1.2
Consumer prices	0.1	0.4	1.7	1.8	1.7	2.1	2.3	2.5	2.6
Compensation per employee	2.6	2.2	2.6	3.3	3.5	3.8	4.0	4.0	4.1
				(Percent of GDP)					
External sector									
Current account balance	8.9	8.5	8.0	8.3	8.1	8.0	7.9	7.7	7.6
Trade balance (goods and services)	8.0	7.9	7.6	7.6	7.3	7.2	7.0	6.9	6.7
Net international investment position	48.1	54.2	59.9	65.7	70.3	75.3	79.9	84.3	88.7
General government									
Overall balance	0.8	1.0	1.2	1.4	1.4	1.3	0.8	0.7	0.7
Gross debt	71.0	68.2	64.1	60.0	56.1	52.8	50.1	47.5	45.1

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

Table 4. Germany: Balance of Payments, 2015–23

(Percent of GDP)

				Projections					
	2015	2016	2017	2018	2019	2020	2021	2022	2023
Current account	8.9	8.5	8.0	8.3	8.1	8.0	7.9	7.7	7.6
Trade balance	8.0	7.9	7.6	7.6	7.3	7.2	7.0	6.9	6.7
Trade in goods	8.6	8.5	8.1	8.2	8.0	7.9	7.7	7.6	7.5
Exports	38.7	37.9	38.9	39.4	40.0	40.3	40.5	40.6	40.8
Imports	30.2	29.4	30.8	31.3	32.0	32.4	32.8	33.0	33.2
Trade in services	-0.6	-0.6	-0.5	-0.6	-0.7	-0.7	-0.7	-0.8	-0.8
Exports	8.2	8.2	8.4	8.5	8.7	8.9	9.1	9.2	9.3
Imports	8.8	8.9	8.9	9.1	9.4	9.6	9.8	10.0	10.2
Primary income balance	2.2	1.9	2.1	2.1	2.2	2.2	2.3	2.3	2.4
Receipts	6.6	6.2	6.1	5.2	5.7	6.0	6.5	6.6	6.9
Payments	4.4	4.3	4.1	3.1	3.5	3.8	4.1	4.3	4.6
Secondary income balance	-1.3	-1.3	-1.7	-1.4	-1.4	-1.4	-1.4	-1.5	-1.5
Capital and Financial Account	7.9	8.3	8.4	8.3	8.1	8.0	7.9	7.7	7.6
Capital account	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Financial account	7.8	8.2	8.4	8.3	8.1	8.0	7.9	7.7	7.6
Direct Investment	2.2	1.0	1.3	1.5	1.2	1.3	1.4	1.3	1.3
Abroad	3.8	2.6	3.4	3.3	3.1	3.3	3.2	3.2	3.2
Domestic	1.6	1.7	2.1	1.8	1.9	1.9	1.9	1.9	1.9
Portfolio investment balance	6.3	6.6	6.2	6.4	6.3	6.1	6.1	5.9	5.8
Financial derivatives	0.9	1.0	0.3	0.7	0.7	0.5	0.6	0.6	0.6
Other financial transactions	-1.5	-0.4	0.7	-0.4	0.0	0.0	-0.2	-0.1	-0.1
Change in reserve assets	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net errors and omissions	-1.1	-0.5	0.4	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, 2009–17

(Percent of GDP)

	2009	2010	2011	2012	2013	2014	2015	2016	2017
Assets	210.3	256.3	248.8	266.2	247.4	257.3	258.8	262.3	259.1
Direct investment	44.7	47.9	47.6	53.3	54.0	55.2	58.4	59.0	59.5
Portfolio investment	69.8	74.9	66.8	76.3	79.6	85.1	87.8	89.8	91.3
Equity and investment fund shares	19.7	21.7	18.2	20.7	23.7	26.0	28.8	30.4	33.4
Debt securities	50.1	53.2	48.7	55.6	55.9	59.1	59.0	59.4	57.9
Financial derivatives (other than reserves) and employee stock options		30.7	33.3	34.8	22.4	26.6	21.9	19.5	14.7
Other investment	90.8	96.3	94.4	95.0	86.2	85.1	85.5	88.5	88.5
Reserve assets	5.0	6.3	6.7	6.9	5.1	5.3	5.2	5.6	5.2
Liabilities	185.7	230.3	226.0	237.5	212.7	217.2	210.7	208.1	199.2
Direct investment	33.8	35.5	35.1	40.0	41.3	40.6	41.7	42.2	42.8
Portfolio investment	84.7	88.4	85.5	92.8	87.7	88.8	84.5	79.4	74.1
Equity and investment fund shares	18.0	19.6	15.9	19.4	22.3	21.1	22.1	21.8	23.1
Debt securities	66.7	68.8	69.6	73.4	65.5	67.7	62.4	57.6	51.0
Financial derivatives (other than reserves) and employee stock options		30.8	33.7	34.6	22.0	27.3	22.4	20.4	15.2
Other investment	67.2	75.6	71.6	70.1	61.6	60.4	62.1	66.1	67.2
Net International Investment Position	24.6	25.9	22.8	28.7	34.7	40.1	48.1	54.2	59.9
Direct investment	10.9	12.4	12.5	13.3	12.7	14.6	16.6	16.8	16.7
Portfolio investment	-14.9	-13.5	-18.7	-16.6	-8.1	-3.7	3.2	10.4	17.2
Financial derivatives (other than reserves) and employee stock options	0.0	-0.1	-0.5	0.2	0.4	-0.8	-0.5	-0.9	-0.5
Other investment	23.6	20.7	22.7	24.9	24.6	24.7	23.5	22.3	21.3

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

Table 6. Germany: Core Financial Soundness Indicators for Banks, 2012–17

(Percent)

	2012	2013	2014	2015	2016	2017
Capital adequacy						
Regulatory capital to risk-weighted assets	17.9	19.2	18.0	18.3	18.8	19.4
Commercial banks	17.8	18.9	17.2	17.3	17.9	18.8
Landesbanken	18.8	21.3	18.4	19.4	21.4	22.3
Savings banks	15.9	16.4	16.6	16.7	16.9	17.4
Credit cooperatives	15.8	16.6	17.4	17.6	17.7	17.6
Regulatory Tier I capital to risk-weighted assets	14.2	15.6	15.4	15.7	16.3	16.9
Commercial banks	15.0	16.1	15.5	15.5	16.0	16.7
Landesbanken	14.0	16.9	14.7	15.6	16.6	17.5
Savings banks	12.5	13.4	14.5	14.8	15.2	15.8
Credit cooperatives	11.1	12.0	13.5	14.1	14.5	14.8
Asset composition and quality						
Sectoral distribution of loans to total loans						
Loan to households	26.8	28.5	28.7	29.0	28.5	28.6
Commercial banks	20.8	22.9	22.3	22.2	20.9	20.8
Landesbanken	5.6	5.8	5.6	5.5	5.4	5
Savings banks	57.2	57.4	57.0	58.2	57.8	57.1
Credit cooperatives	68.7	69.3	69.8	68.8	68.2	67
Loans to non-financial corporations	14.9	15.6	15.2	15.2	14.9	15.1
Commercial banks	11.5	12.3	12.0	12.0	11.0	11.4
Landesbanken	20.8	22.4	22.5	23.5	24.1	23.3
Savings banks	21.5	22.0	21.7	22.4	23.1	24
Credit cooperatives	15.2	16.0	16.6	16.8	17.4	18.3
NPLs to gross loans	2.9	2.7	2.3	2.0	1.7	
Commercial banks	1.9	1.8	1.4	1.2	1.2	
Landesbanken	4.5	4.8	4.8	4.5	3.6	
Savings banks	3.1	2.8	2.3	1.9	1.6	
Credit cooperatives	3.2	2.8	2.4	2.0	1.8	
NPLs net of provisions to capital	27.4	23.8	20.9	17.4	14.8	
Commercial banks	16.4	13.3	7.8	6.9	9.6	
Landesbanken	46.6	49.4	53.6	42.2	30.7	
Savings banks	31.5	27.6	22.6	19.7	16.3	
Credit cooperatives	30.8	26.8	22.7	19.5	17.3	

Table 6. Germany: Core Financial Soundness Indicators for Banks, 2012–17 (concluded)

(Percent)

	2012	2013	2014	2015	2016	2017
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	0.6	0.5	0.5	0.5	0.6	
Credit cooperatives	0.7	0.8	0.6	0.6	0.7	
Return on average equity (after-tax)	5.6	3.5	4.0	4.0	4.3	
Commercial banks	3.7	3.5	3.5	2.2	3.2	
Landesbanken	2.8	-1.6	-1.5	1.9	-2.0	
Savings banks	9.3	7.3	6.7	6.5	7.4	
Credit cooperatives	11.5	11.0	8.6	7.4	8.4	
Interest margin to gross income	71.5	71.9	75.4	75.0	71.2	
Commercial banks	61.8	63.0	66.4	67.0	63.4	
Landesbanken	82.3	78.5	89.9	82.5	74.9	
Savings banks	79.4	80.0	79.8	78.2	76.4	
Credit cooperatives	78.2	78.6	79.2	78.4	76.5	
Trading income to gross income	5.5	4.9	2.9	2.9	2.4	
Commercial banks	9.9	8.0	5.8	5.3	2.6	
Landesbanken	6.7	12.5	1.2	5.4	10.2	
Savings banks	0.1	0.1	0.0	0.0	0.0	
Credit cooperatives	0.1	0.0	0.0	0.0	0.0	
Noninterest expenses to gross income	64.2	69.1	69.2	71.4	69.3	
Commercial banks	67.2	72.8	73.4	75.6	74.3	
Landesbanken	59.6	61.8	70.9	69.1	63.6	
Savings banks	65.7	67.2	68.3	68.9	67.8	
Credit cooperatives	65.9	64.6	65.9	66.6	66.6	
Liquidity						
Liquid assets to total short-term liabilities	144.2	140.5	145.5	146.5	146.6	151.3
Commercial banks	129.5	125.1	128.3	128.4	127.9	131.4
Landesbanken	135.8	138.5	139	139.2	146.4	150.8
Savings banks	233.6	234.6	238.9	246.3	253.7	263.6
Credit cooperatives	230.6	231.8	233.3	241.7	246.9	242.2
Sensitivity to market risk						
Net open positions in FX to capital	3.9	3.8	4.0	4.6	4.0	3.7
Commercial banks	2.0	1.8	1.9	1.8	1.9	2.1
Landesbanken	4.8	5.3	7.3	10.6	6.4	4.0
Savings banks	7.8	7.7	4.8	4.8	4.4	4.3
Credit cooperatives	8.1	8.0	7.7	7.9	7.9	8.2

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

Table 7. Germany: Additional Financial Soundness Indicators, 2012–17

(Percent, unless otherwise indicated)

	2012	2013	2014	2015	2016	2017
Deposit-taking institutions						
Capital to assets	4.7	5.5	5.6	5.9	6.0	6.3
Commercial banks	4.1	4.9	5	5.2	5.1	5.6
Landesbanken	4.4	5.0	4.9	5.4	5.7	5.4
Savings banks	6.9	7.5	7.9	8.3	8.6	9
Credit cooperatives	6.3	7.0	7.4	7.7	7.9	8.2
Geographical distribution of loans to total loans						
Germany	76.8	76.8	74.6	75.9	76.6	78.7
EU-member countries	16.0	16	15.8	15.1	14	12.6
Others	7.2	7.2	9.6	9	9.4	8.7
FX loans to total loans	10.5	10	11.5	11.4	11.2	9.8
Personnel expenses to noninterest expenses	52.9	51.9	51.5	48.9	49.7	
Commercial banks	46.6	44.7	42.7	42.8	42.7	
Landesbanken	49.6	48.4	50.2	50.6	45.1	
Savings banks	62.7	62.3	63.4	63.1	62.6	
Credit cooperatives	59.6	59.8	60.1	60.3	60	
Trading and fee income to total income	28.5	28.1	24.6	25	28.8	
Commercial banks	38.2	37	33.6	33	36.6	
Landesbanken	17.7	21.5	10.1	17.5	25.1	
Savings banks	20.6	20	20.2	21.8	23.6	
Credit cooperatives	21.8	21.4	20.8	21.6	23.5	
Funding						
Customer deposits to total (non-interbank) loans	75.7	84.5	86.9	85.0	82.1	80.6
Commercial banks	84.0	104.5	109.2	101.7	90.5	84.9
Landesbanken	33.6	41.6	40.2	43.7	39.8	40
Savings banks	107.7	108.5	110	109.5	109.5	108
Credit cooperatives	118.7	116.9	117.5	116.9	117.7	116.2
Deposits/total assets	61.3	64.6	63.9	65.8	66.8	68.8
Commercial banks	60.3	65.6	63.3	66.2	68.5	72.9
Landesbanken	51.8	55.4	55.1	58.6	58.4	60.3
Savings banks	86.8	86.7	86.7	86.6	86.5	86.2
Credit cooperatives	86.6	86.8	87	87.1	87.2	87.1
Interbank assets/total assets	34.3	35.0	33.9	33.7	34.9	36.2
Commercial banks	34.1	35.9	34.8	36.4	39.3	41
Landesbanken	34.1	34.8	32.6	30.8	30.7	35.5
Savings banks	22.7	21.2	20.3	18.2	17.9	17.3
Credit cooperatives	26.0	24.2	22.7	21.6	21.2	20.4
Interbank liabilities/total assets	21.7	21.5	21.7	21.6	21.9	21.9
Commercial banks	23.6	22.6	23.6	23.9	26	26.8
Landesbanken	24.4	28.0	27.9	28.1	27	27.5
Savings banks	15.5	14.1	13.1	11.9	11.1	10.7
Credit cooperatives	14.2	13.2	13.1	12.7	12.3	12.6
Securitized funding/total assets						
Commercial banks						
Landesbanken						
Savings banks						
Credit cooperatives						
Loans/assets	38.4	40.3	39.5	41.1	41.6	42.8
Commercial banks	27.2	30.0	28.1	29.3	29.7	32
Landesbanken	38.0	39.5	40.5	43.9	46.1	44.9
Savings banks	62.9	63.7	63.9	65.1	65.5	66.1
Credit cooperatives	59.0	60.6	61.2	61.8	62	62.6
Securities holdings/assets	18.0	19.4	19	18.5	17.4	16.7
Commercial banks	11.0	13.0	12.8	12.6	11.9	11.3
Landesbanken	19.0	21.7	20.9	19.9	18.2	16.9
Savings banks	25.4	25.2	25.2	25.2	24.6	23.7
Credit cooperatives	27.8	27.4	27.8	26.9	26.8	26
Off-balance sheet operations to total assets						
of which : interest rate contracts						
of which : FX contracts						
Spread between highest and lowest interbank rates 1/	9.60	3.88	4.09	8.90	3.51	4.13
Spread between reference loan and deposit rates 2/	325	325	318	301	280	260

Table 7. Germany: Additional Financial Soundness Indicators, 2012–17 (concluded)

(Percent, unless otherwise indicated)

	2011	2012	2013	2014	2015	2016	2017
Insurance sector							
Solvency ratio, Life	177.0	169.0	162.0	162.5	159.3		
Solvency ratio, Non-life (without reinsurance and health insurance)	312.0	314.0	317.0	325.6	322.6		
Return on average equity, Life 3/	9.7	9.5	6.1	5.0	3.1		
Return on average equity, Non-life 3/ (without reinsurance and health insurance)	2.8	3.2	3.8	3.5	3.3		
Market liquidity							
Average bid-ask spread in the securities market (government bills)	0.0	0.01	0.01	0.0	0.0	0.01	0.01
Average bid-ask spread in the securities market (corporate securities)	0.3	0.01	0.01	0.01	0.0	0.0	
Corporate sector							
Total debt to equity 4/	104.1	92.9	84.4	81.8	80.3	81.0	76.6
Total debt to corporate gross value added 5/	128.9	129.6	131.1	129.9			
Return on equity	25.4	23.7	20.5	19.9	19.9	19.6	
Earnings to interest and principal expenses 4/ 6/	1128.8	1609.4	1489.0	1538.2	1726.3	1808.2	1839.6
Number of applications for protection from creditors 4/ 7/	14553.0	14317.0	14344.0	13480.0	13056.0	12056.0	11967
Households							
Household debt to GDP 4/	56.6	56.3	54.9	53.7	52.6	52.8	52.5
Household debt service and principal payments to income 4/ 6/	2.7	2.3	2.0	1.7	1.5	1.3	1.2
Real estate markets							
Real estate prices, new dwellings 8/	100.0	106.9	114.6	121.2	130.2	140.6	153.6
Real estate prices, resale 8/	100.0	106.8	115.0	121.5	130.8	142.7	155.6
Real estate prices, new and resale 8/	100.0	106.9	114.9	121.4	130.7	142.4	155.3
Real estate prices, commercial property 9/	104.7	108.9	114.0	121.0	129.5	139.8	154.8
Residential real estate loans to total loans	16.7	17.1	18.3	19.0	19.2	18.5	18.6
Commercial real estate loans to total loans	5.7	5.7	5.9	5.8	5.8	5.6	5.6

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/ Excluding principal payments.

7/ Resident enterprises that filed for bankruptcy.

8/ 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.

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

Annex I. External Sector Assessment

<table>
<tr><th></th><th colspan="10">Germany</th><th></th></tr>
<tr><td>Foreign asset and liability position and trajectory</td><td colspan="10">Background. Germany's positive net international investment position (NIIP) reached 60 percent of GDP at end-2017; about 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 reach near 85 percent of German GDP and 4 percent of world GDP by 2022, 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 and surpassed €956 billion in May 2018 (28 percent of GDP), after declining between 2012 and 2014.
Assessment. With the implementation of quantitative easing measures by the ECB, Germany's exposure to the Eurosystem has continued to widen.</td><td rowspan="3">Overall Assessment:
Germany's external position in 2017 remained substantially stronger than implied by medium-term fundamentals and desirable policy settings. Staff projects a modest narrowing in the medium run, supported by a gradual realignment of price competitiveness, and continued strong domestic demand. As Germany is part of the euro zone, 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 realign 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, making use of fiscal space to stimulate potential growth, structural reforms to foster entrepreneurship, as well as pension reforms prolonging working lives would reduce saving needs for retirement, stimulate investment, and reduce external imbalances.</td></tr>
<tr><td>Current account

CA Assessment 2017</td><td colspan="10">Background. The CA surplus has been widening since 2001. It averaged 7.9 percent of GDP over the last five years, peaking at 8.9 percent of GDP in 2015. In 2017 it was 8 percent of GDP. Net exports fell for the first time in 6 years, reflecting a deterioration in the terms of trade. However, the CA balance with the rest of euro area continued to rise. The bulk of the CA surplus reflects large saving-investment surpluses of non-financial corporations (NFCs) and households, with rising savings of NFCs and fiscal consolidation accounting for the upward trend.
Assessment. The cyclically-adjusted CA balance reached 8.3 percent of GDP in 2017, slightly below the 2016 level and 3¾ -6¼ percentage points stronger than the value implied by fundamentals and desirable policies. Staff assesses the CA norm at 2- 4½ percent of GDP, with a midpoint ½ percent of GDP above the CA norm implied by the new EBA model of 2¾ percent. Such upward adjustment reflects uncertainty over the demographic outlook and the impact of the recent large-scale immigration on national savings. 1/ 2/
<table>
<tr><td>Actual CA</td><td>8.0</td><td>Cycl. Adj. CA</td><td>8.3</td><td>EBA CA Norm</td><td>2.8</td><td>EBA CA Gap</td><td>5.5</td><td>Staff Adj.</td><td>0.5</td><td>Staff CA Gap</td><td>5.0</td></tr>
</table></td></tr>
<tr><td>Real exchange rate</td><td colspan="10">Background. The yearly average CPI-based and ULC-based real effective exchange rates (REER) appreciated 1½ and ½ percent in 2017, respectively, reflecting the nominal appreciation of the euro against the currencies of key trading partners – most notably the British pound and the yen, but also the US dollar, yuan, and Swiss franc – and the relative pick-up in inflation and labor costs. Estimates through May 2018 show that the REER has appreciated by 2 percent relative to the 2017 average.
Assessment. Staff's assessment for 2017 is of a REER undervaluation of 10–20 percent. The refined EBA REER Level model yields an undervaluation of 14 percent. The undervaluation implied by the CA gap assessment using standard trade elasticities is 15–30 percent. 3/</td></tr>
</table>

	Germany		Overall Assessment
Capital and financial accounts: flows and policy measures	**Background**. In 2017, net portfolio flows constituted almost ¾ of the capital and financial accounts balance, with direct investment being the second largest item (1/6 of total). On a regional basis, over ⅔ of the net outflows were toward European countries and 10 percent toward the Americas (mostly the U.S.). 80 percent of net inflows in 2017 originated from the EU, while net investment by emerging countries has picked up considerably, representing about 40 percent of total. Net direct foreign investment inflows and outflows recovered to historical highs, 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.		
FX intervention and reserves level	**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.		
Technical Background Notes	1/ Demographic factors have a lower contribution to the EBA CA norm than previously estimated (¾ percentage points of GDP, instead of the previously estimated 3 percentage points of GDP), due to demographic projection updates and model refinements. Moreover, for Germany, nearly all of the EBA-estimated gap for 2017 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. Retreat from cross-border integration. A fraying consensus about the benefits of globalization could lead to protectionism and economic isolationism, leading to reduced global and regional policy collaboration with negative consequences for trade, capital and labor flows, sentiment, and growth.	M	M With its high degree of trade openness, Germany is especially susceptible to fluctuations in global demand; fiscal buffers are comfortable.	**Let automatic stabilizers work. Consider a discretionary fiscal expansion to the extent allowed by the fiscal rules. If the output gap widens significantly, depending on the size and nature of the shock to the economy, invoking the escape clause under the national debt brake rule could be appropriate to support the German economy.**
II. Policy uncertainty and divergence. Two-sided risks to U.S. growth with uncertainties about the positive short-term impact of the tax bill on growth, its fiscal costs and global spillovers. In Europe, uncertainty associated with negotiating post-Brexit arrangements. Policy divergence could lead to rising global imbalances and exacerbate exchange rate and capital flow volatility.	M	M With its high degree of trade openness, Germany is especially susceptible to fluctuations in global demand; fiscal buffers are comfortable	
III. Reassessment of regional sovereign risk. Financial stress in the euro area could re-emerge triggered by policy uncertainty, faltering reforms or political unrest as confidence in the European project erodes across parts of Europe.	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, invoking the escape clause under the national debt brake rule could be appropriate to support the German economy.**
IV. Structurally weak growth in key advanced economies: Low productivity growth, a failure to fully address crisis legacies and undertake structural reforms, as well as persistently low inflation could undermine medium-term growth.	H	M 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.**

Source of Risks	Relative Likelihood	Impact	Policy response
Risks to the financial sector			
V. Tighter financial condition. Against the backdrop of continued monetary policy normalization and increasingly stretched valuations across asset classes, an abrupt change in global risk appetite (e.g., due to higher-than-expected inflation in the U.S) could lead to sudden, sharp increases in interest rates and associated tightening of financial conditions	H	H Because of relatively high interest rate risk on their balance-sheet, German banks could be affected by sharp increases in interest rates.	**The authorities should ensure that capital and liquidity buffers are adequate, strengthening supervisory actions where interest rate risk is high, engage in contingency planning, and put in place coordination mechanisms among the relevant authorities involved.**
VI. Low for long. The failure of wage and price inflation to pick up in the euro area as a whole could substantially delay the normalization of monetary policy.	M	M This could exacerbate price pressures in the housing market and further deteriorate banks' and life insurance companies' profitability prospects. Faced with falling net interest margins, banks may be tempted to adopt (risky) search-for-yield strategies, while life insurers may not be able to pay guaranteed yields to policyholders and may become distressed, increasing financial stability risks.	**Lift inflation expectations through consistent communication efforts. Consider a discretionary fiscal expansion to the extent allowed by the fiscal rules. Take precautionary measures now by strengthening the macroprudential framework and bank supervision. Keep pushing large banks to reduce leverage. Supervisors should also make full use of the additional early intervention powers granted to them by the 2014 life insurance reform law to ensure prudent behavior by the industry.**
VII. European bank distress: Strained bank balance sheets amid a weak profitability outlook 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.	**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 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 reach the 60 percent mark this year, from 64.1 percent in end 2017. 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 12 percent of GDP, and debt would swiftly return to a firm downward path after the shock.

Baseline Scenario

1. Macroeconomic assumptions. Real GDP growth is expected at an average of 2 percent over the next three years, supported by rising employment, a pick-up in investment, and a still accommodative monetary policy. In the medium run, growth should converge to its potential level, estimated at about 1 percent per year. Inflation—measured by the GDP deflator—should be 1.6 percent in 2018, and steadily rise thereafter, reaching 2.5 percent by 2023. Sovereign interest rates remain low and are currently negative up to a four-year maturity. Thus, average interest rates are expected to remain low, at 1.5 percent over the medium term.[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 12 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. Similarly, the median forecast error for inflation (GDP deflator) is 0.54 percent, suggesting that the staff underestimated inflation in the past. The median forecast bias for the primary balance is 0.53 percent of GDP, among the conservative side 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 and 3-year average cyclically adjusted primary balance are not ambitious in cross-

[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.

country comparison. Germany was able to deliver larger fiscal consolidations in the past, notably in 2011 and 2012.

Shocks and Stress Tests through the Medium Term

5. Germany's government debt should remain below 56 percent of GDP under plausible macro-fiscal shocks, while gross financing needs would remain below 12 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 liability 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 2019–20, 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 61.1 (10.1) percent of GDP in this case, and converge to 53.1 (6.2) percent of GDP by 2023.
- **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 2019–20 (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 405 basis points increase in debt servicing costs throughout the forecast horizon, mimicking the historical maximum interest rate experienced since 2006. 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 2019–20, 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 12 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					
	2007-2015 [2/]	2016	2017	2018	2019	2020	2021	2022	2023
Nominal gross public debt	73.8	68.2	64.1	60.0	56.1	52.8	50.1	47.5	45.1
Public gross financing needs	15.9	12.9	11.9	11.6	6.4	6.2	4.7	4.7	5.3
Real GDP growth (in percent)	1.2	1.9	2.2	2.2	2.1	1.6	1.5	1.3	1.1
Inflation (GDP deflator, in percent)	1.5	1.3	1.5	1.6	1.7	2.0	2.3	2.5	2.5
Nominal GDP growth (in percent)	2.7	3.3	3.8	3.9	3.9	3.6	3.8	3.8	3.7
Effective interest rate (in percent) [4/]	3.2	1.6	1.6	1.6	1.4	1.4	1.4	1.5	1.5
10-year bond yield	0.6	0.2	0.4	0.2	0.4	0.7	1.1	1.5	1.9

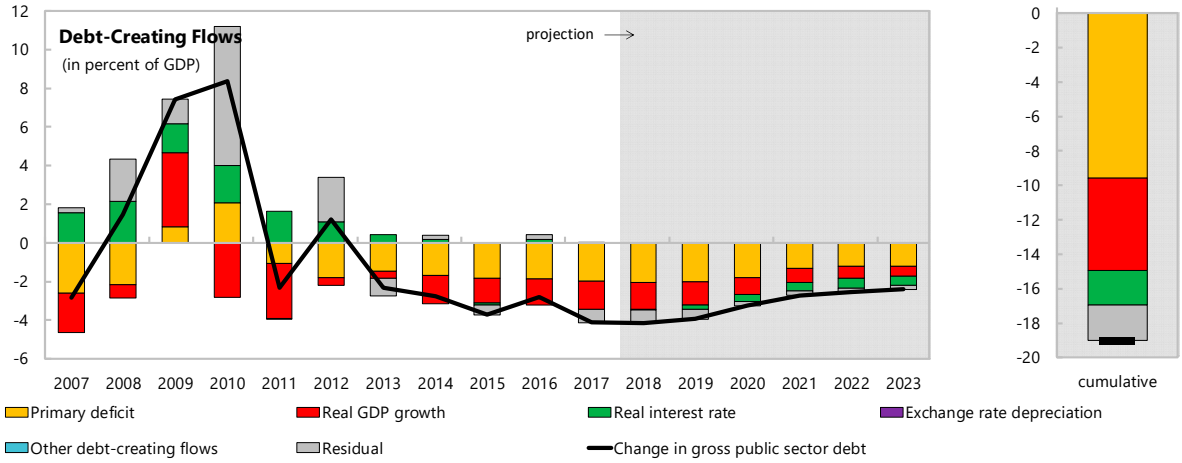
As of May 17, 2018

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							
	2007-2015	2016	2017	2018	2019	2020	2021	2022	2023	cumulative	debt-stabilizing primary balance [9/]
Change in gross public sector debt	0.5	-2.8	-4.1	-4.1	-3.9	-3.3	-2.7	-2.6	-2.4	-19.0	
Identified debt-creating flows	-0.8	-3.0	-3.4	-3.5	-3.4	-3.0	-2.5	-2.3	-2.2	-17.0	
Primary deficit	-1.1	-1.9	-2.0	-2.0	-2.0	-1.8	-1.3	-1.2	-1.2	-9.6	-1.0
Primary (noninterest) revenue and grants	43.6	44.7	44.9	45.1	45.0	45.0	44.7	44.5	44.6	268.8	
Primary (noninterest) expenditure	42.5	42.8	42.9	43.0	43.0	43.2	43.3	43.3	43.4	259.2	
Automatic debt dynamics [5/]	0.3	-1.1	-1.5	-1.4	-1.4	-1.2	-1.2	-1.1	-1.0	-7.4	
Interest rate/growth differential [6/]	0.3	-1.1	-1.5	-1.4	-1.4	-1.2	-1.2	-1.1	-1.0	-7.4	
Of which: real interest rate	1.1	0.2	0.0	0.0	-0.2	-0.4	-0.4	-0.5	-0.5	-2.0	
Of which: real GDP growth	-0.9	-1.3	-1.5	-1.4	-1.2	-0.9	-0.7	-0.6	-0.5	-5.3	
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/]	1.3	0.2	-0.7	-0.7	-0.5	-0.2	-0.2	-0.2	-0.2	-2.1	



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.

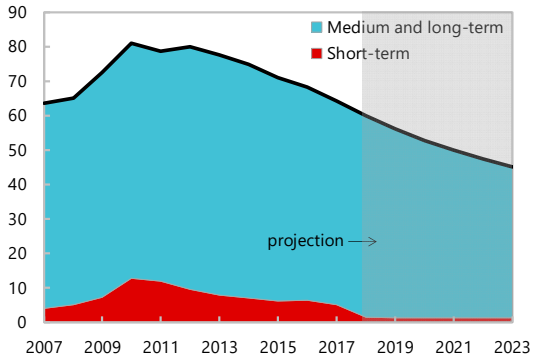
9/ Assumes that key variables (real GDP growth, real interest rate, and other identified debt-creating flows) remain at the level of the last projection year.

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

Composition of Public Debt

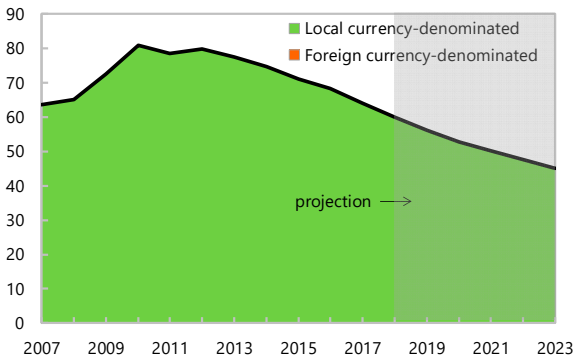
By Maturity

(in percent of GDP)

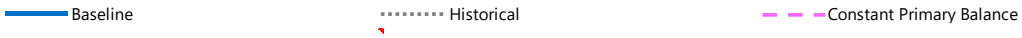


By Currency

(in percent of GDP)

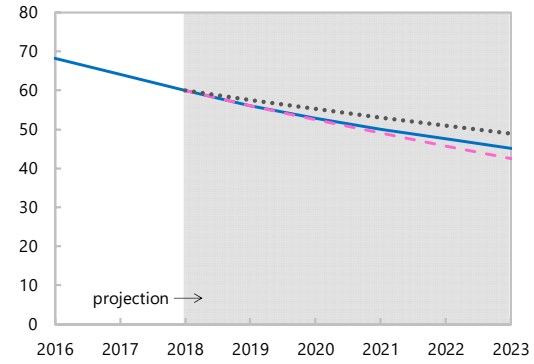


Alternative Scenarios



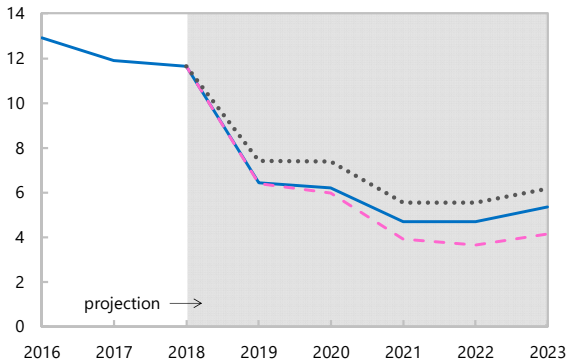
Gross Nominal Public Debt

(in percent of GDP)



Public Gross Financing Needs

(in percent of GDP)



Underlying Assumptions

(in percent)

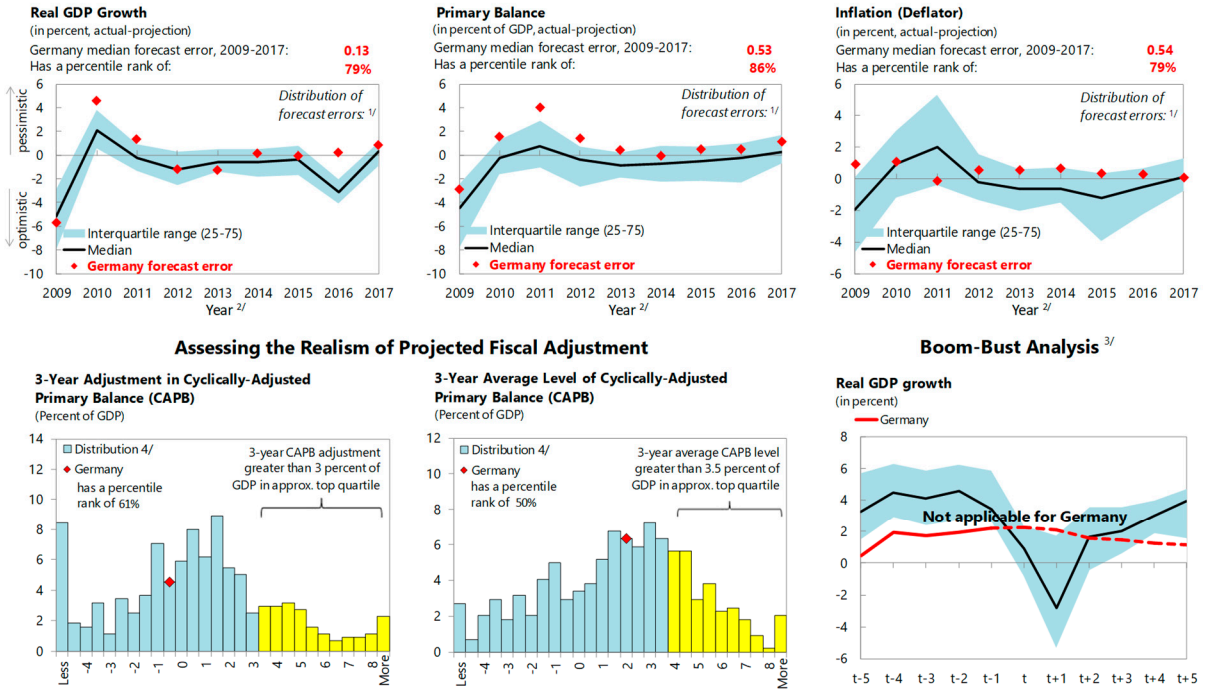
Baseline Scenario	2018	2019	2020	2021	2022	2023
Real GDP growth	2.2	2.1	1.6	1.5	1.3	1.1
Inflation	1.6	1.7	2.0	2.3	2.5	2.5
Primary Balance	2.0	2.0	1.8	1.3	1.2	1.2
Effective interest rate	1.6	1.4	1.4	1.4	1.5	1.5
Constant Primary Balance Scenario						
Real GDP growth	2.2	2.1	1.6	1.5	1.3	1.1
Inflation	1.6	1.7	2.0	2.3	2.5	2.5
Primary Balance	2.0	2.0	2.0	2.0	2.0	2.0
Effective interest rate	1.6	1.4	1.4	1.4	1.5	1.5

Historical Scenario	2018	2019	2020	2021	2022	2023
Real GDP growth	2.2	1.2	1.2	1.2	1.2	1.2
Inflation	1.6	1.7	2.0	2.3	2.5	2.5
Primary Balance	2.0	1.1	1.1	1.1	1.1	1.1
Effective interest rate	1.6	1.4	1.6	1.9	2.0	2.2

Source: IMF staff.

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

Forecast Track Record, versus surveillance countries



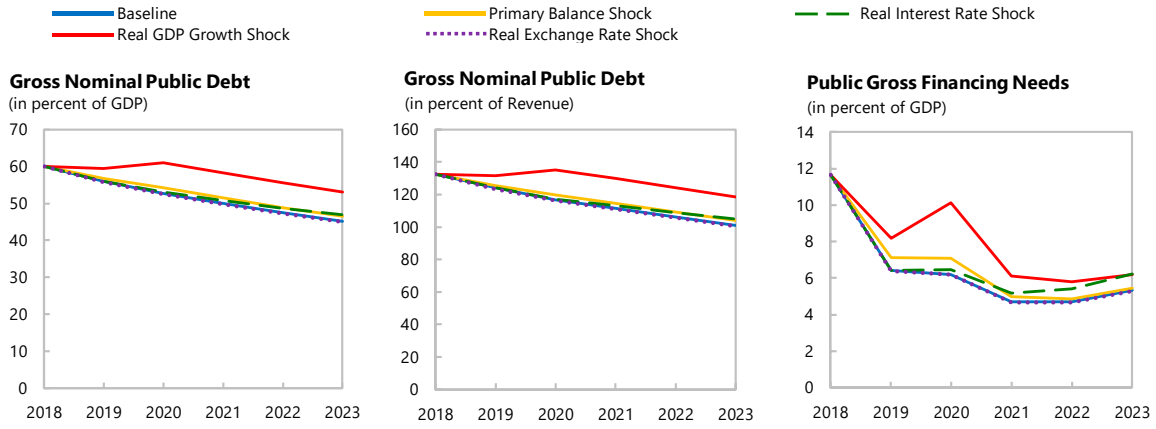
Assessing the Realism of Projected Fiscal Adjustment

Boom-Bust Analysis 3/

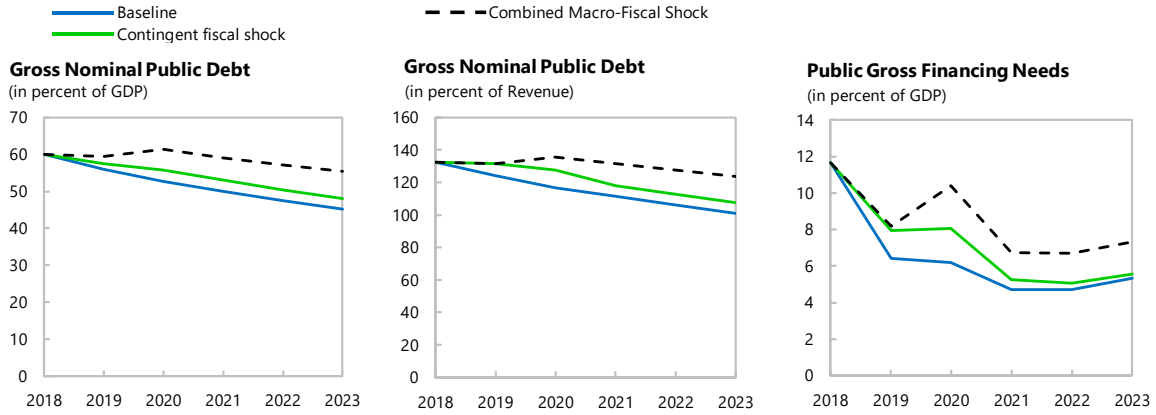
Source : IMF Staff.
1/ Plotted distribution includes surveillance countries, percentile rank refers to all countries.
2/ Projections made in the spring WEO vintage of the preceding year.
3/ Not applicable for Germany, as it meets neither the positive output gap criterion nor the private credit growth criterion.
4/ Data cover annual observations 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)

	2018	2019	2020	2021	2022	2023
Primary Balance Shock						
Real GDP growth	2.2	2.1	1.6	1.5	1.3	1.1
Inflation	1.6	1.7	2.0	2.3	2.5	2.5
Primary balance	2.0	1.3	1.1	1.3	1.2	1.2
Effective interest rate	1.6	1.4	1.4	1.5	1.5	1.6
Real Interest Rate Shock						
Real GDP growth	2.2	2.1	1.6	1.5	1.3	1.1
Inflation	1.6	1.7	2.0	2.3	2.5	2.5
Primary balance	2.0	2.0	1.8	1.3	1.2	1.2
Effective interest rate	1.6	1.4	1.8	2.3	2.6	3.0
Combined Shock						
Real GDP growth	2.2	-0.6	-1.1	1.5	1.3	1.1
Inflation	1.6	1.1	1.4	2.3	2.5	2.5
Primary balance	2.0	0.6	-1.2	1.3	1.2	1.2
Effective interest rate	1.6	1.4	1.9	2.5	2.8	3.2

	2018	2019	2020	2021	2022	2023
Real GDP Growth Shock						
Real GDP growth	2.2	-0.6	-1.1	1.5	1.3	1.1
Inflation	1.6	1.1	1.4	2.3	2.5	2.5
Primary balance	2.0	0.6	-1.2	1.3	1.2	1.2
Effective interest rate	1.6	1.4	1.4	1.6	1.6	1.7
Real Exchange Rate Shock						
Real GDP growth	2.2	2.1	1.6	1.5	1.3	1.1
Inflation	1.6	2.1	2.0	2.3	2.5	2.5
Primary balance	2.0	2.0	1.8	1.3	1.2	1.2
Effective interest rate	1.6	1.4	1.4	1.4	1.5	1.5

Source: IMF staff.

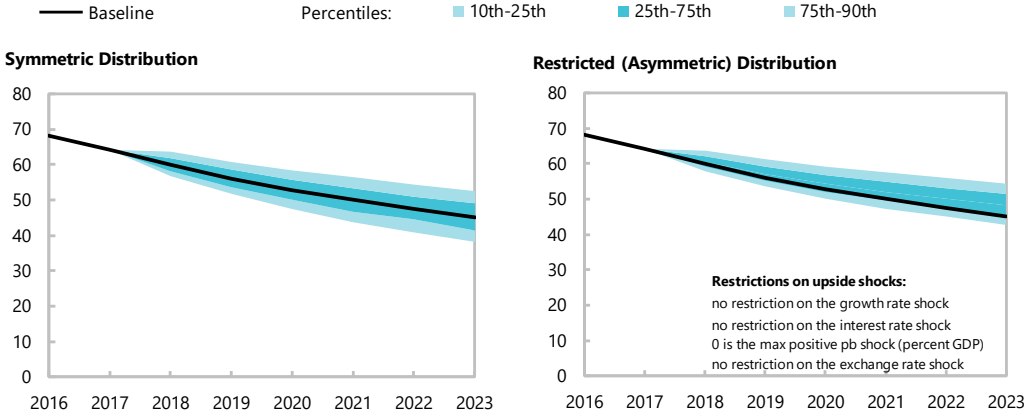
Figure A5. Germany: Public DSA Risk Assessment

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

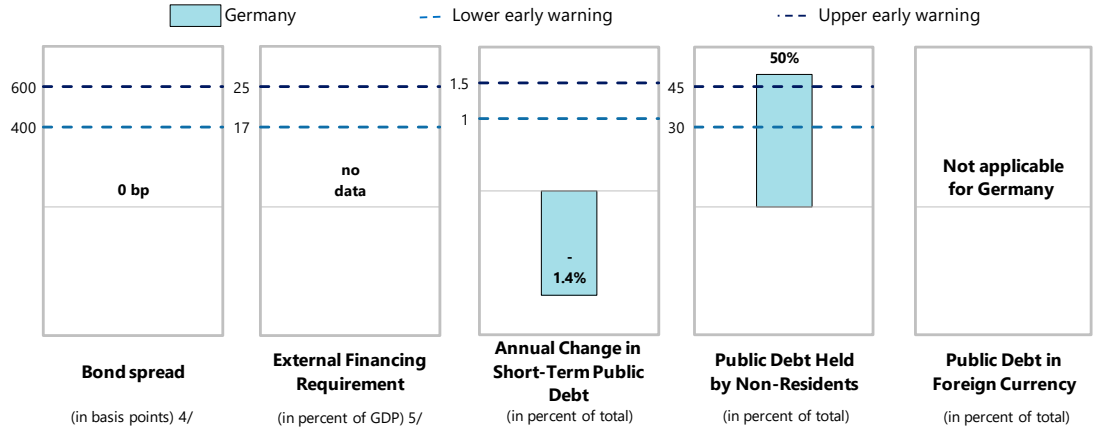
Evolution of Predictive Densities of Gross Nominal Public Debt

(in percent of GDP)



Debt Profile Vulnerabilities

(Indicators vis-à-vis risk assessment benchmarks, in 2017)



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, 16-Feb-18 through 17-May-18.

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 2017 Article IV Recommendations	Authorities' Response
Fiscal Policy	
• Fiscal space should be used to raise the growth potential by encouraging investment, promoting labor supply, and boosting productivity.	• The new government's coalition agreement includes several measures to support long-term growth. A package of €46 billion in additional spending (investment in schools, vocational training, and R&D activities) and tax cuts, spread over the next four years, is planned. An additional fund (financed by auctioning 5G licenses and tax revenue overperformance) will be created for the expansion of the high-speed internet network. • Almost 90 percent of the first tranche (€3.5 billion) of the government's Municipal Investment Promotion Fund (MIPF) created in 2015 has been earmarked as of June 2017 (a large increase from a year ago). • 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.
• Re-examine revenue projection models to improve fiscal planning. • Implement pension reforms to make it more attractive to extend work lives.	• No new action taken. • No new action taken.
Financial Sector Policy	
• Expand the macroprudential toolkit to better address potential future excesses in the housing sector. • To partially overcome data gaps, conduct a regular survey in hotspots to assess households' leverage, loan affordability, and the concentration of bank exposure.	• No new macroprudential regulation was adopted since publication of the 2017 Article IV Staff Report. There are also no new initiatives for collection of supervisory data. • For progress on the implementation of outstanding FSAP recommendations see Annex V.
Structural Reforms	
• Anti-poverty policies should seek to preserve the strong gains in labor force participation and employment of the past decade.	• No new action taken.
• Consider pension reforms that make it attractive to extend working lives	• No new action taken.
• Pursue competition-enhancing reforms in professional services and network industries.	• Professional services: No action taken in Germany. The EC presented the final report on the action plan to complete the transparency initiative for regulated professions.

IMF 2017 Article IV Recommendations	Authorities' Response
• Advance digitalization	• . Network industry: The national implementation of the Directive establishing the European Electronic Communications Code is envisaged within the next 12 months. • Digitalization: The Federal Government aims to roll out comprehensive gigabit networks through Germany by 2025. The coalition agreement contains plan to expand digital infrastructure (10–12 billion euro), with the Gigabit Investment Fund available for deployment of gigabit networks in rural areas.
• Continue to support innovation and venture capital, assess the effectiveness of government measures (e.g., the introduction of "Scale"), and address administrative uncertainties, including the treatment of value-added tax on management fees for venture capital	• The new government has political commitment to introducing R&D tax credit and further reducing administrative burden, including through expanding e-government service provisions. • Further progress has been made in improving the start-up ecosystem, especially fostering venture capital, at the country level, as well as at the EU level (e.g., the operationalization of "High-Tech Gründerfonds III" in Germany, and "VentureEU" in Europe, both targeting growth stages). The number of companies listed at the "Scale" segment of Deutsche Börse has risen to 50, although it is too premature to assess the performance of this new segment. Limited progress has been made in equalizing the treatment of value-added tax on management fees for venture capital within Europe.

Annex V. Authorities' Response to FSAP 2016 Recommendations

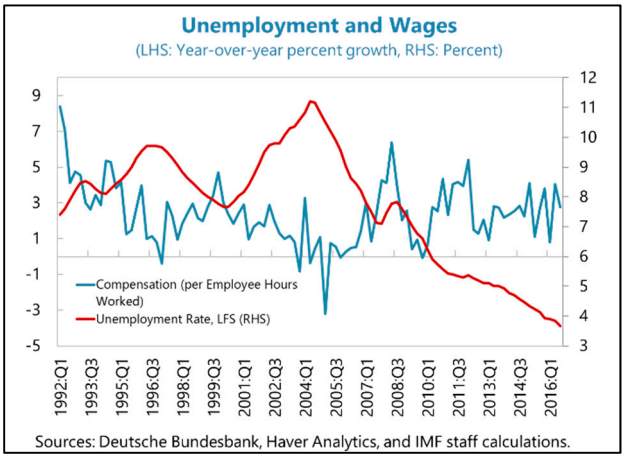
Germany: FSAP Key Recommendations 1/		
Recommendations	**Time Frame[1]**	**Status**
Financial stability policy framework		
Establish a core set of readily-available, consistent data for banks and non-banks to strengthen financial stability and macroprudential policy analysis.	Short term	The Bundesbank is integrating selected granular supervisory and statistical data of banks, insurance companies and investment funds to build a "house of microdata" that will be used for financial stability and macroprudential policy analysis. The "house of microdata" will be supplemented by AnaCredit data when available.
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 introduces new instruments for capping LTV ratios and setting amortization requirements, if necessary, for financial stability purposes. The (minimum) requirements are meant to apply to all financial institutions. Unfortunately, the law omits complementary DTI and DSTI ratio instruments and does not address important data requirements for the effective operation of the real estate-related macroprudential instruments.
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. There is no indication that the legislator intends 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	As of 1 January 2017, BaFin's AML Department added 30 additional staff (two new divisions for AML/CFT banking supervision). In the context of its ongoing AML/CFT supervision BaFin asked banks with cross-border correspondent banking relationships to give more emphasis to this issue in their own risk assessments, to avoid that the required enhanced Customer Due Diligence measures lead to a termination of the relevant relationships. Also, a sub-working group of the European Banking Authority´s AMLC has been set up to work out a framework for future AML/CFT supervisor colleges on all banks with cross-border activities.

Germany: FSAP Key Recommendations (concluded)		
Recommendations	**Time**	**Status**
Insurance oversight		
Prepare a communication strategy ahead of the publication of Solvency II indicators	Short term	BaFin conducted bilateral discussions with 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, launched by EIOPA in May 2018, includes 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 following 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. 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 progress towards compliance with solvency capital requirements without 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 has also increased the frequency of on-site inspections from 80 in 2014, to 102 in 2016 and 116 in 2017.
Introduce stronger rules on reporting of pricing errors and investor compensation rules	Short term	BaFin has 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.		

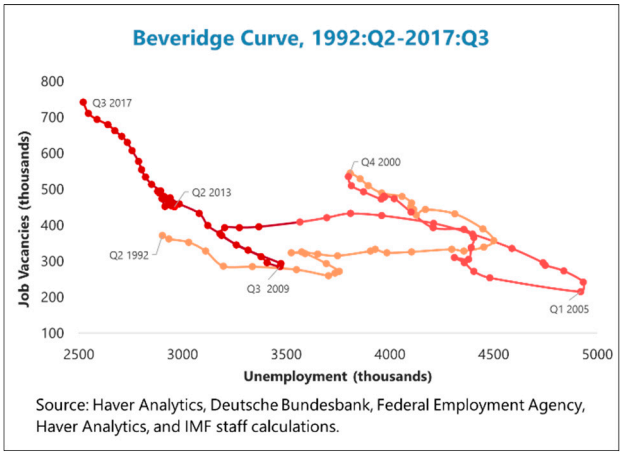
VI. Puzzling Wage Developments in Germany? [1]

The standard wage Phillips curve is alive and well in Germany, and there is no evidence that immigration has had a dampening effect on wage growth in recent years.

1. The performance of the German economy and its labor market have been impressive in recent years, and there is widespread perception that wages should have grown faster. GDP has been growing at a robust pace post-crisis, employment has been booming and the unemployment rate has reached record lows. Wage growth, however, seems to have stabilized around 2.5 percent since 2012. This has led many commentators to conclude that the time-honored relationship between labor market slack and wage inflation – the Phillips curve – does not hold for Germany anymore.[2]



2. Many reasons have been invoked to rationalize this phenomenon. One of the most widely cited arguments is that competition from foreign labor, either directly through increased immigration, or indirectly via the threat of offshoring, may have put downward pressure on wages. Increased competition from foreign labor – so the argument goes – has curtailed workers' bargaining power and flattened the slope of the Phillips curve: wages have become less sensitive to variations in the unemployment rate. Also, because immigrants tend to work in relatively low paid jobs, overall wages may be dampened by a change in the composition of the labor force.[3]



3. We argue instead that the Phillips curve is alive and well in Germany. Indeed, when properly accounting for important labor market reforms in the first half of the 2000s (Hartz reforms), the estimated Phillips curve for Germany fits the data quite well. The Hartz

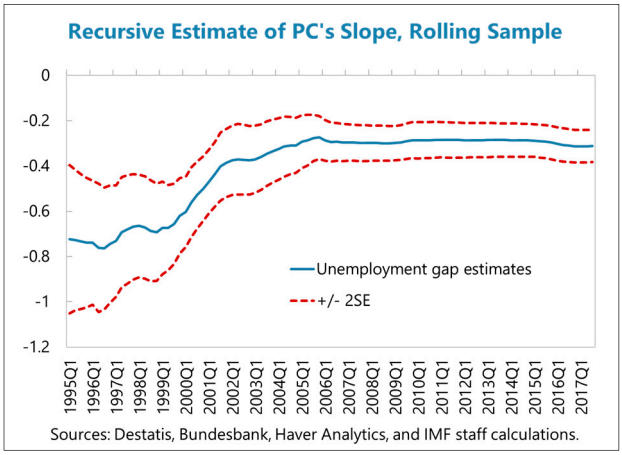
[1] Prepared by Anvar Musayev, Jean-Marc Natal (IMF), and Sabine Klinger and Enzo Weber (IAB). The authors wish to thank Prof. Michael Krause and staff from the Bundesbank, Ministry of Finance and Economic Affairs for valuable discussions and suggestions.

[2] See e.g., Brzezki, C. Oct. (2017).

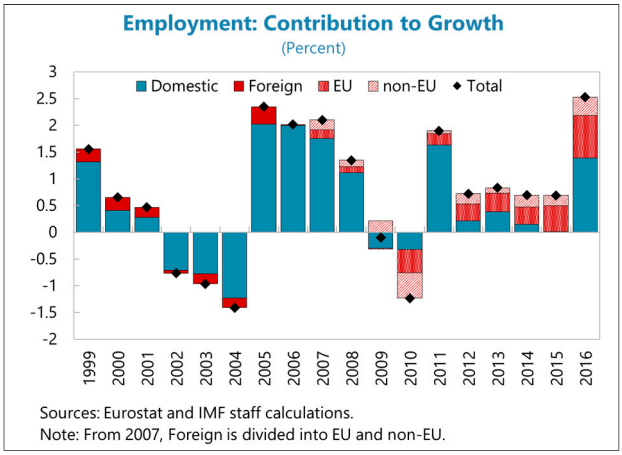
[3] See e.g., Wolff G., Nov. (2017), Bundesbank (2018).

reforms resulted in a one-time inward shift of the Beveridge curve: enhanced matching efficiency and lowered unemployment benefits have pushed the NAIRU down. Hence, a significant part of the decline in unemployment between 2005 and 2008 reflects a more efficient (not a tighter) labor market.

4. A traditional Phillips curve – adjusted for the decline in the NAIRU – fits German wage growth quite well, and its slope has remained constant. The coefficients have the expected signs and magnitude, and are stable over time (see Table 1, specifications I and III). Wage growth is well explained by deviations of past wages from trend labor productivity (error correction term), inflation expectations (forward and backward looking) and the unemployment gap.[4] Our preferred equation suggests that wage growth could have been higher between 1999 and 2007 – which is in line with the notion that wage moderation had started before the Hartz reforms, and that threat of offshoring may have played a role during this period. The equation also suggests that a large part of the increase in unemployment during the Hartz reforms (2002–2005) was cyclical, in line with the Beveridge curve evidence that shows a movement along the curve during this period. Finally, the estimates are also robust to a wide range of unemployment gap measures.



5. Whether immigration has had a role to play in recent wage developments in Germany is an empirical question. First, when assessing the role of immigration on wages, one has to control for 'composition' effects as immigrants usually tend to be paid lower wages than natives, even when controlling for skills, age, experience and sector of activity (see below analysis with micro-level data). Second, immigration affects wages via its effect on the level of competition in the labor market. An extended theoretical and empirical literature has shown that immigration exerts *downward* pressure on the wages of workers to which immigrants are close substitute (typically earlier generations of migrants and low -skilled native workers), but *upward* pressure on the wage of workers to which immigrants are complements.[5]

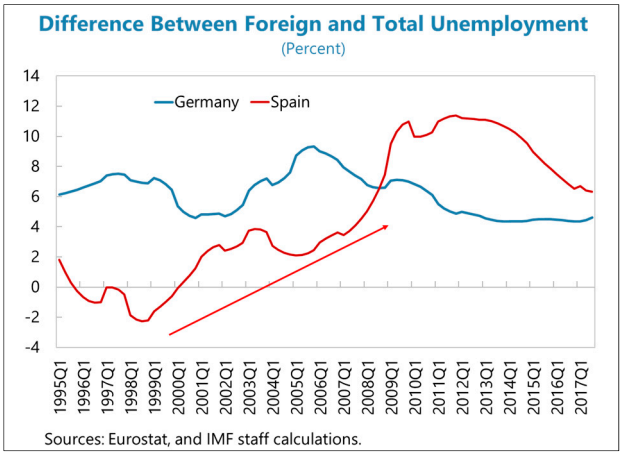


[4] Our measure of unemployment gap is adjusted for the drop in the NAIRU in the wake of the Hartz reforms.

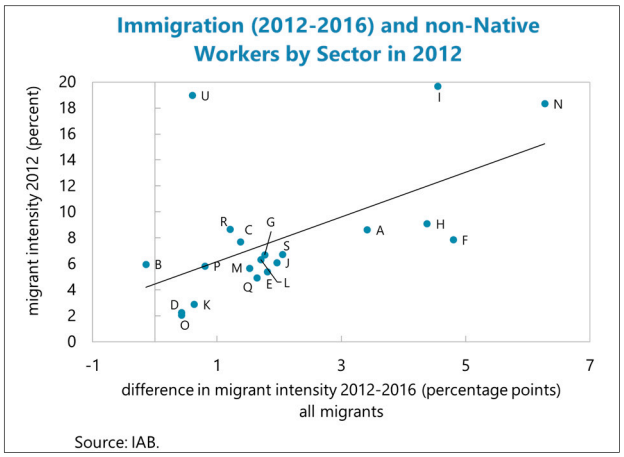
[5] See e.g., Ottaviano and Peri (2012) and literature cited therein.

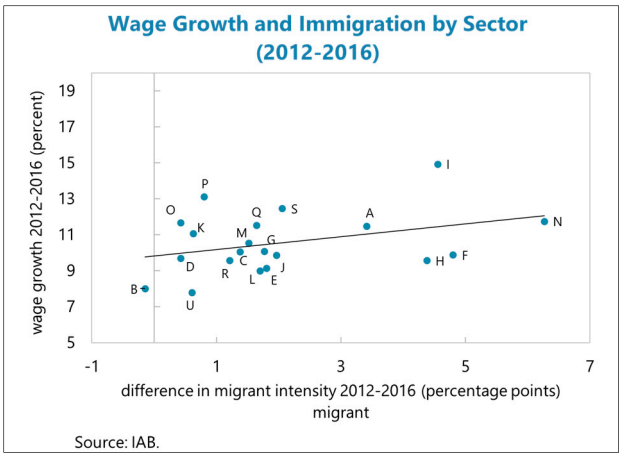
Higher competition in one sector (or line of work), where immigrants are close substitute for domestic workers, is accompanied by higher demand for complementary labor. [6] In general equilibrium, total demand for goods and capital is increased through immigration. The negative effect of immigration on wages of close substitutes is likely to be larger when immigration is the result of push factors (war, economic crisis) in provenance countries, than when it is the result of demand-pull factors (economic boom) in the recipient country. Eventually, assessing the balance of effects is an empirical question.

6. The recent immigration wave to Germany (2012–2016) suggests a demand-pull story. Comparing Germany's recent immigration boom (2012–2016) with the one in Spain in the 2000s is instructive. In Germany, the relative unemployment rate of foreign workers with respect to natives remained constant, which suggests a demand-pull story: higher demand for labor was met with an elastic labor supply thanks to immigration. Consistent with microeconomic data from the social security panel (maintained by the Institut fuer Arbeitsmarkt- und Berufsforschung, IAB, the research institute of the federal Employment Agency) covering close to 39 million workers in Germany, the population of migrants has increased the most in (i) sectors where wage increases were the highest, and (ii) where previous immigrant workers were already the most active in 2012. Again, this suggests a demand-pull story as immigration flows were the most intense to sectors where labor demand and wage growth was the highest (Food and accommodation (I), Support (N), Transport (H) and Construction (F)). At the same time, immigration was also concentrated in sectors where earlier generations of migrants were already the most represented, suggesting localized wage pressure on foreign born workers and their close substitutes. In contrast, in Spain, the relative unemployment rate of foreign workers increased sharply during the last immigration wave, hinting at supply-push factors: foreign workers' labor supply increased more than labor demand, pushing up migrants' unemployment rate with a likely larger impact on wages. Of course, these stylized facts are only suggestive. Formal empirical analysis is needed to test the counterfactual question of whether wage growth would have been higher without immigration in Germany, to which we now turn.



[6] See e.g., Ottaviano and Peri (2012) for a review of the literature.





7. To test for the impact of immigration on aggregate wages in Germany we follow a two-pronged approach. First, we follow Gali (2010) and Bentolila et al (2007) and derive a micro-founded Phillips curve based on aggregate data where immigration is allowed to play a role on both the slope and the intercept of the Phillips curve (for a given slope, immigration may have led to a drop in the NAIRU). Once estimated on German data, the immigration-related terms are either insignificant or wrong-signed, or both (see Table 1, specifications II and IV), which is not that surprising given that the traditional Phillips curve (specifications I and III in Table 1) did not point to any missing variables (stable coefficients). [7]

8. The second approach focuses on micro-level data to disentangle competition from composition effects. We rely on the IAB social security data to construct a panel data set where both cross-sectional and longitudinal dimensions can be used to disentangle 'competition' from 'composition' effects of migration on wages.[8]

[7] Specifications I and II are microfounded equations where wage expectations is implicitly a function of future unemployment gaps (see Gali, 2010 and Bentolila et al., 2007). Both equations also include a lagged inflation term as nominal wages are indexed to past price inflation. Spec. II allows for immigration to have an impact on both the level and the slope of the Phillips curve, therefore, the NAIRU is assumed constant at the 2009 level, when the effect of Hartz reforms are likely to have disappeared from the sample. The result is robust to various assumption on the NAIRU, including HP filtering with lambda values covering a range comprised between 1'600 and 1'000'000. Specification III and IV are reduced form equations that allow more flexibility. We include an inflation expectation term (a combination of backward and forward (consensus forecast) inflation) and an error correction term that measures deviations of the wage level from a fundamental level driven by productivity growth.

[8] More specifically, we estimate a weighted least square panel over the period 2012–2016 where the aggregate wage level (weighted sum of clusters with different workers' attributes like e.g., EU national, male, aged between 25 and 35, low qualification, in the construction sector, in East-Germany, covered by social security) is regressed on dummy variables accounting for the specific features of the employees in the sample (taking the value of either one or zero if the feature is represented in the given cluster). Various combinations of features allow us to construct 14'760 different clusters for each of the 4 years. The coefficients of the respective dummy variables (reported in table 2) are the basis of a shift-share analysis where we compute the pure 'composition' effect of migration on wages as reported in the text table.

- **Composition effect**. Because immigrants are paid less than natives, aggregate wages would have been higher by 0.56 percent over the period 2012–2016, or 0.14 percent per year, if the immigration boom had not taken place. This is the pure accounting (composition) effect of increasing the share of low wage earners in the economy. The overall negative composition effect of - 0.56 percent is partly accounted for by the specific attributes of the migrant population, as for example immigrants are relatively young (-0.05 percent), work part-time (-0. 08 percent), and are employed in sectors that pay less (-0.27 percent). Even controlling for all these factors, immigrants are paid less than natives, which by itself brings aggregate wages down by -0.18 percent over the period (see Text Table).

Shift-Share Analysis: Composition Effect Broken Down
(Percent)

contribution of:	nationality	-0.18
	sex	0.02
	age	-0.05
	qualification	-0.02
	sector	-0.27
	job/working time	-0.08
	region	0.02
total		**-0.56**

- **Competition effect.** After controlling (with dummy variables) for the fact that wages of immigrants are typically lower than those of native workers, wages of men are typically higher than wages of women, and wages in manufacturing are typically higher than average wages, among other factors, we find a small but positive effect of the immigration measure on wages (Table 2, first line). The coefficient is to be interpreted as a marginal effect: if the migrant share increased by one percentage point, overall wages would increase by 0.5 percent. Hence, since migration led to a yearly average increase in the migrant share in total working population of 0.44 percentage points, the competition effect of immigration has led to an increase of aggregate wages of 0.22 percent per year.

9. Putting it all together, immigration seems to have had no notable impact on wages in Germany. Taking the effect of composition (negative) and competition (positive) together, immigration has had a negligible (and slightly positive) effect on aggregate wages over the last 4 years. Relying on aggregate data only, the Phillips curve for Germany likewise suggests no role for immigration in explaining recent wage dynamics. This is consistent with recent results from Weber and Weigand (2018), who find no negative effects of immigration shocks on wages in a structural macroeconometric analysis.

Table 1. The Wage Phillips Curve – Germany 1992–2017

	Specification			
	I	II	III	IV
Inflation (t-1)	0.688***	0.392**		
	(0.123)	(0.193)		
Inflation expectations			0.642***	0.178
			(0.140)	(0.199)
Ugap	-0.311***		-0.308***	
	(0.035)		(0.031)	
Change in Ugap	0.666***			
	(0.159)			
Ugap (constant NAIRU after 2009)		-0.290***		-0.114***
		(0.074)		(0.024)
Change in Ugap (constant NAIRU after 2009)		0.848***		
		(-0.164)		
Error correction term (t-4)			-0.105***	-0.105***
			(0.018)	(0.016)
Immigration rate				0.029
				(0.038)
Foreign - total unemployment		0.204***		
		(0.068)		
Immigration rate *foreign unemployment		0.002		
		(0.007)		
Immigration rate *foreign unemployment^2		-0.001**		
		(0.001)		
c	0.311***	-0.117	0.157***	-0.238
	(0.060)	(0.420)	(0.028)	(0.316)
Observations	103	91	103	88
Adj. R-squared	0.69	0.47	0.73	0.64
DW stat	0.73	0.74	0.70	0.78

Specification I and III sample: 1992:1-2017:3.
Specification II and IV sample: 1995:1-2017:3.
Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 2. WLS Panel Wage Equation – Germany 2002–2016

Dependent variable: log wage
N=59840
F(40, 59800) = 4604598.89
Prob > F = 0.0000
Root MSE = 0.0111

		coeffient	S.E.
migrant_intensity_t-1		**0.005**	**0.000**
nationality	German	0.005	0.000
	Europe without EU	-0.042	0.004
	EU	-0.056	0.003
	8 asylum countries	-0.148	0.012
	other migrants	-0.096	0.006
sex	male	0.053	0.001
	female	-0.056	0.001
age	15-25	-0.246	0.002
	25-35	-0.081	0.001
	35-45	0.046	0.001
	45-55	0.091	0.001
	55-65	0.085	0.001
	over 65	-0.053	0.004
qualification	low	-0.196	0.003
	medium	-0.016	0.001
	high	0.282	0.001
sector	Agriculture, forestry and fishing	-0.236	0.006
	Mining and quarrying	0.189	0.012
	Manufacturing	0.118	0.001
	Electricity, gas, steam and air conditioning supply	0.323	0.007
	Water supply; sewerage, waste management and remediation activities	0.051	0.007
	Construction	-0.103	0.002
	Wholesale and retail trade; repair of motor vehicles and motorcycles	-0.047	0.001
	Transportation and storage	-0.106	0.003
	Accommodation and food service activities	-0.313	0.004
	Information and communication	0.132	0.003
	Financial and insurance activities	0.281	0.003
	Real estate activities	-0.151	0.005
	Professional, scientific and technical activities	0.056	0.002
	Administrative and support service activities	-0.248	0.003
	Public administration and defence; compulsory social security	0.146	0.003
	Education	0.045	0.003
	Human health and social work activities	0.014	0.002
	Arts, entertainment and recreation	-0.157	0.005
	Other service activities	-0.126	0.003
job	SVB+full-time	0.333	0.001
	SVB+part-time	-0.183	0.001
	marginal	-1.058	0.003
region	West	0.030	0.000
	East	-0.140	0.001
year	2013	7.591	0.002
	2014	7.614	0.002
	2015	7.634	0.002
	2016	7.650	0.003
minimum wage	2012-2014	-0.804	0.004
	2015-2016	-0.792	0.004

Database: Data Warehouse of the Federal Employment Agency.

References

Bentolia, Samuel, Juan J. Dolado and, Juan F. Jimeno. "Does Immigration Affect the Phillips Curve? Some Evidence for Spain", December 2007, Institute for the Study of Labor.

Brzezski, Carsten. "Flexible German unions bend the Phillips Curve", October 2017, Handelsblatt Global. https://global.handelsblatt.com/opinion/flexible-german-unions-bend-the-phillips-curve-839628.

Deutsche Bundesbank (2018): Lohnwachstum in Deutschland: Einschätzung und Einflussfaktoren der jüngeren Entwicklung. *Monatsbericht* 4/2018, 13–28.

Gali, Jordi. "The Return of the Wage Phillips Curve", February 2010, National Bureau of Economic Research.

Klinger, Sabine, and Enzo Weber (2016): Decomposing Beveridge curve dynamics by correlated unobserved components. Oxford Bulletin of Economics and Statistics, 78, 877–894.

Ottaviano, G., and G. Peri, (2012): Rethinking the effects of immigration on wages. *Journal of the European Economic Association* 10, 152–197.

Weber, Enzo, and Roland Weigand (2018): Identifying macroeconomic effects of refugee migration to Germany. Economics Bulletin, 38, 852–862.

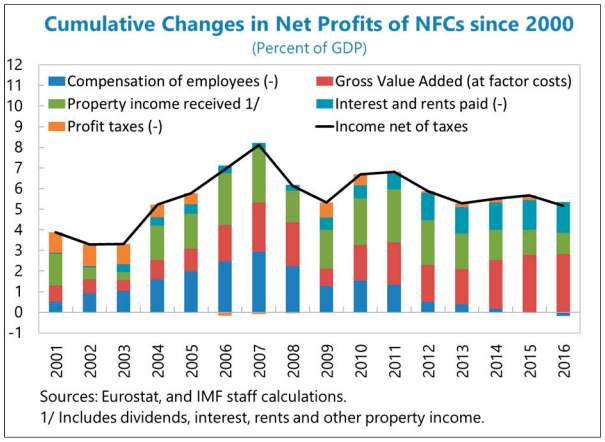
Wolff, Guntram B. "German wages, the Phillips curve and migration in the euro area", blog post, Bruegel, November 2017. http://bruegel.org/2017/11/german-wages-the-phillips-curve-and-migration-in-the-euro-area/

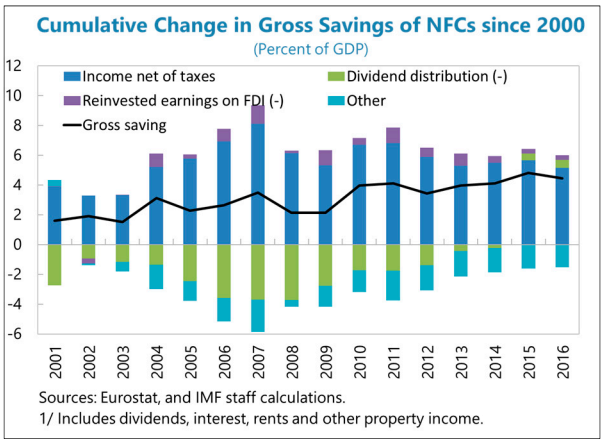
Annex VII. The Rise of German Corporate Savings[1]

Non-financial corporate (NFC) savings have been rising in Germany over the last two decades. This annex explores NFC savings behavior using both national accounts and firm-level data. The discussion of stylized facts presented here is a first step into a deeper analysis of the fundamental drivers of NFC savings in Germany.

Gross Corporate Savings in the National Accounts

1. The factors driving the increase in German NFC gross saving have shifted over time—from rising profitability initially to increased retained earnings more recently.[2] Savings rates are defined as a share of gross value added (GVA). Since in Germany the weight of corporate GVA in GDP has risen overtime, the positive trend observed in NFC savings rates has translated into higher savings as a share of GDP (Figure 1).[3] Throughout the decade leading to 2007, the rise in savings rates followed an increase in profitability, on the back of wage moderation and declining interest payments (Figure 1). After 2007, interest payments continued to fall but the labor share in GVA recovered to 2001 levels, stabilizing thereafter. Consequently, profits declined somewhat in percent





[1] Prepared by Ruo Chen and Joana Pereira (both EUR). The authors wish to thank Prof. Jens Suedekum and staff from the Bundesbank, Ministry of Finance and Economic Affairs for valuable discussions and suggestions.

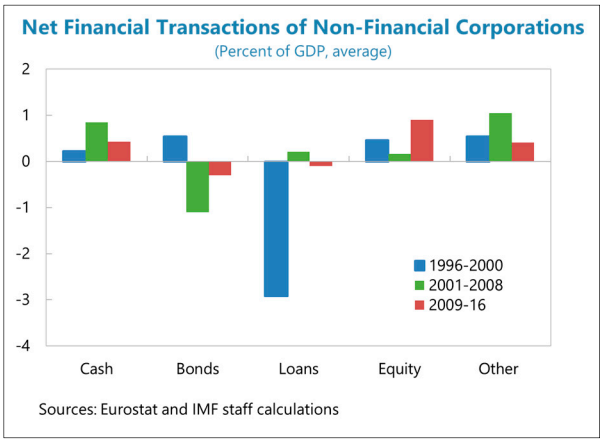
[2] See also "*The savings of non-financial corporations in Germany*", Deutsche Bundesbank Monthly Report, March 2018, pp 20–22.

[3] GVA (net of production taxes) is either paid back to capital – the gross operating surplus (GOS) – or labor. The evolution of GOS can then be decomposed into changes in dividends, savings, and other payments such as profit taxes, interest payments, reinvested earnings from FDI (which are part of savings), and other transfers. Profits are defined as the sum of gross savings and dividends. Formally,

$$GVA - Production\ Taxes = GOS + Compensation\ of\ Employees$$
$$GOS = Net\ Profits + Profit\ Tax - Reinvested\ Earnings + Other\ Trf$$
$$= Gross\ Savings\ (GS) + Dividends + Profit\ Tax - Reinvested\ Earnings + Other\ Trf$$

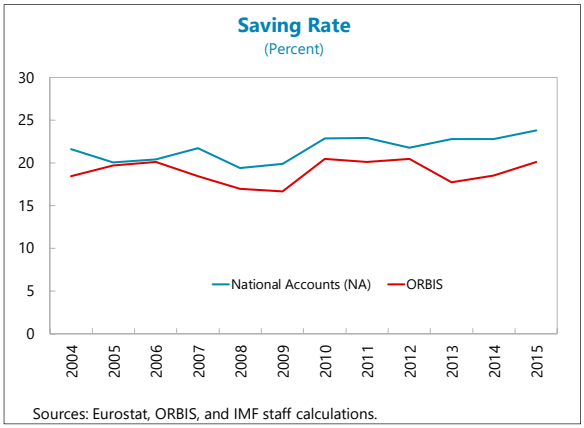
of GVA, although less so in percent of GDP. Instead, the share of gross profits distributed to shareholders has seen a substantial decline since 2007 (from about 50-55 percent to less than 45 percent) and was thus the main driver of corporate savings since 2007.[4] Reinvested earnings from FDI picked up around 2001, adding to firms' savings, but have been roughly constant since then.

2. NFCs substantially deleveraged over the last 15 years, with a concomitant accumulation of very liquid financial assets in the balance sheet. Debt-to-equity peaked in 2002, and has since declined to a historical low of about 50 percent. At the same time, cash holdings and other liquid assets (such as trade credits) have risen substantially, as well as equity claims (largely related to FDI) after 2008. This trend possibly reflects an explicit choice of German firms to reduce their reliance on the financial sector to fund (domestic and external) investment. With business investment growth very weak in Germany until recently, however, these liquid assets have not yet been deployed domestically.



Gross Corporate Saving Patterns at the Firm Level

3. Firm-level data is used to provide deeper insights into the saving behavior of NFCs. For Germany, potentially important differences in NFC behavior may occur in large firms compared to SMEs, which in Germany are collectively referred to as the "Mittelstand".[5] The saving rate (defined as gross saving divided by GVA) in the Orbis sample shows a similar pattern

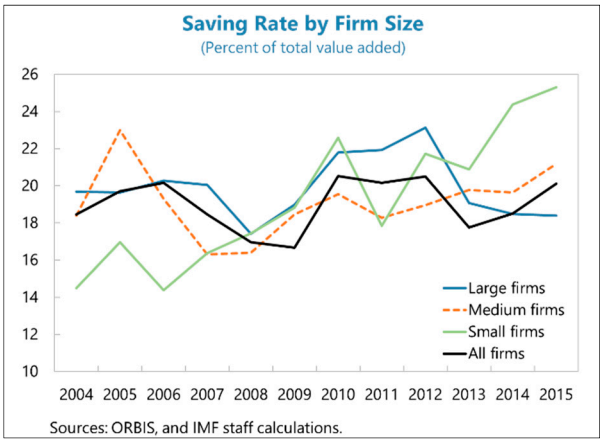


[4] *Profits* are here defined as including consumption of fixed capital and *net profits* refers to profits net of taxes. Dividend payout ratios would be substantially larger if measured as a share of net entrepreneurial income (after deduction of consumption of fixed capital), and would show a declining trend since 2000.

[5] A German Mittelstand company may not however be a typical SME. Often, a Mittelstand company is run by one or more family members, has been in the family for generations, and specializes in niches where it is a market leader. It may have thousands of employees and sales exceeding €100 million, whereas the official definition of SMEs used by the European Commission includes companies with less than 250 employees and sales of less than €50 million a year.

to that from the national accounts.[6] During 2004–2015, the saving rate increased by about 1.6 percentage points in the Orbis sample, compared with a 2.2 percentage point increase in the national accounts. The average saving rate in the Orbis sample is about 2.7 percentage points lower than that in the national accounts.

4. Over the past decade, higher NFC saving appears to be driven by increased saving by SMEs.[7] The contribution of medium and small firms to gross NFC saving increased by about 13 and 4 percentage points during 2004–2015, respectively. However, small firms had the largest increases in the saving rate. The saving rate of medium firms also trended upwards, but less rapidly than small firms, while the saving rate of large firms was stable. As the Orbis database is biased towards large firms and, to a lesser extent, medium firms, extending the Orbis sample with more small firms with higher and increasing saving rates could potentially match the level and trend of the saving rates in the national accounts.[8]



5. Family-owned small businesses have the highest saving rates, reflecting low interest payments and increasing operating surpluses. Based on ownership information in the Orbis database, a firm is classified as a family-owned business if its largest shareholder is an individual or a family. While family-owned medium-sized firms did not show higher saving rates than other medium firms (potentially due to missing dividend information), family-owned small firms consistently had higher saving rates than other small firms (Figure 2). In general, the increasing saving rates of medium and small firms were driven by decreasing interest payments. The higher and increasing savings of family-owned small firms, in particular, were driven by both low interest payments and increasing operating surpluses.

---

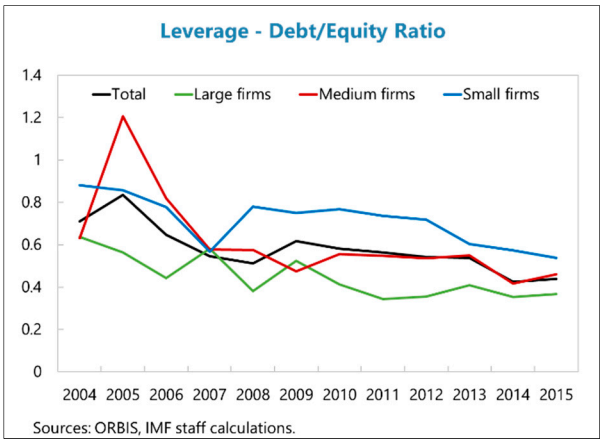
[6] The gross value added and gross saving of each firm are calculated as,
$Gross\ Value\ Added = Operating\ PnL + Financial\ PnL + Extraordinary\ and\ Other\ PnL + Depreciation + Cost\ of\ Employees;$
$Gross\ Saving = Operating\ PnL + Depreciation + R\&D - Interest - Tax - Dividend.$

The information on dividends is not directly available in the Orbis dataset, which has a large coverage of both publicly listed and private firms. Applying the dividend payout ratios derived from the national accounts would lower the saving rates for large and medium firms, but both groups shown more increases in the saving rates.

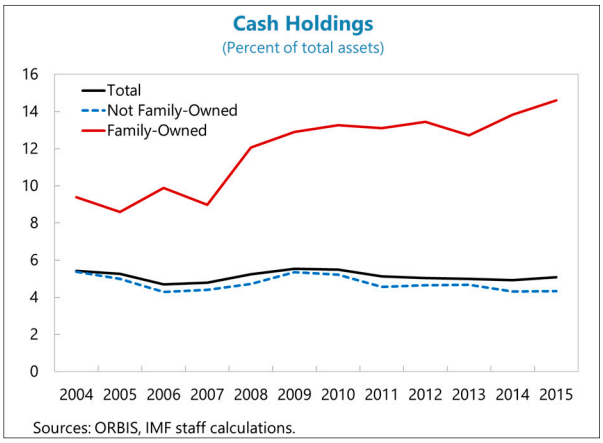
[7] We define a firm's size based on its number of employees. A micro firm has less than 10 employees, a small firm has 10 to 49 employees, a medium firm has 50 to 249 employees, and a large firm has more than 250 employees.

[8] According to the OECD Structural and Demographic Business Statistics (SDBS), in the national accounts about 44, 20, 18, and 15 percent of gross value added were contributed by large, medium, small, and micro firms in 2015.

6. Consistent with the national accounts data, the firm-level data also show substantial deleveraging process over the past decade or so. The debt-to-equity ratios decreased across all firm-size groups, by an average of 27 percentage points during 2004–2015. Small firm's leverage ratio dropped by 34 percentage points, to 54 percent in 2015. Firm's deleveraging was achieved through debt reduction, with small increases in their equity positions in recent years.



7. Family-owned firms increased their cash holdings more than other firms. Looking at different ownership structures, family-owned firms held larger shares of cash and cash equivalent on their balance sheets, which also increased significantly. Cash holdings, in percent of total assets, of family-owned firms increased from 9 percent in 2004 to 15 percent in 2015, whereas cash holdings of non-family-owned firms stayed at around 5 percent during the same period. However, high and increasing cash holdings were not associated with high or increasing intangible assets in family-owned firm's balance sheets. This suggests that cash holdings were not used to finance increasing investment in intangible assets, as suggested by the literature.[9]



Why Are Firms Saving More?

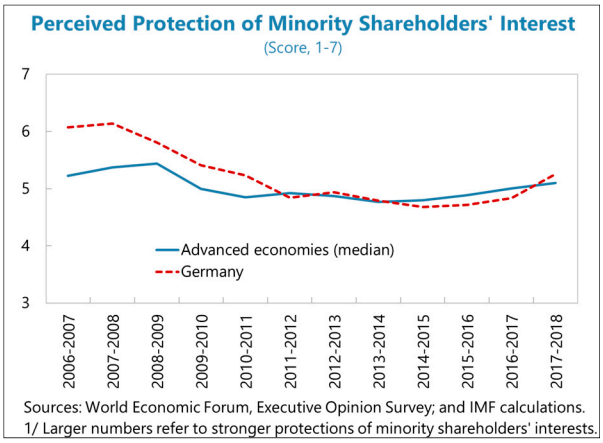
8. Several factors may have incentivized firms to deleverage and increase retained earnings, which further analysis of the firm level data may enable to assess.

- The 2000 corporate tax reform introduced a more favorable tax treatment of retained earnings, aimed at supporting debt reduction among the then-highly-leveraged German NFCs. Another reform in 2008 reduced corporate tax rates and limited interest deductibility. If the marginal propensity to consume out of capital gains is lower than out of dividends/interest, the tax reforms might explain the increase in savings.

- The precautionary motive for deleveraging increased after the GFC, related to the experience of particularly tight financial conditions during the crisis.

[9] Falato, A., Kadyrzhanova, D., and Sim, J. (2013): "*Rising Intangible Capital, Shrinking Debt Capacity, and the US Corporate Savings Glut*," Federal Reserve Board of Governors Working Paper 2013–67.

- Assuming equity investors only expect a constant risk premium over risk-free assets, the decline in interest rates might explain the decline in the dividend payout ratio. In addition, some studies have shown a positive relationship between corporate governance quality and dividend policy.[10] The declining trend in dividend payments might, for instance, relate to deteriorating perceptions regarding protection of minority shareholders rights, as reported by the World Economic Forum, although the direction of causality is difficult to establish. For the family-owned firms, the pressure to pay dividends would be even lower, since the distinction between household and firm saving may be blurred.

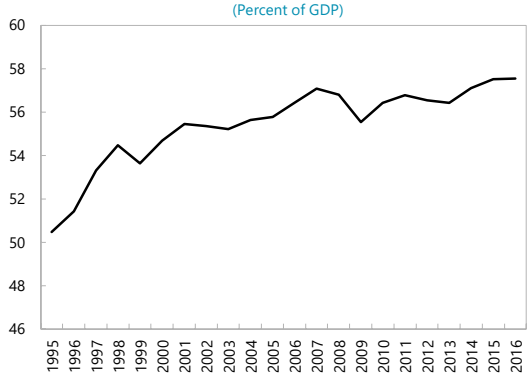


[10] Jiraporn, P., Kim, J., and Kim, Y. (2011): "*Dividend Payouts and Corporate Governance Quality: An Empirical Investigation*", The Financial Review.

Figure 1. Evolution of Germany's Non-Financial Corporate Accounts

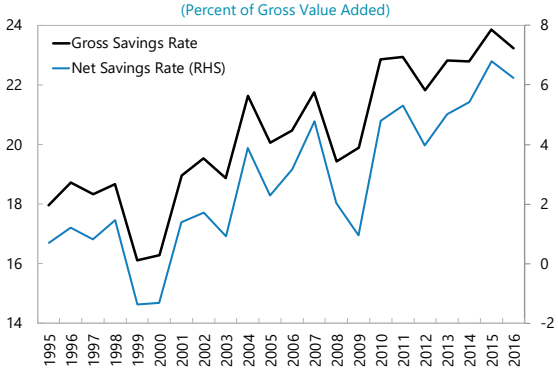
NFCs value added represents a rising share of income in the German economy…

NFC Gross Value Added
(Percent of GDP)



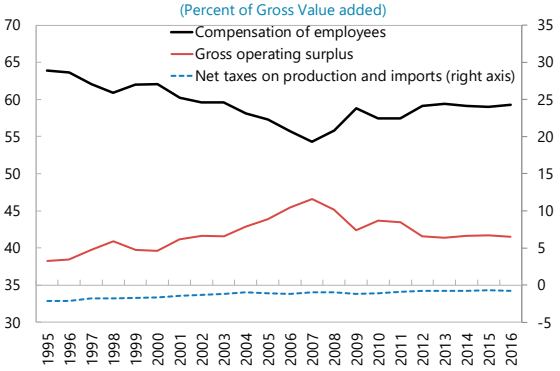
…and firms are saving a rising share of value added

NFC Saving Rate
(Percent of Gross Value Added)



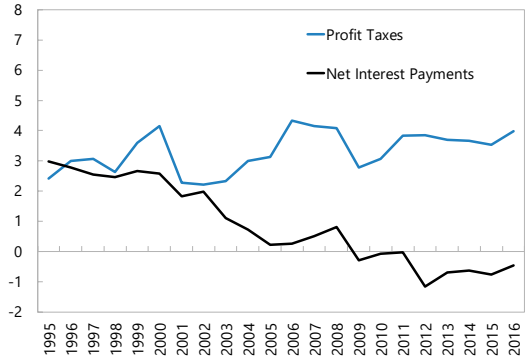
The share of value added paid to labor gradually fell from 1996 to 2007, but has recovered since the global crisis.

Allocation of NFCs Value Added
(Percent of Gross Value added)



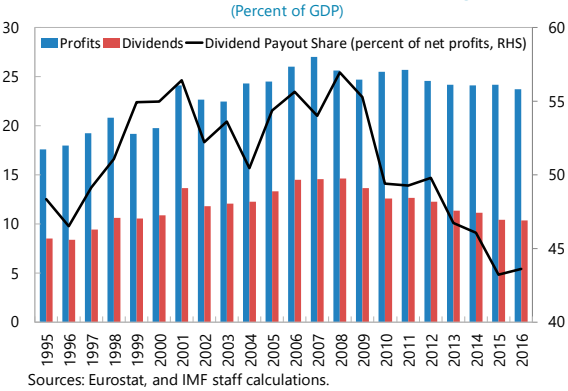
The long-term decline in the interest bill further supported corporate profitability.

Interest Bill and Profit Taxes
(Percent of NFCs Gross Value Added)



Dividend payout ratios declined substantially since the global financial crisis.

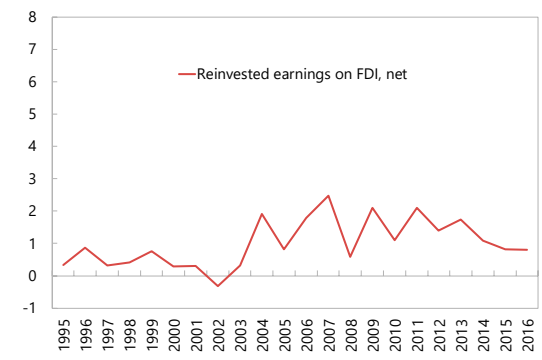
Distribution of Profits and Gross Savings
(Percent of GDP)



Sources: Eurostat, and IMF staff calculations.

Reinvested earnings stepped up in 2001 but have been stable since then.

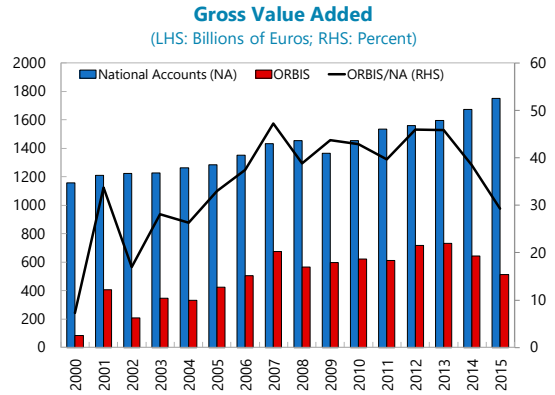
Reinvested Earnings from Foreign Investment
(Percent of NFCs Gross Value Added)



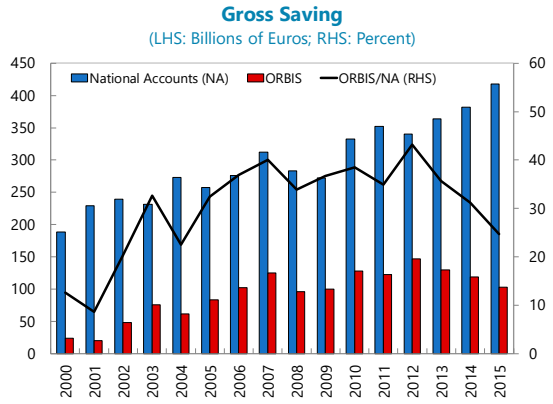
Sources: Eurostat, and IMF staff calculations.

Figure 2. Corporate Savings in Firm-Level Data

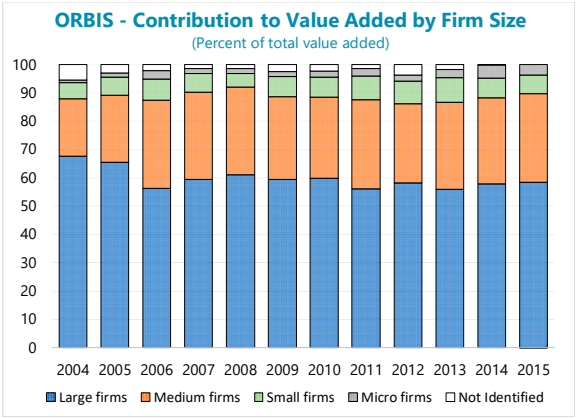
The Orbis sample covers about 40 to 50 percent to NFC gross value added, …



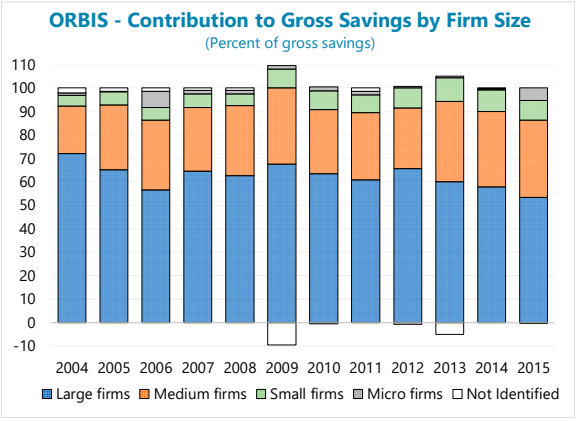
… and about 30 to 40 percent of NFC gross savings in the national account.



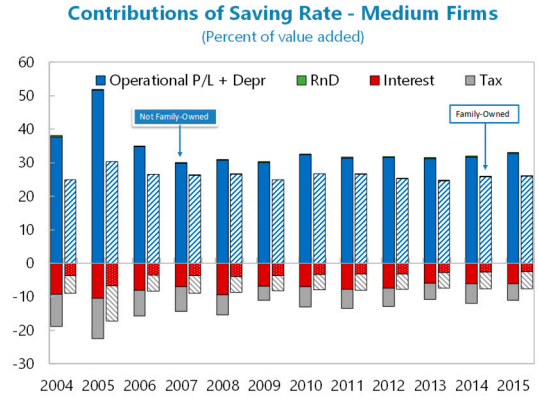
A large part of gross value added is contributed by large firms, …



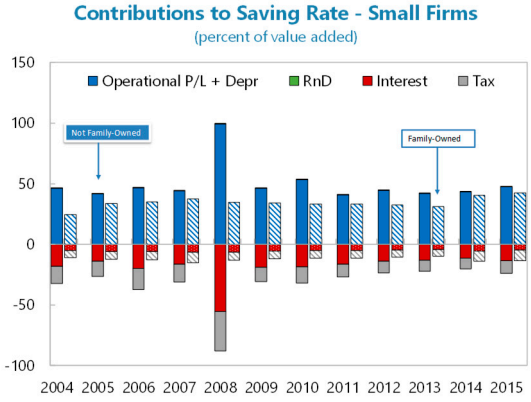
… but medium and small firms have increasing contributions to the gross savings.



Decreasing interest bills contribute to higher savings, and family-owned firms tend to have lower interest bills.



Increasing operating surpluses also contributed to higher savings of family-owned small firms.



Sources: ORBIS, and IMF staff calculations.

Annex VIII. Government Investment in Germany[1]

At around 2 percent of GDP, Germany's general government investment is considered among the lowest in advanced economies. Yet, a range of modalities for governments to support investment in public goods complicate cross-country comparison. This Annex attempts to undertake cross-country comparison of government investment including—to the extent possible—government-supported investment that is not accounted as government investment. Meanwhile, given data limitations to construct government investment data that are fully consistent across countries, the Annex also studies total—public and private—investment in the areas where the government's indirect support can be sizable. The results show that Germany's government investment is below peers' even accounting for investment grants and public-private partnerships, yet the government also provides sizable loan subsidies, some of which may be used for investment. At the same time, Germany's total investment is also below peers, especially in infrastructure and human capital.

Evolution of General Government Investment in Germany

1. Germany's general government investment[2] has declined since reunification, driven by municipalities (Figure 1). General government investment declined from around 3 percent of GDP per year in the early 1990s to 2–2¼ percent of GDP per year in recent years. The decline after reunification was to be expected, while important shifts from the government to private sector (e.g., outsourcing, privatizations) especially at municipalities (waste and sewerage management, water supply) and Länder (universities) in the 1990s also contributed to the decline, Germany's general government investment in Germany is currently among the lowest in advanced economies.[3] The reduction was most prominent in municipal spending on construction. While investment was cut in both east and west Germany, yet the degree of reduction was materially larger in municipalities in east Germany, reflecting the slowdown of reunification investment. Cut in investment between 1993–95—just after reunification—and 2009–11 was larger in Länder with higher debt in the mid-1990s.

2. High debt and staffing constraints are contributing to the decline in municipal investment., The decline in investment between 1995–2004—after reunification-related investment tapered—and 2012–16 was larger in municipalities with higher debt (Figure 1, right bottom panel). Indeed, surveys indicate that while the low interest rate environment is providing favorable financing conditions, roughly one third of municipalities—notably those that are highly indebted—have seen a decline in loan offers, particularly for high volumes and long maturities.[4] Recently, financial relief and investment promotion by the federal and Länder governments have been supporting municipal

[1] Prepared by Laurent Kemoe and Aiko Mineshima.

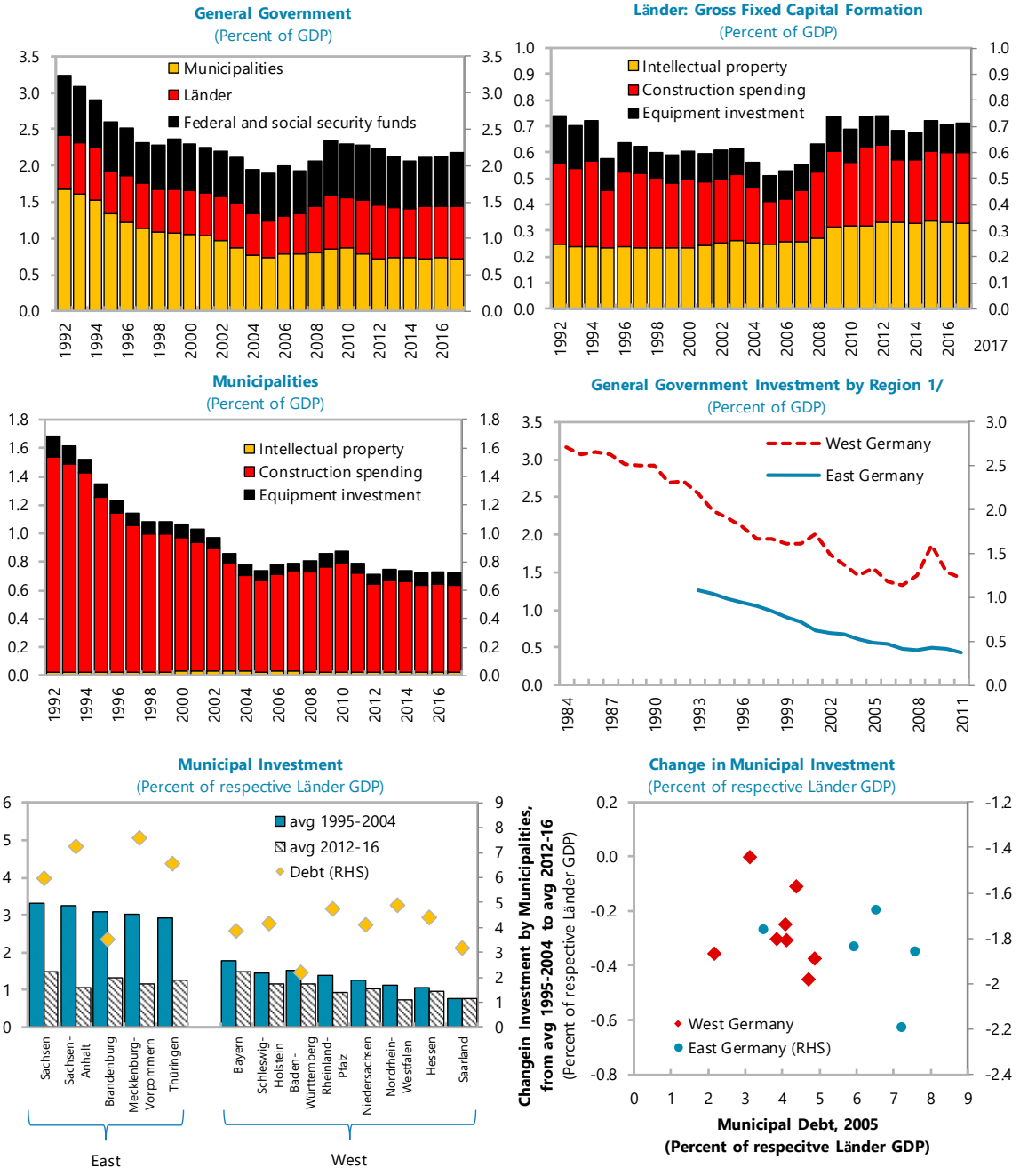
[2] The general government investment includes investment by the federal, state (Länder), and municipal governments, as well as social security funds.

[3] Weaker deflator for public construction compared to the overall GDP deflator through the mid-2000s also contributed to the decline in GDP ratios.

[4] KfW (2017).

investment, which should help mitigate funding constraints. In addition, reductions in municipal staff over years, especially in the construction and planning sectors, have created capacity constraints that have yet to be fully addressed.

Figure 1. Government Investment

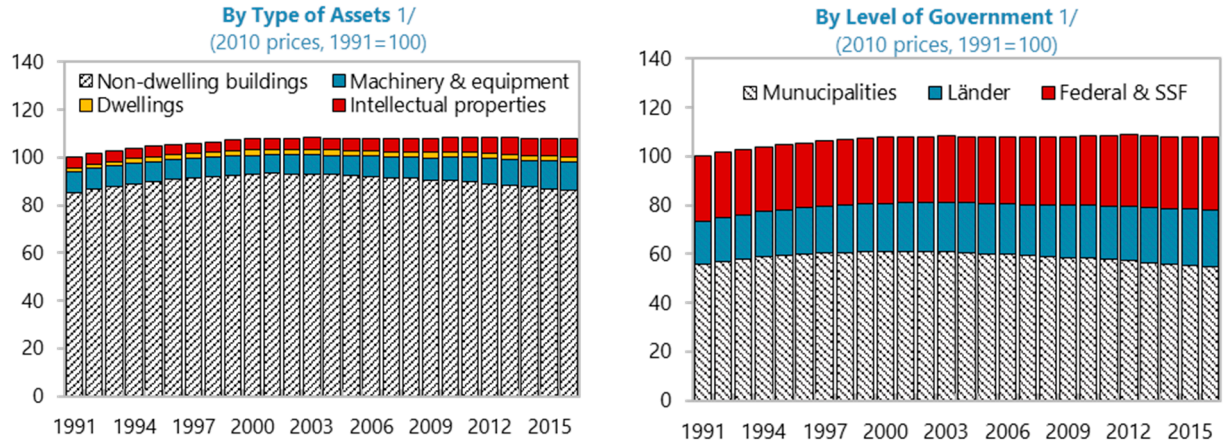


Sources: Destatis, Haver Analytics, and IMF staff calculations

1/ Includes investment by the federal, Länder, and municipality governments.

3. The general government's net capital stock—gross capital stock net of depreciations—has been stagnant since 2000 (Figure 2). Declines in dwellings and non-dwelling buildings—of which share in total net capital stock was 2 percent and 85 percent, respectively, in 2016—since the early 2000s were largely offset by rapid rises in intellectual properties and machinery over the last decade, resulting in a stagnation of the total net capital stock. Among the different levels of government, municipalities' net capital stock has declined since the early 2000s, returning to the level around reunification.[5] This is in contrast to the federal government and Länder, where the net capital stock has been on a rise. An annual survey conducted by KfW (2017) indicates that municipalities' perceived investment backlog stood at €126 bn (3.9 percent of GDP) in 2017, with a substantial need in traffic infrastructure (27 percent of the total backlog) and education including schools (26 percent of the total backlog).[6]

Figure 2. General Government Net Capital Stock



Sources: Destatis, and IMF staff calculations.

1/ Rebased the original data that are on real prices with 2010 as the base year (2010=100). The contributions are calculated based on the nominal weights in 1991, which are adjusted proportionally to ensure that the sum subcomponents becomes equal to the overall index for each year.

Cross-Country Comparison of General Government Investment

4. Various modalities for governments to support investment in public services complicate cross-country comparison. Examples of government support to investment in public services that is not counted as government investment include, among others, (i) investment grants, (ii) public-private partnerships (PPPs), (iii) loan guarantees, and (iv) tax concessions (e.g., for mortgage interest, research and development, and municipal bonds).[7] Limited data feasibility,

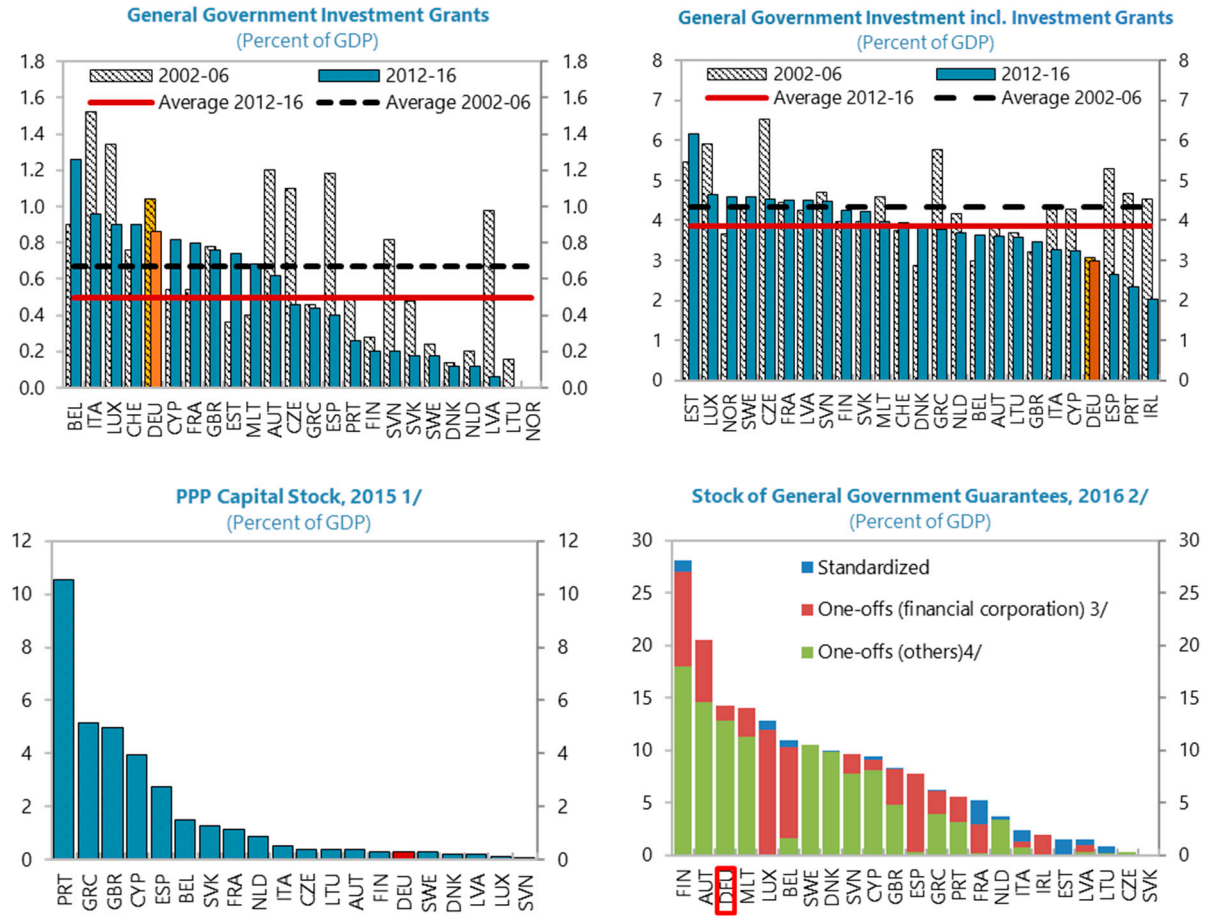
[5] The net capital of social security funds also declined since the mid-2000s, yet the size is very small at around 1.5–2 percent of general government net capital.

[6] The survey reports investment needs as perceived by municipal policy-makers and not according to verifiable objective criteria.

[7] Governments can also support investment through state-owned financial institutions, such as development banks, which provide long-term funding at subsidized rates; and government-backed saving schemes.

however, hampers the integration of these factors into government investment data in a fully consist manner. General government investment in Germany is below that in advanced Europe even after accounting for investment grants and PPPs.[8] General government investment including investment grants in Germany was around 3 percent of GDP annually during 2012–16, about 1 percent of GDP below that in peers. Yet, the German government has provided substantial loan guarantees, some of which support investment in public services (Figure 3). In addition, certain public services—e.g., education, healthcare—in Germany are provided by the private sector while in other countries by the public sector (e.g., France), further complicating cross-country comparison.

Figure 3. General Government Investment – International Comparison



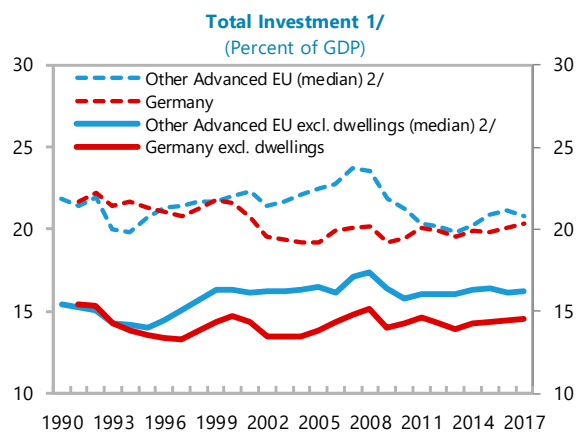
Sources: Eurostat, IMF "FAD Investment and Capital Stock Database, 2017," and IMF calculations.
1/ Calculated with real variables.
2/ No all the government guarantees are related to investment activities.
3/ Includes one-off guarantees provided for non-financial public corporations and others.
4/ Includes one-off guarantees provided for public and private financial corporations.

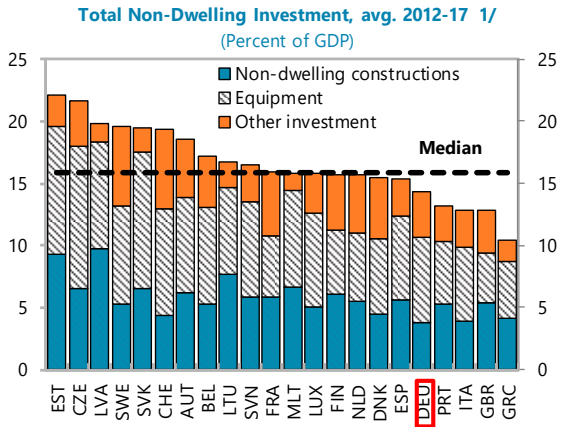
[8] Germanys' general government spending including investment grants is below peers' for most key functions, such as education, health, and transport.

Total—Public and Private—Investment

5. Germany's total investment—including both private and public—has been below peers' (Figure 4). Technical complications in disaggregating public and private investment would warrant a close look at total investment. Focusing on non-dwelling investment, which is more relevant to potential output, Germany trails peers, especially in buildings and structure, which include key infrastructure such as roads, railways, and ports. At the same time, investment in equipment and other assets (e.g., intellectual properties) is comparable to peers.

Figure 4. Total Investment

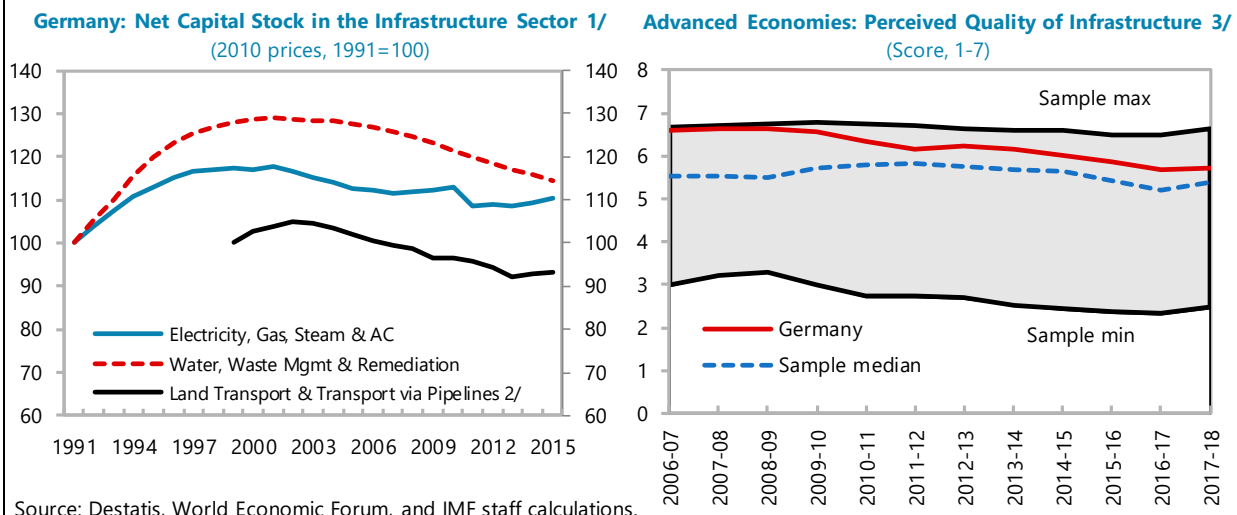




Sources: AMECO, and IMF staff calculations.
1/ Gross fixed capital formation. GDP ratios are calculated with real variables.
2/ Includes Switzerland.

6. The net capital stock of key infrastructure—utilities and land transport service—in Germany has been on a declining path since the early 2000s (Figure 5). The perceived quality of overall infrastructure—based on World Economic Forum's annual opinion survey—is relatively high for Germany compared to other advanced economies. However, the score for Germany has been deteriorating since the global financial crisis (GFC), from close to the best performer to closer to the median performer.

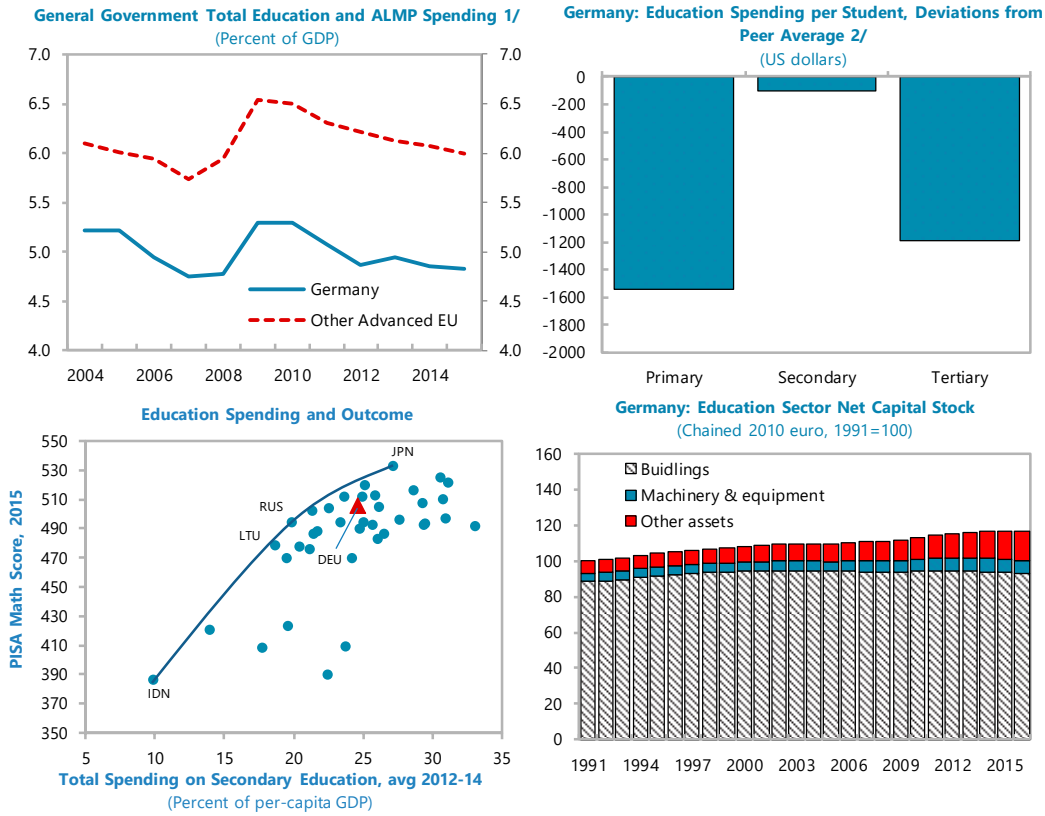
Figure 5. Quality and Perceived Quality of Infrastructure



Source: Destatis, World Economic Forum, and IMF staff calculations.
1/ Rebased the original data that are on real prices with 2010 as the base year (2010=100).
2/ 2000=100 due to data limitations.
3/ Based on the World Economic Forum's Executive Opinion Survey, with the survey question, "How would you assess general infrastructure (e.g., transport, telephony, and energy) in your country?" The results are scaled 1-7, where "1" refers to "among the worst in the world" and "7" to "among the best in the world."

7. The German government spends less on human capital than peers, but spending efficiency seems high (Figure 6). The German government has been spending around 4¾ percent of GDP in education and active labor market programs in recent years, well below 6–6½ percent of GDP in other advanced EU countries. Nonetheless, focusing on government education spending can be misleading given the German education system where the private sector plays a significant role ("Freie Träger"). Yet total—public and private—education spending per student also suggests low education spending in Germany, especially for the primary education, if controlling for income differentials among advanced economies. At the same time, the education outcome, as measured by PISA score for mathematics, is relatively high, suggesting the sound efficiency of spending. Regional disparities, however, are rising, reflecting socio-economic variations (BMBF, 2016), and Germany's decentralized education system makes it difficult to ensure certain standards in core subjects across Länder. The net capital stock of buildings in the education sector has been stagnant since the late 1990s, supporting the aforementioned finding of sizable investment backlogs in education in municipalities.

Figure 6. Human Capital Investment



Sources: Destatis, Eurostat, OECD, and IMF staff estimates.
1/ Education spending includes current and capital spending.
2/ Includes public and private education spending. Calculated as the deviations from the fitted values estimated with the coefficients from cross-sectional regressions of education spending per student and per-capita income in a U.S. dollar for 2012-14.
3/ Rebased the original data that are on real prices with 2010 as the base year (2010=100).

Key Findings

- Germany's general government investment has declined since reunification, drive by construction spending by municipal governments. At around 2–2¼ percent of GDP, Germany's general government investment is among the lowest in advanced economies.

- Various modalities for governments to support investment in public goods complicate cross-country comparison of government investment. Accounting for investment grants and PPPs, Germany's general government investment remains below peers'. However, the government provides sizable loan guarantees, some of which may be used for investment in public goods.

- Germanys' total—private and public—investment in non-dwelling assets is below peers', especially in buildings and structures. The net capital stock of infrastructure—e.g., land transports, utilities—and education has been eroding since the early 2000s. In addition, the perceived quality of infrastructure is deteriorating while municipalities' perceived investment backlog for education and infrastructure is accumulating, suggesting a scope for increasing investment in these areas.

References

Federal Ministry of Education and Research (BMBF), 2016, "Education in Germany 2016."

KfW, 2017 "KfW Municipal Panel 2017," Economics Department, KfW Group

Annex IX. Is There a Housing Price Bubble in Germany's Main Cities?[1]

A housing valuation model using Germany's ten largest cities and twelve European peers shows that since 2010, house prices in Munich, Hamburg, Frankfurt and Hannover have increased by 25 to 50 percent above the levels suggested by economic fundamentals. The average overvaluation gap in the 7 biggest cities was 21 percent in 2017.

1. Following a decade-long correction, house prices started to pick up in Germany right after the global financial crisis (GFC). The increase was supported by record-low interest rates and the appetite of banks and households for low risk and relatively high-yield investment. Large immigration flows and urbanization further pushed up demand for housing. House prices have on average increased by 45 percent since their trough in 2010, or about 5.4 percent per year. This is faster than nominal GDP growth and has been accompanied by a moderate pick-up in mortgage credit (Figure 1, panel 1 and 2).

2. At the aggregate level, these developments do not suggest reasons for alarm. Traditional valuation measures – e.g. price-to-rent and price-to-income ratios – point to a return to long-term equilibrium (Figure 1, panel 3), and mortgage lending has grown broadly in line with GDP.

3. In international comparison, house price developments in Germany do not stand out either. In most advanced economies house prices have grown far more robustly (Figure 1, panel 4); since 1991, real prices have tripled in Norway and New Zealand, more than doubled in Sweden and Australia, and are 50 percent higher in France in real terms, whereas they have increased by only 2 percent in Germany.

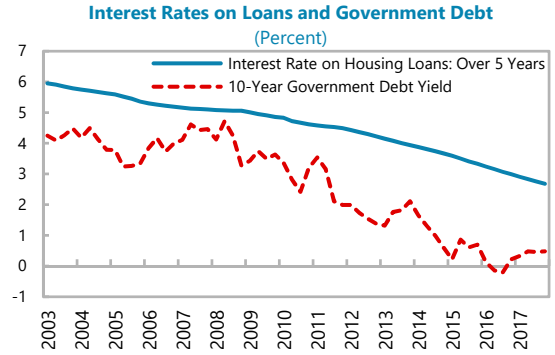
4. However, the aggregate picture may be deceiving as it masks very different realities at the city level. House prices have been increasing at double-digit rates in Germany's main cities in recent years, and accelerated sharply again in 2017. In fact, house prices in Germany's top five hot spots grew faster than in most European cities in 2017, in contrast with the situation in 2010 when house price growth in almost all German cities was below the average (Figure 2, panel 1 and 2).

5. A first look at the traditional equilibrium measures of house prices again shows that German cities stand out in the European context (Figure 2, panel 4 and 5). For instance, in Copenhagen, Madrid or Rome, income is rising faster than house prices, justifying increasing demand for houses and higher prices. In contrast, price-to-income ratios, as well as price-to-rent ratios (another popular valuation measure), have risen fast in German cities (Figure 2, panel 3 and 5) in the last decade, signaling potential deviation of house prices from fundamentals.

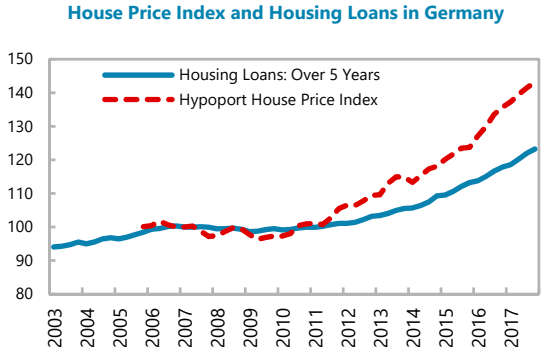
[1] Prepared by Laurent Kemoe (STA), Jean-Marc Natal and Joana Pereira (both EUR). The authors wish to thank Nan Geng, Florian Kajuth, Jesper Linde, and staff from the Bundesbank for valuable discussions and suggestions.

Figure 1. House Price Developments in Germany

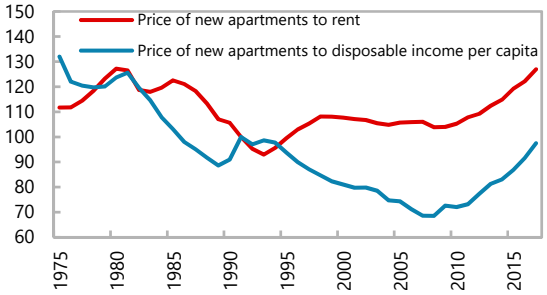
Mortgage rates have dropped and the spread to long-term risk-free rates has increased …



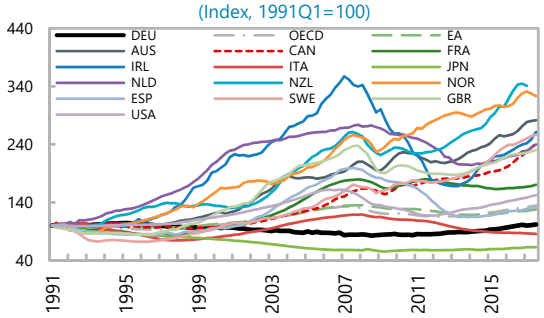
…. prompting a sustained increase in housing loans and house prices.



Most affordability measures do not show signs of disorderly development at the country level yet …



….and real house prices have increased much less in Germany than in other OECD peer countries over the last three decades.



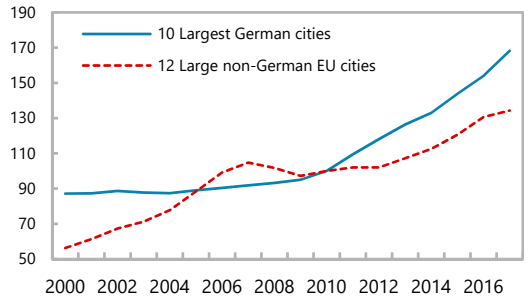
Sources: bulwiengesa AG, Deutsche Bundesbank, Europace AG, Haver Analytics, OECD, and IMF staff calculations.

6. Existing empirical studies on house price valuations mainly focus on country-level developments rather than city-level prices. The conclusions of these studies regarding Germany are generally consistent with the view that there is no build-up of risk in the German housing market at the aggregate level. Dermani, Lindé and Walentin (2016) and Geng (2018) even show that fundamentals would warrant higher house prices in Germany. Kajuth, Knetsch and Pinkwart (2016), on the other hand, compared actual house prices to their fundamental price for a number of cities and regions in a Germany-only model and found that prices of both apartments and single-family homes significantly exceeded the levels suggested by fundamentals in major cities. The Bundesbank estimates, based on Kajuth et *al*. (2016), that house prices in Germany's "hot spots" may be overvalued by as much as 30 percent in 2017, suggesting that a large part of the recent surge was not driven by fundamental factors.

Figure 2. Housing Developments at the City-level

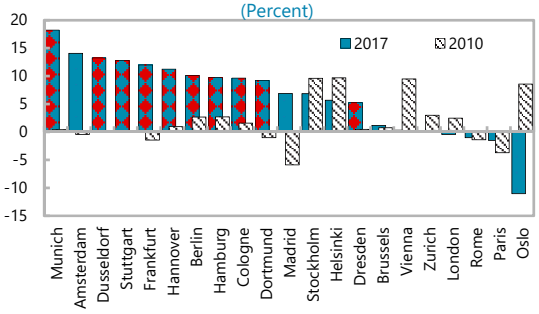
House prices have increased considerably in Germany's main cities since 2010....

Average House Price Index in Main German and European Cities
(Index, 2010 = 100)



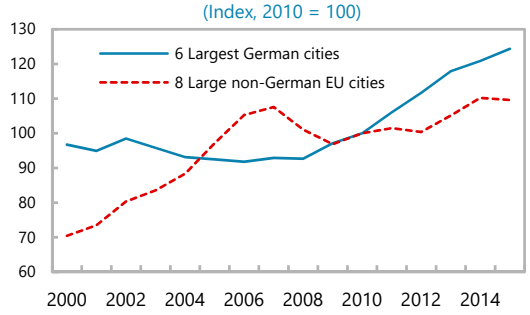
.... Accelerating even faster than peers in 2017.

Annual house Price Growth in Main German and European Cities
(Percent)



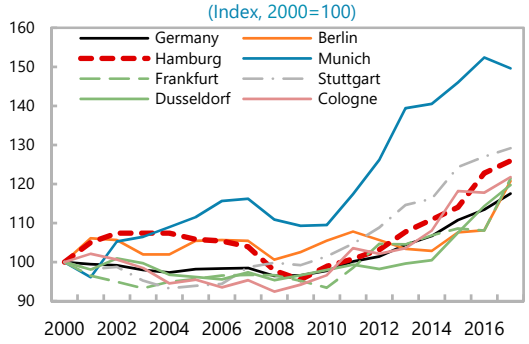
Housing affordability in German cities has been deteriorating faster than European peers.

Average Price/Income Ratio in Main German and European Cities
(Index, 2010 = 100)



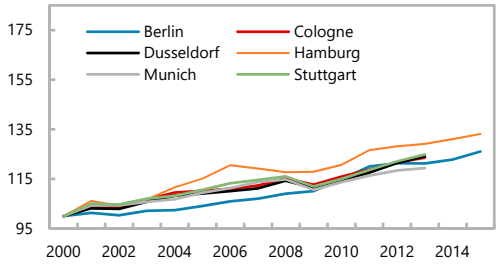
Price-to-Rent ratios in German cities are also rising fast.

Price-to-Rent Ratio (New Apartments)
(Index, 2000=100)



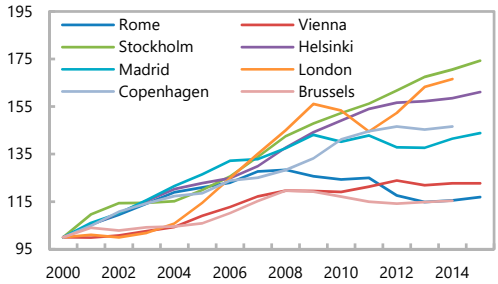
The increase in house prices in happened despite a moderate increase in disposable income...

Disposable Income per capita in Main European cities
(Index, 2000=100)



....., but the development is other major European cities has been justified by higher increases than in Germany.

Disposable Income per capita in Main European cities
(Index, 2000=100)



Sources: Bloomberg Finance L.P., bulwiengesa AG, Eurostat, Haver Analytics, OECD, National Statistical Offices, and IMF staff calculations.

7. We revisit this question by estimating a housing valuation model that relies on city-level data, for Germany's and Europe's largest cities. We allow for a more precise assessment of imbalances at the relevant level of aggregation.[2] This is an important innovation since, as noted above, existing empirical studies rely either on international country-level data or on Germany-only city/regional-level data.

8. Our housing valuation panel model examines various factors driving house prices in the 10 biggest German cities and in 12 large European cities.[3] A particular focus is given to city-level housing supply (measured by residential investment and construction prices) and demand factors (real mortgage rates, income, employment and demographic developments, etc.), as well as institutional/policy factors. More specifically, fundamental house prices are derived from an estimated long-run relationship between the above factors and actual city-level house prices. These fundamental prices are then used to assess housing valuation gaps in German cities, and compare with those of European peers.

Denote by P_{it}, P_{it}^* and ε_{it} the actual house price, fundamental house price and deviation of house price from fundamentals (which we refer to as the housing valuation gap) in city i at time t respectively, so that $P_{it} = P_{it}^* + \varepsilon_{it}$. Our model allows for the fundamental house price to be affected by city- and country-level demand (D_{it}) and supply shifters (S_{it}). That is:

$$P_{it}^* = \alpha_i + \beta_d D_{it} + \beta_s S_{it}$$

where α_i is a city-specific effect, and β_d (resp. β_s) is a vector of demand (resp. supply) elasticities of the fundamental house price.[4] Since house prices are introduced in logs, $\varepsilon_{it} = P_{it} - P_{it}^*$ is the percent deviation of house prices from the fundamental price in city i at time t. In other words, ε_{it} is the housing valuation gap.

Demand shifters, D_{it}, include both country and city-specific factors. Real mortgage interest rates at the country-level are included. At the city level, we look at real household income (proxied by real GDP per capita), a demographic variable (population density), an employment indicator (the annual percentage change in the employment rate). To account for structural differences in the conditions

[2] A recent study by Kholodilin and Ulbricht (2015) based on international city-level prices shows that house prices are overvalued in some major European urban areas but finds them correctly or undervalued in large German cities like Berlin, Hamburg and Stuttgart. Our approach focuses on a more homogenous set of European cities which are likely to have common determinants for house price developments and, therefore, provide a more accurate valuation of fundamental house prices.

[3] The ten German cities in our sample are: Berlin, Cologne, Dortmund, Dresden, Dusseldorf, Frankfurt, Hamburg, Hannover, Munich and Stuttgart. The 12 large European cities that we use in the study are: Amsterdam, Brussels, Copenhagen, Dublin, Helsinki, London, Madrid, Oslo, Paris, Rome, Stockholm and Vienna.

[4] We also explore, in robustness analyses, the role played by policy, institutional, and structural factors such as rent controls, tax relief for housing purchases and long-run supply responsiveness of housing construction. In those cases, the model specification presented above is slightly modified as follows: $P_{it}^* = \alpha_i + \beta_d D_{it} + \beta_s S_{it} + \beta_i I_{it}$ where I_{it} denotes a vector in policy, institutional, and structural factors and β_i the house price-elasticity of these factors.

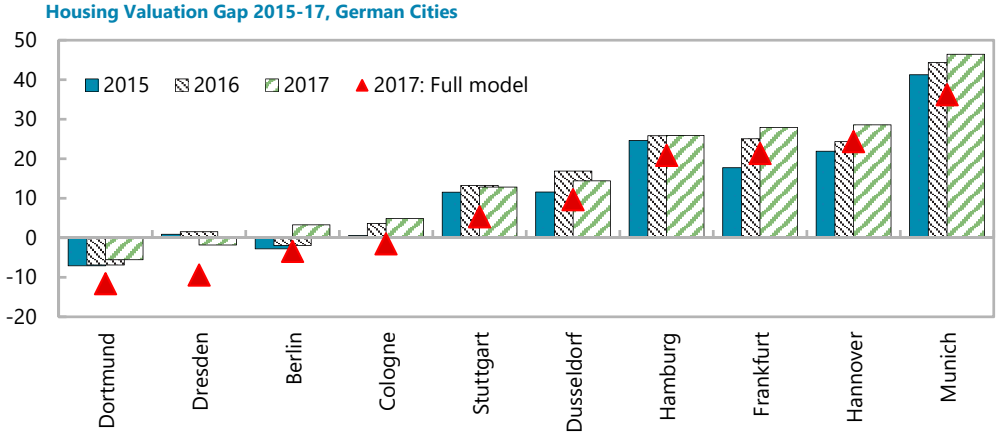
for mortgage credit across countries, we introduce an additional variable which interacts a dummy (that takes 1 if the mortgage rates are mainly fixed in the country and 0 otherwise) with the mortgage rate.

As for supply shifters, S_{it}, we use construction prices at the city-level, and a two-year lag of real investment in real estate activities as a proxy for the change in the housing stock, given the scarcity of housing stock data at the city-level.[5]

House price data are collected from a variety of sources including Haver Analytics, Bloomberg, the private German firm bulwiengesa AG (for Germany's main cities) and National Statistical Offices. Data on housing supply and demand shifters are from the OECD and Eurostat regional statistics databases. Our data span the period 2002–2014 mostly due to constraint on their availability at the city-level. Out-of-sample predictions are done for the years 2015–17 for German cities where data are more readily available.

9. Model results suggest that house prices appear overvalued in some German cities.[6] House prices appear to have been well above their fundamental levels in Hamburg, Frankfurt, Hannover and Munich during recent years (Figure 3). Munich tops the ranks in 2017, with house prices at 46 percent above the level suggested by fundamentals. In Hannover, Frankfurt and Hamburg, house price overvaluation gaps in 2017 were between 25 and 30 percent. Stuttgart and Dusseldorf also show some sign of overvaluation (10 to 15 percent), but overvaluation gaps seem to have stalled in 2017. A population-weighted average of the overvaluation gaps in the 7 biggest cities[7] shows that house prices in these cities were 21 percent above fundamental level, consistent with the Bundesbank's assessment of an overvaluation gap between 15 and 35 percent.

Figure 3. Housing Valuation Gap in Main German and European Cities



Source: IMF staff estimates.

[5] Our results are robust to using 1 and 3 lags instead of 2.

[6] Estimation results are presented in Table 1. The valuation gap exercise is based on specification (1) without insignificant variables. The red dots present the results based on the full model (including variables that are not significant).

[7] Berlin, Hamburg, Munich, Cologne, Frankfurt, Stuttgart and Dusseldorf.

10. The results presented above are robust to a number of alternative specifications and to the use of additional control variables. Institutional and policy variables such as rent controls, tax relief for housing purchase and the supply responsiveness of housing demand play only a marginal role at the city level. In a deeper robustness analysis, we replace the real mortgage rate by a number of potential equilibrium mortgage rates since 2010 (when house prices in German cities started to surge). The results of this analysis provide a range for the overvaluation gap in Munich between 45 and 50 percent in 2017, and between 25 and 35 percent in Hamburg, Frankfurt and Hannover.

Table 1. House price valuation model: Regression results

Dependent: 100*log (real house price index, 2010=100)	(1)	(2)	(3)	4)
Real GDP per capita, (index, 2010 =100)	0.696***	0.702***	0.711***	0.709***
	(0.184)	(0.186)	(0.186)	(0.186)
Mortgage rate (percent)	-3.903***	-4.087***	-4.090***	-4.082***
	(1.436)	(1.409)	(1.368)	(1.349)
*fixed-rate dummy*Mortgage rate*	2.941*	3.318**	3.322**	3.332***
	(1.568)	(1.525)	(1.504)	(1.469)
Population density (pers. per sqkm)	0.001*	0.001*	0.001*	0.001*
	(0.001)	(0.001)	(0.001)	(0.001)
Growth of employment rate, (percent)	0.788*	0.818*	0.806*	0.808*
	(0.427)	(0.439)	(0.431)	(0.437)
Real estate investment (-2), (percent of GDP)	1.316	1.258	1.593	1.534
	(1.194)	(1.180)	(1.623)	(1.628)
Construction price (-2), (index, 2010 =100)	0.110***	0.114***	0.111***	0.111***
	(0.039)	(0.038)	(0.043)	(0.042)
*tax relief*Real GDP per capita*		0.037	0.041	0.038
		(0.043)	(0.045)	(0.044)
Rent control			-0.153	-0.141
			(0.454)	(0.457)
Supply responsiveness				0.725
				(10.679)
Constant	374.772***	372.041***	371.170***	389.578***
	(20.869)	(21.981)	(22.016)	(25.356)
Observations	256	256	256	256
R-Square: Overall	0.306	0.313	0.318	0.316
Between	0.219	0.159	0.148	0.157
Within	0.259	0.252	0.247	0.250
Wald Chi-Square	64.87***	65.34***	66.12***	77.50***

*Note: Model (1) is the baseline specification. Models (2)-(4) extend the baseline by including policy/institutional indicators as additional explanatory variable. The results are from a random effect model estimation. Numbers in parentheses are robust standard errors. Asterisks indicate significance levels as follows: * p<10%. ** p<5%. *** p< 1%.*

References

Dermani, Emilio, Jesper Lindé and Karl Walentin (2016). *Is there an Evident House Bubble in Sweden?* Sveriges Riskbank Economic Review, 2016:2.

Kajuth, Florian, Thomas A. Knetsch and Nicolas Pinkwart (2016). *Assessing House Prices in Germany: Evidence from an Estimated Stock-flow Model using Regional Data.* Journal of European Real Estate Research Vol. 9(3), 286–307

Kholodilin, Konstantin A. and Dirk Ulbricht (2015). *Urban House Prices: A Tale of 48 Cities.* Economics: The Open–Access, Open-Assessment E-Journal, 9 (2015–2028).

Geng, Nan (2018). *Fundamental Drives of House Prices in Advanced Economies.* IMF Working Paper, Forthcoming.

INTERNATIONAL MONETARY FUND

GERMANY

STAFF REPORT FOR THE 2018 ARTICLE IV CONSULTATION—INFORMATIONAL ANNEX

June 15, 2018

Prepared By European Department

CONTENTS

FUND RELATIONS

(As of April 30, 2018; unless specified otherwise)

Mission: May 2–14, 2018 in Berlin, Bonn, Frankfurt, and Nuremberg. The concluding statement of the mission is available at

http://www.imf.org/en/News/Articles/2018/05/14/Germany-Staff-Concluding-Statement-of-the-2018-Article-IV-Mission

Staff team: Ms. Kozack (head), Mr. Natal and Mses. Mineshima, Pereira and Chen (all EUR), Mr. Kemoe (STA)

Country interlocutors: State Secretary of the Ministry of Finance Schmidt, Bundesbank President Weidmann, officials from the Federal Chancellor's office, the Finance, Economic Affairs, Labor, and Environment Ministries, the Bundesbank, the Federal Office for Migration and Refugees. Mr. Merk (OED) participated in the discussions. Additional meetings took place with representatives from the social partners, the banking and insurance sectors, think tanks, and academics.

Fund relations: The previous Article IV consultation discussions took place during May 2017 and the staff report was discussed by the Executive Board on June 28, 2017. The Executive Board's assessment and staff report are available at

https://www.imf.org/en/Publications/CR/Issues/2017/07/07/Germany-2017-Article-IV-Consultation-Press-Release-Staff-Report-and-Statement-by-the-45048

Membership Status: Joined August 14, 1952; Article VIII.

General Resources Account:	**SDR Million**	**Percent of Quota**
Quota	26,634.40	100.00
Fund holdings of currency	24,515.42	92.04
Reserve position in Fund	2,119.12	7.96
Lending to the Fund		
New Arrangements to Borrow	1,366.12	

SDR Department:	**SDR Million**	**Percent of Allocation**
Net cumulative allocation	12,059.17	100.00
Holdings	11,793.92	97.80

Outstanding Purchases and Loans: None

Financial Arrangements: None

Projected Payments to Fund (SDR Million; based on existing use of resources and present holdings of SDRs, as of April 30, 2018):

		Forthcoming			
	2018	2019	2020	2021	2022
Principal					
Charges/Interest	1.74	2.53	2.54	2.53	2.53
Total	1.74	2.53	2.54	2.53	2.53

1/ When a member has overdue financial obligations outstanding for more than three months, the amount of such arrears will be shown in this section.

Exchange Rate Arrangement

Germany's currency is the euro, which floats freely and independently against other currencies.

Germany is an Article VIII member and maintains an exchange system free of restrictions on payments and transfers for current international transactions. It maintains measures adopted for security reasons, which have been notified to the Fund for approval in accordance with the procedures of Decision 144 and does so solely for the preservation of national or international security.

Anti-Money Laundering/Combating the Financing of Terrorism (AML/CFT)

Germany was last assessed against the previous AML/CFT standard in 2009. Some shortcomings were identified inter alia with respect to the money laundering (ML) and terrorist financing (TF) offenses, and AML/CFT preventive measures (including the reporting of suspicious transaction requirements, and customer due diligence, CDD, requirements). In recent years, Germany has introduced significant reforms to enhance its AML/CFT regime. It notably criminalized self-laundering and immobilized bearer shares, enhanced domestic cooperation, and improved the supervisory framework for designated non-financial business and professions (DNFBPs) and the risk analysis model applied by BaFin for AML/CFT supervision. Onsite visits to financial institutions and DNFBPs have increased. Germany made progress in addressing the 2016 FSAP's main recommendations on AML/CFT. BaFin notably increased by 30 the staff devoted to AML/CFT supervision, and established new units specifically dedicated to the supervision of major banks with cross-border activities. Within the EU, the German authorities actively support enhanced cooperation between AML/CFT supervisors. BaFin has started to establish its own audit teams (along external audit teams), increased the number of its onsite inspections of banks, and is planning on-site inspections to be carried out by BaFin-only teams in the medium term. It is also adjusting its AML/CFT supervisory framework in line with the European Supervisory Authorities' joint November 2016 guidelines on risk-based supervision. Furthermore, Germany is working on the implementation of the Fourth EU AML Directive requirement to establish a register containing information on beneficial ownership information of corporate and other legal entities, and of express trusts and legal arrangements having a structure or functions similar to trusts. A draft law implementing this requirement is

scheduled to enter into force in June 2017, and to allow for the register to be accessible by competent authorities in December 2017.

The next assessment of Germany's AML/CFT framework is tentatively scheduled to take place in 2021.

STATISTICAL ISSUES

(As of May 31, 2018)

I. Assessment of Data Adequacy for Surveillance
General: The economic database is generally comprehensive and of high quality, and data provision is adequate for surveillance.
National Accounts: Germany adopted the *European System of Accounts 2010 (ESA2010)* in September 2014. The 2006 ROSC Data Module mission found that the macroeconomic statistics generally follow internationally accepted standards and guidelines on concepts and definitions, scope, classification and sectorization, and basis for recording. However, the sources for estimating value added for a few categories of service industries could be improved. A direct source for quarterly changes in inventories, which is an important indicator of changes in GDP over the business cycle, is lacking. Extrapolations of changes in inventories are based on the difference between the monthly production index and turnover index in manufacturing.
Government Finance Statistics: Comprehensive data reporting systems support the accuracy and reliability of the government finance statistics. However, these data are based on cash accounting systems, although documentation exists to explain the differences between the general government data in the ESA2010 (noncash) classification and the general cash data on an administrative basis; Germany publishes—through Eurostat—general government revenue, expenditure, and balances on a noncash/ accrual basis on a quarterly basis (*ESA2010*) and these data are presented in a GFSM 2014 format in International Financial Statistics, albeit with delay. Germany submits annual data for publication in the *Government Financial Statistics Yearbook,* in *GFSM 2014* format. Monthly data are disseminated on a cash-basis. **Monetary and Financial Statistics:** The ECB reporting framework is used for monetary statistics and data are reported to the IMF through a "gateway" arrangement with the ECB. The arrangement provides an efficient transmission of monetary statistics to the IMF and for publication in the *IFS*. Monetary statistics for Germany published in the *IFS* cover data on central bank and other depository corporations (ODCs) using Euro Area wide residency criterion. Data based on national residency criterion is also published as memorandum items. **Financial Sector Surveillance:** Germany participates in the IMF's Coordinated Direct Investment Survey (CDIS), Coordinated Portfolio Investment Survey (CPIS) and financial soundness indicators (FSIs) databases. The German authorities compiled a comprehensive set of FSI data and metadata. Of the 40 FSIs, Germany reports all except net foreign exchange exposure to equity (I31). Even though

Germany reports all of the 12 core FSIs, six FSIs are reported on an annual basis only: (i) NPL Net of Provisions to Capital, (ii) NPL to Total Gross Loans, (iii) Return on Assets, (iv) Return on Equity, (v) Interest Margin to Gross Income, and (vi) Non-Interest Expense to Gross Income. Plans are already underway to change the legal basis for the periodicity of deposit taking institutions' reporting requirements. In addition, the quality of data on bank exposures submitted to the BIS needs to be improved, including provision of the data on ultimate risk basis for advanced countries. **External Sector Statistics:** The Bundesbank compiles the balance of payments in close cooperation with the Federal Statistical Office. Balance of payments, International Investment Position statistics, and related cross-border statistics are compiled according to the sixth edition of the *Balance of Payments and International Investment Position Manual* (*BPM6*), and the legal requirements of the ECB and Eurostat.

II. Data Standards and Quality	
Adherent to the Special Data Dissemination Standards Plus (SDDS Plus) since February 2015. **Implementing G-20 DGI recommendations**: Currently disseminates a residential property price index and a commercial property price index.	Data ROSC from 2006 is available.

Germany: Table of Common Indicators Required for Surveillance
(As of May 31, 2018)

	Date of latest observation	Date received	Frequency of Data[7]	Frequency of Reporting[7]	Frequency of Publication[7]	Memo Items	
						Data Quality–Methodological soundness[9]	Data Quality–Accuracy and reliability[10]
Exchange Rates	May 31, 2018	May 31, 2018	D	D	D		
International Reserve Assets and Reserve Liabilities of the Monetary Authorities[1]	April 18	May 18	M	M	M		
Reserve/Base Money[2]	April 18	May 18	M	M	M		
Broad Money[2]	April 18	May18	M	M	M		
Central Bank Balance Sheet	April 18	May 18	M	M	M		
Consolidated Balance Sheet of the Banking System	April 18	May 18	M	M	M		
Interest Rates[3]	April 18	May 18	M	M	M		
Consumer Price Index	April 18	May 18	M	M	M		
Revenue, Expenditure, Balance and Composition of Financing[4]—General Government[5]	Q1:18	May 18	Q	Q	Q	LO, LO, LO, O	O, O, O, O, O
Stocks of General Government and Government-Guaranteed Debt[6]	December 17	April 18	A	A	A		
External Current Account Balance	March 18	May 18	M	M	M	O, O, LO, O	O, O, O, O, O
Exports and Imports of Goods and Services	March 18	May 18	M	M	M		
GDP/GNP	Q1:18	May 18	Q	Q	Q	O, O, O, O	LO, O, O, O, O
Gross External Debt	Q4:17	March 18	Q	Q	Q		
International Investment Position[7]	Q4:17	March 18	Q	Q	Q		

[1] Includes reserve assets pledged or otherwise encumbered as well as net derivative positions.
[2] Pertains to contribution to EMU aggregate.
[3] Both market-based and officially-determined, including discount rates, money market rates, rates on treasury bills, notes, and bonds.
[4] Foreign, domestic bank, and domestic nonbank financing.
[5] The general government consists of the central government (budgetary funds, extra budgetary funds, and social security funds) and state and local governments.
[6] Including currency and maturity composition
[7] Includes external gross financial asset and liability positions vis-a-vis nonresidents.
[8] Daily (D); weekly (W); monthly (M); quarterly (Q); annually (A); irregular (I); and not available (NA)
[9] Reflects the assessment provided in the data ROSC (published on January 18, 2006, and based on the findings of the mission that took place during July 5–20, 2005) for the dataset corresponding to the variable in each row. The assessment indicates whether international standards concerning methodological soundness, namely, (i) concepts and definitions, (ii) scope, (iii) classification/sectorization, and (iv) basis for recording are fully observed (O); largely observed (LO); largely not observed (LNO); not observed (NO); and not available (NA).
[10] Same as footnote 9, except referring to international standards concerning accuracy and reliability, namely, (i) source data, (ii) assessment of source data, (iii) statistical techniques, (iv) assessment and validation of intermediate data and statistical outputs, and (v) revision studies.

Statement by Mr. Merk, Alternate Executive Director on Germany
June 29, 2018

On behalf of my authorities, I would like to thank staff for the discussions and the candid and balanced assessment of the German economy. My authorities find their views well-documented in the report.

The German economy has been performing well and its performance continues to be strong, sustainable, balanced, job-rich and inclusive. Driven by domestic demand the upswing is ongoing, while increasing supply-side bottlenecks are reflected in strong wage growth and in higher domestic inflation. Employment is continuing to increase and unemployment is expected to fall to a new record low in 2019. In line with our commitments at the European and national level, public government debt is decreasing towards the debt ceiling of 60 percent of GDP. Reliable social safety nets are securing the inclusiveness of growth.

We broadly agree with staff's views on the near-term outlook and the challenges in the medium term. We emphasize that potential growth is set to slow down over the medium term. Like staff we see the main risks and challenges to the outlook stemming from external factors and from Germany's demographic profile. The aging of the society is one of the major obstacles for stronger potential growth. However, further increases in labor participation especially of women and the elderly, a reduction in long-term unemployment as well as qualified immigration may mitigate the negative economic and fiscal impact of the decline in working age population to some extent.

Fiscal Policies remain forward looking, prudent, and growth friendly. The fiscal stance in Germany is mildly expansionary, in spite of an increasingly positive output gap. Public investment in physical and human capital will be increased further. The new government is committed to tackle still existing capacity constraints for public investment at the municipal level and to simplify tax administration to improve business climate. The phasing out of the solidarity surcharge will reduce the labor tax wedge.

Having said this, we do not agree with the assessment that there remains ample fiscal space after implementation of current government plans. Against the backdrop of the significant challenges stemming from an aging society, we see a strong case for using the opportunity to build buffers for the time to come. We see a balanced federal budget as an important guide post to anchor expectations which can serve as an anchor of stability not only for Germany but also for the Euro Area. Preserving fiscal sustainability in the face of demographic challenges and rebuilding buffers for unforeseen but probable events, like a future economic downturn, is of utmost importance. Moreover, all levels of government must be prepared for a normalization of interest rates.

My authorities reiterate their view that the German current account surplus is a result of private sector decisions in international trade as well as in domestic saving and investment and not of domestic policy distortions. To a considerable degree the current account surplus is explained by the rapidly aging population. Therefore, we expect that the current account surplus will decline in the years to come, especially when the baby boomers will retire. Also, differences in expected GDP growth domestically and abroad and trading partners' policies help explain the surplus. It is not fully clear whether these factors are adequately reflected in the models used by the staff to evaluate current account balances. Therefore, we would like to stress that a cautious interpretation of EBA "norms" is warranted, given the high model and estimation uncertainty. The same is true for the REER estimates: In contrast with the IMF assessment, the Bundesbank currently does not consider the REER as significantly undervalued, and instead assesses German price competitiveness to be neutral within reasonable error bounds. Methodically, we would reiterate the view that on a global scale – since Germany is a member of the European Monetary Union – the euro area balance should be the primary reference for assessing the significance of current account developments.

We agree with staff's assessment that more analysis on the rise of corporate savings is needed. We also see a need for a more multilateral scope of analysis and reporting on current account developments, encompassing trading partners' macroeconomic policies as well as the role of monetary policy, exchange rate developments and other external factors.

The ongoing more robust wage growth will further strengthen domestic sources of growth. However, we highlight that wage increases cannot be set politically. Wage setting is left to social partners. This decentralized process for wage bargaining is highly valued in Germany and communication by officials has often been seen as politicizing social partners' negotiations.

We agree with staff that higher domestic investment is desirable. In the past years Germany has already implemented various measures to promote domestic investment, and there is a commitment to do more in the new coalition agreement, including investment in education, e.g. increased supply of all-day childcare and all-day schools; expansion of training for refugees, which will help to integrate refugees in the workforce; investments in the expansion of high speed internet and 5G network, while public investment must not crowd out private investment.

Germany launched various initiatives that will strengthen potential growth and incentivize private investment in a sustainable, forward-looking, and cost-efficient way:

- The new government will support digital transformation through investments in digital infrastructure and an improving supply of skilled labor. The Federal Government aims at rolling out comprehensive gigabit networks. Additional public investment will predominantly be aimed at rural areas, where private investments could not be expected in the near future.

- The new government will continue the transition to renewable energy sources while reducing uncertainty in the energy sector for private investors.
- Labor supply will be strengthened and the new government will make it more attractive to extend labor market participation. Furthermore, there are plans to further support vocational training and life-long-learning, invest in the integration of refugees, promote the reconciliation of work and family life for all, and safeguard the fairness of labor markets.
- Support of R&D to small and medium sized enterprises as well as measures to improve the framework conditions for venture capital will help to stimulate investment and innovation.
- We agree that greater competition in product markets are warranted but are not convinced about staff's recommendations regarding reforms in the professional services. We consider many of the existing regulations to be justified by legitimate concerns guarding against potential deterioration of quality and consumer protection standards.

We broadly agree with staff on their assessment of the housing market and the financial sector. The housing sector has, in recent years, been characterized by rising prices, in particular in the major German cities. Our authorities are monitoring the housing market closely and do not see any immediate risks to financial stability stemming from this market. In this context a lack of substantial credit growth or deterioration of credit standards, and households' strong balance-sheets are reassuring. At the present juncture, they do not consider the activation of borrower-based macroprudential tools to be warranted. The financial sector as such is resilient, capital buffers in the banking and live insurance sectors are deemed comfortable, and restructuring is ongoing, albeit slowly. At the same time, the low interest rate environment and strong competition remain challenging for the financial sector.