

KIEL INSTITUTE **ECONOMIC OUTLOOK**

German Economy Winter 2024

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GERMAN ECONOMY IN WINTER 2024: NO RECOVERY IN SIGHT

Jens Boysen-Hogrefe, Dominik Groll, Timo Hoffmann, Nils Jannsen, Stefan Kooths, Christian Schröder und Nils Sonnenberg

The German economy is stuck in stagnation. There are no signs of a significant economic recovery. Instead, there are increasing signs that the economic weakness is primarily structural rather than cyclical, which means there is little room for improvement in economic activity in the short term. There is also a risk of additional headwinds in the coming year. If the new US administration follows through on its protectionist announcements, as assumed in this forecast, this will be a further drag on exports. Exports have already failed to keep pace with world trade recently, as companies have become less competitive. The provisional budget management, which is necessary due to the end of the coalition and will remain in place well into next year, could also slow economic output, although the effects are likely to be small. Against this backdrop, we have lowered our forecast and expect GDP to stagnate next year (fall forecast: +0.5 percent), following a decline of 0.2 percent in the current year (fall forecast: -0.1 percent). In 2026, economic output is expected to grow by 0.9 percent (fall: 1.1 percent), whereby almost 0.3 percentage points are attributed to the additional number of working days. The economic weakness is leaving its mark on the labor market. The unemployment rate will rise from 5.7 percent in 2023 to 6 percent this year and 6.3 percent next year. After a noticeable increase this year, real disposable household income will barely grow in the next two years. As a result, private consumption will not gain much momentum either. Gross fixed capital formation will gradually bottom out as financing conditions improve somewhat. The budget deficit is expected to be around 2 percent of GDP over the next two years, down from 2.3 percent this year.

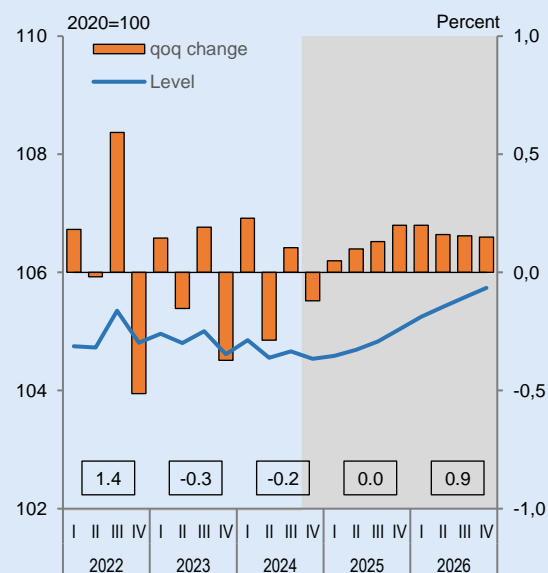
GDP will continue to stagnate for the time being.

GDP rose slightly in the third quarter, although leading indicators had pointed to a decline. A sharp increase in changes in inventories contributed to the rise. However, inventories are difficult to interpret in economic terms due to the lack of inventory statistics in Germany. Gross value added declined in the third quarter. Leading indicators continue to show no signs of a recovery. Business confidence remains gloomy. Business conditions in October and November were below the level of the third quarter, and the purchasing managers' index remains below the expansion threshold. Business expectations also remain low. They fell only slightly in November, despite the threat of a more protectionist course in the United States following the US presidential elections. However, some firms had already

Box 1: The impact of economic policy uncertainty on the German economy (p. 08 – 10)

Box 2: How has production capacity in the manufacturing industry developed in recent years? (p. 11 – 13)

Figure 1:
Gross domestic product



Quarterly data: Volumes, seasonally and calendar adjusted. Annual data (boxes): Volumes, change in percent.

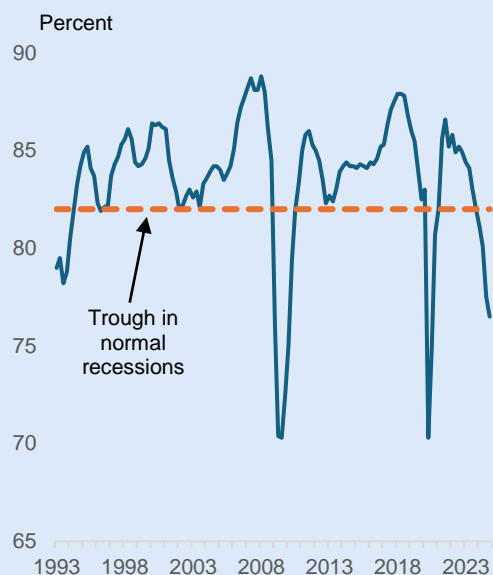
Source: Federal Statistical Office, *Fachserie 18, Series 1.2 and 1.3*; shaded: Kiel Institute forecast.

participated in the survey before the election so that a further deterioration in business expectations is likely. Industrial production in October was below the level of the third quarter. All in all, GDP is likely to decline slightly in the fourth quarter (Figure 1). There are no signs of a significant improvement in the next year. In the first half of the year in particular, the provisional budget management will have a dampening effect, although the impact on GDP growth for the full year is expected to be small (0.1 percentage points). In addition, higher tariffs in the United States would have a negative impact on economic output. Our forecast assumes that U.S. tariffs on German goods will be increased in the second quarter. Uncertainty about economic policy reached a record high in November and is likely to dampen economic activity further (Box 1). Against this backdrop, economic output will only stagnate next year.

The manufacturing industry is in crisis. Industrial production continues to fall. A rapid improvement is not in sight as structural problems are weighing on production. At 76.5 percent, capacity utilization in industry has recently fallen to a level more than 5 percentage points below the trough in normal recessions (Figure 2). While this in itself would suggest considerable room for expansion, the overall picture suggests that the weakness in industry is not only cyclical but also, to a significant extent, structural (Box 2). Employment has fallen sharply, while the number of persons in short-time work is only moderately elevated. Moreover, industrial production has been decoupled from the uptrend in global industrial production for some time, and the competitiveness of manufacturing firms has fallen according to survey data. Higher tariffs in the United States – as we have assumed in this forecast – are likely to affect the export-oriented manufacturing industry in particular. Although gross value added in the manufacturing industry has been on a downward trend for more than a year, it has fallen by far less than industrial production. One reason for this is likely to be an increasing share of services in the gross value added by industrial firms, as services of manufacturing firms are not included in industrial production. If this trend continues, gross value added in the manufacturing industry could remain stable next year. For the fourth quarter, meanwhile, leading indicators point to a decline.

Higher tariffs in the United States are weighing on export prospects. Following a decline in German exports by 1.9 percent in the third quarter, we expect a further fall by 0.8 percent in the fourth quarter against a backdrop of despondent business confidence in customer markets and bleak export expectations by German companies. For the coming years, the political uncertainty following the election of Donald Trump as the next US president speaks against a significant upturn in German exports. Operating under the assumption that tariffs on goods imports from the EU will be increased by 5 percentage points and on those from China by 30 percentage points in the second quarter of next year, and guided by trade models suggesting a short-term decline in goods exports of around 1 percent (Felbermayr et al. 2024), we estimate a drop in exports by 0.7 percent in the coming year and a rise by 1.2 percent in the following year. Weak economic indicators point to a decline of imports by 0.5 percent in the current quarter, and the anemic development of exports and investments in equipment speaks against a clear

Figure 2:
Capacity utilization in the manufacturing industry



Quarterly data. Seasonal adjusted. Normal recessions: Recessions outside of crises.

Source: ifo Institut.

upturn in German imports in the forecast period; we predict an increase by 0.9 (2.2) percent in 2025 (2026). Monthly price indices for special trade indicate a slight increase in the terms of trade in the current quarter, but we expect them to stagnate in 2025 before deteriorating again and moving back towards their long-term average in 2026 with a fall by around 0.5 percent.

No significant pick-up in private consumption is in sight. Despite rising real disposable income, private consumption has not yet broken out of stagnation. Although private consumption rose by 0.3 percent in the third quarter, it had fallen by 0.5 percent in the preceding quarter. Overall, it will stagnate this year, even though real disposable income of private households will grow by more than 1 percent. Accordingly, the saving rate is likely to rise by 1 percentage point. Key reasons for the persistently weak consumer climate likely include the high level of economic policy uncertainty and the deteriorating situation on the labor market. Moreover, despite recent gains, real wages will only reach their 2019 levels this year. After the relatively strong increase this year, real disposable incomes are unlikely to rise significantly over the next two years. Wage growth will be held back by the weakening labor market and the fact that wages have largely caught up with high consumer price inflation. Next year, net wages and salaries will be dampened by the end of the inflation compensation bonus. All in all, real disposable income is unlikely to exceed this year's level next year and is expected to increase by 0.6 percent in 2026. We expect the saving rate to remain elevated. In particular, geopolitical risks are likely to remain high in the coming years, and the economic outlook is likely to remain gloomy. Against this backdrop, consumer spending will be roughly flat next year and rise by 0.6 percent in 2026.

Investment in construction will fall for the fourth year in a row. Investment in construction fell by 0.4 percent in the third quarter. The main reason for this was the renewed decline in residential construction, which is particularly sensitive to interest rates (- 6 percent) and continues to be burdened by higher financing costs. In addition, the sharp rise in construction costs also has a dampening effect. The affordability of property, measured by the annuity-income ratio, remains low in a long-term comparison. For the fourth quarter, leading indicators point to a renewed decline of investment in construction, which will likely fall by 3.7 percent in the current year, the fourth year in a row; the overall decline in this period will have been around 13 percent. Investments in construction are likely to bottom out in 2025. Financing conditions have improved somewhat: mortgage interest rates have fallen by around 40 basis points in the current year and are likely to fall further. Incoming orders for residential construction have bottomed out at a very low level and have moved sideways for around a year. In addition, the number of property transactions and the volume of new residential construction loans have been trending upward since the beginning of the year. The lack of demand reported by construction companies has also declined recently. Investments in non-residential construction are likely to increase throughout the forecast period, supported by infrastructure projects. All in all, we expect investments in construction to fall by 1.2 percent in 2025 and to expand by 2.7 percent in 2026.

Economic policy uncertainty is dampening investments in machinery, equipment, and vehicles. Investments in machinery, equipment, and vehicles fell by 0.2 percent in the third quarter, for the fourth quarter in a row, primarily due to the decline in volatile government investments by around 11 percent. Private investments rose by 1.1 percent, reversing the sharp decline in the previous quarter (-4.0 percent). For the fourth quarter, leading indicators point to a decline in private investments. However, we expect the decline in private and the increase in public investments to roughly cancel out. Private investments in machinery, equipment, and vehicles are likely to fall further for now. According to media analyses, economic policy uncertainty in Germany remains at a high level which, along with weak sales prospects and increased financing costs, is likely to further dampen the willingness to invest (Baker et al. 2016, Junker and Michelsen 2024, Grimme and Stöckli 2017, Berend and Jannsen 2024). This is in line with company surveys, in which the economic policy environment is most frequently cited as a business risk after domestic demand (DIHK 2024). Since peaking in 2021, incoming domestic orders

received by capital goods manufacturers have fallen by around 20 percent. Pro-cyclical private investments are likely to gradually increase again towards the end of 2025 in line with the slight economic improvement. Government investments are expected to increase throughout the entire forecast period due to military procurements as part of the Bundeswehr Special Fund. Overall, investments in machinery, equipment, and vehicles will probably fall by 5.6 percent in the current year. We expect a further decline of 0.4 percent in 2025 before an increase of 3.9 percent in 2026. Investments in other fixed assets (mainly spending on software, research, and development) have risen strongly until recently and are likely to continue to expand in the forecast period, not least due to investments in digitalization. In the current year, they will increase by 4.0 percent, the fourth year in a row. Overall, they will have increased by around 20 percent in this period. For 2025 and 2026, we expect an increase of 2.5 and 1.9 percent respectively.

The inflation rate is in calmer waters, albeit with persistently high price increases for services.

In November, the inflation rate stood at 2.2 percent. Energy prices continued to decline, dropping by 3.7 percent compared to the previous year. Industrial goods became 1.6 percent more expensive, while food prices rose by 1.8 percent. Services saw a particularly sharp increase of 4.0 percent. Energy prices are expected to continue to decrease slightly in 2025. For 2025 and 2026, a further decline in crude oil prices (Brent) is assumed, reaching US\$71 and US\$69 per barrel respectively. Correspondingly, the forecasted prices for gasoline, diesel, and heating oil in 2025 are expected to fall by 3.5 percent, 2.9 percent, and 3.9 percent. This decline would be even greater were it not for the planned increase in the CO₂ price by €10 per ton at the beginning of the coming year. The assumed market prices for gas and electricity in 2025 (2026) are €46 (€36) and €98 (€88) per MWh. We expect the price level for consumer gas and electricity to decrease only slightly. However, due to statistical base effects, prices are likely to decline by 2.1 percent and 1.7 percent in 2025 compared to the previous year. Overall, the energy component is forecast to decrease by 2.3 percent in 2025 before rising slightly by 0.4 percent in 2026. Services continue to be the main driver of inflation. Since the beginning of the year, service prices have risen by an average of 4 percent per month (annualized). However, in the second half of the year, the momentum of price increases has gradually weakened. We anticipate significant price hikes by various service providers at the start of the new year. Over the course of the year, inflationary pressure is expected to ease gradually. Inflationary pressure on food and industrial goods is normalizing step by step after their prices rose, respectively, by an average of 1.5 percent and 1.9 percent per month (annualized) since the beginning of the year. Unlike services, the price momentum slightly increased towards the end of the year, but no widespread price pressure is evident.

Overall, inflation during the forecast period remains slightly above the 2 percent mark. For the current year as a whole, an inflation rate of 2.2 percent is expected (Table 1). The high core rate (+2.8 percent) is cushioned by the decline in the energy component (- 3.2 percent). In 2025, the core rate will remain elevated at 2.6 percent (long-term average: 1.4 percent). With a decrease in the energy component of 2.3 percent, the overall inflation rate is expected to remain at 2.2 percent. In 2026, the energy component will rise slightly by 0.4 percent, but the core rate will further weaken to 2.2 percent, resulting in an overall inflation rate of 2 percent.

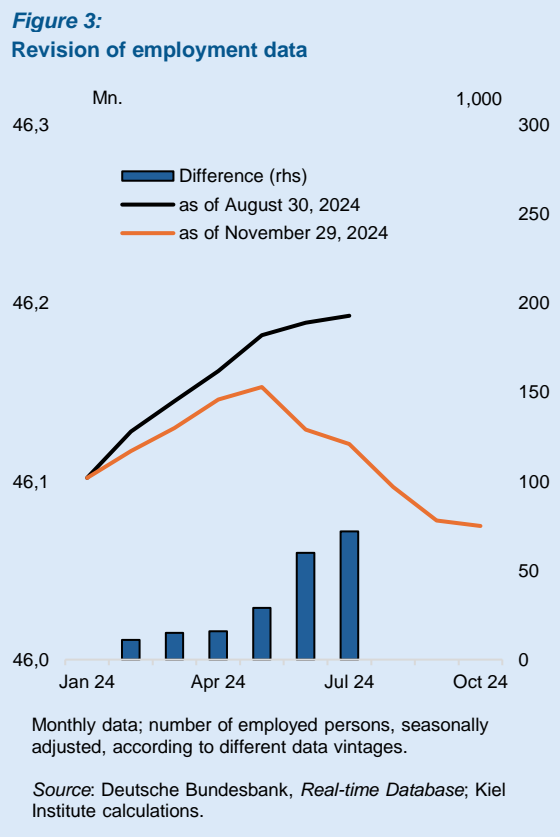
Wage dynamics will slow down. The metal and electrical industry is the first major collective bargaining sector in which a collective agreement has been negotiated for the second time following the surge in inflation. Considering all agreed remuneration components, this agreement provides for significantly lower earnings increases for 2025 and 2026 than the previous agreement for 2023 and 2024. This is due to both lower permanent pay increases and the elimination of inflation compensation bonuses. Negotiated wages and salaries in the economy as a whole will equally suffer a noticeable setback next year due to the elimination of these bonuses, although we expect that basic pay rates will accelerate. We anticipate a 3.8 percent increase in negotiated wages and salaries next year after 6.2 percent this

year. In 2026, the increase is likely to slow down further. The growth in effective earnings (gross wages and salaries per employee) will also fall noticeably following the strong growth in 2023 and 2024. The relationship between labor costs on the one hand and prices and labor productivity on the other hand will have largely normalized following the strong real wage increases this year. As a result, real wages will likely be more closely linked to labor productivity again. In view of the economic stagnation, labor productivity has been exceptionally weak for years and is not expected to gain much momentum in the forecast period, which in itself will dampen wage dynamics and counteract the wage-increasing effects of labor shortages due to aging.

The data on employment have been revised downwards significantly. Due to a revision of the official statistics, the development of employment over the course of this year has changed significantly compared to three months ago. While according to the data used for our autumn forecast, the seasonally adjusted number of people in employment had risen up to and including July (the most recent figure at the time), the current data shows that it fell quite significantly in June and July (Figure 3). The downward revision for July is 72,000 people.

Unemployment continues to rise in view of the weak economic activity, and employment is falling. The decline in employment continued between August and October. At the same time, unemployment kept rising unabated. In November, a seasonally adjusted 2.86 million people were registered as unemployed (unemployment rate: 6.1 percent). This means that the number of unemployed, adjusted for the effect of Ukrainian refugees, has increased by 370,000 persons since summer 2022. The leading indicators for the labor market have deteriorated further from an already low level. According to the ifo Employment Barometer, the willingness to hire in the private sector is now as low as was last seen before the Hartz reforms in the mid-2000s, excepting severe economic crises (Great Financial Crisis, COVID-19). This applies in particular to the manufacturing sector, where companies want to cut more and more jobs. According to the IAB Labour Market Barometer, local employment agencies are also taking a more pessimistic view of both employment and unemployment from month to month. In view of the fact that we no longer expect any notable revival in economic activity next year, we are revising our forecast upwards for unemployment and downwards for employment. Unemployment is therefore likely to continue to rise throughout the coming year and only decline again in 2026 as part of the tentative economic recovery. The annual average unemployment rate will rise from 6 percent this year to 6.3 percent in the next two years. We expect the number of people in employment to decline next year and stagnate in 2026. Demographic change is increasingly standing in the way of an increase in employment. The baby boomers are gradually retiring from the workforce, which means that the potential labor force will soon follow a long-term downward trend.

The general government budget deficit is expected to remain moderate in 2025. Investment spending, particularly for defense purposes, will rise. As the year will commence without the annual budget



law in place, certain government expenditures will be delayed, but the overall impact is likely to be minimal. Revenues will benefit from higher social contribution rates and the expiration of the tax exemption of inflations compensation bonuses. Overall, the budget balance is anticipated to improve at a pace similar to that of 2024.

In 2026, the budget deficit is likely to widen again. While various fiscal policy measures and a moderate economic recovery offer some relief to the general government budget, increasing expenditures in healthcare and elderly care will continue to apply pressure. Additionally, the growing number of retirees will place further strain on the statutory pension system. Moreover, transfers to the EU will rise, and the federal government is expected to return to its usual spending trajectory.

Table 1:
Key indicators

	2023	2024	2025	2026
Gross domestic product (GDP), price-adjusted	-0.3	-0.2	0.0	0.9
Gross domestic product, deflator	6.1	3.0	1.8	1.6
Consumer prices	5.9	2.2	2.2	2.0
Labor productivity (per hour worked)	-0.6	-0.1	0.1	0.7
Employment (1000 persons)	46,011	46,108	46,013	45,960
Unemployment rate (percent)	5.7	6.0	6.3	6.3
<i>in relation to nominal GDP</i>				
Public sector net lending	-2.6	-2.3	-1.9	-2.1
Gross public debt	62.7	63.2	63.9	64.4
Current account balance	5.9	6.2	5.6	5.2

GDP, consumer prices, labor productivity: percentage change on previous year; unemployment rate: as defined by the Federal Employment Agency.

Source: Federal Statistical Office, *Fachserie 18, Series 1.2*; Federal Employment Agency, *Monthly Bulletin*; Federal Employment Agency, *Employment Statistics*; shaded: Kiel Institute forecast.

Box 1:

The impact of economic policy uncertainty on the German economy

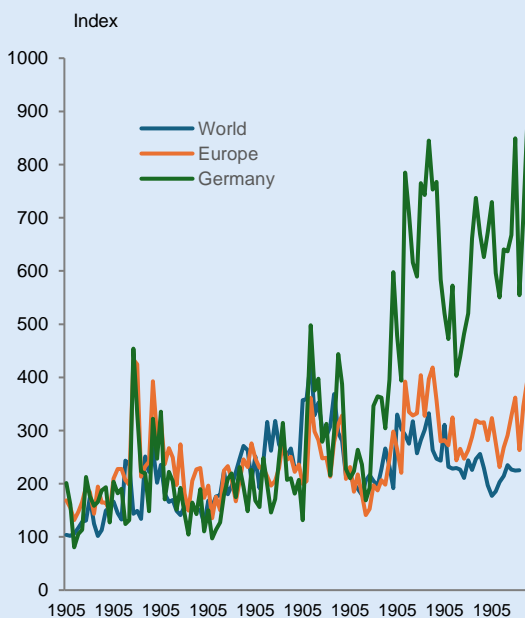
Economic policy uncertainty, as measured by media articles, has been very high in Germany for some time. It rose sharply after the start of the war in Ukraine and in the wake of the energy crisis. After initially falling with the drop in energy prices, it has been on a clear upward trend again since spring 2023 (Figure 1). It is striking that economic policy uncertainty in Germany has been significantly higher than in neighboring European countries or worldwide since 2022, whereas it had developed very similar until then. A high level of uncertainty can dampen overall economic activity, in particular by discouraging firms and private households from investing (Bloom 2009). In this note, we empirically assess the extent to which increased economic policy uncertainty has contributed to the weak economic performance in Germany.

A well-known indicator for measuring economic policy uncertainty evaluates articles in selected newspapers (Baker et al. 2016). The higher the frequency of keywords related to economic policy uncertainty, the higher the indicator. Fluctuations in the indicator can easily be linked to events that have increased economic policy uncertainty, such as the Brexit vote or the start of the war in Ukraine. Of course, such an indicator also has weaknesses. For example, the upward trend in the indicator could be related to a higher news coverage of economic policy uncertainty - and to some extent of the indicator itself - without uncertainty actually being higher. In addition, there is evidence that the results may also depend on the scaling used, i.e. how the number of keywords is related to the number of articles that have been evaluated (Bulliskeria et al. 2023).

A vector autoregressive model (VAR) is used for the empirical analysis of the effects of fluctuations in economic policy uncertainty on GDP. In addition to GDP, the following variables are included in the model as control variables: stock prices and their volatility based on the DAX, interest rates measured by two-year German government bonds, the number of persons in employment and consumer prices. The variables are included as log-levels with the exception of DAX volatility and interest rates. The model is estimated using monthly data for the period from January 1993 to September 2024. GDP, which is only available on a quarterly basis, is interpolated to monthly data using industrial production. Three lags of the variables are included in the model. Based on common methods (Baker et al. 2016; Jurado et al. 2015), the effects of economic policy uncertainty are identified under the assumption that uncertainty can affect all other variables contemporaneously but is not affected by these variables contemporaneously (Cholesky identification).

According to the results, a one standard deviation increase in economic policy uncertainty (equivalent to an increase of around 30 percent) dampens German GDP by around 0.15 percent at its peak (Figure 2).

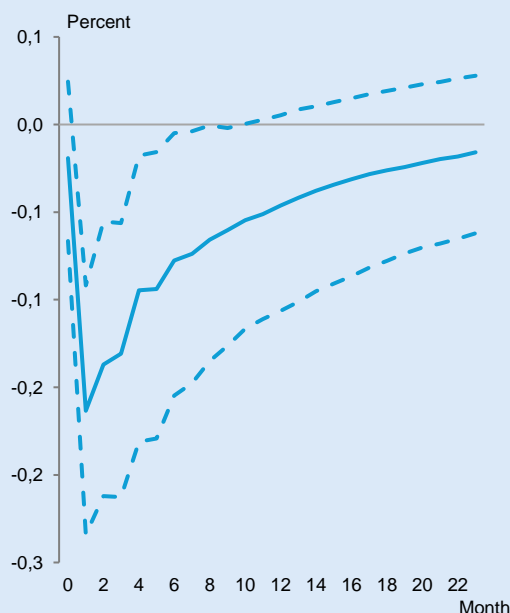
**Figure 1:
Uncertainty**



Monthly data.

Source: Economic Policy Uncertainty.

**Figure 2:
GDP**

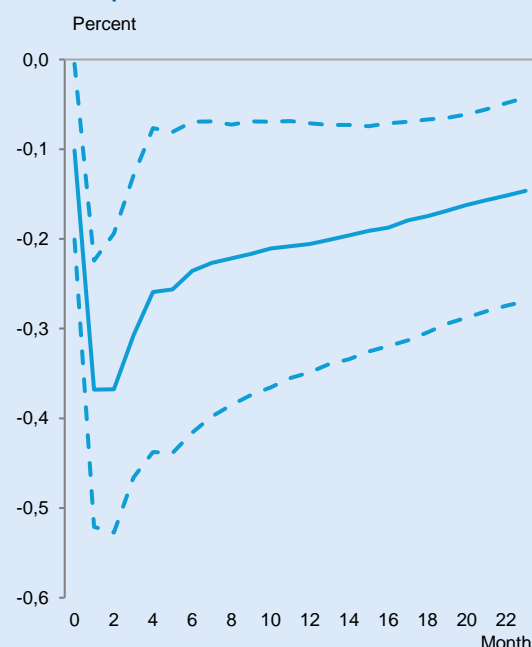


Monthly data. Effects of an uncertainty shock that leads to an increase in economic policy uncertainty by one standard deviation (increase of around 30 percent). Dashed lines: 68 percent interval.
Sources: Economic Policy Uncertainty; Federal Statistical Office; Kiel Institute.

The maximum effect is reached quite quickly. Thereafter, the negative impact diminishes. An increase in uncertainty has a stronger impact on industrial production, with a maximum effect of around 0.4 percent (Figure 3). This is plausible as a decline in investment activity has a particularly strong impact on industrial production. Significant negative effects are also found when producer prices for gas and electricity are included in the model (to control for the effects of the energy crisis) or when the identification of uncertainty shocks is adjusted so that economic policy uncertainty can be affected by all other variables in the VAR contemporaneously, but can only affect the other variables with a lag of one month. However, the maximum effect of economic policy uncertainty on GDP is then smaller. The effects of policy uncertainty are also smaller (and less statistically significant) when the model is only estimated up to 2019, i.e. before for the period before the recent sharp increases. This may indicate that policy uncertainty has non-linear effects on GDP, i.e. larger increases have a disproportionately large impact, while smaller fluctuations have only a small effect on GDP. Similar effects are found when the model is used to estimate the effects of global or European policy uncertainty. Overall, the results are qualitatively in line with numerous other studies on the effects of uncertainty on the economy that are based on alternative uncertainty measures or identification methods (Ademmer et al. 2019; Ademmer and Janssen 2019; Bachmann et al. 2013; Baker et al. 2016; Born et al. 2018; Junker and Michelsen 2024; Jurado et al. 2015, Meinen and Röhe 2017). However, the quantitative impact depends on the specifications chosen.

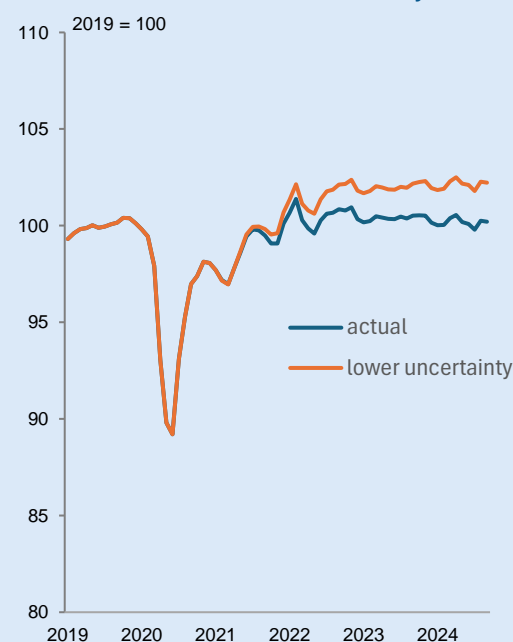
The VAR analysis can be used to estimate the extent to which the increase in economic policy uncertainty in Germany has dampened GDP in recent years. If economic policy uncertainty in Germany had developed in line with economic policy uncertainty in Europe since the beginning of 2021, and if this lower level had been due solely to the identified shocks to economic policy uncertainty, German GDP would have developed much more favorably. At its peak, the higher uncertainty in Germany could therefore explain up to 2 percent lower GDP (Figure 4). On average since 2021, GDP is estimated to have been about 1 percent below the level that would have been expected at the European level of uncertainty. Of course, when interpreting these results, it is important to bear in mind that a fundamental problem with such analyses - namely that economic policy uncertainty is likely to be driven by factors that also affect GDP - can only be addressed to a limited extent by the identification method used here, as well as by other methods. For example, poor economic policy conditions are likely not only to increase uncertainty but also to directly dampen GDP. However, some of these factors are difficult to control for in empirical analyses. This suggests that the approach used here tends to overestimate the direct effects of economic policy uncertainty. In addition, the results can vary considerably in quantitative terms depending on the empirical specification.

Figure 3:
Industrial production



Monthly data. Effects of an uncertainty shock that leads to an increase in economic policy uncertainty by one standard deviation (increase of around 30 percent). Dashed lines: 68 percent interval.
Sources: Economic Policy Uncertainty; Federal Statistical Office; Kiel Institute.

Figure 4:
GDP under current and lower uncertainty



Monthly data. Lower uncertainty: GDP path if uncertainty in Germany had been the same as in Europe due to smaller uncertainty shocks since 2021. 3-months average.

Sources: Economic Policy Uncertainty; Federal Statistical Office; Kiel Institute.

All in all, the high level of economic policy uncertainty in Germany is likely to dampen GDP significantly, although the quantitative effect is difficult to assess. If the federal government's apparently divisive on economic policy has contributed to the high level of economic policy uncertainty, the early end of the legislative period could shorten the period of high economic policy uncertainty and depending on the outcome of the elections, reduce uncertainty and contribute to an economic upturn. However, it seems likely that geopolitical and trade risks alone will keep policy uncertainty high for the time being.

Box 2:

How has production capacity in the manufacturing industry developed in recent years?

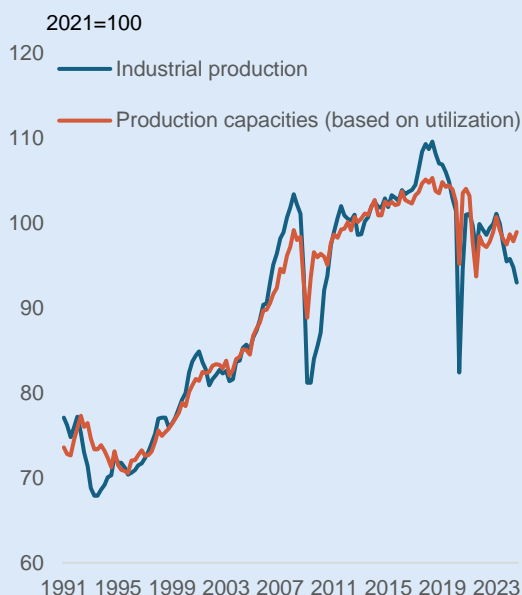
Industrial production has fallen considerably in recent years. In the third quarter, it was about 10 percent below its level in 2019. For the economic outlook, it is important to know how much of the lower production is due to cyclical or temporary factors, and how much is due to a permanent decline in production capacity. Given the importance of manufacturing for the economy as a whole – its share in total gross value added was around 20 percent in 2023 – this has important implications for GDP and potential output. However, production capacity cannot be observed and therefore must be estimated. To this end, we use surveys of capacity utilization in manufacturing and evaluate the results using other indicators.

Manufacturing firms are surveyed by the ifo Institute regarding their capacity utilization on a quarterly basis. This indicator can be used to decompose fluctuations in industrial production into changes in capacity utilization and production capacity. Of course, this requires strong assumptions – for example, that normal capacity utilization in manufacturing has not changed significantly over the years. It is also assumed that the information provided by firms is mainly related to industrial production and not to other (service) activities, such as sales or research and development. According to this approach, the declines in production can be partly attributed to lower capacity utilization, but they are also due to significant reductions in production capacity and are therefore of a more permanent nature (Figure 1). Capacity has fallen by around 6 percent since 2019. It is noticeable that the production capacities estimated in this way show relatively high short-term fluctuations and have sometimes fallen abruptly, especially during economic crises. It is usually assumed that production capacities change only gradually. Part of the fluctuations may be due to the fact that, especially in times of crisis, the information provided by firms is less precise or has a different correlation with industrial production than in normal times. In addition, especially in periods of declining production capacity – for example, when capacity has become obsolete – firms may initially tend to report a declining utilization of their normal production capacity. This in itself could mean that the decline in production capacity is initially underestimated and that the recent fall in production in autumn, when capacity utilization slumped, could be more due to declining production capacity than the estimation method suggests. Short-term fluctuations aside, the results of a flattening growth path until 2019 are in line with other estimates, such as estimates of aggregate potential output based on the European Commission's methodology (Boysen-Hogrefe et al. 2024).

Other observations equally point to a significant decline in production capacity in the manufacturing industry. Employment has fallen by more than 4 percent since 2019, while hours worked have fallen by more than 7 percent (Figure 2). In principle, these declines could also be due to cyclical factors. However, short-time work in the manufacturing industry has increased only moderately. Moreover, given the shortage of skilled workers, many firms are likely to be more reluctant to cut jobs than in previous periods of weakness. This suggests that the decline in employment is largely structural in nature.

There are also other signs that production capacity in important industries has been reduced recently. For example, production in the energy-intensive industries, which account for about 17 percent of industrial production, is still below its pre-energy crisis level (Figure 3). As energy prices in Germany are likely to remain relatively high for the foreseeable future – although they have come down from their historical highs –, production in the energy-intensive industries is expected to be permanently lower. In the automotive industry, which is of a similar size, production capacity appears to have been permanently reduced by the switch to electric vehicles (Falck et al. 2021).

Figure 1:
Industrial production and production capacities



Quarterly data. Volumes, seasonally and calendar adjusted. Production capacities: Calculated based on deviation of survey-based utilization from long-run average (1991-2019).

Sources: Federal Statistical Office; ifo; Kiel Institute.

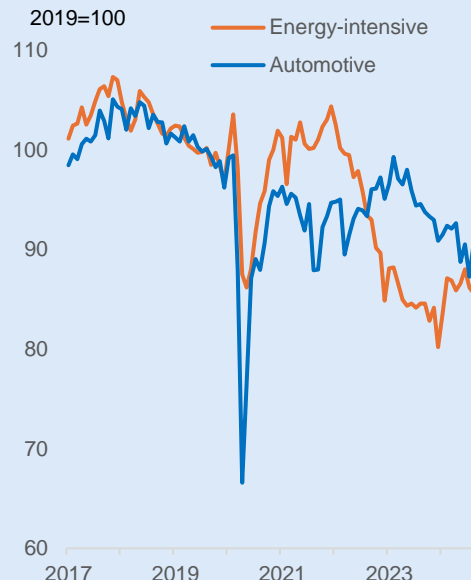
Figure 2:
Production capacities and persons in employment in manufacturing



Quarterly data. Seasonally adjusted. Production capacities: Average over four quarters.

Sources: Federal Statistical Office; ifo; Kiel Institute.

Figure 3:
Production in energy-intensive and automotive industries



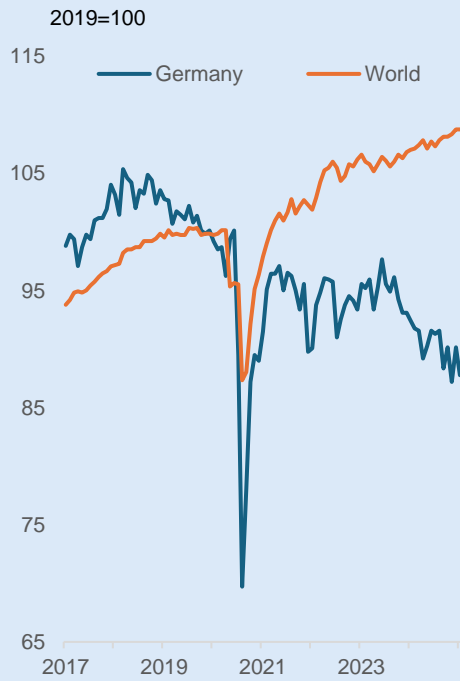
Monthly data. Volumes, seasonally and calendar adjusted.

Sources: Federal Statistical Office.

Finally, industrial production in Germany has decoupled from global industrial production. Global production has risen significantly since 2019, meaning that international cyclical factors cannot be responsible for weak production in Germany (Figure 4). Rather, in line with company surveys, this suggests that manufacturing firms have lost international competitiveness, and that production will remain subdued.

The fact that gross value added in the manufacturing industry has been much more stable than industrial production since 2019 argues against a significant decline in production capacity in the manufacturing sector as a whole. Although it has been on a downward trend for more than a year, it was recently only about 2.5 percent below its 2019 level, meaning that the weakness in the manufacturing industry had a lower impact on overall economic output (as measured by gross value added or GDP) than the decline in industrial production suggests (Figure 5). In principle, several factors can contribute to the discrepancies between industrial production and gross value added, such as different industry weights or changing intermediate input ratios (Lehmann and Wollmershäuser 2024). However, these factors can hardly explain the large differences between industrial production and gross value added. This could indicate that manufacturing firms have significantly increased their production of services, which are included in gross value added but not in industrial production. In this case, the impact of the weakness in manufacturing on potential output would be less severe, but the result of a significant decline in capacity to produce industrial goods would remain. In addition, to the extent that services are linked to the sale of industrial goods in the form of services, a decline in industrial production could also affect the potential for services with a time lag.

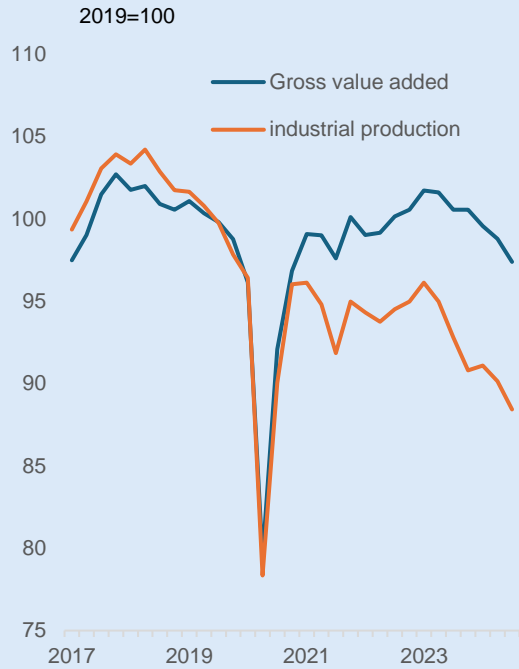
Figure 4:
Industrial production in Germany and in the world



Monthly data. Volumes, seasonally and calendar adjusted. World industrial production includes energy production.

Sources: Federal Statistical Office; CPB.

Figure 5:
Industrial production and gross value added in the manufacturing industry



Quarterly data. Volumes, seasonally and calendar adjusted.

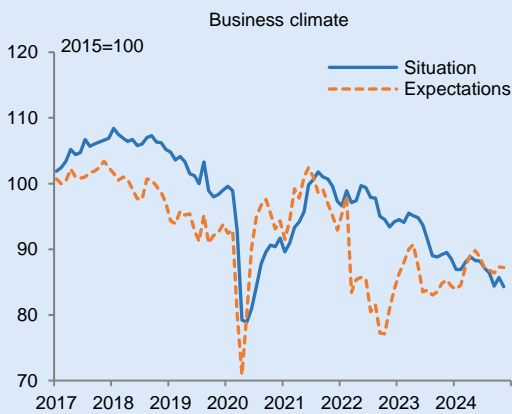
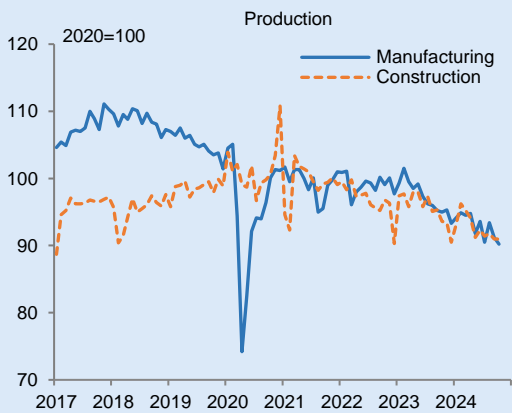
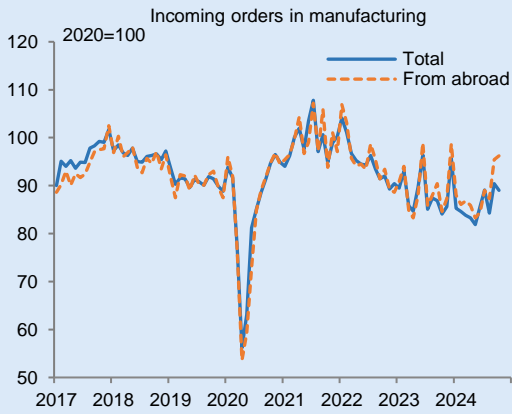
Sources: Federal Statistical Office; Kiel Institute.

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1. Leading indicators

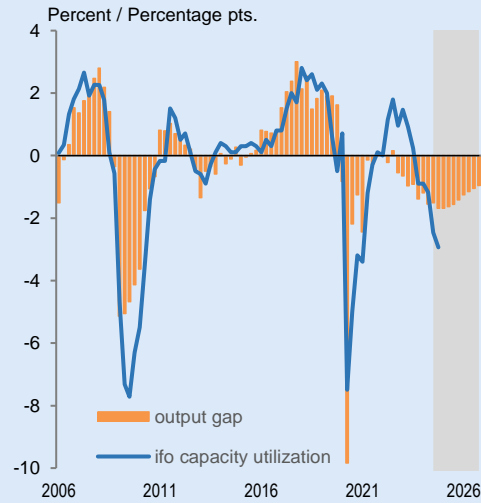
Figure 1.1:
Leading indicators



Monthly data, seasonally adjusted.

Source: Deutsche Bundesbank, *Seasonally Adjusted Business Statistics*, ifo, *Konjunkturperspektiven*; Kiel Institute calculations.

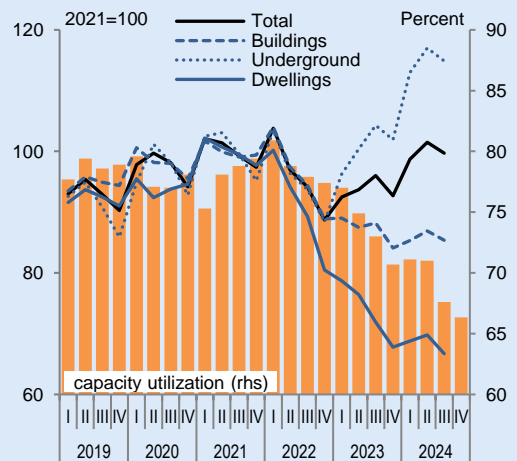
Figure 1.2:
Capacity utilization



Quarterly data: GDP deviation from potential output, estimation of potential output from the medium-term projection autumn 2024 (Boysen-Hogrefe et al. 2024), deviation of ifo capacity utilization indicator from the mean (2005 bis 2019).

Source: Federal Statistical Office, ifo institute - Leibniz Institute for Economic Research, Kiel Institute forecast.

Figure 1.3:
Order stocks and capacity utilization in construction industry

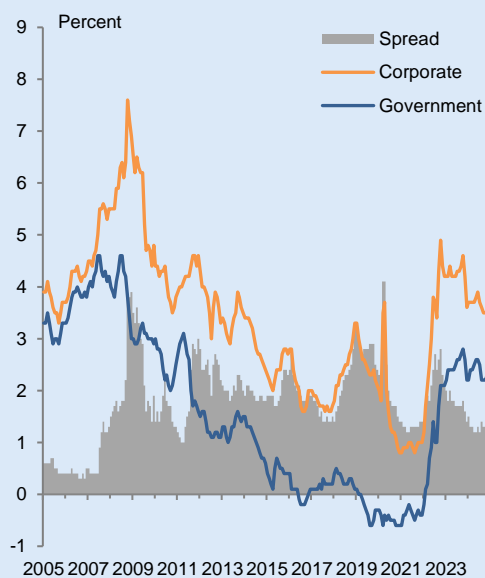


Quarterly data. Capacity utilization (deviation from normal level): seasonally adjusted; order stocks: price, seasonally and working-day adjusted.

Source: Federal Statistical Office, *GENESIS database*; ifo, *Konjunkturperspektiven*.

2. Monetary conditions and prices

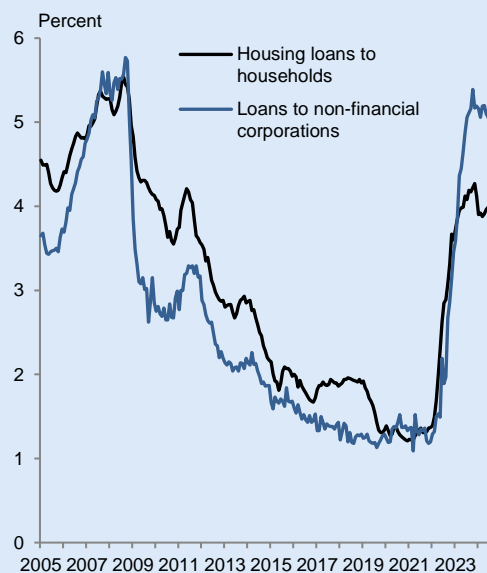
Figure 2.1:
Bond yields



Monthly data.

Source: Deutsche Bundesbank, *Monthly Reports*; Kiel Institute calculations.

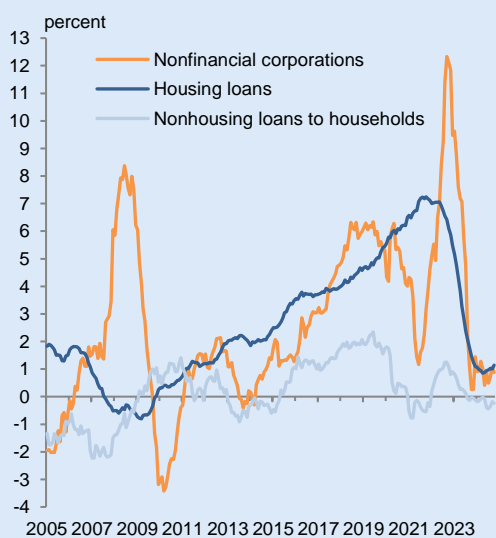
Figure 2.2:
Loan interest rates



Monthly data; Effective interest rates, new business, total loans.

Source: Deutsche Bundesbank, *MFI interest rate statistics*.

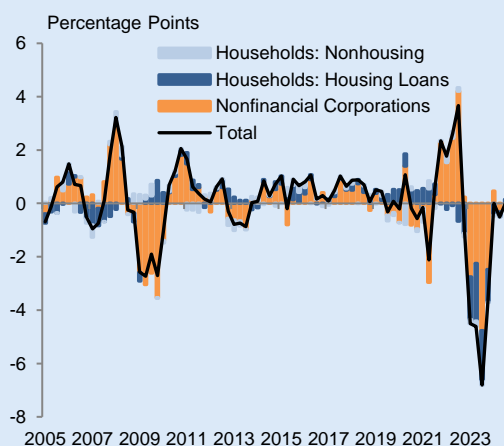
Figure 2.3:
Credit growth



Change compared to one year ago; Monthly data.

Source: Deutsche Bundesbank, *Seasonally Adjusted Business Statistics*; Kiel Institute calculations.

Figure 2.4:
Credit impulse

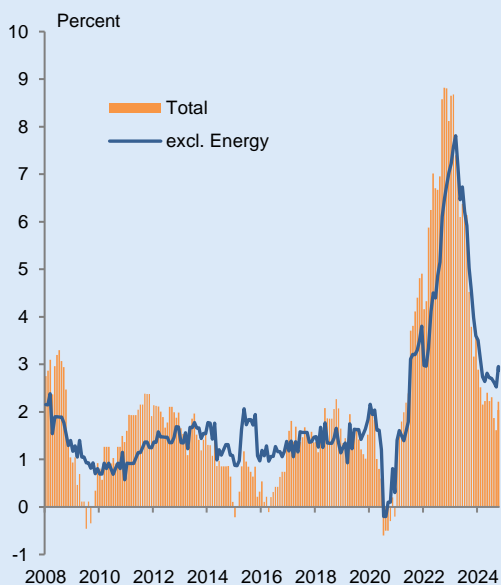


Quarterly data, most recent quarter based on first month; calculations follow Biggs et al. (2009), *Credit and economic recovery*, DNB Working Paper 218, De Nederlandsche Bank, Amsterdam.

The credit impulse is the change of the credit growth relative to the growth in GDP.

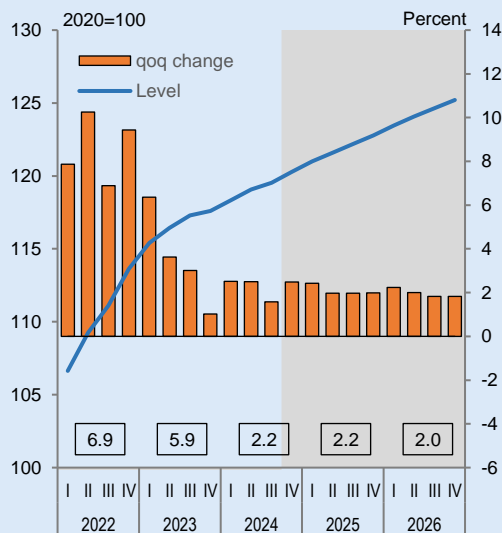
Source: Deutsche Bundesbank, *Seasonally Adjusted Business Statistics*; Kiel Institute calculations.

Figure 2.6:
Consumer prices



Monthly data; year-on-year change.
Source: Deutsche Bundesbank, *Time series databases*; Kiel Institute calculations.

Figure 2.7:
Consumer price index



Quarterly data: seasonally adjusted; qoq change: annualized.
Annual data (boxes): Volumes, change in percent.

Source: Federal Statistical Office, *Fachserie 17, Series 7*; shaded: Kiel Institute forecast.

Table 2.1:
Projections and assumptions on the international environment

	2024				2025				2026			
	I	II	III	IV	I	II	III	IV	I	II	III	IV
ECB key interest rate	4.00	3.75	3.50	3.00	2.50	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Long-term interest rate	2.28	2.48	2.28	2.21	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15
US-dollar/euro exchange rate	1.09	1.08	1.10	1.07	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Price competitiveness	91.8	92.1	92.1	91.5	91.0	90.6	90.3	90.2	90.1	90.0	90.0	90.0
Export markets	1.4	1.4	1.4	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6
Oil price	81.9	85.0	78.7	73.5	72.3	71.6	71.0	70.5	70.1	69.7	69.4	69.1
Gas price	27.4	31.7	35.4	43.3	48.0	46.3	45.3	43.4	40.9	35.0	34.3	34.4
Electricity price	69.2	72.9	78.3	118.4	97.8	97.8	97.8	97.8	88.0	88.0	88.0	88.0

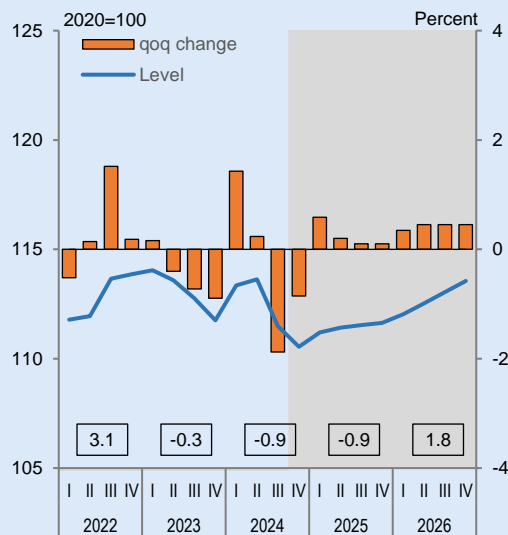
ECB key interest rate: deposit facility rate (end of quarter); long-term interest rate on 9–10 year bonds; price competitiveness: against 60 trading partners, based on consumer price inflation; index: 1991:I = 100, increasing values indicate deterioration of price competitiveness; export markets: GDP growth in 41 countries, weighted with shares in German exports, change over previous quarter. Oil price: US-Dollar per barrel North Sea Brent. Gas price: Euro per MWh (TTF). Electricity price (Phelix, Baseload).

Source: ECB, *Monthly Bulletin*; Deutsche Bundesbank, *Monthly Bulletin*; IMF, *International Financial Statistics*, Refinitiv, EEX, ENDEX; Kiel Institute calculations; shaded: Kiel Institute forecast or assumption.

3. External trade

Figure 3.1:

Exports

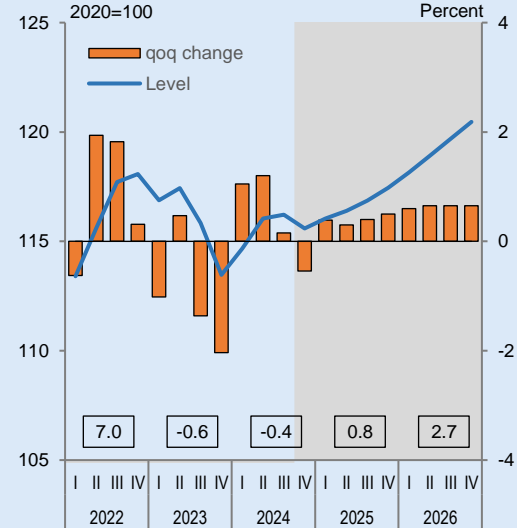


Quarterly data: Volumes, seasonally and calendar adjusted. Annual data (boxes): Volumes, change in percent.

Source: Federal Statistical Office, *Fachserie 18, Series 1.2 and 1.3*; shaded: Kiel Institute forecast.

Figure 3.2:

Imports

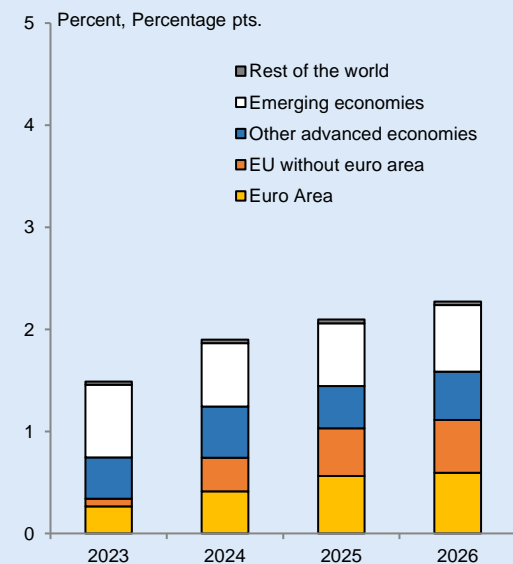


Quarterly data: Volumes, seasonally and calendar adjusted. Annual data (boxes): Volumes, change in percent.

Source: Federal Statistical Office, *Fachserie 18, Series 1.2 and 1.3*; shaded: Kiel Institute forecast.

Figure 3.3:

German export markets

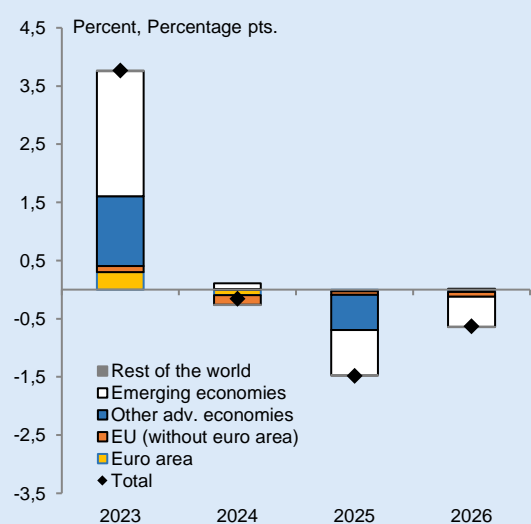


Annual data, volumes; GDP growth in 64 countries, weighted with shares in German exports.

Source: Federal Statistical Office, *Fachserie 7 Series 1*; national sources; Kiel Institute calculations and forecast.

Figure 3.4:

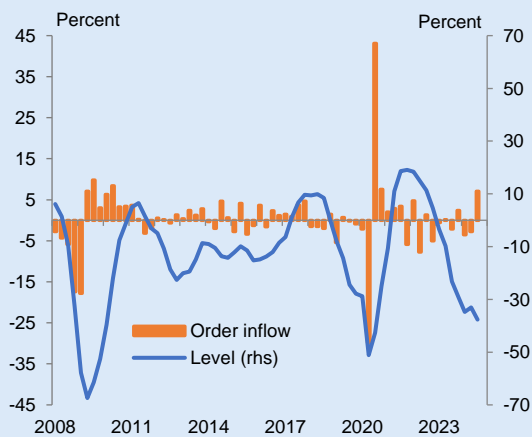
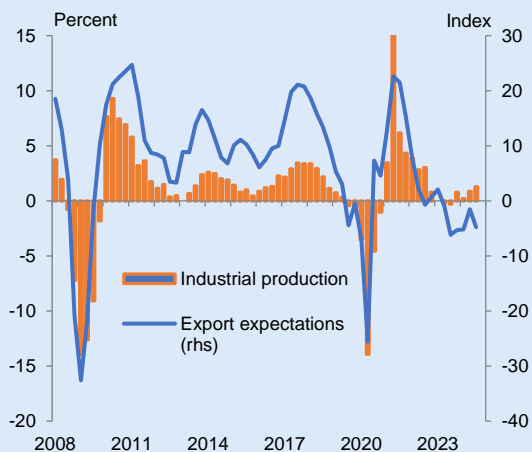
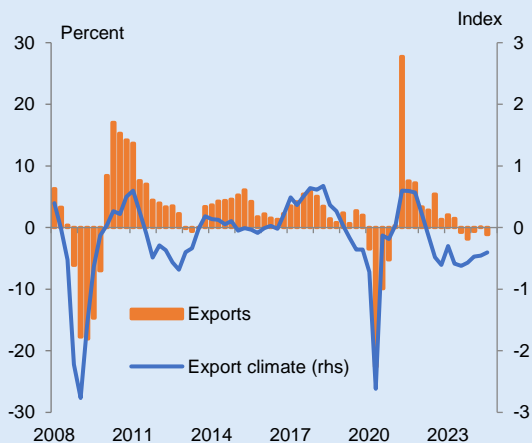
Germany's price competitiveness



Annual data; vis-à-vis 57 countries based on consumer prices and exchange rates; weights according to Germany's price competitiveness indicator vis-à-vis 60 trading partners based on consumer price indices from the Deutsche Bundesbank. Increase reflects worsening of price competitiveness.

Source: Bundesbank, *Monthly Report 11.2023*; national sources; Kiel institute calculations and forecast.

Figure 3.5:
Export indicators

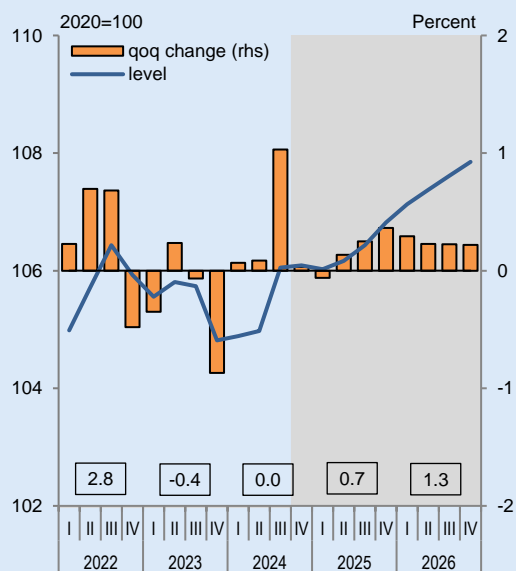


Quarterly data; exports, industrial production, volumes, change on previous year; order inflow: volumes, change on previous quarter; export expectations, foreign orders on hand: volumes; business expectations, industrial production: based on 42 countries weighted by shares of German exports.

Source: Deutsche Bundesbank; CPB, *World Trade Monitor*; Thomson Reuters Datastream; ifo, *Konjunkturperspektiven*; Kiel Institute calculations.

4. Domestic expenditure

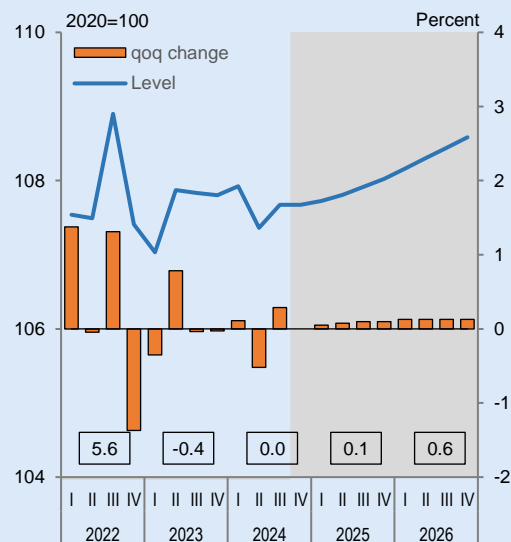
Figure 4.1:
Domestic expenditure



Quarterly data: price, seasonally and calendar adjusted, qoqchange. Annual data: price adjusted, annual rate (boxes).

Source: Federal Statistical Office, *Fachserie 18, Series 1.2 and 1.3*; shaded: Kiel Institute forecast.

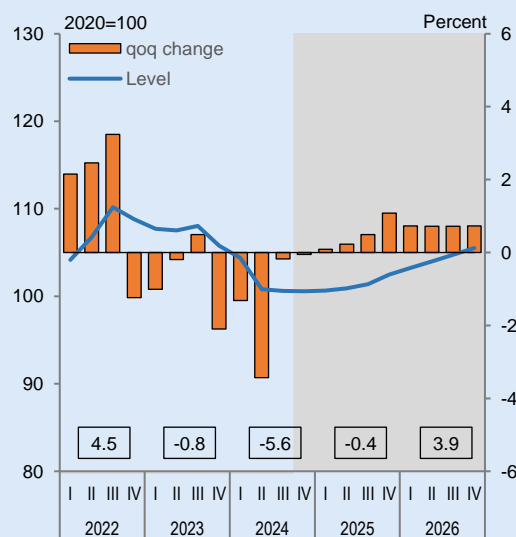
Figure 4.2:
Private consumption



Quarterly data: Volumes, seasonally and calendar adjusted. Annual data (boxes): Volumes, change in percent.

Source: Federal Statistical Office, *Fachserie 18, Series 1.2 and 1.3*; shaded: Kiel Institute forecast.

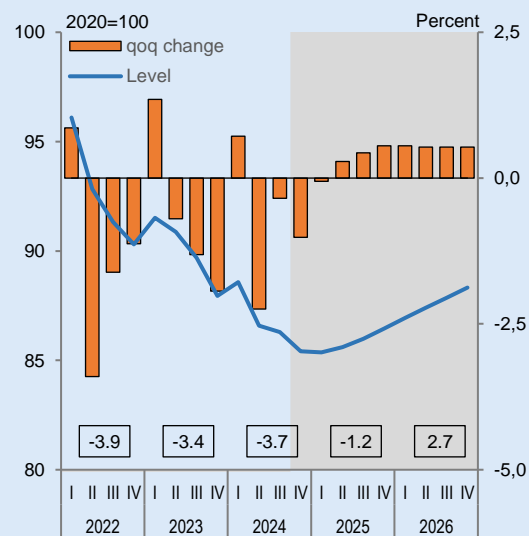
Figure 4.3:
M&E investments



Quarterly data: Volumes, seasonally and calendar adjusted. Annual data (boxes): Volumes, change in percent.

Source: Federal Statistical Office, *Fachserie 18, Series 1.2 and 1.3*; shaded: Kiel Institute forecast.

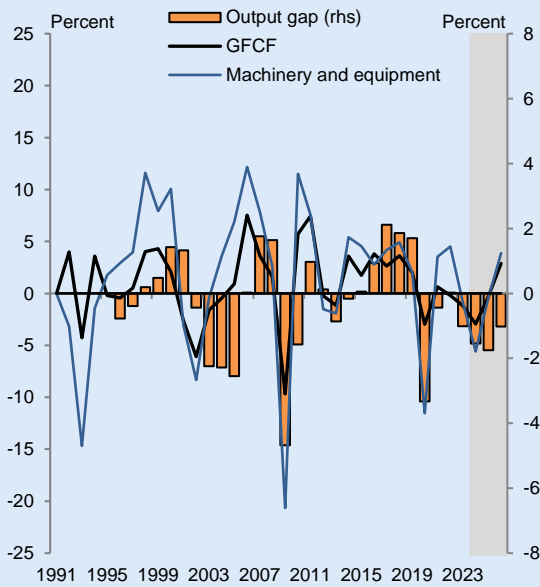
Figure 4.4:
Construction



Quarterly data: Volumes, seasonally and calendar adjusted. Annual data (boxes): Volumes, change in percent.

Source: Federal Statistical Office, *Fachserie 18, Series 1.2 and 1.3*; shaded: Kiel Institute forecast.

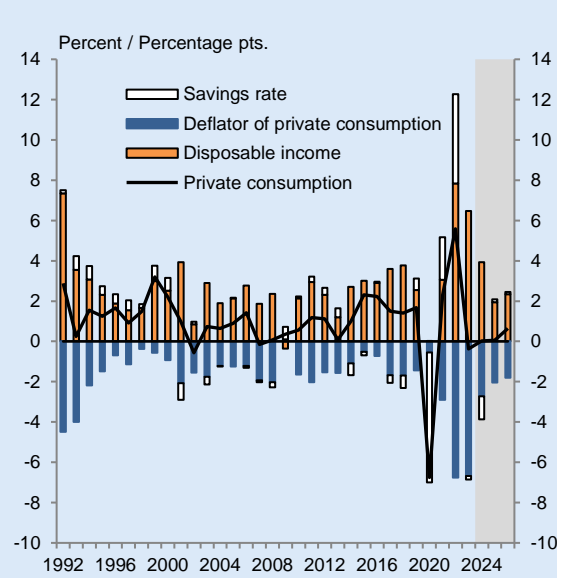
Figure 4.5:
Investment cycles



Annual data; GFCF, machinery and equipment: volumes, change on previous year; output gap: in percent of potential output, estimation taken from medium-run projection.

Source: Federal Statistical Office, *Fachserie 18, Series 1.2*; Kiel Institute calculations; shaded: Kiel Institute forecast.

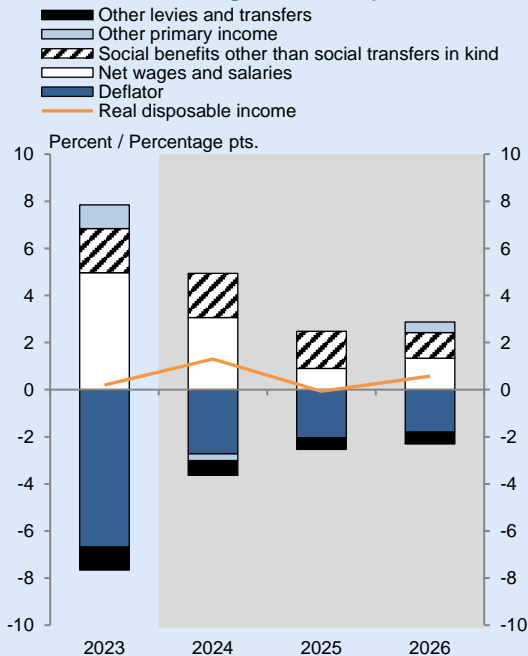
Figure 4.6:
Decomposition of growth in private consumption



Annual data; disposable income including adjustment for the change in pension entitlements.

Source: Federal Statistical Office, *Fachserie 18, Series 1.2*; Kiel Institute calculations, shaded: Kiel Institute forecast.

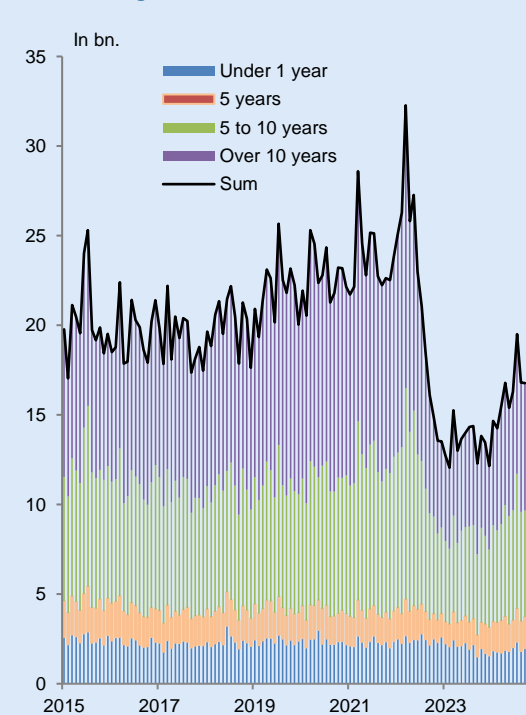
Figure 4.7:
Contributions to changes in real disposable income



Annual data. Other levies and transfers: Levies on social benefits, taxes on consumption and other transfers received (net); Deflator: Deflator of private consumption.

Source: Federal Statistical Office, *Fachserie 18, Series 1.2*; Kiel Institute calculations; shaded: Kiel Institute forecast.

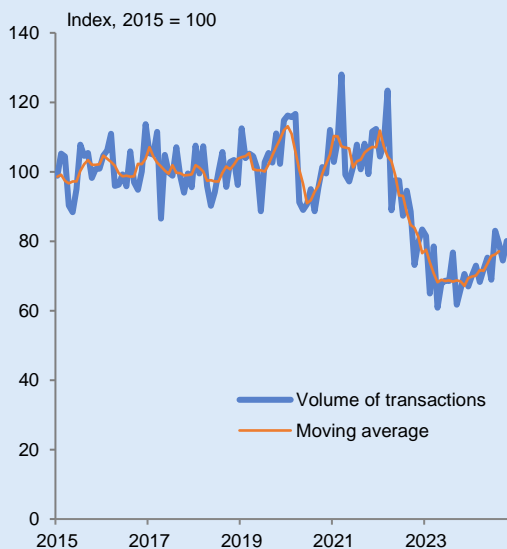
Abbildung 4.8:
New Housing Loans to Households



Monthly data, new business, different durations, in billion Euro.

Source: Deutsche Bundesbank, *Time series databases*.

Figure 4.9:
Volume of real estate transactions



Monthly data, volumen of transaction. real estate, price-adjusted, based on the revenue from the real estate transfer tax of the German states.

Source: Federal ministry of finance, vdp real estate price index, Kiel Institute calculations.

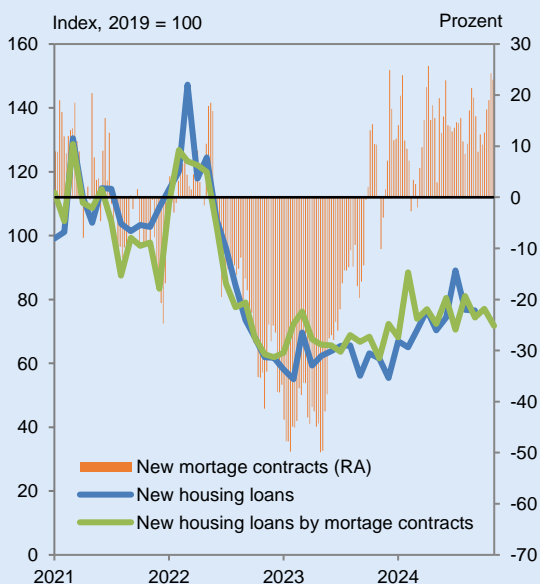
Table 4.1:
Gross fixed capital formation

	2023	2024	2025	2026
Total	-1.2	-2.9	-0.3	2.9
Corporate investment	0.7	-2.5	-0.1	1.9
Machinery and equipment	-0.8	-5.6	-0.4	3.9
Construction (nondwellings)	-4.1	-3.2	0.3	1.7
Other	4.7	4.0	2.5	1.9
Dwellings	-4.1	-5.3	-2.1	3.4
Public (nondwellings)	0.8	2.0	-0.2	1.6
<i>Memorandum item:</i>				
Construction	-3.4	-3.7	-1.2	2.7

Volumes; change over previous year in percent.

Source: Federal Statistical Office. *Fachserie 18, Series 1.2*; shaded: Kiel Institute forecast.

Figure 4.10:
Mortgage contracts



Weekly data, year-over-year change rates in percent, number of mortgage contracts for private households; monthly data, new housing loans to households, projection of new housing loans by new mortgage contracts.

Source: SCHUFA Holding AG, Federal Statistical Office, Kiel Institute calculations.

5. Industries

Table 5.1:
Gross value added for industries

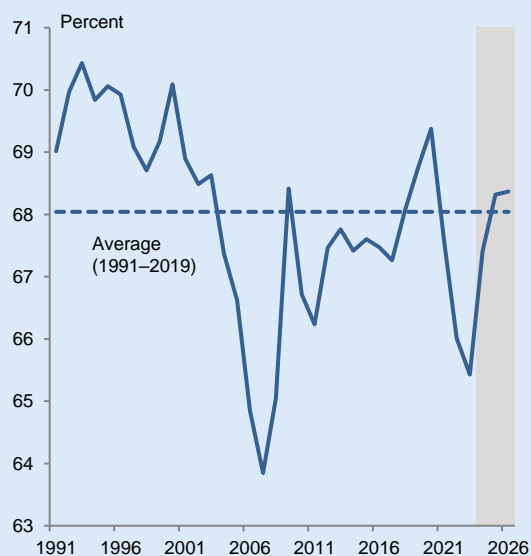
	2024				2025				2026			
	I	II	III	IV	I	II	III	IV	I	II	III	IV
	Seasonally and calendar-adjusted, q-o-q change in percent											
Gross domestic product	0.2	-0.3	0.1	-0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.1
Gross value added	-0.1	-0.5	-0.2	-0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.1
Industry excl. construction	-1.3	-1.0	-1.4	-0.2	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1
Manufacturing	-1.0	-0.8	-1.4	-0.2	0.2	0.0	0.0	0.1	0.1	0.1	0.1	0.1
Energy, Water etc.	-3.4	-2.0	-1.0	-0.5	-0.3	0.0	0.1	0.2	0.3	0.3	0.3	0.3
Construction	1.8	-3.4	-1.2	-0.5	-0.2	0.0	0.2	0.4	0.5	0.5	0.5	0.5
Trade, transport, accomodation, food services	-0.5	-0.8	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2
Information and communication	1.9	-0.4	-0.4	-0.2	0.0	0.2	0.4	0.5	0.7	0.7	0.7	0.7
Financial and insurance services	0.4	-0.8	-0.9	-0.5	-0.3	-0.1	0.0	0.1	0.1	0.1	0.1	0.1
Real estate activities	0.4	0.0	-0.2	-0.2	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0
Business services	-0.7	0.3	-0.3	-0.1	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2
Public services, education, health	0.4	0.2	1.3	0.1	-0.1	0.1	0.2	0.3	0.2	0.1	0.1	0.1
Other services	2.2	-0.3	0.6	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2

Quarterly data, volumes.

Source: Federal Statistical Office, *Fachserie 18, Series 1.3*; shaded: Kiel Institute forecast.

6. Wages

Figure 6.1:
Real unit labor costs



Yearly data; compensation of employees per hour (nominal) in relation to gross value added per hour (nominal).

Source: Federal Statistical Office, *Fachserie 18, Series 1.2*; shaded: Kiel Institute forecast.

Table 6.1:
Wages and productivity

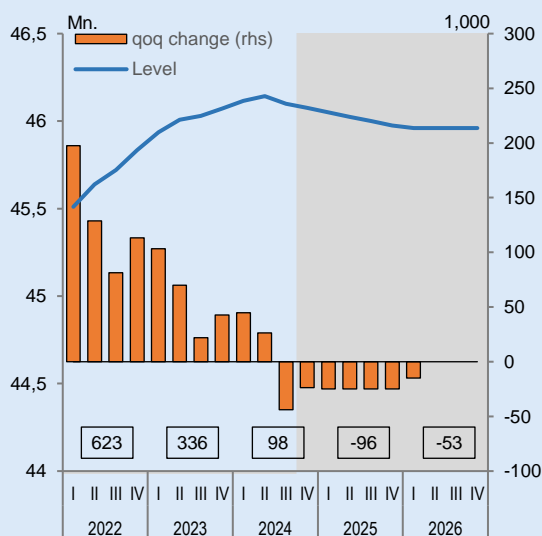
	2023	2024	2025	2026
<i>Per hour</i>				
Negotiated wages	4.0	6.2	3.8	3.1
Gross wages and salaries	6.6	5.4	2.8	2.2
Wage drift	2.6	-0.9	-1.0	-0.9
Compensation of employees	6.0	5.1	3.2	2.4
Labor productivity	-0.6	-0.1	0.1	0.7
Unit labor costs	6.7	5.3	3.1	1.6
Unit labor costs (real)	0.5	2.3	1.3	0.1
<i>Per capita</i>				
Negotiated wages	4.0	6.2	3.8	3.1
Gross wages and salaries	6.4	5.1	3.0	2.7
Wage drift	2.4	-1.0	-0.8	-0.5
Compensation of employees	5.9	5.0	3.5	2.8
Labor productivity	-1.0	-0.4	0.2	1.1
Unit labor costs	6.9	5.5	3.2	1.8
Unit labor costs (real)	0.7	2.4	1.4	0.2

Change over previous year in percent; wage drift: difference between change of negotiated wages and change of gross wages and salaries in percentage points; labor productivity: real GDP per hour or per capita; unit labor costs: compensation of employees (per hour or per capita) in relation to labor productivity; unit labor costs (real): unit labor costs deflated by GDP deflator.

Source: Federal Statistical Office. *Fachserie 18, Series 1.2*; Deutsche Bundesbank. *Negotiated Pay Rate Statistics*; shaded: IfW forecast.

7. Employment

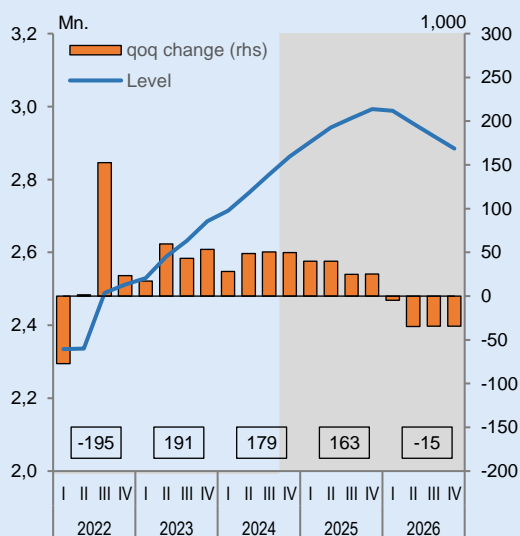
Figure 7.1:
Employment



Quarterly data: seasonally adjusted.
Annual data (boxes): yoy change in 1,000.

Source: Federal Statistical Office, *Fachserie 18, Series 1.3*; shaded: Kiel Institute forecast.

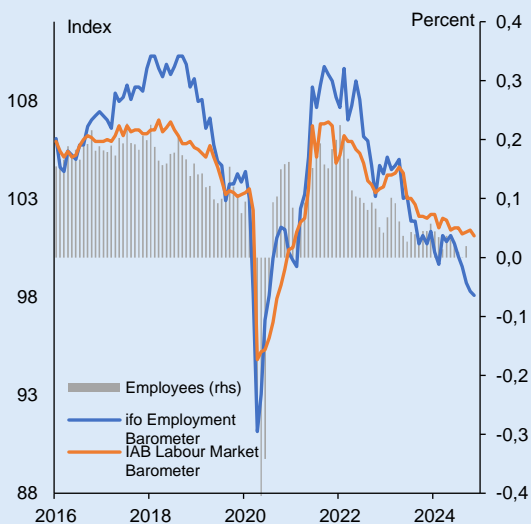
Figure 7.2:
Unemployment



Quarterly data: seasonally adjusted.
Annual data (boxes): yoy change in 1,000.

Source: Federal Statistical Office, *Fachserie 18, Series 1.3*; shaded: Kiel Institute forecast.

Abbildung 7.3:
Labor market indicators



Monthly data; employees subject to social security: m-o-m change (three-months average), seasonally adjusted. ifo Employment Barometer: rebased to 2015=105. IAB Labour Market Barometer, Component B (employment): 90=very bad outlook, 110=very good outlook.

Source: Federal Employment Agency, *Seasonally-Adjusted Time Series*; ifo Institute; Institute for Employment Research (IAB); Kiel Institute calculations.

Table 7.1:

Employment (1.000 persons)

	2022	2023	2024	2025	2026
Hours worked (domestic concept. mn. hours)	61,211	61,437	61,350	61,303	61,427
Persons in employment (domestic concept)	45,675	46,011	46,108	46,013	45,960
Self-employed	3,895	3,847	3,821	3,803	3,783
Employees (domestic concept)	41,781	42,163	42,287	42,210	42,178
Employees subject to social security contributions	34,507	34,790	34,930	34,943	34,970
Minijobs	4,125	4,198	4,181	4,105	4,045
Net commuting	211	210	200	200	200
Persons in employment (national concept)	45,464	45,801	45,908	45,813	45,761
Employees (national concept)	41,570	41,954	42,087	42,011	41,978
Unemployed persons (registered)	2,418	2,609	2,788	2,951	2,936
Unemployment rate (registered; percent)	5.3	5.7	6.0	6.3	6.3
Unemployment rate (ILO; percent)	2.9	2.8	3.3	3.6	3.6

Self-employed: including family workers; unemployed persons (registered): definition of the Federal Employment Agency (BA).

Source: Federal Statistical Office. *Fachserie 18. Series 1.2*; Federal Employment Agency. *Monthly Bulletin*; Federal Employment Agency. *Employment Statistics*; shaded: Kiel Institute forecast.

8. Public finances

Table 8.1

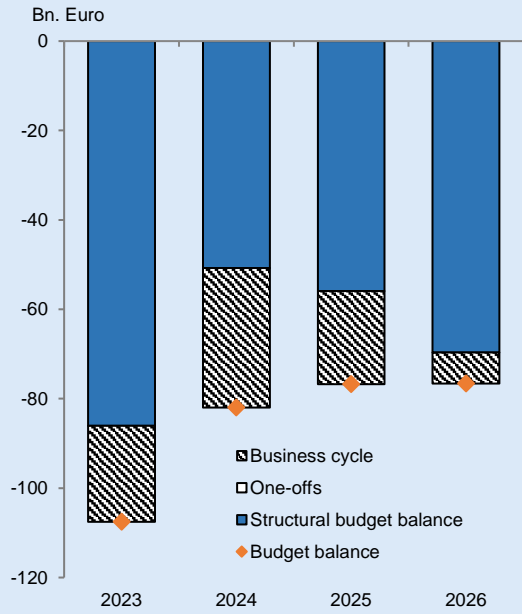
Revenues and expenditures of the general government (bn. Euro)

	2022	2023	2024	2025	2026
Revenues	1,852.6	1,917.4	2,011.6	2,102.5	2,171.4
→relative to GDP	46.9	45.8	46.6	47.7	48.0
Taxes	960.8	957.6	992.2	1,024.8	1,052.5
→relative to GDP	24.3	22.9	23.0	23.3	23.3
Social contributions	667.1	709.9	753.7	803.4	835.2
→relative to GDP	16.9	17.0	17.5	18.2	18.5
Other revenues	224.7	250.0	265.7	274.3	283.8
→relative to GDP	5.7	6.0	6.2	6.2	6.3
Expenditures	1,937.5	2,025.0	2,093.6	2,179.3	2,248.1
→relative to GDP	49.0	48.4	48.5	49.5	49.7
Compensation of employees	320.7	337.6	353.1	365.9	375.3
Intermediate consumption	252.2	264.0	272.8	280.3	287.3
Social transfers in kind	354.6	362.1	391.5	409.9	425.7
Gross capital formation	112.2	117.1	128.5	135.9	139.8
Capital transfers	27.9	36.6	45.0	46.7	45.9
Social benefits	613.9	657.0	699.1	734.0	759.7
Subsidies	67.5	84.5	49.5	51.9	52.9
Other current transfers	111.3	91.9	87.6	91.6	97.5
Other capital transfers and investment grants	77.9	74.4	66.7	63.3	64.1
Other expenditures	-1.0	-0.5	-0.5	-0.5	-0.5
Net lending/ net borrowing	-84.9	-107.5	-82.0	-76.7	-76.6
→relative to GDP	-2.1	-2.6	-1.9	-1.7	-1.7
Revenues of central, state, and local governments	1,229.5	1,244.9	1,291.5	1,335.1	1,344.2
Net of transfers from social security funds	1,218.7	1,239.6	1,289.4	1,331.9	1,341.0
Transfers from social security funds	10.8	5.3	2.1	3.2	3.2
Expenditures of central, state, and local governments	1,323.1	1,361.4	1,367.1	1,406.9	1,415.0
Net of transfers to social security funds	1,144.7	1,211.9	1,224.6	1,266.0	1,273.8
Transfers to social security funds	178.4	149.5	142.5	140.9	141.2
Net lending/ net borrowing central, state, and local governments	-93.7	-116.6	-75.6	-71.8	-70.8
Revenues of social security funds	812.3	827.3	864.7	911.5	919.1
Net of transfers from central, state, and local governments	633.9	677.8	722.2	770.6	778.0
Expenditures of social security funds	803.5	818.3	871.1	916.5	926.7
Net of transfers to central, state, and local governments	792.8	813.1	868.9	913.3	923.5
Net lending/ net borrowing social security funds	8.8	9.0	-6.4	-4.9	-7.6

Sums may deviate due to rounding. Relative to GDP in per cent.

Source: Federal Statistical Office, *internal worksheet*; Kiel Institute calculations; shaded: Kiel Institute forecast.

Figure 8.1:
Structural budget balance



Source: Europäische Kommission, AMECO; Kiel Institute calculations and forecast.

9. GDP and its components

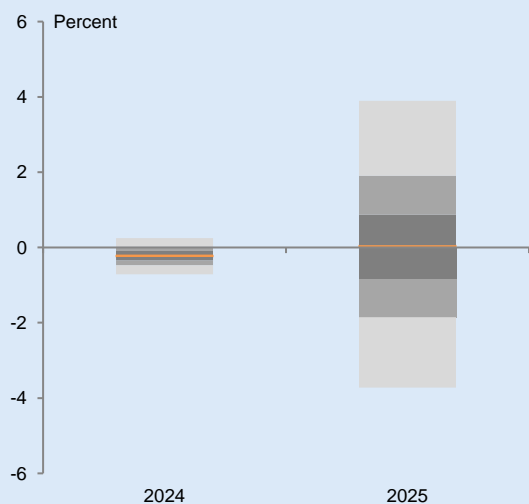
Table 9.1:
Quarterly data

	2024				2025				2026			
	I	II	III	IV	I	II	III	IV	I	II	III	IV
Gross domestic product	0.2	-0.3	0.1	-0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.1
Private consumption	0.1	-0.5	0.3	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Government consumption	-0.3	1.6	0.4	0.4	-0.3	0.2	0.5	0.7	0.5	0.1	0.3	0.2
Machinery and equipment	-1.3	-3.4	-0.2	0.0	0.1	0.2	0.5	1.1	0.7	0.7	0.7	0.7
Constructions	0.7	-2.2	-0.3	-1.0	-0.1	0.3	0.4	0.6	0.6	0.5	0.5	0.5
Other investment	1.4	0.6	0.6	0.5	0.6	0.7	0.7	0.7	0.6	0.6	0.6	0.6
Change in inventories	0.0	0.4	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Domestic expenditure	0.1	0.1	1.0	0.0	-0.1	0.1	0.3	0.4	0.3	0.2	0.2	0.2
Exports	1.4	0.2	-1.9	-0.9	0.6	0.2	0.1	0.1	0.3	0.5	0.5	0.5
Imports	1.0	1.2	0.2	-0.5	0.4	0.3	0.4	0.5	0.6	0.6	0.6	0.6
Net exports	0.2	-0.4	-0.9	-0.2	0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Employment (domestic)	46,116	46,143	46,099	46,075	46,050	46,025	46,000	45,975	45,960	45,960	45,960	45,960
Unemployment (registered)	2,714	2,763	2,813	2,863	2,903	2,943	2,968	2,993	2,988	2,954	2,919	2,885

Volumes, seasonally and working-day adjusted. Change on previous quarter in percent; change in inventories, net exports: Lundberg component (contribution to GDP growth); employment, unemployment: seasonally adjusted. 1.000 persons; unemployment: as defined by the Federal Employment Agency (BA).

Source: Federal Statistical Office, *Fachserie 18, Series 1.3*; Federal Employment Agency, *Monthly Bulletin*; shaded: Kiel Institute forecast.

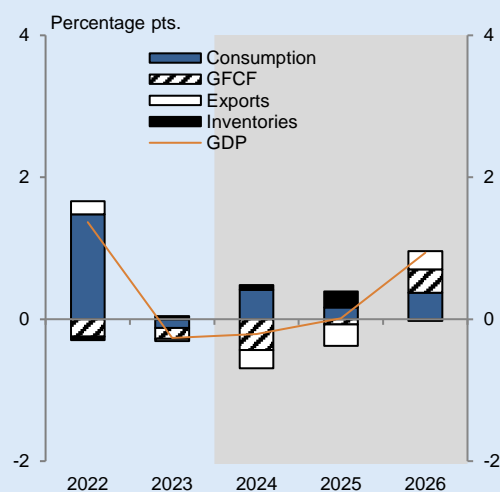
Figure 9.1:
Forecast intervals for GDP growth



GDP: volumes, change over previous year. Point forecasts: orange lines. Forecast intervals: gray shaded areas with confidence levels of 33, 66, and 95 percent. Confidence levels calculated based on historical forecast errors of the Kiel Institute in the fourth quarter 1994–2023.

Source: Own calculations.

Figure 9.2:
Import adjusted expenditure-side contributions to GDP growth



Annual data; price-adjusted, growth contribution of each expenditure component adjusted by import content; import content is estimated based on input/output tables; see Kooths and Stolzenburg (2018).

Source: OECD, *Input Output Database*; Federal Statistical Office *Fachserie 18, Series 1.2*; shaded: Kiel Institute forecast.

10. The German economy

Table 10.1:
The German economy

	2023	2023	2024	2025	2026
	Bn. Euro	Change over previous year in percent			
Use of gross domestic product, price-adjusted					
GDP		-0.3	-0.2	0.0	0.9
Private consumption expenditure		-0.4	0.0	0.1	0.6
Public consumption expenditure		-0.1	2.3	1.2	1.5
Total fixed investment		-1.2	-2.9	-0.3	2.9
Machinery and equipment		-0.8	-5.6	-0.4	3.9
Construction		-3.4	-3.7	-1.2	2.7
Other equipment		4.7	4.0	2.5	1.9
Changes in stocks		0.1	0.1	0.4	0.0
Domestic Demand		-0.4	0.0	0.7	1.3
Exports		-0.3	-0.9	-0.9	1.8
Imports		-0.6	-0.4	0.8	2.7
Net exports		0.1	-0.2	-0.7	-0.3
Use of gross domestic product at current prices					
GDP	4,185.6	5.9	2.8	1.8	2.5
Private consumption expenditure	2,205.6	6.3	2.8	2.1	2.5
Public consumption expenditure	905.2	4.1	4.8	2.8	3.1
Total fixed investment	899.9	4.9	-0.4	1.6	5.1
Machinery and equipment	275.7	4.8	-4.0	1.3	5.7
Construction	466.1	4.4	-0.8	0.8	5.0
Other equipment	158.0	6.2	6.8	4.5	4.3
Changes in stocks (€ bn.)		7.2	9.9	29.3	25.7
Domestic Demand	4,017.9	4.2	2.5	2.6	3.1
Exports	1,816.6	0.4	-0.1	-0.2	2.5
Imports	1,649.0	-3.6	-0.9	1.5	3.9
Net exports (€ bn.)		167.7	181.1	152.1	132.5
Gross national income	4,332.2	5.7	2.6	2.0	2.6
Deflators					
GDP		6.1	3.0	1.8	1.6
Private consumption expenditure		6.7	2.7	2.0	1.8
Public consumption expenditure		4.2	2.4	1.6	1.5
Investment in machinery and equipment		5.7	1.7	1.7	1.8
Investment in construction		8.1	3.1	2.1	2.3
Investment in other equipment		1.4	2.7	2.0	2.4
Exports		0.7	0.8	0.7	0.7
Imports		-3.0	-0.5	0.7	1.1
<i>Addendum: Consumer prices</i>		5.9	2.2	2.2	2.0
Income distribution					
Net national income (factor costs)	3,134.5	6.8	1.2	1.5	2.4
Compensation of employees	2,229.0	6.8	5.3	3.3	2.8
in percent of national income		71.1	74.0	75.3	75.6
Property and entrepreneurial income	905.4	6.7	-9.0	-3.4	1.1
Disposable income	2,404.4	6.9	4.0	2.0	2.4
Saving rate		10.4	11.4	11.3	11.2
Wages and salaries	1,846.0	7.4	5.5	2.8	2.6
Wage per hour		6.6	5.4	2.8	2.2
Unit labor costs		6.7	5.3	3.1	1.6
Productivity per hour		-0.6	-0.1	0.1	0.7
Unemployment (1,000)	2,608.7	2,788.0	2,951.5	2,936.2	
Rate of unemployment (percent)	5.7	6.0	6.3	6.3	
Total employment (1,000)	46,010.5	46,108.4	46,012.8	45,960.3	
Public sector budget balance					
Public sector budget balance (€ bn.)		-107.5	-99.0	-83.2	-96.3
Public sector budget balance (in percent of GDP)		-2.6	-2.3	-1.9	-2.1
Public debts (in percent)		62.7	63.2	63.9	64.4

Change in stocks, net exports: Lundberg-component (contribution to GDP growth); employment, unemployment: as defined by the Federal Employment Agency (BA); public debts: in relation to GDP.

Source: Federal Statistical Office, *Fachserie 18, Series 1.2*; shaded: Kiel Institute forecast.

11. National accounts

National Accounts									
Forecast period: 2024 to 2025									
	2024	2025	2026	2024		2025		2026	
				H1	H2	H1	H2	H1	H2
1. Production									
Change over the same period of the preceding year in %									
Persons in employment	0.2	-0.2	-0.1	0.4	0.1	-0.2	-0.2	-0.2	-0.1
Hours worked	-0.1	-0.1	0.2	-0.6	0.3	-0.1	-0.1	-0.2	0.6
Hours worked by person in employment	-0.4	0.1	0.3	-1.0	0.2	0.1	0.1	0.0	0.6
Labor productivity ¹	-0.1	0.1	0.7	0.3	-0.4	-0.3	0.5	0.9	0.6
Gross domestic product, price-adjusted	-0.2	0.0	0.9	-0.3	-0.1	-0.4	0.4	0.7	1.2
2. Use of gross domestic product at current prices									
a) EUR bn.									
Consumption expenditure	3 214.5	3 288.6	3 375.5	1 570.7	1 643.7	1 605.3	1 683.2	1 647.7	1 727.9
Private households ²	2 266.3	2 313.8	2 370.7	1 108.7	1 157.6	1 129.7	1 184.1	1 155.9	1 214.8
Government	948.2	974.7	1 004.9	462.0	486.1	475.6	499.1	491.8	513.1
Gross fixed capital formation	895.9	910.7	957.0	438.4	457.5	439.0	471.7	456.6	500.4
Machinery and equipment	264.6	268.0	283.2	127.8	136.8	126.3	141.7	132.7	150.5
Construction	462.6	466.3	489.7	229.7	232.8	227.8	238.5	237.7	252.0
Other products	168.8	176.4	184.1	80.9	87.9	84.8	91.6	86.2	97.9
Changes in inventories ³	9.9	29.3	25.7	6.2	3.7	26.8	2.5	26.8	-1.2
Domestic expenditure	4 120.3	4 228.6	4 358.3	2 015.4	2 105.0	2 071.1	2 157.5	2 131.2	2 227.1
Net exports	181.1	152.1	132.5	110.3	70.9	87.5	64.6	77.0	55.5
Exports	1 815.6	1 811.8	1 856.6	913.7	901.9	898.3	913.5	913.5	943.1
Imports	1 634.5	1 659.7	1 724.1	803.5	831.0	810.8	848.8	836.5	887.6
Gross domestic product	4 301.5	4 380.7	4 490.8	2 125.6	2 175.8	2 158.6	2 222.1	2 208.1	2 282.6
b) Change over the same period of the preceding year in %									
Consumption expenditure	3.3	2.3	2.6	3.8	2.9	2.2	2.4	2.6	2.7
Private households ²	2.8	2.1	2.5	3.0	2.5	1.9	2.3	2.3	2.6
Government	4.8	2.8	3.1	5.8	3.8	2.9	2.7	3.4	2.8
Gross fixed capital formation	-0.4	1.6	5.1	-0.8	-0.1	0.1	3.1	4.0	6.1
Machinery and equipment	-4.0	1.3	5.7	-3.7	-4.3	-1.1	3.5	5.1	6.3
Construction	-0.8	0.8	5.0	-1.6	0.1	-0.8	2.4	4.3	5.7
Other products	6.8	4.5	4.3	7.0	6.6	4.8	4.2	1.7	6.8
Domestic expenditure	2.5	2.6	3.1	2.1	3.0	2.8	2.5	2.9	3.2
Exports	-0.1	-0.2	2.5	-0.3	0.1	-1.7	1.3	1.7	3.2
Imports	-0.9	1.5	3.9	-3.4	1.6	0.9	2.1	3.2	4.6
Gross domestic product	2.8	1.8	2.5	3.3	2.3	1.6	2.1	2.3	2.7
3. Use of gross domestic product, price-adjusted (chain-linked, 2010=100)									
a) EUR bn.									
Consumption expenditure	2 695.6	2 706.2	2 730.5	1 330.0	1 365.6	1 334.0	1 372.2	1 345.4	1 385.2
Private households ²	1 882.3	1 883.3	1 895.3	927.4	954.9	925.7	957.6	930.1	965.2
Government	813.7	823.6	836.2	402.8	410.9	408.7	414.8	415.9	420.2
Gross fixed capital formation	709.4	707.3	727.7	348.4	361.0	341.8	365.5	348.4	379.2
Machinery and equipment	225.9	224.9	233.6	109.1	116.8	106.3	118.7	109.6	124.0
Construction	333.5	329.3	338.2	166.6	166.9	161.5	167.8	165.0	173.2
Other products	153.3	157.2	160.1	73.8	79.5	75.5	81.6	75.2	84.9
Domestic expenditure	3 443.7	3 468.0	3 512.1	1 694.7	1 748.9	1 708.6	1 759.4	1 727.4	1 784.7
Exports	1 513.8	1 500.6	1 527.3	764.5	749.2	745.3	755.2	753.0	774.4
Imports	1 347.2	1 357.8	1 394.7	664.6	682.6	666.0	691.8	679.6	715.1
Gross domestic product	3 608.0	3 608.4	3 642.2	1 794.0	1 814.0	1 786.8	1 821.6	1 799.5	1 842.6
b) Change over the same period of the preceding year in %									
Consumption expenditure	0.7	0.4	0.9	0.8	0.6	0.3	0.5	0.9	0.9
Private households ²	0.0	0.1	0.6	0.1	-0.1	-0.2	0.3	0.5	0.8
Government	2.3	1.2	1.5	2.3	2.3	1.5	1.0	1.8	1.3
Gross fixed capital formation	-2.9	-0.3	2.9	-3.1	-2.8	-1.9	1.3	1.9	3.8
Machinery and equipment	-5.6	-0.4	3.9	-5.5	-5.7	-2.6	1.6	3.1	4.5
Construction	-3.7	-1.2	2.7	-4.3	-3.2	-3.1	0.6	2.2	3.2
Other products	4.0	2.5	1.9	4.6	3.5	2.4	2.6	-0.4	4.0
Domestic expenditure	0.0	0.7	1.3	-0.8	0.9	0.8	0.6	1.1	1.4
Exports	-0.9	-0.9	1.8	-0.6	-1.1	-2.5	0.8	1.0	2.5
Imports	-0.4	0.8	2.7	-1.9	1.2	0.2	1.3	2.0	3.4
Gross domestic product	-0.2	0.0	0.9	-0.3	-0.1	-0.4	0.4	0.7	1.2

National Accounts (cont.)									
Forecast period: 2024 to 2025									
	2024	2025	2026	2024		2025		2026	
				H1	H2	H1	H2	H1	H2
4. Deflators (2010=100)									
Change on the same period of the preceding year in %									
Private consumption ²	2.7	2.0	1.8	2.9	2.6	2.1	2.0	1.8	1.8
Government consumption	2.4	1.6	1.5	3.4	1.4	1.5	1.7	1.6	1.5
Gross fixed capital formation	2.6	1.9	2.1	2.4	2.8	2.1	1.8	2.0	2.2
Machinery and equipment	1.7	1.7	1.8	1.8	1.5	1.5	1.9	1.9	1.6
Construction	3.1	2.1	2.3	2.8	3.3	2.3	1.9	2.1	2.4
Exports	0.8	0.7	0.7	0.4	1.3	0.8	0.5	0.7	0.7
Imports	-0.5	0.7	1.1	-1.5	0.5	0.7	0.8	1.1	1.2
Gross domestic product	3.0	1.8	1.6	3.6	2.4	2.0	1.7	1.6	1.5
5. National income									
a) EUR bn.									
Primary income of private households ²	3 007.8	3 084.3	3 162.4	1 473.8	1 534.0	1 513.8	1 570.4	1 546.6	1 615.8
Employers social contributions	400.6	422.7	437.9	193.4	207.2	204.7	218.0	211.9	226.1
Gross wages and salaries	1 945.9	2 001.6	2 053.2	931.0	1 014.9	960.9	1 040.7	984.1	1 069.1
Other primary income ⁴	660.3	659.9	671.3	348.3	311.9	348.2	311.8	350.7	320.6
Primary income of other sectors	549.5	532.0	540.9	268.2	281.4	250.8	281.2	256.5	284.4
Net national income	3 557.3	3 616.3	3 703.3	1 742.0	1 815.4	1 764.6	1 851.6	1 803.1	1 900.3
Consumption of fixed capital	889.0	917.2	948.8	441.9	447.1	456.0	461.2	471.3	477.6
Gross national income	4 446.3	4 533.5	4 652.2	2 183.8	2 262.5	2 220.6	2 312.8	2 274.3	2 377.8
memorandum item:									
Net national income (factor costs)	3 171.5	3 220.3	3 296.1	1 548.9	1 622.6	1 566.1	1 654.3	1 598.8	1 697.3
Property and entrepreneurial income	824.0	796.0	805.0	423.4	400.5	400.4	395.6	402.9	402.1
Compensation of employees	2 347.5	2 424.4	2 491.1	1 125.5	1 222.1	1 165.7	1 258.7	1 195.9	1 295.2
b) Change over the same period of the preceding year in %									
Primary income of private households ²	3.9	2.5	2.5	4.3	3.4	2.7	2.4	2.2	2.9
Employers social contributions	4.6	5.5	3.6	4.8	4.4	5.9	5.2	3.5	3.7
Gross wages and salaries	5.4	2.9	2.6	6.1	4.8	3.2	2.5	2.4	2.7
... per employee	5.1	3.0	2.7	5.7	4.6	3.3	2.8	2.6	2.8
Other primary income ⁴	-1.0	-0.1	1.7	-0.8	-1.2	0.0	-0.1	0.7	2.8
Primary income of other sectors	-5.0	-3.2	1.7	-2.7	-7.0	-6.5	-0.1	2.3	1.2
Net national income	2.4	1.7	2.4	3.1	1.7	1.3	2.0	2.2	2.6
Consumption of fixed capital	3.6	3.2	3.5	3.5	3.7	3.2	3.2	3.4	3.6
Gross national income	2.6	2.0	2.6	3.2	2.1	1.7	2.2	2.4	2.8
memorandum item:									
Net national income (factor costs)	1.2	1.5	2.4	1.9	0.5	1.1	2.0	2.1	2.6
Property and entrepreneurial income	-9.0	-3.4	1.1	-7.7	-10.4	-5.4	-1.2	0.6	1.6
Compensation of employees	5.3	3.3	2.8	6.0	4.7	3.6	3.0	2.6	2.9
6. Disposable income of private households ²									
a) EUR bn.									
Mass income	1 966.1	2 017.5	2 071.5	945.8	1 020.2	974.5	1 043.0	1 000.2	1 071.4
Net wages and salaries	1 360.1	1 382.6	1 416.8	645.3	714.8	658.9	723.7	673.8	743.0
Social benefits other than social transfers in kind	775.6	814.9	842.7	383.9	391.7	404.2	410.7	419.1	423.5
less: Levies on social benefits, taxes on consumption	169.6	180.0	187.9	83.3	86.2	88.6	91.3	92.8	95.1
Other primary income ⁴	660.3	659.9	671.3	348.3	311.9	348.2	311.8	350.7	320.6
Other transfers received (net) ⁵	-125.1	-126.8	-131.5	-58.7	-66.4	-60.8	-66.0	-62.8	-68.7
Disposable income	2 501.3	2 550.6	2 611.3	1 235.5	1 265.8	1 261.9	1 288.8	1 288.1	1 323.3
Change in pension entitlements	57.7	58.0	58.3	28.0	29.7	28.2	29.9	28.3	30.0
Consumption expenditure	2 266.3	2 313.8	2 370.7	1 108.7	1 157.6	1 129.7	1 184.1	1 155.9	1 214.8
Saving	292.7	294.8	299.0	154.8	137.9	160.3	134.5	160.5	138.5
Saving ratio (%) ⁶	11.4	11.3	11.2	12.2	10.6	12.4	10.2	12.2	10.2
b) Change over the same period of the preceding year in %									
Mass income	5.8	2.6	2.7	6.6	5.1	3.0	2.2	2.6	2.7
Net wages and salaries	5.7	1.7	2.5	6.7	4.8	2.1	1.2	2.3	2.7
Social benefits other than social transfers in kind	6.2	5.1	3.4	6.5	5.8	5.3	4.8	3.7	3.1
less: Levies on social benefits, taxes on consumption	6.5	6.1	4.4	7.7	5.5	6.4	5.9	4.7	4.2
Other primary income ⁴	-1.0	-0.1	1.7	-0.8	-1.2	0.0	-0.1	0.7	2.8
Disposable income	4.0	2.0	2.4	4.4	3.7	2.1	1.8	2.1	2.7
Consumption expenditure	2.8	2.1	2.5	3.0	2.5	1.9	2.3	2.3	2.6
Saving	14.1	0.7	1.4	13.8	14.5	3.6	-2.5	0.1	3.0

National Accounts (cont.)									
Forecast period: 2024 to 2025									
	2024	2025	2026	2024		2025		2026	
				H1	H2	H1	H2	H1	H2
7. Revenue and expenditure by general government ⁷									
a) EUR bn.									
Revenue									
Taxes	987.6	1 019.9	1 046.4	487.9	499.6	503.3	516.6	516.0	530.4
Social contributions	752.0	796.3	827.3	364.3	387.7	388.3	408.0	403.2	424.0
Property income	34.2	35.4	36.5	17.6	16.6	18.3	17.1	19.0	17.5
Other current transfers	31.9	32.4	32.9	13.7	18.2	13.9	18.5	14.2	18.8
Capital transfers	20.5	20.6	20.7	8.9	11.6	8.9	11.7	9.0	11.7
Sales	182.0	190.1	197.5	85.1	96.9	89.1	101.0	92.6	104.9
Other subsidies	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Total	2 008.4	2 094.8	2 161.5	977.6	1 030.8	1 021.9	1 072.9	1 054.0	1 107.5
Expenditure									
Intermediate consumption ⁸	666.1	685.2	709.5	321.4	344.7	331.5	353.7	344.1	365.3
Compensation of employees	353.1	364.7	373.6	170.2	182.9	175.7	188.9	180.6	193.1
Property income (interest)	45.0	48.6	50.8	22.6	22.4	24.4	24.2	25.6	25.2
Subsidies	54.3	56.6	57.1	25.4	29.0	26.3	30.3	26.5	30.6
Social benefits	700.2	734.8	761.0	346.3	353.9	364.3	370.5	378.7	382.3
Other current transfers	88.3	88.9	98.6	43.0	45.3	43.4	45.6	48.1	50.4
Capital transfers	77.3	67.6	68.5	38.2	39.1	30.0	37.6	30.4	38.1
Gross capital formation	123.5	132.1	139.0	54.9	68.6	56.7	75.4	60.1	78.9
Net acquisitions of non-produced non-financial assets	-0.5	-0.5	-0.5	-0.1	-0.4	-0.1	-0.4	-0.1	-0.4
Total	2 107.4	2 178.0	2 257.7	1 022.0	1 085.5	1 052.3	1 125.7	1 094.1	1 163.6
Net lending	-99.0	-83.2	-96.3	-44.4	-54.6	-30.4	-52.8	-40.2	-56.1
b) Change over the same period of the preceding year in %									
Revenue									
Taxes	3.1	3.3	2.6	3.9	2.4	3.1	3.4	2.5	2.7
Social contributions	5.9	5.9	3.9	6.5	5.4	6.6	5.2	3.8	3.9
Property income	9.1	3.4	3.2	10.4	7.6	4.0	2.8	3.6	2.8
Other current transfers	-4.5	1.6	1.6	-6.5	-2.8	1.6	1.6	1.6	1.6
Capital transfers	5.4	0.5	0.5	4.0	6.4	0.5	0.5	0.5	0.5
Sales	10.0	4.4	3.9	8.6	11.2	4.7	4.2	3.9	3.9
Other subsidies	-20.7	0.0	0.0	-23.8	-18.6	0.0	0.0	0.0	0.0
Total	4.7	4.3	3.2	5.2	4.3	4.5	4.1	3.1	3.2
Expenditure									
Intermediate consumption ⁸	6.3	2.9	3.5	6.9	5.8	3.1	2.6	3.8	3.3
Compensation of employees	4.6	3.3	2.5	5.8	3.5	3.3	3.3	2.7	2.2
Property income (interest)	23.2	8.0	4.5	31.3	15.9	8.0	8.0	4.9	4.1
Subsidies	-35.7	4.1	1.0	-40.0	-31.4	3.7	4.5	1.0	1.0
Social benefits	6.6	4.9	3.6	7.0	6.2	5.2	4.7	3.9	3.2
Other current transfers	-3.8	0.6	10.9	-2.5	-5.0	0.7	0.5	11.1	10.7
Capital transfers	3.9	-12.6	1.4	28.8	-12.6	-21.5	-3.9	1.3	1.5
Gross capital formation	5.5	7.0	5.2	8.7	3.0	3.3	9.9	6.0	4.6
Net acquisitions of non-produced non-financial assets	1.2	0.0	0.0	-54.9	42.5	0.0	0.0	0.0	0.0
Total	4.1	3.3	3.7	5.5	2.8	3.0	3.7	4.0	3.4
¹ Price-adjusted gross domestic product per hour worked. ² Incl. nonprofit institutions serving households. ³ Incl. acquisitions less disposals of valuables. ⁴ Operating surplus/mixed income, net property income ⁵ Received less paid other current transfers. ⁶ Savings in percent of disposable income (incl. change in pension entitlements). ⁷ Central, regional, local and social security funds. ⁸ Incl. social transfers in kind and other production taxes.									
Source: Federal Statistical Office, <i>Fachserie 18: National Accounts</i> ; Kiel Institute calculations and forecasts.									

Literature

- Baker, S. R., N. Bloom and S. J. Davis (2016). [Measuring Economic Policy Uncertainty](#). The Quarterly Journal of Economics 131(4): 1593–1636.
- Berend, L. and N. Jannsen (2024). [Zum Einfluss der wirtschaftspolitischen Unsicherheit auf die deutsche Konjunktur](#). Kiel Insight 2024.11.
- Boysen-Hogrefe, J., K.-J. Gern, D. Groll, T. Hoffmann, N. Jannsen, S. Kooths, J. Reents, C. Schröder and N. Sonnenberg (2024). [Potenzialwachstum im Kriechgang](#). Kieler Konjunkturberichte 118.
- DIHK (2024). [Deutsche Wirtschaft verliert den Anschluss](#). DIHK-Konjunkturumfrage Herbst 2024.
- Falck, O., N. Czernich and J. Koenen (2021). [Auswirkungen der vermehrten Produktion elektrisch betriebener Pkw auf die Beschäftigung in Deutschland](#). Ifo Studie.
- Felbermayr, G., J. Hinz and R. J. Langhammer (2024). [US Trade Policy After 2024: What Is at Stake for Europe?](#) Kiel Policy Brief 178.
- Grimme, C. and M. Stöckli (2017). [Makroökonomische Unsicherheit in Deutschland](#). ifo Schnelldienst 70(6): 41–50.
- Junker, S. and C. Michelsen (2024). [Wirtschaftspolitische Unsicherheit: Investitionen bleiben aus](#). vfa Economic Policy Brief 11.24.
- Lehmann, R. and T. Wollmershäuser (2024). [Struktureller Wandel im Verarbeitenden Gewerbe: Produktion unterzeichnet Bruttowertschöpfung](#). Ifo Schnelldienst 77(2): 55–60.