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Drivers of Germany's Growth Downturn

Harri Kemp

WP/26/112

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Drivers of Germany's Growth Downturn
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ABSTRACT: Germany's economy experienced a pronounced recession during 2023–24, with real GDP contracting and growth falling notably behind the rest of the euro area. This paper systematically examines the underlying causes of this downturn using four complementary approaches. We find that about 60 percent of Germany's growth underperformance was due to lower potential growth while about 40 percent reflected cyclical factors. The downturn was broad-based, with nearly all major expenditure categories—but particularly investment and exports—weighing on activity. On the production side, the recession was concentrated in manufacturing and construction, which together accounted for the bulk of the growth gap relative to the euro area. The analysis further shows that the decline in output was driven primarily by falling productivity, especially in industry and construction, rather than by a reduction in hours worked. This decline in productivity partly reflected cyclical labor hoarding amid weak aggregate demand. However, structural challenges—including (i) longer-term subdued productivity growth due to structural factors such as persistent underinvestment in public infrastructure, skills, and innovation as well as excessive red tape; (ii) population aging; (iii) one-off adverse effects from the 2022 energy-price shock, and (iv) deteriorating external competitiveness (although the level of the current account surplus remains substantial)—amplified the cyclical downturn.

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WORKING PAPERS

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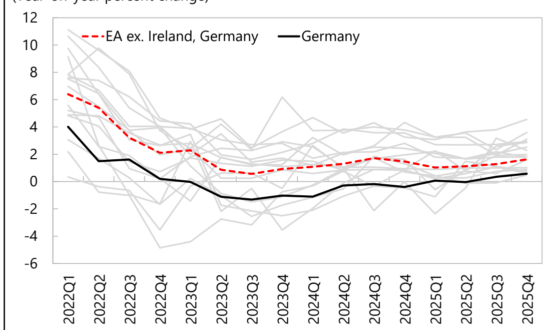
A. Introduction

Germany's real GDP declined significantly over 2023–24, underperforming the rest of the euro area. Real GDP recovered sharply following the COVID-19 shock but then contracted by an average of 0.7 percent per year in 2023-24 before expanding only modestly by 0.2 percent in 2025. Much of this decline can be ascribed to the aftershocks of (i) the large spike in natural gas prices in Europe in 2022 in the wake of Russia's invasion of Ukraine and its shut-off of gas exports to Germany and (ii) ECB monetary tightening, which was required to contain inflation resulting from the energy shock and other factors. However, the rest of euro area was also affected by these two shocks, yet the growth weakness in Germany since 2022 has been much larger than the average for the rest of the euro area, where growth remained positive throughout the entire period (text chart).[1]

GDP Growth Compared to Euro Area
(Year-on-year percent change)



Sources: Eurostat and IMF staff calculations.

This paper uses complementary approaches to investigate the drivers of Germany's recent growth weakness and longer-term growth decline. First, the paper uses a multivariate filter (MVF) approach to analyze the degree to which the downturn reflects cyclical versus structural factors. Second, the paper uses data from both the expenditure and production sides of the national accounts, as well as a collection of supplementary data, to assess the extent to which various factors—such as energy prices, monetary tightening, productivity, and external competitiveness—contributed to Germany's growth underperformance. The broad picture that emerges from this analysis is a recent downturn that was broad-based, with nearly all major expenditure categories—but particularly investment and exports—weighing on activity. On the production side, the recession was concentrated in manufacturing and construction, which together accounted for the bulk of the growth gap relative to the euro area. The analysis further shows that the decline in output was driven primarily by falling productivity, especially in industry and construction, rather than by a reduction in hours worked. This decline in productivity partly reflected cyclical labor hoarding amid weak aggregate demand. However, structural challenges—including (i) longer-term subdued productivity growth due to structural factors such as persistent underinvestment in public infrastructure, skills, and innovation as well as excessive red tape; (ii) population aging; (iii) one-off adverse effects from the 2022 energy-price shock; and (iv) deteriorating external competitiveness—amplified the cyclical downturn.

B. Cyclical Versus Structural Factors

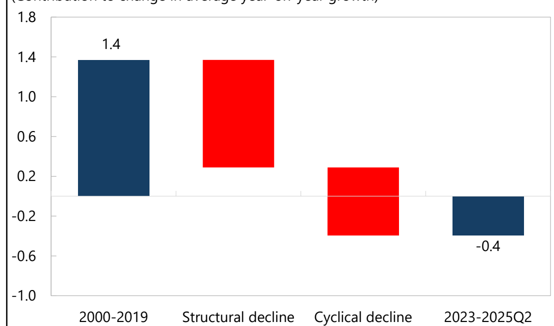
An MVF-based estimate of potential output and the output gap can help assess the degree to which Germany's growth decline was driven by cyclical versus structural factors. The MVF model is based on Benes et al (2010) and uses data on core inflation, unemployment, and capacity utilization, in addition to GDP,

[1] In this paper, data on the rest of the euro area excludes Ireland due to the high volatility of Ireland's GDP data, which in turn reflects the activities of large multinationals.

to estimate potential output and the output gap. The model is augmented by data on energy prices, both in the inflation and potential output equations, to account for the impact of energy-price spikes on inflation and potential output. Controls are also added to adjust for the unusual effect of the pandemic on potential output.[2]

Model estimates suggest that weak growth from end-2022 to mid–2025 can be ascribed to both cyclical and structural factors.[3] Around 60 percent of lower growth relative to Germany's average for 2000–19 can be ascribed to structural factors (i.e., a decline in trend growth), with the remaining 40 percent being cyclical (see text chart). Using model output for trend capacity utilization and unemployment, national accounts data on the aggregate capital stock and labor force, as well as average capital and labor shares in output, we find that around 40 percent of the decline in trend growth can be ascribed to a decline in trend capital and labor inputs (in part due to population aging), with the remaining 60 percent explained by other factors, mainly declining trend productivity growth. In contrast, average GDP growth in the rest of the euro area (excluding Germany and Ireland) during 2023–25 has been broadly similar to the pre-pandemic period, with trend growth also in line.

Contributions to Germany's Growth Decline
(Contribution to change in average year-on-year growth)



Sources: Haver Analytics and IMF staff.

The rest of this paper delves deeper into the reasons for both the cyclical downturn and the structural decline in productivity. Toward this end, we first examine the main stylized facts of the downturn in terms of the key drivers from both the expenditure side of the national accounts and the main sectors on the production side. We then delve more deeply into key drivers of low productivity.

C. Drivers of Growth Underperformance from the Expenditure Side

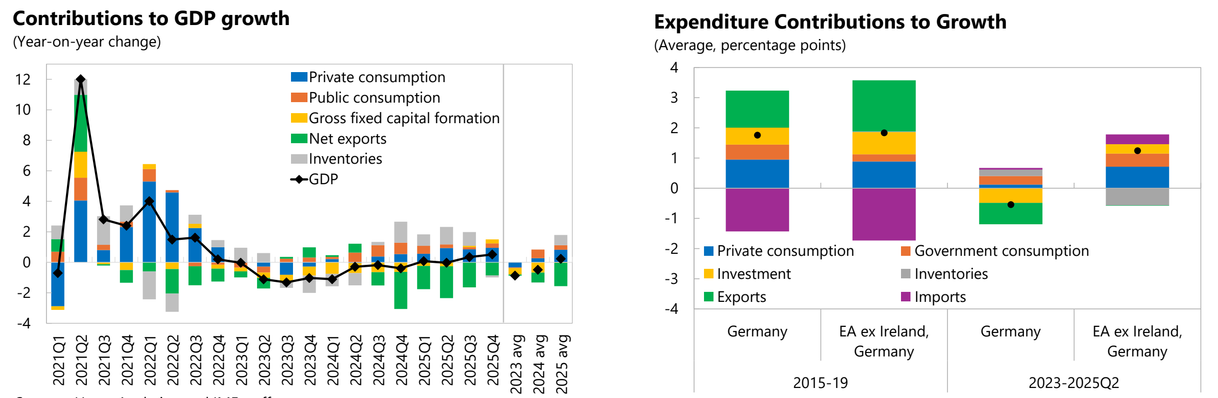
Most major categories on the expenditure side of the national accounts contributed to Germany's growth downturn and underperformance, with weak investment and export growth the largest negative contributors. Nearly all categories contributed less to Germany's growth between end-2022 and Q2 2025 than in previous years (Figure 1). Similarly, most categories underperformed relative to the rest of the euro area (Figure 1, right). Investment and export growth was particularly weak, while private consumption growth was subdued. Russia's invasion of Ukraine in early 2022 led to a sharp spike in energy prices, boosting inflation, eroding real incomes, and weighing on sentiment. Subsequent monetary tightening to help contain inflation likely weighed on investment growth while incentivizing household saving. Finally, weaker external demand,

[2] The pandemic-related shutdown during which GDP contracted sharply could result in unreasonably large estimates of the output gap during this period. Given the nature of the shock, it is reasonable to assume that the productive capacity of the economy, i.e. potential output, was also affected negatively during this period. However, standard methods would fail to account for this volatility in potential. As such, a control is included in the equation for potential output to account for the sudden and temporary fall in productive potential. We use data on short-term work schemes in Germany to proxy for the pandemic shock to potential, the intuition being that the use of short-term work schemes spiked during the pandemic and quickly returned to more normal levels thereafter.

[3] We focus on the period from end-2022 to Q2 2025, as Q1 2023 and Q2 2025 were the first and last quarters in which growth of GDP (unadjusted) was negative relative to the same quarter a year earlier.

partly due to synchronized global monetary tightening following the energy price shock and partly due to the continuation of the longer-term decline in Germany's external competitiveness, weighed on exports. The larger downturn of investment in Germany than in the rest of the euro area likely reflects (i) that manufacturing (on which Germany is more dependent) is more interest rate-sensitive than services and (ii) a bubbly real estate market that was more vulnerable to adverse shocks (see next section). Government consumption was the one positive contributor to domestic demand over this period, with a broadly similar contribution to growth from public spending as during the pre-pandemic period. The remainder of this section looks further into developments in each of the main private-sector expenditure categories.

Figure 1. Germany: Expenditure Contributions to GDP Growth



Sources: Haver Analytics, and IMF staff.

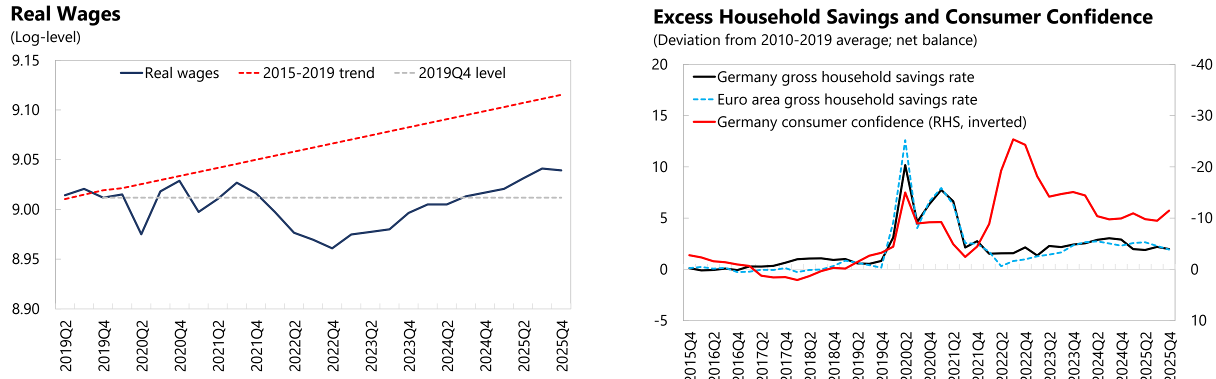
Sources: Haver Analytics and IMF staff.

Private Consumption

Real income declines following the energy-price led inflation spike and elevated household savings on the back of weak sentiment and rising interest rates weighed on private consumption. Private consumption contracted in 2023 amid low consumer confidence and as real disposable income declined on the back of high inflation. Wages then began to catch up with inflation with a lag, such that real disposable income increased by 1.5 percent in 2024 (Figure 2, left). Nonetheless, private consumption growth remained subdued (only 0.5 percent) amid weak confidence. Overall, private consumption contributed very little to average growth during 2023–24. This is reflected in higher-than-usual household savings rates over this period amid high interest rates and historically weak consumer confidence (Figure 2, right). Analysis suggests that about one-third of the increase in the savings rate between early-2022 and late-2024 was driven by higher interest rates, around a fifth of the increase was driven by slowly rising real incomes, and another fifth was driven by transfer payments to cushion the effect of high energy prices. About one-third of the increase was due to unexplained factors, which could be ascribed to precautionary savings due to higher uncertainty and past declines in real wealth when inflation was high.[4]

[4] Analysis based on a simple OLS regression of the gross household savings rate on real gross household disposable income, the 3-month money market interest rate, and social transfer spending as a share of gross disposable income.

Figure 2. Germany: Real Wages and Household Savings



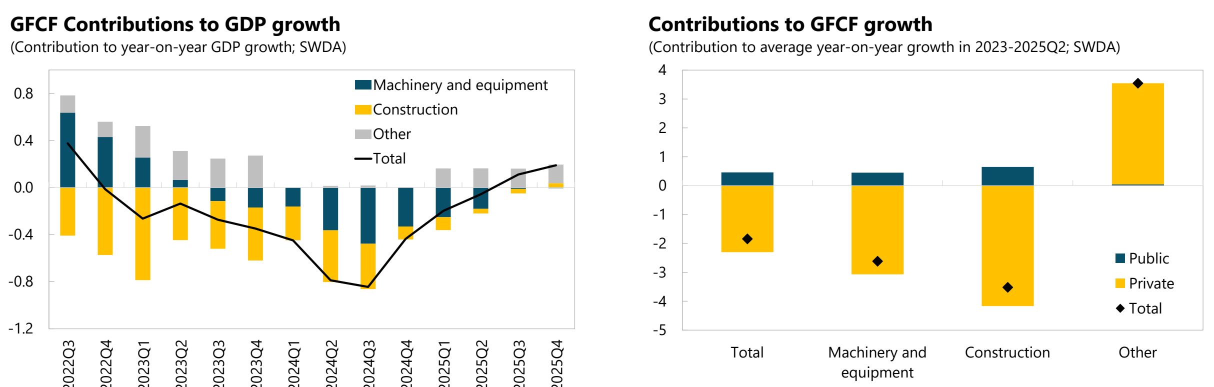
Sources: Haver Analytics, and IMF staff.

Sources: Haver Analytics and IMF staff.

Investment

Falling real investment on the back of low confidence and higher interest rates was a key factor in the German growth slowdown and the gap relative to the euro area. In the five years prior to the pandemic, real investment contributed 0.6 percentage points to growth on average, which is around a third of the average growth in Germany over this period and broadly in line with the relative contribution in the rest of the euro area (Figure 1, right). Following the energy-price shock and subsequent monetary tightening in the euro area to lower inflation, the contribution of investment to growth in Germany has instead been negative, representing, together with exports, the largest drag on growth. Much of this large decline in investment and underperformance relative to the rest of the euro area has been due to a big drop in construction (Figure 3, left). This in turn has partly reflected the unwinding of a pre-shock real-estate price boom as interest rates rose, as discussed in more detail in the later section on developments by major production sector. Construction accounted for 4.4 percentage points of the 5.3 percent decline in real investment between 2022 and 2024, with a decline in machinery and equipment investment contributing another 1.9 percentage points. Other investment, which includes intangibles such as software as well as agricultural investment, increased by 5 percent over the same period, contributing positively to overall investment growth (+1 percentage point). The decline in investment has been driven by the private sector, with public sector investment remaining positive (Figure 3, right).

Figure 3. Germany: Gross Fixed Capital Formation (GFCF)



Sources: Haver Analytics, and IMF staff.

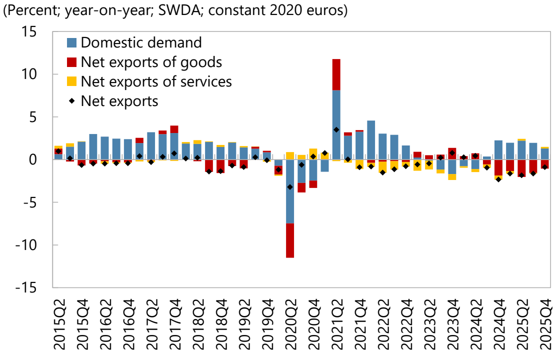
Sources: Haver Analytics, and IMF staff.

External Demand

The contribution of net exports to growth fell sharply after the pandemic on a combination of subdued external demand, particularly from Europe, and the continued decline in Germany's external competitiveness. Prior to the pandemic, the contribution of net exports to GDP growth averaged -0.2 pp between 2015Q1 and 2019Q4 (Figure 4, left). Since 2022, this contribution has declined to around -0.8 pp of GDP, reflecting a decline in the contribution from both goods and services net exports, with the former particularly weak since mid-2024 (Figure 4). We will first briefly look at aggregate developments in goods and services trade separately before discussing the main drivers of the decline in external demand for Germany's exports.

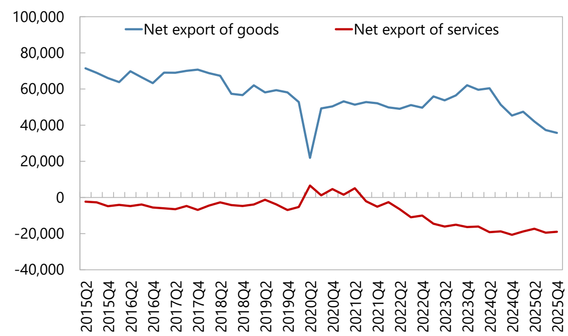
Figure 4. Germany: External Demand Developments

Contribution to GDP Growth: Domestic vs External Demand
(Percent; year-on-year; SWDA; constant 2020 euros)



Sources: Haver Analytics and IMF staff.

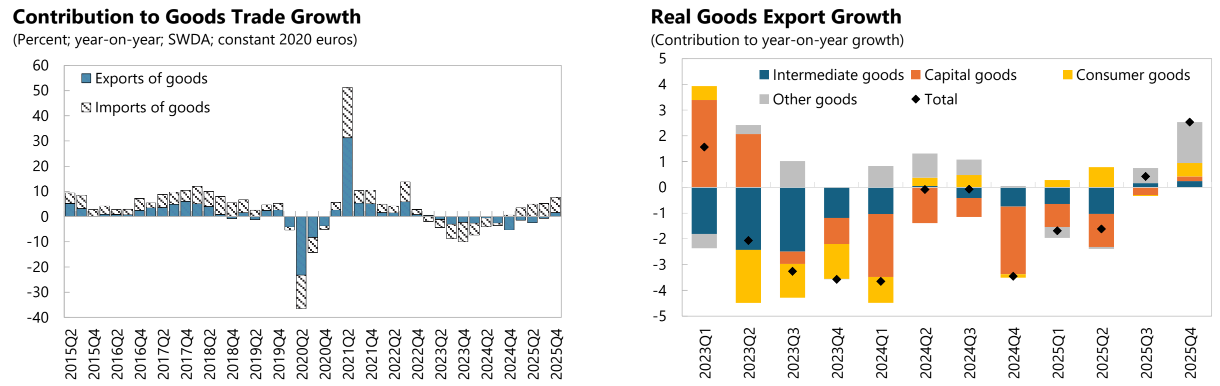
Net Exports of Goods and Services
(Constant 2020 euro; millions)



Sources: Haver Analytics and IMF staff.

- **Goods exports.** Germany's real goods exports rebounded solidly in the latter stages of the pandemic (Figure 5, left) as global goods demand surged. However, this trend subsequently reversed, with real goods exports in 2025 around 5 percent below their 2022 level, mainly driven by falling exports of intermediate and capital goods, which account for roughly three-quarters of Germany's goods exports (Figure 5, right). Goods exports contracted on a combination of post-pandemic global rebalancing of demand back toward services (e.g., tourism) and away from goods, subdued trading partner growth on the back of synchronized global monetary tightening (with especially weak growth in the rest of Europe, which accounts for about two thirds of German exports), and the continuation of the longer-term erosion of Germany's export competitiveness (find a detailed discussion below). Despite the decline in goods exports, *net* exports of goods continued to contribute positively to GDP during 2023 and most of 2024 (Figure 4, left) as goods imports declined even faster than goods exports, reflecting lower demand for imported inputs and weak domestic demand, among other factors.

Figure 5. Germany: Goods Trade

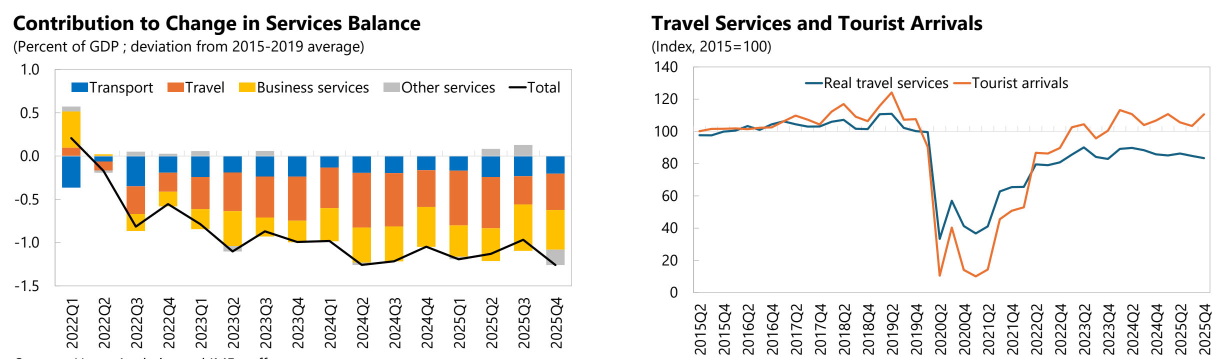


Sources: Haver Analytics and IMF staff.

Sources: Haver Analytics and IMF staff.

- **Services exports.** Real net services exports have declined since 2021, and their contribution to growth has been mostly negative (Figure 4). The largest negative contributors to the change in the services balance relative to the pre-pandemic average were travel and business services (Figure 6, top left). While tourist arrivals have rebounded from the pandemic-induced downturn, real receipts for travel services have only partially recovered, with real receipts per arrival in the first nine months of 2025 still 16 percent below their pre-pandemic level (Figure 6, top right). The decline in net exports of business services was almost fully driven by declines in net exports in research and development (R&D) and professional and management consulting services (Figure 6, bottom left). The R&D trade balance turned negative in 2023 as imports (expenditure) surged while exports (receipts) remained broadly flat as a share of GDP (Figure 6, bottom right).

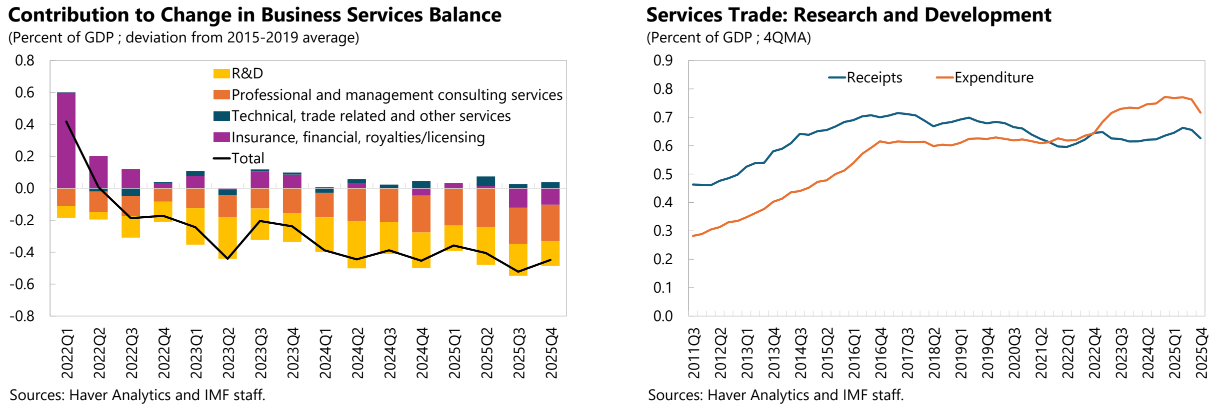
Figure 6. Germany: Services Trade and Tourism Spending



Sources: Haver Analytics and IMF staff.
Note: Other serivces include telecommunication, construction, personal, cultural, recreational, and government services.

Sources: Haver Analytics and IMF staff.
Note: Real travel services is nominal travel services deflated by HICP package holidays and accommodation.

Figure 6. Germany: Services Trade and Tourism Spending (concluded)



In general, German export market shares have fallen since 2017 and, compared with other countries, have developed particularly weakly since 2021 (Figure 7, left). After the global economic and financial crisis of 2008–09, German export market shares remained more or less stable up until 2016 but declined thereafter (Figure 7, top left and bottom left). German exports of goods and services (national accounts definition) expanded by 0.5 per year between 2017 and 2025 even as sales markets expanded by 2.6 percent per year (Figure 7, top right). Between 2022 and 2025 German exports fell by 3.9 percent while sales markets expanded by almost 6 percent. About three-quarters of German goods exports are intermediate and investment goods. These important categories also lagged behind global import growth over the last decade (Figure 7, bottom right). Exports of intermediate and investment goods account for around 50 percent of German manufacturing output, implying that the decline in global demand for German export goods in these categories helps explain much of the decline in manufacturing output (see Figure 13). More generally, a back-of-the envelope calculation suggests that if German goods and services exports had evolved according to the historical relationship with sales market growth between 2022 and 2025, real GDP growth would have been higher by an average of 0.6 percentage points per year, all else equal. We explore several possible reasons for the fall in German export market share and decline in German exports.

Figure 7. Germany: Export Market Share and Sales Market Growth

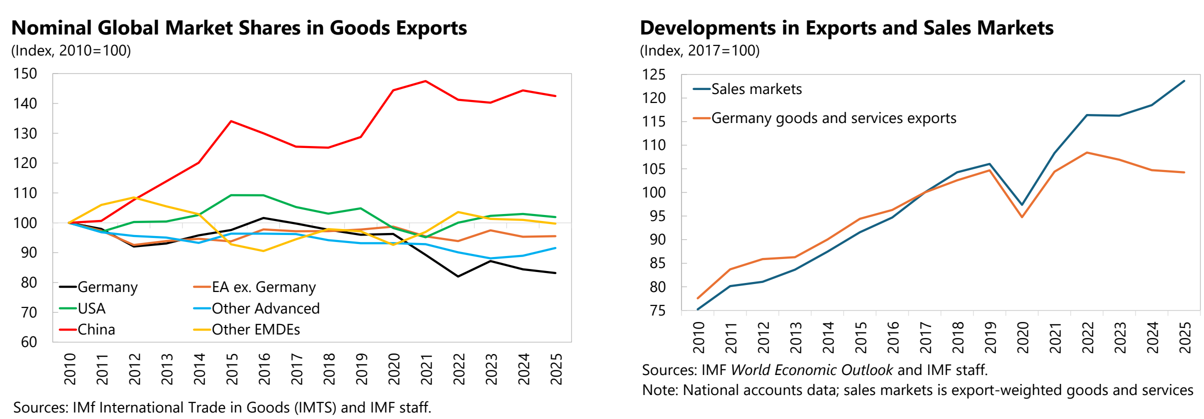
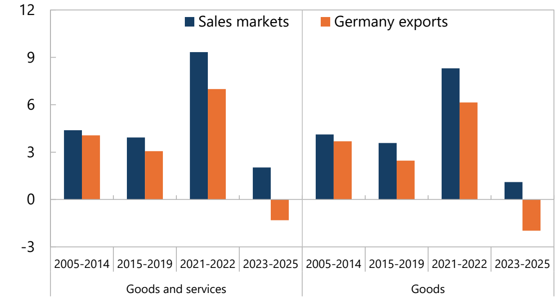


Figure 7. Germany: Export Market Share and Sales Market Growth (concluded)

Trading Partner Domestic Demand and German Exports
(Constant prices; average annualized growth)



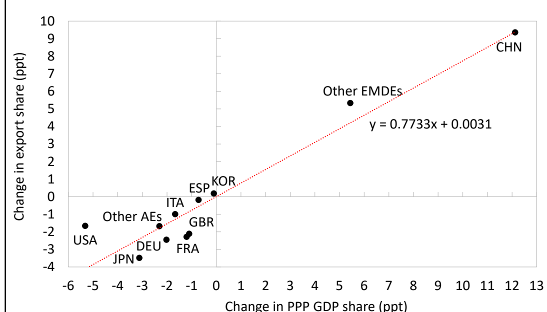
Source: IMF *WEO*, Destatis, Haver Analytics, and IMF Staff.
Note: National accounts data; sales markets is export-weighted imports of Germany's trading partners.

Investment and Intermediate Goods Trade
(Nominal USD; average annualized growth)

Source: Trade Data Monitor and IMF Staff.
Note: World imports exlude Germany; Investment and intermediate goods classified according to BEC (rev.5).

The decline in the German export share (and declining shares for other major advanced economies) may partly reflect that these economies are simply growing more slowly than Emerging Markets. Countries with faster-growing labor forces and faster economy-wide productivity growth (perhaps due to relative income convergence) could be expected to have both rising shares of global GDP and rising shares of global exports, even without changes in price competitiveness. Indeed, there appears to be a strong positive relationship between the change purchasing power parity (PPP) GDP share and export market share (text chart). The relationship holds even when excluding China and other Emerging and Developing Economies (EMDE) although the correlation is not as strong. This estimated long-run relationship suggests that about 20 percent of the decline in Germany's global share since 2016 is in line with what one would expect given its declining share of global GDP since 2016. The latter is driven to a large degree by slower working-age population growth and lower economy-wide productivity growth than in the rest of the world, but Germany's declining share of global GDP may also partly reflect weaknesses specific to the external sector, as this sector contributed disproportionately to the recent growth downturn, as discussed in earlier sections.

Change in Export Share vs PPP GDP share
(2025 vs 2000-2005 average)



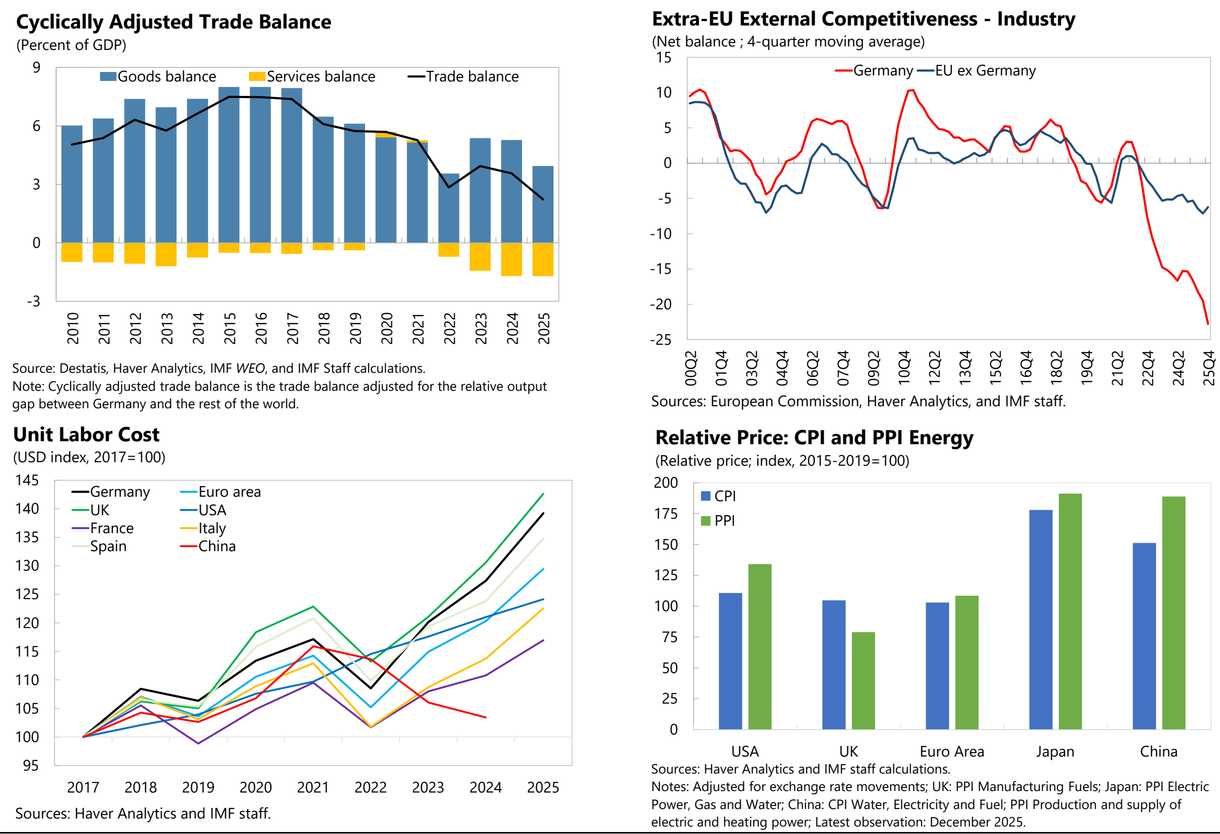
Sources: IMF International Trade in Goods (IMTS), IMF *WEO*, and and IMF staff.

Losses in market share, and the decline in demand for German export products, could also be linked to a deterioration in external competitiveness. Germany's overall external competitiveness has declined since the mid-2010s as reflected in the decline in the cyclically adjusted trade balance (Figure 8, top left) and survey measures of external competitiveness (Figure 8, top right).[5] The Bundesbank (2025, 2026) notes that the German export industry has suffered considerable global market share losses since 2021, mainly due to a deterioration in supply-side competitiveness, with the machinery and equipment sector showing a particularly acute loss in competitiveness. Rising relative costs, including for labor (Figure 8, bottom left) and energy, at

[5] Based on the European Commission Business and Consumer Survey. While the latest drop in competitiveness has been acute, survey results appear to be fairly cyclical (dropping sharply during the early 2000s recession, the GFC, and pandemic), such that they might at least partially reflect businesses misinterpreting a lack of cyclical demand for their goods as a lack of competitiveness.

least relative to the US and major Asian economies (Figure 8, bottom right), as well as low productivity growth (see below and Figure 9, bottom left), may have contributed to the decline in overall export competitiveness. While export competitiveness has declined since the mid-2010s, the level of the cyclically adjusted current account (trade) balance remains substantial and stronger than would be implied by fundamentals.[6]

Figure 8. Germany: Competitiveness Measures and Relative Costs



Germany has faced increased competition in traditional sales and product markets as key competitors have diversified and increased the complexity of their export baskets.

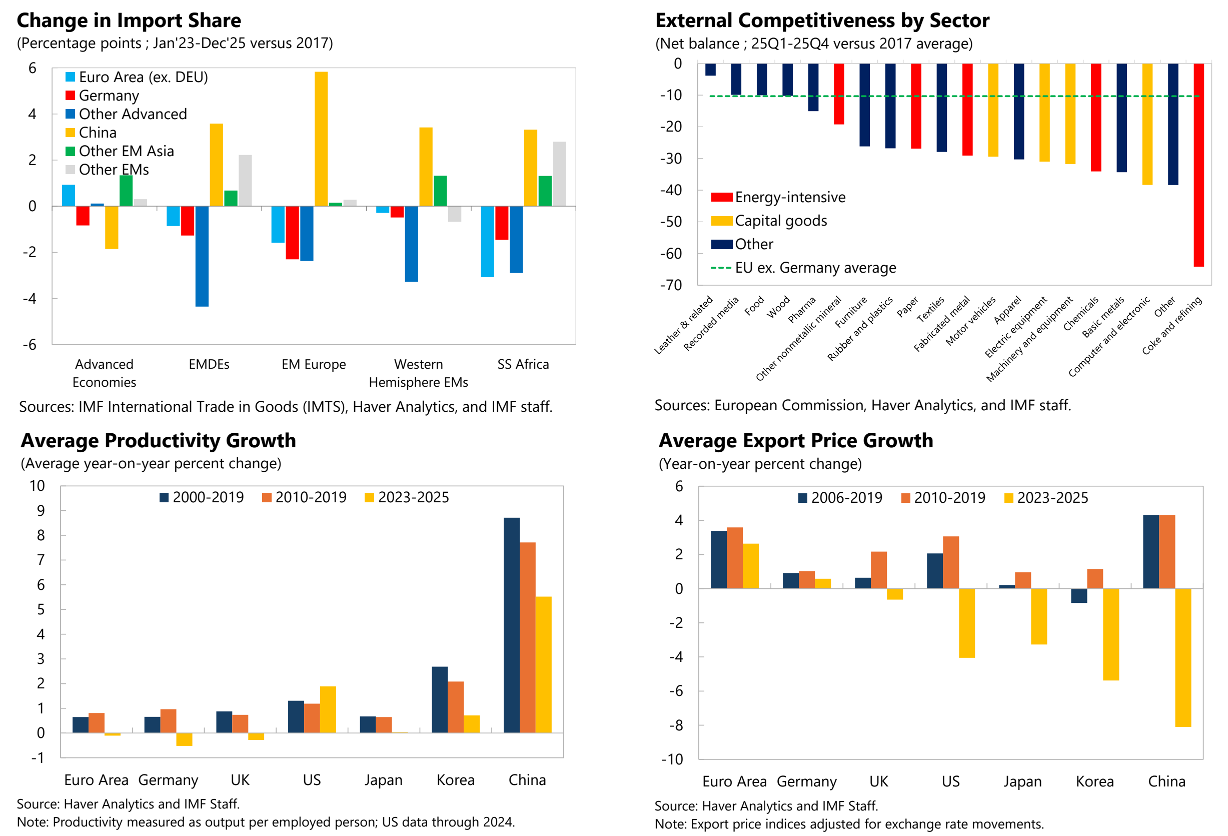
- Germany has lost market share in key export markets, including in advanced economies. The share of imports coming from Germany has broadly declined, but the decline is particularly pronounced in emerging and developing economies (EMDE) while China, and emerging Asia more broadly, have gained market shares in EMDEs (Figure 9, top left). See Box 1 for further discussion of Germany's trade and competition with China.

- As mentioned above, German industry has seemingly become less competitive internationally over recent years and is also performing poorly relative to the rest of Europe (Figure 8, top right). In line with energy-price developments, the loss of competitiveness has been acute in energy-intensive industries. However,

[6] See Annex III in the Staff Report for the 2025 Article Consultation with Germany for a detailed assessment of Germany's external position in 2025.

key capital goods industries also appear to be struggling. Together, these sectors account for almost half of industrial output (Figure 9, top right).

Figure 9. Germany: Competitiveness in Product and Sales Markets



- Key competitors, particularly China, have diversified and increased the complexity of their export baskets, thereby making inroads into traditional German product markets.[7]

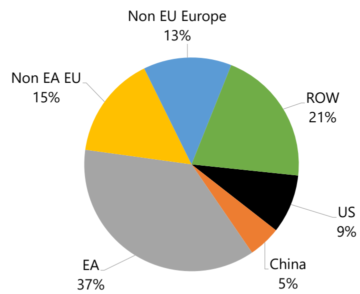
- Increased competitive pressures are also reflected in differing productivity and export price trends across countries. As discussed previously, productivity growth in Germany (and Europe) has lagged behind key competitors over recent decades (Figure 9, bottom left), while competitors’ export prices (adjusted for exchange rate movements) have declined significantly over the last two years (Figure 9, bottom right), in part because of euro appreciation.

[7] See also Bundesbank (2024) for a discussion.

Box 1. Germany: Trade and Competition with China

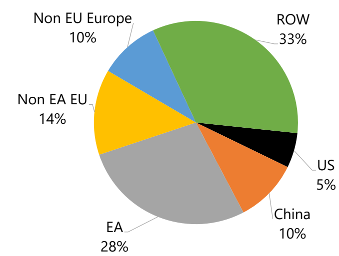
China is one of Germany's larger non-EU trade partners. Europe is by far Germany's largest trading partner, accounting for about two-thirds of Germany's trade. Nonetheless, Germany's trade with China is notable at 5 percent of its total exports during the four quarters through Q4 2025, amounting to about €88 billion, or 2 percent of GDP. Germany's imports from China over the same period, were 10 percent of its total imports, amounting to €185 billion, or 4 percent of GDP. Germany exports mainly vehicles, machinery, and electrical equipment to China, and its main imports from China are in the same sectors.

Relative Contribution to German Exports 1/
(December 2024-December 2025)



Sources: Bundesbank, Haver Analytics, and Destatis.
1/ Exports of Goods and Services.

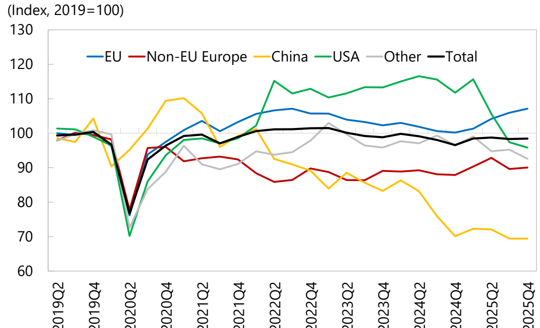
Relative Contribution to German Imports 1/
(December 2024-December 2025)



Sources: Bundesbank, Haver Analytics, and Destatis.
1/ Imports of Goods and Services.

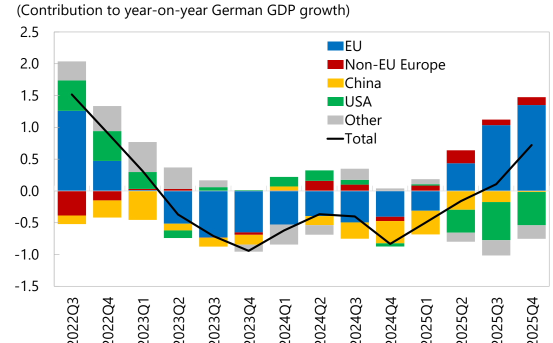
Germany's net exports to China have declined in recent years. This trend reflects a combination of factors, including euro appreciation against the yuan, slower growth of Chinese domestic demand following the drop in domestic property prices, Chinese industrial subsidies, reduced production and exports of German energy-intensive goods following the spike in European energy prices in 2022, Chinese productivity advances in sectors that compete with imports from Germany, such as autos, and an increased shift to localized production, as evidenced by rising German FDI into China. The last factor could reflect both geopolitical considerations (e.g., to reduce exposure to trade conflicts) and market changes (e.g., Chinese demand for cars is shifting increasingly to EVs, which are more efficient to produce locally than are ICE vehicles, as EVs are heavier and hence more expensive to transport), among other factors. That said, increased exports to Europe have offset some of this decline to China and, more recently, to the US in the wake of higher US tariffs on German goods exports.

Germany Real Merchandise Exports
(Index, 2019=100)



Sources: Haver Analytics and IMF staff.
Note: Country exports deflated by overal export deflator.

Real Goods Export GDP Growth Contribution
(Contribution to year-on-year German GDP growth)



Sources: Haver Analytics and IMF staff.

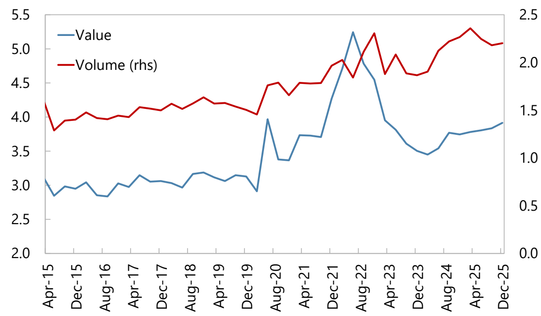
Germany's imports from China have been on a rising trend over the last decade as a share of GDP and as a share of total German imports. However, imports from China spiked in value terms in 2021–22. This spike partly reflected higher chemical prices following the 2022 energy crisis and higher electrical and machinery prices and demand amidst post-pandemic supply-chain issues, as well as a sharp pickup in

Box 1. Germany: Trade and Competition with China (concluded)

demand for solar technology, of which 87 percent was sourced from China, during the energy crisis that followed Russia's invasion of Ukraine.[1] This spike in value terms mostly reversed during 2023 as the energy price shock and post-pandemic supply chain issues eased.

German Imports from China

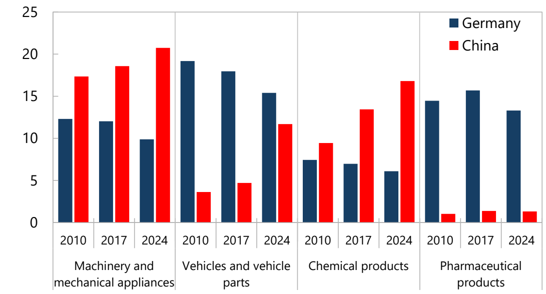
(LHS: Share of German GDP, RHS: Share of total volume of German imports; SA)



Sources: Destatis, Eurostat, and Haver Analytics.

Share of Global Exports

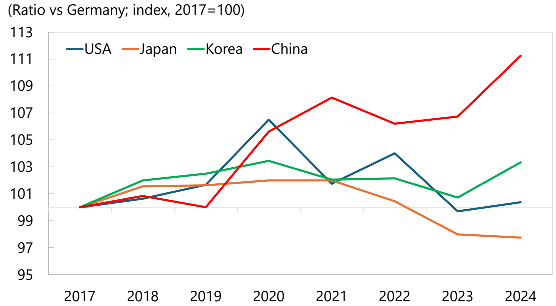
(Percent)



Source: Trade Data Monitor and IMF Staff.
Note: HS categories 84 (machinery and mechanical appliances), 87 (vehicles and parts and accessories thereof), 28 and 29 (organic and in-organic chemicals) and 30 (pharmaceutical products).

Relative Economic Complexity

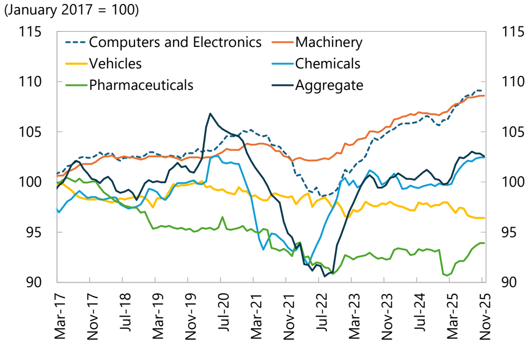
(Ratio vs Germany; index, 2017=100)



Sources: Harvard Growth Lab Atlas of Economic Complexity and IMF staff.
Note: Economic Complexity Index (ECI) based on the diversification and complexity of export baskets (Hasuman et. al (2011))

Germany Terms of Trade Indexes for Key Export Sectors

(January 2017 = 100)



Sources: Destatis, and Haver Analytics.

German firms are facing higher competitive pressure from Chinese companies in third markets. Over the past 15 years, China's share of global exports has risen substantially while Germany's share has declined (Figure 7. top left). The decline in German export share has been even more acute shince 2017 and unifrom across regions (Figure 9, top left). These differences in relative trends have been particularly evident in the chemical, machinery, and vehicle sectors. While these trends may partly just reflect China's higher convergence-related productivity growth that would result in a rising share of China in global GDP and global exports relative to those of Germany, they may also reflect compositional factors such as Chinese production moving increasingly into sectors that compete more with German exports, as well as yuan depreciation against the euro and effects of industrial subsidies. According to a survey carried out by IW Koeln, nearly two-thirds of German firms report feeling heightened competition from Chinese imports, particularly from those exporting in third markets.[2] Despite increased competition in recent years, there is little evidence of widespread price-cutting by German exporters. Sectoral terms-of-trade indexes suggest that most German export prices have been broadly stable or rising in recent years relative to import prices.

1/ See: [In 2022, 87% of the imported photovoltaic power stations came from China - German Federal Statistical Office](#).

2/ See "Competitive Pressure from China for German Companies", IW Koeln, Juergen Matthes and Edgar Schmitz, June 2024, IW-Report 30/2024 (https://www.iwkoeln.de/fileadmin/user_upload/Studien/Report/PDF/2024/IW-Report_2024-Umfrage-China-Konkurrenz.pdf

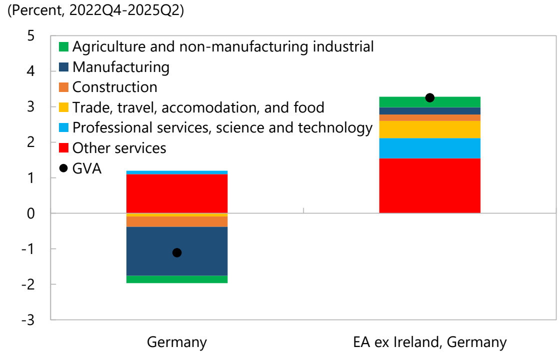
D. Drivers of Growth Underperformance from the Production Side

Germany's slowdown has been broad-based across sectors from the production side of the national accounts, with the decline in manufacturing and construction output particularly acute due to monetary tightening, higher energy prices, and weak demand for key German exports. Excluding information and communication, all main production sectors performed better in the rest of the euro area than in Germany during the growth slowdown. However, some sectors contributed especially heavily to Germany's underperformance. Specifically, four sectors that account for slightly over half of German GVA—manufacturing; trade, travel, accommodation, and food; construction; and professional services, science, and technology—explain over two thirds of Germany's growth gap over this period relative to the rest of the euro area (Figure 10, top row), with manufacturing being the largest contributor. Employment data paint a similar picture, with employment declines in Germany concentrated in these four sectors (Figure 10, bottom left).

Figure 10. Germany: Sectoral Contribution to GVA and Employment

Contributions to GVA Growth

(Percent, 2022Q4-2025Q2)



Sources: Haver Analytics; and IMF staff calculations.

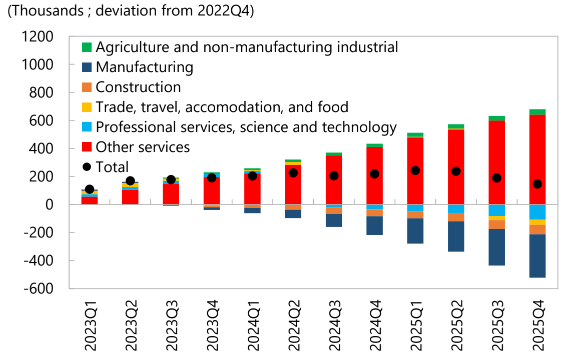
Contribution to Differences in GDP Growth between EA20 ex DEU, IRL and DEU (2022Q4 to 2025Q2) 1/

	In pp of annualized growth	In percent of total difference	DEU share in GVA
Manufacturing	0.5	32.6	0.22
Trade, travel, accomodation, and food	0.2	12.6	0.17
Construction	0.2	11.9	0.04
Professional services, science and technology	0.2	10.5	0.12
Other (including differences in sectoral weights)	0.5	32.4	0.46
Total	**1.5**	**100.0**	**1.0**

1/ Differences in sectoral growth rates times the sectoral weight in GDP (using the average of the sectoral weights for (i) Germany and (ii) the EA20 ex DEU, IRL).

Sectoral Contribution to Employment

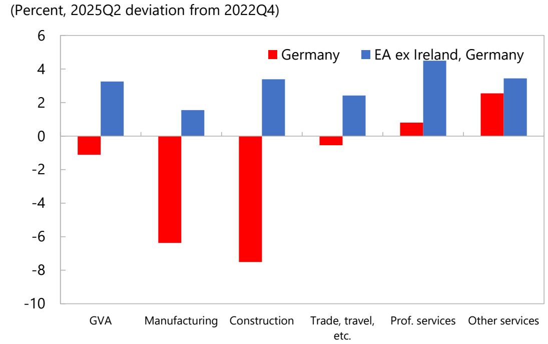
(Thousands ; deviation from 2022Q4)



Sources: Haver Analytics and IMF staff.

Change in Sectoral GVA

(Percent, 2025Q2 deviation from 2022Q4)



Sources: Haver Analytics; and IMF staff calculations.

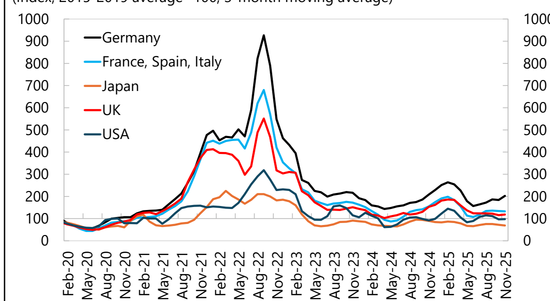
The following sections look further into factors driving the downturn in manufacturing and construction, as these sectors had the largest growth deviations relative to the euro area (Figure 10, bottom right). While detailed data on GVA developments within manufacturing and construction are not yet available for 2024–25, some insight into developments within these two sectors can be gleaned by looking at more detailed sectoral trends in other, higher-frequency data, such as industrial production (IP), employment, and capacity utilization. For trade, travel, accommodation, and food, the relative growth weakness during the period under investigation likely reflects some combination of generally weak domestic demand and subdued growth in real travel spending per tourist arrival noted earlier. Similarly, the weakness in professional services, science, and technology mirrors the decline in exports of R&D and professional and management services noted earlier. Finally, while value-added in the energy sector has also declined sharply over recent years, most of the decline took place in 2022 following the energy-price shock and falls somewhat outside the reference period (Box 2).

Box 2. Germany: A Big Drop in Energy Value-Added

German wholesale electricity prices spiked during the 2022 energy-price shock. Wholesale natural gas prices in Germany rose sharply in 2022 following Russia's invasion of Ukraine and the subsequent shut-off of Russian gas supplies. Higher natural gas prices in turn increased the cost of generating electricity from gas and coal in Germany and elsewhere in Europe. While this shock also drove gas and electricity prices higher in other major European economies, the effect was not as strong as in Germany because these countries' natural gas sources were less exposed to the shut-off of Russian gas and/or their electricity pricing depended less on natural gas generation. Rising demand from Europe for supplemental LNG supplies also drove gas and electricity prices higher in Asia and the U.S., but to a much smaller degree.

Global Real Wholesale Electricity Prices

(Index, 2015-2019 average=100; 3-month moving average)

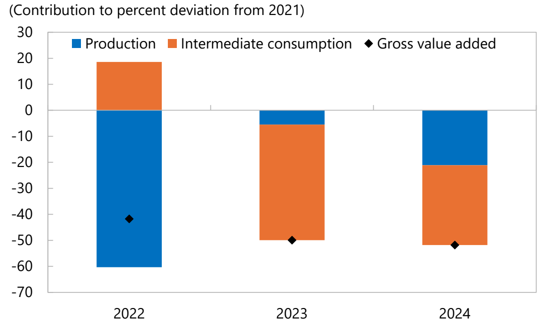


Sources: Haver Analytics, Ember Energy, Bloomberg, US EIA, and IMF staff calculations.
Note: France, Spain, Italy is PPP-weighted average; USA is average across eleven price hubs; Nominal prices converted to eur/MWh and deflated by EUR headline HICP.

As a result of the spike in energy prices, value-added in the energy sector dropped sharply in 2022 and remains well below the 2021 level.[1] The energy sector contributed just 0.1 percentage points to the overall decline in gross value-added since 2022. However, much of the decline in the sector took place in 2022 following the energy-price shock. Real energy production in the national accounts dropped by around 14 percent in 2022 as the cost of generating electricity rose. While production recovered in 2023, intermediate consumption increased sharply resulting in real gross value-added remaining depressed. Production declined again in 2024, and value-added in the energy sector remains around 50 percent below the 2021 level. This decline in value-added in the energy sector reduced total gross value-added by 0.5 pp between 2021 and 2024. In contrast, the rest of the economy contributed a positive 1.5 pp to total value-added during this period.

Energy Gross Value Added

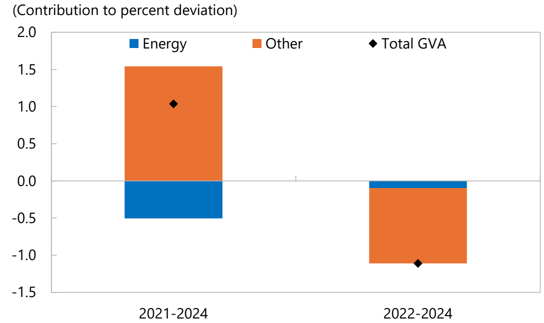
(Contribution to percent deviation from 2021)



Source: Destatis and and IMF Staff.
Note: Energy is electricity, gas, steam, air conditioning supply.

Energy and Total Gross Value Added

(Contribution to percent deviation)



Source: Destatis and and IMF Staff.
Note: Energy is electricity, gas, steam, air conditioning supply.

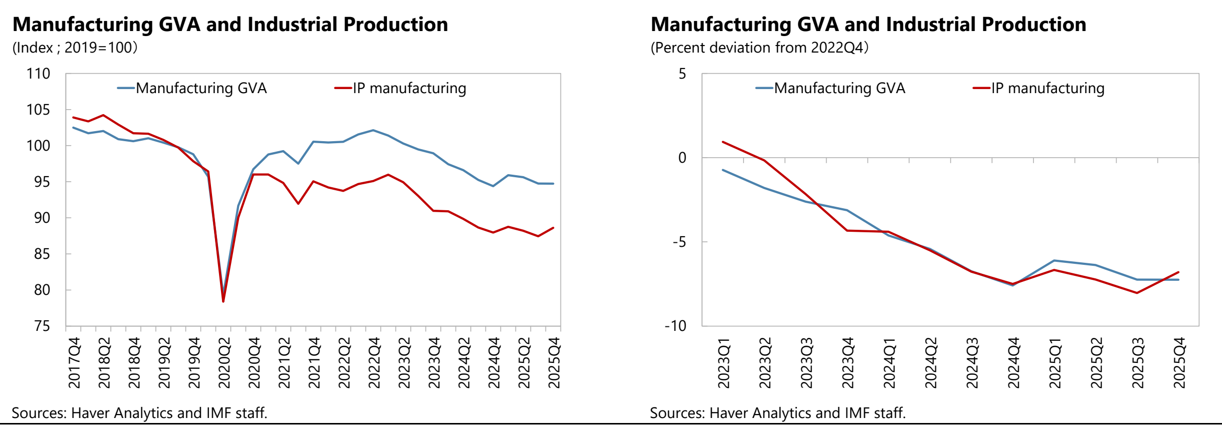
1/ Energy refers to electricity, gas, steam, and air conditioning supply in the national accounts.

Manufacturing

In aggregate, cyclical factors and one-off shocks explain a significant share of the decline in manufacturing output. Monetary tightening likely had a significant impact on manufacturing output, as manufacturing tends to be more interest-sensitive than services. Consistent with this, Datsenko and Fleck (2024) find that high interest rates have depressed economic activity more in those euro-area countries with large manufacturing sectors. For example, the authors find that the effect on Germany is about twice as large as on the next three largest euro-area economies. The opposite finding applies to the service sector—GDP in countries with larger service sectors tends to be less affected by increases in policy rates. Higher energy prices, weaker external demand, and weak domestic machinery and equipment investment also contributed to the decline in manufacturing output over recent years. In recent analysis, Goldman Sachs (2025) find that the aggregate industrial output gap has historically been driven mostly by swings in global growth, but surging energy prices during the recent energy crisis and weak domestic investment also contributed to the recent decline. Low external demand could, however, be linked to longer-term structural decline in German industrial productivity and competitiveness (see Section C above).

The decline in German manufacturing GVA since late-2022 has been mirrored in the IP data. While the level of manufacturing GVA has held up better than manufacturing production, growth dynamics since late-2022 have been broadly similar (Figure 11). Therefore, given the lack of up-to-date data on GVA developments within the manufacturing sector, we examine trends in the more detailed and more timely IP data to assess key drivers of the downturn in manufacturing.

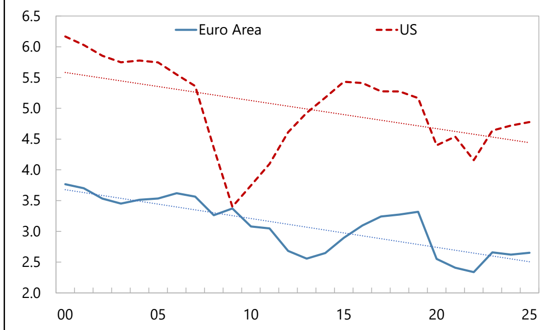
Figure 11. Germany: Manufacturing GVA and Industrial Production



- **Machinery and equipment output has declined sharply.** While all main *sub-sectors* of manufacturing have declined since late-2022, the largest contributor to the overall decline came from machinery and equipment manufacturing (Figure 13, top left). Machinery and equipment output (which includes computer and electronic equipment, electrical equipment, and other machinery and equipment) is around 11 percent below its 2022Q4 level, mainly driven by weaker domestic investment on the back of low confidence and tight monetary policy, increased costs due higher energy prices and wage settlements, and lower demand for German capital goods exports (see Section C above). Importantly, motor vehicle production and exports have also declined relative to pre-pandemic levels but have remained relatively stable since early-2023 (Figure 12). A significant share of the overall decline in passenger car production over the last decade occurred during 2018–19, related in part to implementation of tougher emissions standards in Europe following the EU's adoption of the Worldwide Harmonized Light-Duty Vehicles Test Procedure (WLTP). Trend growth in motor vehicle production in Germany is also constrained by the fact that nearly two-thirds of German auto production is for the European car market, which has exhibited a long trend decline in demand (text chart).

New Car Sales per 100 Persons

(Units)



Sources: Eurostat, BLS, Haver Analytics, and IMF staff calculations.

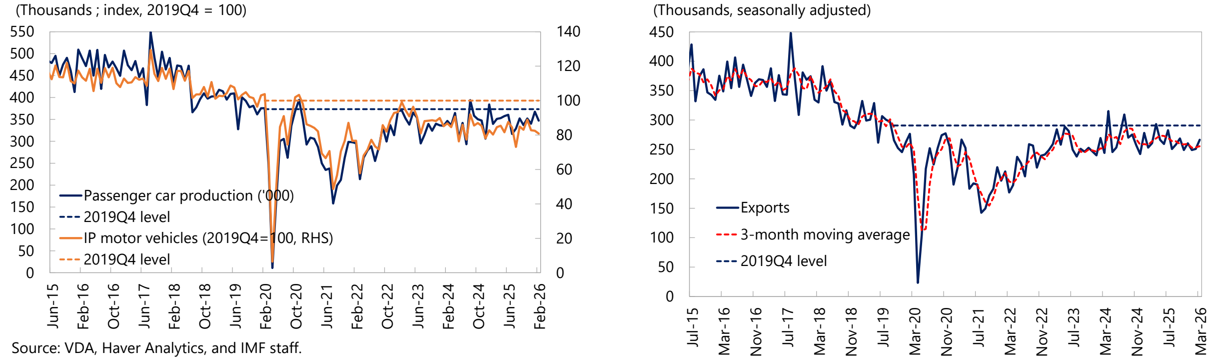
Figure 12. Germany: Vehicle Manufacturing and Exports

Motor Vehicle Production

(Thousands ; index, 2019Q4 = 100)

Passenger Car Exports

(Thousands, seasonally adjusted)



Source: VDA, Haver Analytics, and IMF staff.
Note: Passenger car production adjusted using IP seasonal factors.

Source: VDA, Haver Analytics, and IMF staff.

- **By economic category, falling intermediate and investment goods output were the largest contributors to the overall manufacturing decline.** All categories of manufacturing declined (Figure 13, top right), with a similar contribution to the overall manufacturing output decline from intermediate and investment goods production (Figure 13, middle left). The decline in intermediate and capital goods production matches the decline in domestic fixed investment and weaker external demand for German exports (see Section C above).

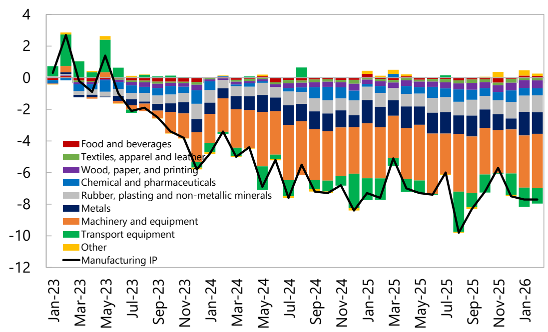
- **Output in non-energy intensive sectors has fallen sharply since late-2022.** By *energy intensity*, output in the non-energy-intensive sectors (which account for around 80 percent of manufacturing output) fell somewhat *more* than in the energy-intensive sectors over the period of investigation and accounted for a larger share of the decline in manufacturing IP (Figure 13, middle right), reflecting weakness in both domestic and external demand (see Section C above). However, the decline in energy-intensive production started earlier (in early-2022), following the energy-price shock (Figure 13, bottom left). Output in energy-intensive industries fell sharply in 2022 and but stabilized at around 20 percent below the 2021Q4 level since mid-2023.

As a result of the decline in manufacturing output, capacity utilization and employment fell across all main manufacturing sectors, with a few exceptions (Figure 13, bottom right).

Figure 13. Germany: Industrial Output, Capacity Utilization, and Employment

Industrial Production of Goods by Sector

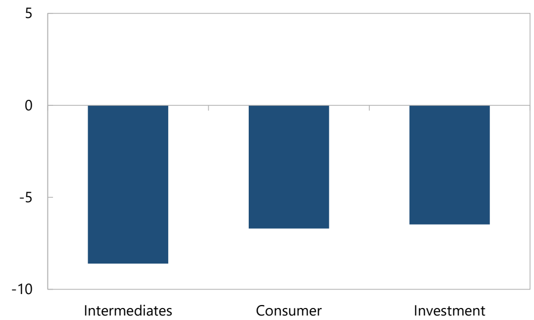
(Seasonally adjusted ; Contribution of percent deviation from 2022Q4)



Sources: Haver Analytics and IMF staff.

Industrial Production of Goods by Economic Category

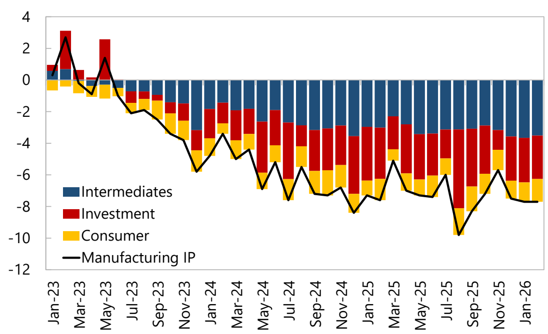
(Seasonally adjusted ; percent change between 2022Q4 and 2025Q2)



Sources: Haver Analytics and IMF staff.

Industrial Production of Goods by Economic Category

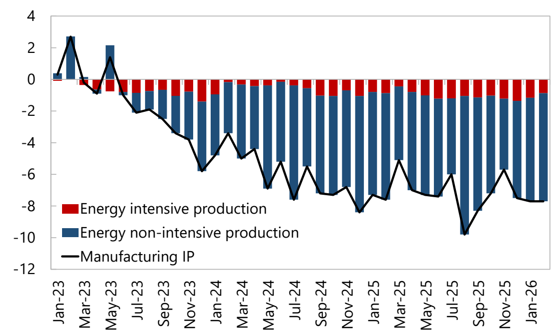
(Seasonally adjusted ; Contribution of percent deviation from 2022Q4)



Sources: Haver Analytics and IMF staff.

Industrial Production of Goods by Energy Intensity

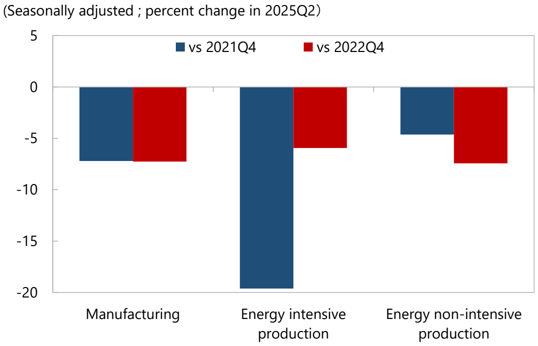
(Seasonally adjusted ; Contribution of percent deviation from 2022Q4)



Sources: Haver Analytics and IMF staff.

Industrial Production of Goods by Energy Intensity

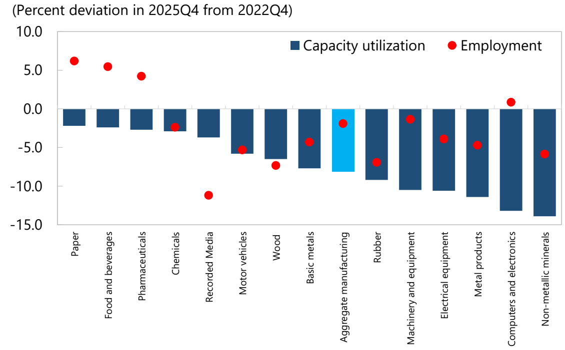
(Seasonally adjusted ; percent change in 2025Q2)



Sources: Haver Analytics and IMF staff.

Capacity Utilization and Employment

(Percent deviation in 2025Q4 from 2022Q4)

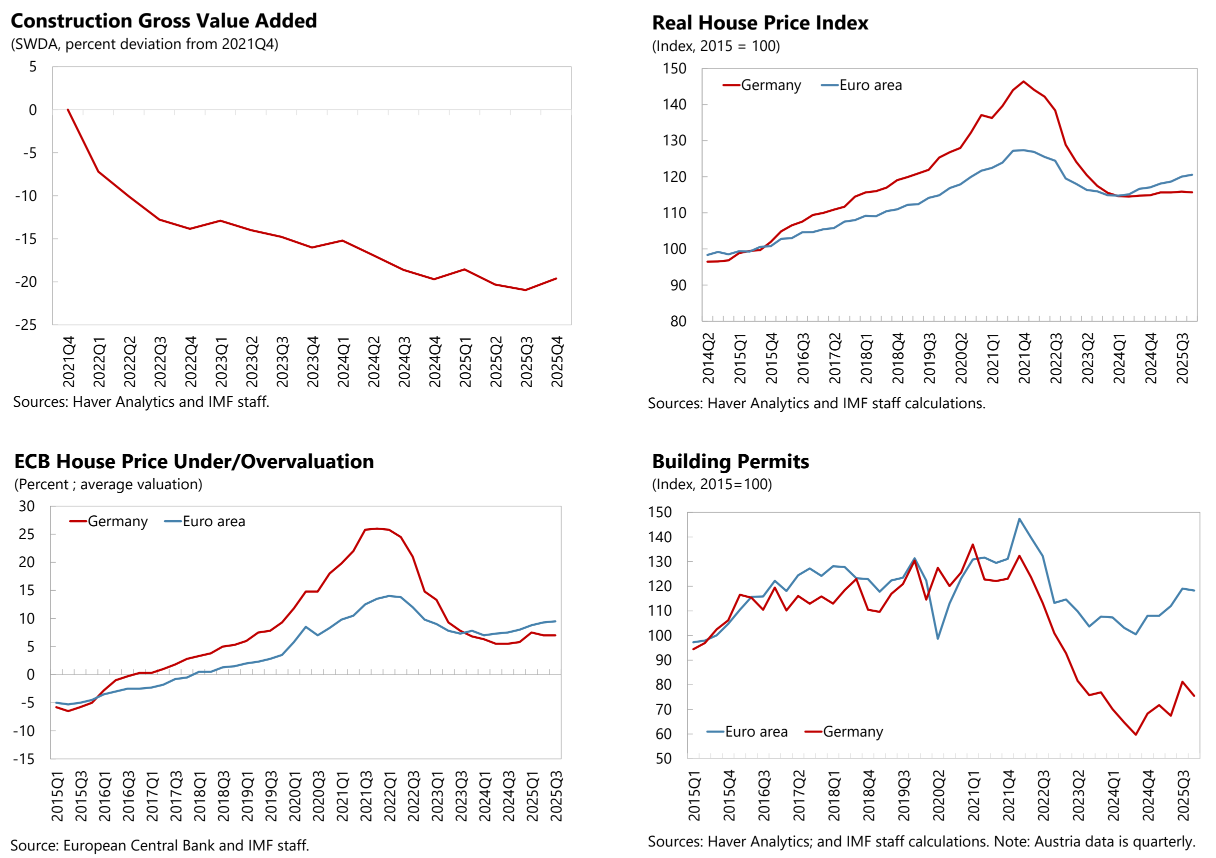


Sources: Haver Analytics and IMF staff.

Construction

Construction output has declined sharply since the 2022 energy-price shock and the subsequent monetary tightening required to contain inflation (Figure 14, top left). Value-added in construction fell by around 14 percent in 2022 and by another 6.5 percent between end-2022 and Q2 2025. This decline reflects the cooling in the housing market that has been observed since early-2022 and the anticipation of monetary tightening in German lending rates (Figure 14, top right). The more rapid cooling of German real house prices and larger decline in construction GVA than in the rest of the euro area may reflect the larger run-up in house prices in the years before the monetary tightening (Figure 14, top right) and the resulting assessed overvaluation, with the ECB assessing German house prices to have been more overvalued than in the euro area by around 12 percentage points on average in 2021 (Figure 14, bottom left). The stronger historical house price growth in Germany also seems to have produced a somewhat stronger supply response (as proxied by building permits), which fell sharply as house prices fell (Figure 14, bottom right). However, data from recent quarters suggest that the housing market may be nearing a bottom, with real house prices and building permits rising in 2025.

Figure 14. Germany: Construction Indicators

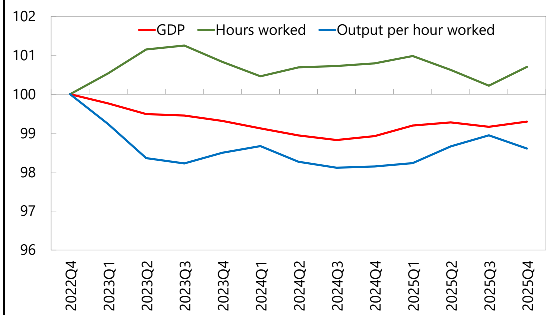


E. Productivity Developments

Another lens though which to view the downturn is to examine the degree to which it was driven by a reduction in labor inputs (hours worked) versus lower productivity (output per hour worked). Previous sections explored drivers of the recent growth decline from a national accounts and compositional standpoint. We now turn to broader trends in productivity to provide additional insights.

The decline in aggregate output has been reflected mainly in falling productivity—especially in industry and construction—rather than in a decline in hours worked. Total hours worked increased through most of 2023 and has remained broadly flat ever since, averaging around 1 percent above the 2022Q4 level. In contrast, output per hour declined sharply and remains around 2 percent below its 2022Q4 level (text chart). Overall, lower productivity accounts for all of the decline in GDP, with the productivity decline concentrated in industry and construction (Figure 15, left). In contrast, most of the difference in output growth relative to the rest of the euro area is accounted for by weaker growth in total hours worked, while productivity growth has been weaker in industry and construction (Figure 15, right). Productivity growth in services has actually been higher in Germany than in the rest of the euro area during this period.

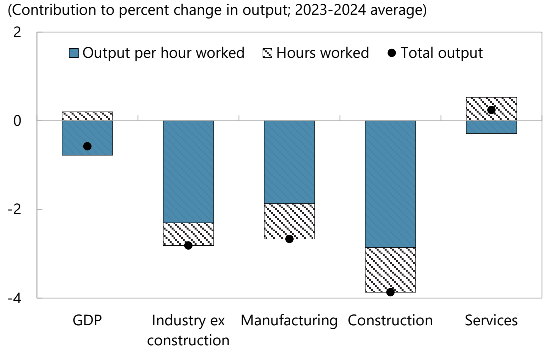
Output, Productivity and Hours Worked
(Index, 2022Q4 = 100, 2 quarter moving average)



Sources: Haver Analytics, and IMF staff calculations.

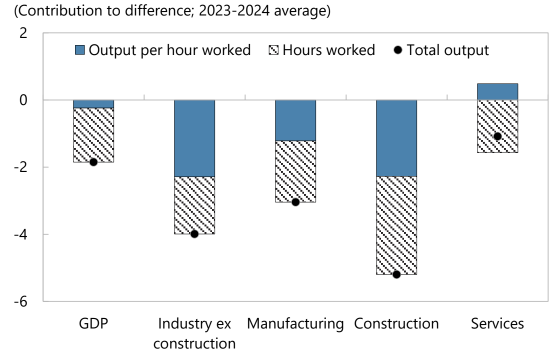
Figure 15. Germany: Productivity and Hours Worked

Productivity and Hours Worked
(Contribution to percent change in output; 2023-2024 average)



Sources: Haver Analytics and IMF staff.

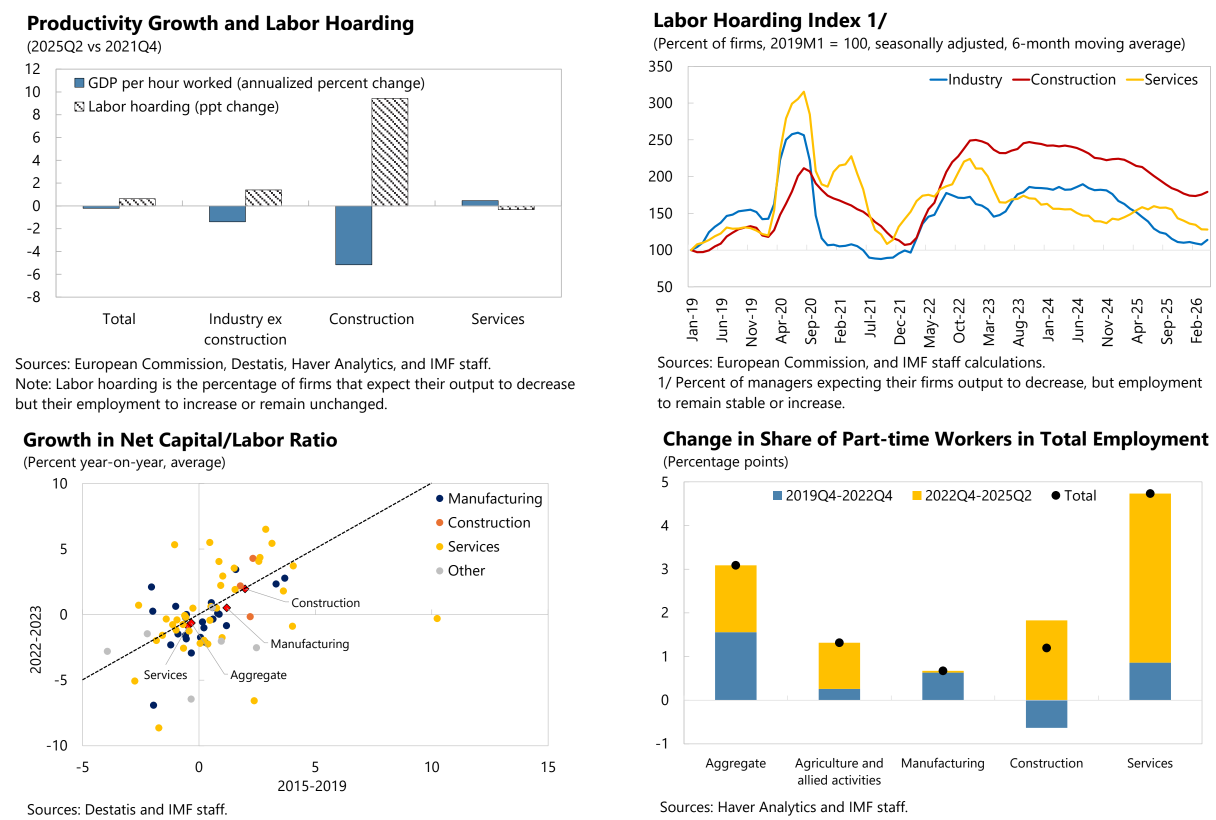
Germany vs Euro Area ex Ireland, Germany
(Contribution to difference; 2023-2024 average)



Sources: Haver Analytics and IMF staff.

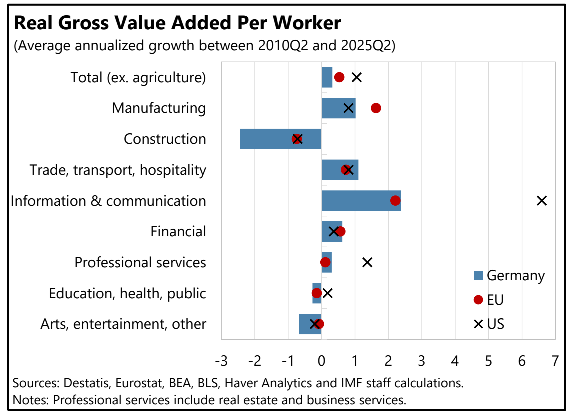
Reasons for weak productivity growth are difficult to discern with certainty. The concentration of the decline of both output and productivity in the manufacturing and construction sectors, together with declines in capacity utilization, suggest that weak demand in these sectors may have led to some labor hoarding, causing productivity to decline (Figure 16, top left). Survey data suggest that labor hoarding in the construction sector surged in 2022 and remains well above pre-pandemic levels (Figure 16, top right). Similarly, labor hoarding in the industrial sector increased notably in 2022 and remained at elevated levels through 2024. Labor hoarding indicators for both sectors eased during 2025 and early 2026 in line with the broader economic recovery. The sharp decline in investment during 2023–24, partly due to higher interest rates, could also have adversely affected productivity. In fact, around 60 percent of the 71 NACE sectors recorded weaker growth in the real net capital-to-labor ratio in 2022–23 than during the 5 years prior to the pandemic while a similar proportion saw outright declines, contributing to lower productivity growth (Figure 16, bottom left). Finally, there is a notable increase in the share of part-time workers in total employment across sectors (Figure 16, bottom right). This shift could have also affected productivity if these workers represent a compositional shift in the type of workers in the labor force.[8]

Figure 16. Germany: Labor Hoarding, Capital/Labor Ratio, and Part-time Work



[8] Evidence on the impact of part-time work on productivity is limited and inconclusive. KfW Research (2023) finds that the higher incidence of part-time work has reduced hours per worker and thus dampened labor productivity while IAB (2025) observes that increasing part-time work and a shift into low-productivity sectors like health and education prevents stronger productivity growth. Crucially, part-time jobs in Germany are often concentrated in lower-wage, lower-skill occupations (retail, hospitality, care), which drags down average productivity. In contrast, Garnero (2016) notes that part-time work substantially increases the flexibility of workers and firms, and has contributed to higher participation of women in the labor market in many countries. Similarly, firm-level research in other countries finds that firms with more part-timers allocate labor more efficiently, sometimes raising output per hour (e.g., Künn-Nelen et al (2013)).

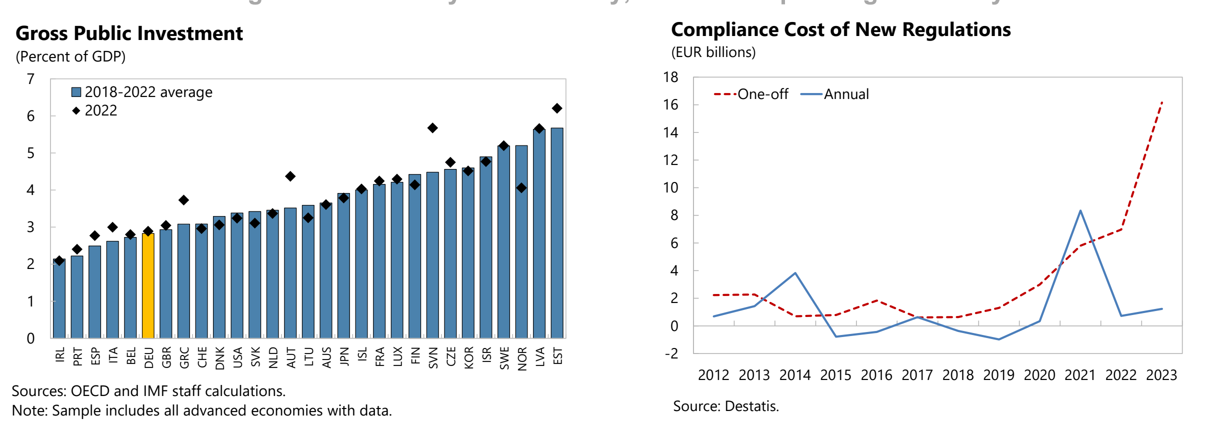
Longer-term trends in productivity shows that Germany underperforms relative to both the U.S. and the broader EU. Productivity growth over the past 10 years has been weak, reflecting both recent cyclical factors, such as construction and manufacturing productivity falling due to labor hoarding (discussed above), and structural factors (text chart). Subdued long-term productivity growth is also reflected in the weak performance of broad expenditure categories over the last decade (see Section C above), with subdued income growth, weak investment activity, and deteriorating external competitiveness (in part due to slower relative productivity growth) weighing on underlying trend growth. Structural factors contributing to subdued long-term productivity developments include the following:[9]



- Germany's investment in public infrastructure in the years before the downturn was among the lowest in advanced economies as a percent of GDP (Figure 17, left). This resulted in increasing gaps in transport, digital, and energy infrastructure, which in turn weighed on private and public sector efficiency. In response, Germany launched a large expansion of public investment spending in 2026

- Firms consistently point to overly burdensome regulations and "red tape" (e.g., slow permitting procedures) as obstacles to doing business. Moreover, regulatory burdens appear to have risen further during 2022–23 (Figure 17, right). In response, the German government recently launched an extensive Modernization Agenda to reduce bureaucracy, regulate better, and create a more efficient federal administration, with a particular focus on digital transformation.

Figure 17. Germany: Productivity, Skills and Spending Efficiency



- Failure to foster a dynamic growth environment for young, innovative firms, including by deepening the Single Market, means that productivity growth continues to be lower than in the US, particularly in high-growth sectors such as IT. The average age of the 10 largest companies in Germany is nearly three times

[9] See the Staff Report for the 2025 Article Consultation with Germany for a more detailed discussion of structural headwinds and policy solutions.

that of those in the United States (Text Table 1). This suggests that there has been less growth of new firms with innovative technologies, which are key to boosting productivity.[10] New firm growth is especially important given that many of Germany's existing industries are in relatively low-growth sectors. For example, about two-thirds of German auto production is for the European car market, which has exhibited a long trend decline in demand, as noted earlier.

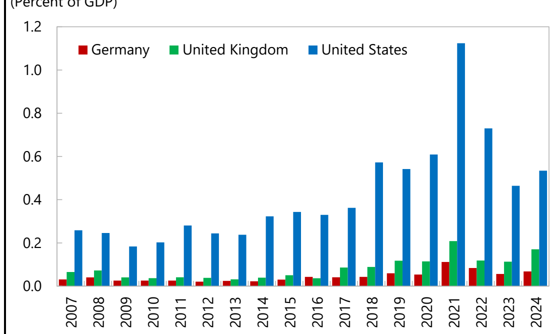
Text Table 1. Germany: Age of Top 10 Largest Firms by Capitalization

Rank	Germany	Age (yrs)	United States	Age (yrs)
1	SAP	53	NVIDIA	32
2	Siemens	178	Microsoft	50
3	Deutsche Telekom 1/	78	Apple	49
4	Allianz	135	Alphabet	27
5	Rheinmetall	136	Amazon	31
6	Munich RE	145	Meta Platforms (Facebook)	21
7	Deutsche Bank	155	Broadcom	64
8	Mercedes Benz	99	Tesla	22
9	BMW	109	Berkshire Hathaway	186
10	Merck	357	Oracle	48
	Average	145		53

Sources: Bloomberg L.P., IMF staff calculations.
1/ Based on founding date of Deutsche Bundespost, which was broken up into 3 companies in 1995, one of which was Deutsche Telekom. An older age could be considered based on Deutsche Bundespost's predecessors.

- Financing conditions are also a constraining factor for startups and upscaling. Given a bank-dominated financial sector in Germany, financing available to young firms has been mostly in the form of debt, which is more onerous than equity financing for innovative, risk-taking firms seeking to grow quickly. For example, there was only 0.07 percent of GDP in venture capital (VC) investment in Germany as of end-2024, compared with 0.17 percent in the UK and 0.53 percent of GDP in the U.S. (text chart). Fostering a more supportive environment for innovative start-ups could boost productivity. Savings and Investment Union (along with other Single Market reforms) could bolster VC and other equity financing in Europe through enhanced economies of scale.

Venture Capital Investment
(Percent of GDP)



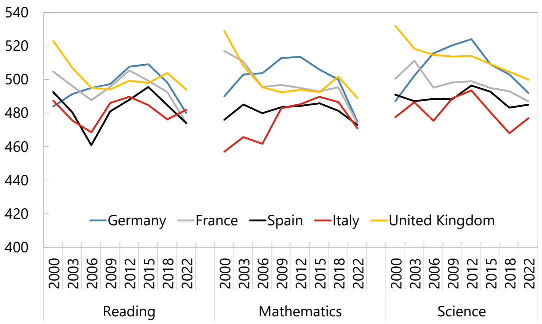
Sources: OECD, Haver Analytics, IMF staff

[10] For example, [Acemoglu et al. 2018] show the critical contribution of small, fast growing firms to aggregate productivity growth in the US and notes that that industrial policies to subsidize often large incumbent firms can actually lower economic growth by slowing down reallocation and even discouraging innovation by both continuing firms and new entrants.

- Low training rates for adults, population aging, and weak foundational and digital skills are leading to a growing skills gap while educational and training systems have not adapted sufficiently and education spending efficiency has declined (Figure 18).

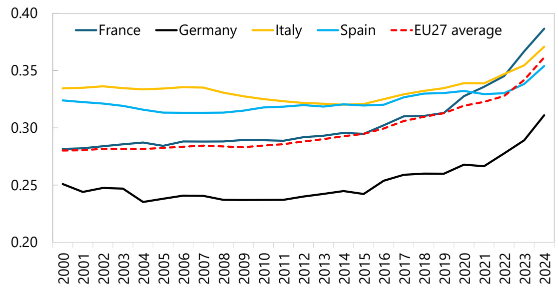
Figure 18. Germany: Skills and Education Spending Efficiency

Trends in Maths, Reading and Science
(2022 score points)



Source: OECD.

Public Education Spending Efficiency Gap
(Scale, 0-1)



Sources: IMF Fiscal Monitor October 2025 and IMF staff.
Note: The efficiency gap is distance to the spending efficiency frontier and ranges from 0 (fully efficient) to 1 (fully inefficient).

F. Conclusion

While Germany's downturn has been the result of multiple causes that are difficult to isolate, the analysis in this chapter sheds light on some of the recession's main characteristics. Analysis suggests that about 40 percent of the downturn reflected temporary cyclical factors while about 60 percent reflected lower potential growth. Unlike previous cycles, the decline is broad-based and not confined to specific sub-sectors, with nearly all major expenditure categories—particularly investment and exports—acting as significant drags on activity. From the production side, the contraction has been especially pronounced in the manufacturing and construction sectors due to higher interest rates, higher energy prices, subdued external demand, and weak sentiment. The GDP decline is also mirrored in a substantial drop in productivity, especially in industry and construction, which appears to be driven by lower investment and cyclical labor hoarding amid weak demand. Longer-term trends—such as underinvestment in public infrastructure, skills, and innovation; accumulating red tape; population aging; and deteriorating external competitiveness (although the level of the current account surplus remains substantial)—have amplified the cyclical downturn. The broad-based nature of the recession, coupled with persistent structural headwinds, suggests that Germany's recovery will depend not only on policies to boost demand and investment (especially much-needed fiscal stimulus with an emphasis on increasing public investment) but also on addressing deeper challenges in productivity, innovation, and competitiveness.[11]

[11] See Staff Report for the 2025 Article Consultation with Germany for a detailed discussion of the different policy priorities.

References

Benes, J., Clinton, K., Garcia-Saltos, R., Johnson, M., Laxton, D., Manchev, P., and Matheson, T., 2010. *Estimating Potential Output with a Multivariate Filter*, IMF Working Paper, WP/10/285, December 2010.

Bundesbank, 2024. *Global and European Setting*, Monthly Report, November 2024.

Bundesbank, 2025. *What's behind the sustained decline in German export market shares?*, Monthly Report, July 2025.

Datsenko, R. and Fleck, J., 2024. *Country-Specific Effects of Euro-Area Monetary Policy: The Role of Sectoral Differences*, FEDS Notes. Washington: Board of Governors of the Federal Reserve System, November 12, 2024.

Garnero, A., 2016. *Are part-time workers less productive and underpaid?*, IZA World of Labor 2016: 249.

Goldman Sachs, 2025. *Germany—Structural Manufacturing Headwinds Persist, But Cyclical Outlook Brightens*, European Economics Analyst, 16 July 2025.

Hausmann, R., Hidalgo, C., Bustos, S., Coscia, M., Simoes, A., Yildirim, M, 2011. *The Atlas of Economic Complexity: Mapping Paths to Prosperity*, Copy at http://www.tinyurl.com/23knslay

IMF, 2025. Spending Smarter: How Efficient and Well-Allocated Public Spending Can Boost Economic Growth, IMF Fiscal Monitor, October 2025.

Künn-Nelen, A. de Grip, A., and Fouarge, D., 2013. *Is Part-Time Employment Beneficial for Firm Productivity?*, Industrial and Labor Relations Review, Vol. 66, No. 5, 2013.

PUBLICATIONS

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