KIEL INSTITUTE ECONOMIC OUTLOOK

German Economy
Spring 2023

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Research Center
Business Cycles and Growth

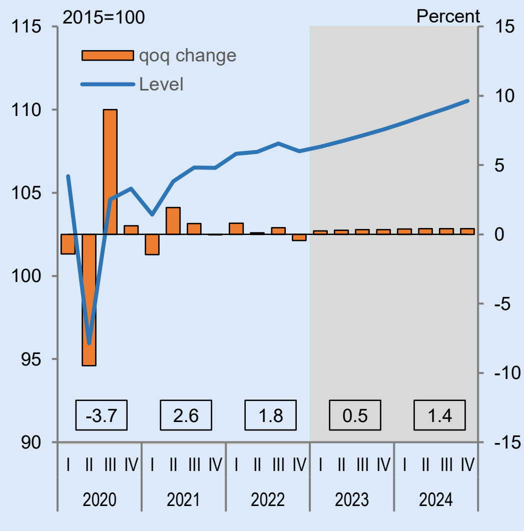
GERMAN ECONOMY IN SPRING 2023: ECONOMY IS STABILIZING BUT LITTLE MOMENTUM GOING FORWARD

Jens Boysen-Hogrefe, Dominik Groll, Timo Hoffmann, Nils Jannsen, Stefan Kooths, Nils Sonnenberg und Vincent Stamer

The German economy is working its way out of the energy crisis. In recent months, the economic outlook has improved somewhat. GDP is expected to increase by 0.5 percent in the current year and by 1.4 percent in 2024, slightly more than we had expected in our winter forecast (0.3 percent and 1.3 percent, respectively). The German economy, thus, seems to avoid a deep contraction as a result of the energy crisis. However, the economic consequences of the war in Ukraine have slowed down the recovery from the pandemic and depressed the level of GDP. Inflation is likely to remain stubbornly high for some time. Similar to our winter forecast, we expect consumer prices to increase by 5.4 percent in the current year and 2.1 percent in 2024. High inflation reduces the disposable income of private households and leads to a decline in private consumption in this year. No major impulses are emerging from the global economy. However, as supply bottlenecks ease, companies in the manufacturing industry can start to work off their previously accumulated order backlogs, even if energy-intensive industries are still suffering from high energy prices. Construction investment will decline significantly due to the worsening financial conditions. The labour market remains robust despite slow GDP growth. On the contrary, the consequences of demographic change are becoming increasingly apparent: In the next years, employment will pass its peak. The massive shortage of skilled workers will lead to strong wage increases in times of high inflation. Due to strongly increasing revenues and high inflation, the public deficit relative to nominal GDP is expected to fall from 2.6 per cent in 2022 to 1.4 per cent in 2024. The debt ratio is expected to decline from 66.4 per cent to 63.5 per cent during this period.

GDP is expected to rise again at the beginning of the year. In the last months, the economic outlook has brightened. The economic risks posed by the energy crisis have diminished with the sharp drop in wholesale prices for gas and electricity and the relatively high storage levels for gas. This is reflected in the significantly increased business expectations of the companies. Industrial production (including construction and energy) in January more than made up for the sharp decline in December and was well above its level in the fourth quarter. Overall, forecast models point to a fairly strong increase in GDP of up to more than 0.5 percent. For our forecast, we assume a lower increase. In view of the decline in real disposable income, we expect private consumption to fall again. However, fluctuations in private consumption are only disproportionately reflected in many forecast models, as they were not a major economic driver before the pandemic and the leading indicators are not very reliable for consumption. In addition, the fluctuations in industrial production in December and January were to a large extent caused by construction production, for which the general conditions remain unfavorable and which is extremely volatile at monthly frequency. Overall, companies have assessed their business situation into February as almost unchanged compared to the fourth quarter. Against this background, we expect a slight increase in GDP of 0.2 percent for the first quarter (Figure 1).

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.

Value added in the manufacturing industry will increase significantly as supply bottlenecks ease. In the past few years, high order backlogs have piled up due to massive supply bottlenecks while the order situation was good at the same time. Although incoming orders fell by more than 10 percent in the course of last year due to the energy crisis and production remained more or less stable, companies were hardly able to reduce their high order backlogs until recently. At the turn of the year, order backlogs were still about 30 percent above their level at the end of 2019. The increased range of the stock of orders indicate that the additional order backlogs account for more than 10 percent of current annual production. The overall robust foreign economy suggests that new orders will pick up again in the course of the year. Since supply bottlenecks are likely to ease further, we expect production in the manufacturing sector to pick up noticeably. For the first quarter there are even signs of a fairly strong increase in gross value added. Industrial production, for example, rose in January and was about 1 per cent above its level in the fourth quarter. Truck toll mileage, which has a fairly high forecast quality for industrial production, suggests a further significant increase in February. Overall, gross value added in manufacturing is expected to increase by 2.8 percent this year and by 2 percent next year.

Import prices drop significantly and lead to a sudden recovery of the terms of trade. German exports fell in the fourth quarter. Chemical products and other intermediate goods that are energy-intensive to produce had a significant impact on the overall decline in exports. Other industries, such as machinery and motor vehicles, experienced more stable exports as companies are increasingly able to work off the high order backlog. Services exports also endured a weak quarter. In the first quarter of 2023, the dampening influences from a weak global economy are still in effect, but will eventually subside in the second quarter following the recovery of emerging economies. Imports have undergone an even more pronounced decline in the fourth quarter as imports from China dropped strongly. We predict for 2023 an increase by 0.5 percent for exports and a decline by 0.2 percent for imports. After nine months of positive growth, import prices declined in the fourth quarter of 2022 and are expected to drop considerably in the first quarter of 2023 as well due to falling commodity and energy prices. Although prices for other imported goods rose only slightly in the fourth quarter, they did not fall noticeably compared to raw materials and chemical products. Export prices have also fallen significantly, particularly for chemical products, but less pronounced than import prices. Overall, the price dynamics have led to a sudden improvement in the terms of trade. We expect the terms of trade to continue to improve in 2023 and to make up much of its losses from 2022.

Core inflation accelerated further at the beginning of the year. While energy prices rose strongly until September 2022, year-on-year rates have been declining since then. Conversely, core (non-energy) inflation that increased from 3 to 7 percent in 2022 accelerated further at the beginning of the year to 7.3 percent in January and 7.6 percent in February. This indicates an unbroken underlying inflationary trend in food, services and non-energy goods. The core rate is expected to decline over the course of 2023. On average, however, core inflation will be higher in 2023 (5.4 percent) than in 2022 (4.9 percent). For 2024, we project a significantly lower core rate of 2.5 percent, which is, however, still well above its long-term average of 1.3 percent. The core inflation is likely to gradually decline due to easing inflationary pressures from goods (excluding energy and food). This trend has already been observed in the United States. With easing supply chain bottlenecks, upward price pressures on goods have calmed down relatively quickly there. Moreover, according to business surveys, the pass-through of higher energy costs is likely to be relatively far advanced. Price increases in services will be more persistent. Overall, however, companies are now operating in a new environment. In the post-pandemic recovery, the willingness to pay on many private households was relatively high and companies could adjust prices upwards relatively easily as supply was limited at the same time by material shortages. However, the scope for companies to increase prices is likely to narrow in the face of weakening consumer demand. Real unit labour costs have recently been at historically low levels. While higher wage settlements will provide a boost to costs, we expect that at least major parts of this impulse will not translate into further price increases, but that corporate margins will narrow and unit labour costs will return to its long-run average.

The impact of energy prices on inflation declines in 2023. Energy prices are expected to increase by 5 percent, after an increase by 30 percent in 2022. The contribution to overall inflation falls accordingly from 2.3 percentage points in 2022 to 0.4 percentage points in 2023. Based on our assumption for the crude oil price, which foresees a shallow decline in crude oil prices until the end of the forecast period, fuel prices (diesel and petrol) are likely to decline already from the second quarter of 2023.

Heating oil prices are not expected to decline until the end of 2023.[1] The inflationary impulses from gas and electricity are capped by the price brakes that have been introduced at the beginning of the year. However, wholesale prices indicate much lower prices levels of gas and electricity in 2023 and 2024 than we expected in our winter, anyway. Gas prices are likely to increase by 20 percent in 2023, following a 50 percent increase in 2022.[2] For electricity prices we expect an increase of 12 percent in 2023, whereas they had risen by 20 percent in the previous year. Gas and electricity together will contribute about 0.6 percentage points to inflation in 2023. Without the price brakes for gas and electricity, we would expect both components to increase by about 25-30 percent. The contribution to overall inflation would accordingly be 0.5 percentage points higher. Overall, inflation is expected to be 5.4 percent in 2023 and 2.1 percent in 2024 (Table 1).

Private consumption will only decline temporarily. Leading indicators point to another decline in private consumer spending in the first quarter. Retail sales in January were below the level of the fourth quarter. There are also signs of a further decline in consumer spending in the hospitality industry. Consumer climate has recently risen again somewhat, but is still at a historically low level. The propensity to buy of private households has so far hardly been able to break away from its lows. Overall, we expect private consumer spending to decline by 0.5 percent in the first quarter. In the further course of the year, private consumer spending will gradually increase again. Energy prices for households, for example, are not expected to rise any further and will ease again somewhat beginning at the end of the year. The first payments under the so-called gas and electricity price brakes will reach private households in March - after the one-off payment to gas customers in December. Finally, households are likely to reduce their savings rate again in view of their high extra savings, especially since wholesale prices for gas and electricity have recently calmed down considerably and the risks of exploding energy costs have been averted for the time being by the price brakes. All in all, we expect private consumption to decline by 0.5 percent this year due to the weak start to the year. In the coming year, when real disposable incomes rise again quite strongly, private consumer spending will increase by 1.8 percent.

The dynamics of construction investments continue to point downwards and price pressure is decreasing. Leading indicators point to an increase in construction investment in the first quarter. Construction activity in January was well above its level in the fourth quarter. Surveys on capacity utilization also point to an increase at the start of the year. Overall, we expect an increase of construction investments by 1.8 percent in the first quarter. For the rest of the year, however, we expect significant declines in view of the poor general conditions. New orders are at their lowest level since 2015. In addition, a growing number of companies reported cancellations of orders. Falling building permits also point to a weak construction activity for the remaining year. Rising interest rates on housing loans caused the volume of new housing loans to fall in January by 46 percent compared to the previous year. In view of the high margins of firms in the construction industry, a rapid price response to weak demand could have a stabilizing effect. However, this is countered by the inertia of land prices, so that a longer-lasting weakness is more likely. Stabilizing will be that materials shortages have eased and are likely to ease further in the forecast period. Moreover, despite significant declines, the order backlog is still relatively high. Further, incoming orders seem to have stabilized at their low levels recently. Companies in the construction industry have built up employment until recently and continue to complain about a shortage of skilled workers. This suggests that they rather expect a temporary period of weakness. Overall, we expect a decline in construction investment of 4.1 percent this year. Thus, it would fall behind the level of 2018. The decline in construction investments is driven to a large extent by the development in residential investment, which particularly suffers by increased financing costs and falling real disposable income of private households. In the next year, construction investment is expected to decrease slightly by 0.5 percent. The strong upward price pressure is likely to calm down quickly as a result of the lower

[1] Similar to the prices for fuels, heating oil prices are likely to be below the levels of the previous year, but the heating oil component in the consumer price index contains a smoothing component, which is intended to take account of the fact that homeowners maintain heating oil stocks for a longer period of time and in the case of renters the down payments to cover operating cost are only adjusted to the current price development with a delay. As a result, the strong price increases of the past year are still having an effect in the current year.

[2] For gas prices in the consumer price index the developments of last year are still having a mechanical effect this year, despite the price brake currently in place. This is due to the fact that the fixed down payments of renters to cover the operating costs (gas) only react to current price developments with a delay.

demand. For 2023, we expect an increase in the deflator of construction investment by 5 percent, which is expected to slow down to 1 percent in the 2024.

Investment in machinery and equipment remain stable despite the weak economy. In 2022, investment in machinery and equipment increased by 3.3 percent. This increase - in a period of uncertainty and weakness in the economy - is unusual with regard to the typical investment cycle and can be explained by the record level of domestic orders on hand for capital goods that built up in the wake of supply bottlenecks in the pandemic. Contrary to the upward momentum of leading indicators, investment in machinery and equipment declined by 3.6 percent in the final quarter of the previous year. A major contributor to the decline was government investment in machinery and equipment, which fell by around 28 percent. Looking forward, investment in machinery and equipment will increase at a robust pace. Incoming orders for capital goods have stabilized and were recently increasing again. Moreover, corporate expectations have come off their lows. As material bottlenecks ease, the high domestic order backlogs will be gradually reduced, boosting investment in machinery and equipment. Public investment, which accounts for a share of about 10 percent, is expected to increase significantly due to rising defense spending. Leading indicators, especially domestic sales by capital goods producers, suggest a strong increase in investment in machinery and equipment in the first quarter. In 2023 they are expected to rise by 2.1 percent. For 2024, we expect a growth rate of 4.4 percent. A stronger increase will be counteracted by the expected lower investment activity in the energy-intensive industries due to higher energy prices.

Despite high wage growth, labor costs remain extraordinarily low relative to prices and productivity. Negotiated wages and salaries rose by 2.6 percent last year, following an increase of 1.6 percent in 2021. A much stronger acceleration is on the horizon for the current year. Considering all extra payments (such as the inflation compensation premium free of taxes and social security contributions), the latest agreement in the metal and electrical industry provides for an overall increase of 7.2 percent for 2023 and 4.1 percent for 2024, after an average of 0.5 percent in the years 2020 to 2022. For the ongoing negotiations in the public sector at federal and local-government level and the upcoming negotiations in the retail sector as well as wholesale and foreign trade sector in the second quarter, we expect noticeable wage increases as well. Against this backdrop, we expect an overall increase in negotiated wages and salaries of 5.3 percent in 2023 and 5.4 percent in 2024; these would be the highest increases since 1995. In addition to the high rate of inflation, the acceleration in wage growth is being driven by the labor shortage, which has been growing for years and is currently at an exceptionally high level. Effectively-paid earnings are likely to rise faster than collectively agreed earnings. Gross wages and salaries per employee rose by 4.7 percent last year. Much of the high positive wage drift was due to the noticeably lower level of short-time work compared to 2021. In addition, there was a strong increase in effective earnings in the final quarter of 2022 (seasonally adjusted), to which the increase in the statutory minimum wage to 12 euros per hour on October 1st is likely to have contributed significantly. The wage drift is likely to remain positive in the current and coming year in view of high domestic price pressures as well as record labor shortages. All in all, we expect effective earnings per employee to rise by 5.6 percent (2023) and 5.8 percent (2024). Since German reunification higher rates have only been recorded in 1992. Real unit labor costs fell in the past two years to a very low level by historical standards. The reason for this is that labor costs have lagged behind domestic prices (measured by the deflator of gross value added), with the result that nominal labor productivity has risen faster than nominal labor costs. This is likely to be an important reason why employment has been comparatively robust so far despite the very difficult overall economic environment. Over the forecasting horizon, while we expect real unit labor costs to rise and approach their long-term average, labor demand continues to be supported by this factor.

Employment is expected to peak in the forecast period. After the increase in employment had slowed down until around mid-year, the pace of job creation stabilized in the second half of last year. Almost all of the recent increase in employment (subject to social security contributions) was attributable to persons with foreign citizenship. While their share of employment growth increased from 20 percent to 60 percent between 2011 and 2021, it rose sharply over the past year to 95 percent by December. The rapid increase last year was not caused by accelerated growth in employment of foreigners – although employment of Ukrainian nationals increased sharply. Rather, the increase in employment of German nationals slowed rapidly and came to a virtual standstill toward the end of the year. Leading indicators, such as the ifo Employment Barometer and the IAB Labor Market Barometer, have improved somewhat since the fall and point to continued employment growth in the second quarter of this year. Over the remainder of the forecast period, however, employment is likely to peak. While the negative impact of the energy crisis on employment is likely to be offset to a large extent because companies are holding on to their staff due to the labor shortage and because they can afford to do so due to the relatively low level of real unit labor costs, the progressive aging of the working population leads to a decline in the potential labor force despite substantial immigration. Unemployment falls only gradually over the forecast period, particularly because Ukrainian refugees are likely to take time to integrate into the labor market. All in all, we expect an unemployment rate of 5.4 percent in the current year and 5.2 percent in the coming year, compared to 5.3 percent last year. Starting from a relatively low level, working time per person only stagnated last year, despite a substantial reduction in short-time work. This was mainly due to the sharp rise in sick leave to a level not seen since German reunification. In this forecast, we assume that the sickness rate will normalize by 2024. The resulting recovery in working hours will counteract the age-related decline in employment, so that total hours worked will increase over the forecast period.

Fiscal deficits decline slowly. Payments to users of natural gas and electricity and transfers to companies, heavily affected by the energy crisis, lead to rising expenditures. However, several measures for both the Covid-19 crisis and the energy crisis do not apply any longer in 2023. Thus, the expenditures do not increase as fast as in the previous year. Revenues increase at a lower pace, too. Tax revenues are hampered by the economic slowdown and tax cuts in the income tax, as well as in the value added tax on natural gas. However, social security contributions benefit from robust wage growth and rising rates. Overall, the budget deficit will only modestly decrease. In 2024, the end of energy related payments in April, provides some relief to the public budget. However, the deficit will remain elevated compared to the pre-Covid era.

Table 1:
Key indicators

	2021	2022	2023	2024
Gross domestic product (GDP), price-adjusted	2.6	1.8	0.5	1.4
Gross domestic product, deflator	3.1	5.5	6.2	2.2
Consumer prices	3.1	6.9	5.4	2.1
Labor productivity (per hour worked)	0.9	0.4	0.2	0.3
Employment (1000 persons)	44,980	45,570	45,885	45,827
Unemployment rate (percent)	5.7	5.3	5.4	5.2
in relation to nominal GDP				
Public sector net lending	-3.7	-2.6	-2.1	-1.4
Gross public debt	68.6	66.4	64.3	63.5
Current account balance	7.4	3.8	5.6	5.6

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

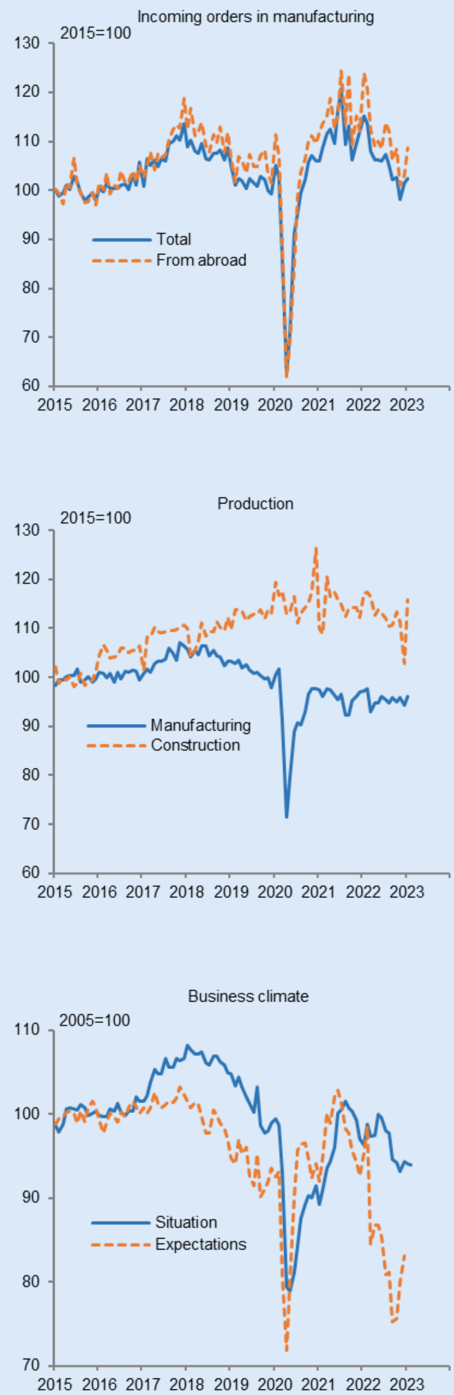
Source: Federal Statistical Office, *Fachserie 18, Series 1.2*; Federal Employment Agency, *Monthly Bulletin;* Federal Employment Agency, *Employment Statistics*; shaded: Kiel Institute forecast.

Data annex

Contents

1. Leading indicators

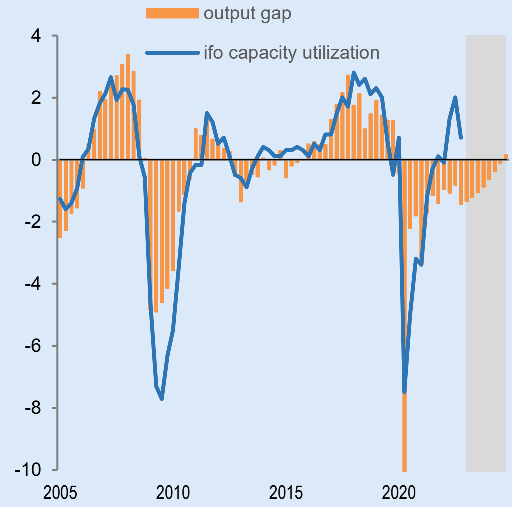
Figure 1.1:
Leading indicators



Monthly data, seasonally adjusted.

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

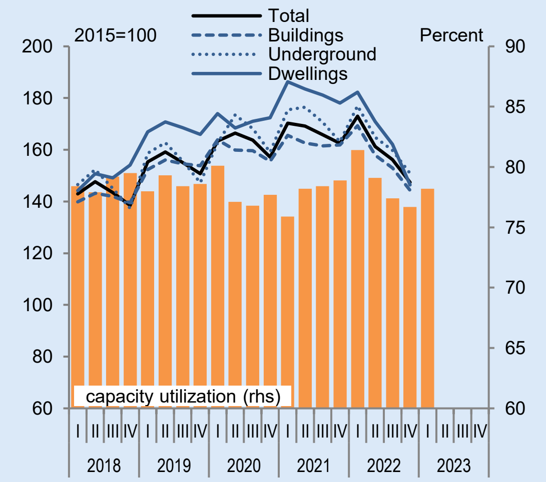
Figure 1.2:
Capacity utilization



Quarterly data: change in percent, GDP deviation from potential output, deviation of ifo capacity utilization indicator from the mean (2005 bis 2019).

Source: Federal Statistical Office, ifo institue - Leipniz Institute for Economic Research, Kiel Institute forecast.

Figure 1.3:
Order stocks and capacity utilization in construction industry

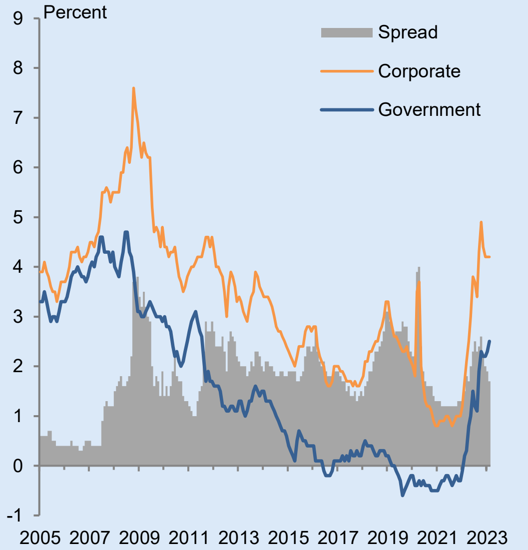


Quarterly data. Capacity utilization (deviation from normal level): seasonally adjusted; order stocks: price, seasonally and working-day adjusted.

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

2. Monetary conditions and prices

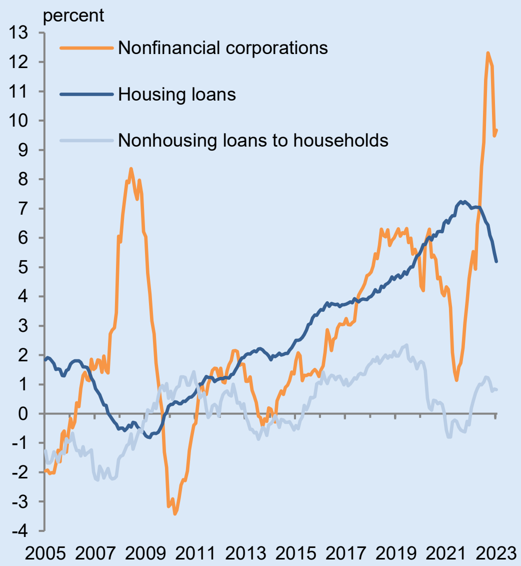
Figure 2.1:
Bond yields



Monthly data, average maturities above three years.

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

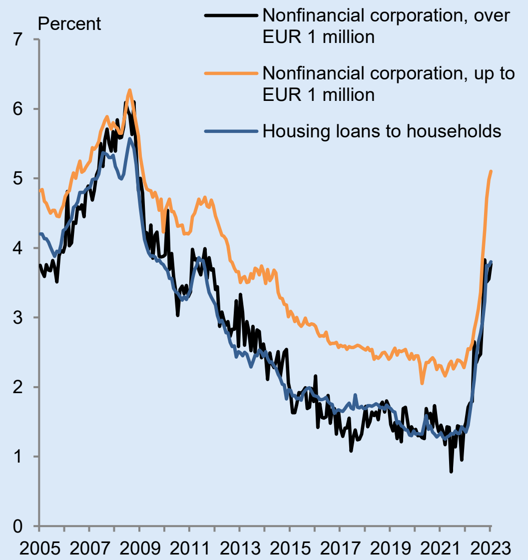
Figure 2.3:
Credit growth



Change compared to one year ago; Monthly data.

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

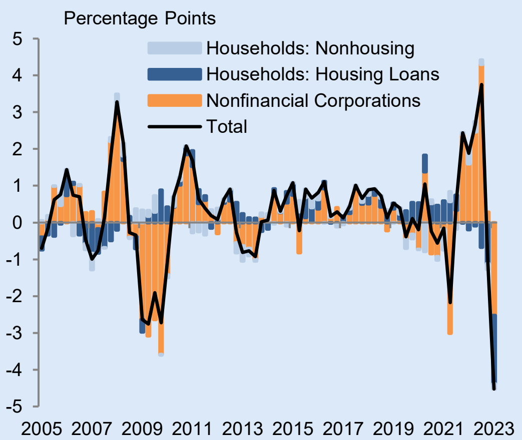
Figure 2.2:
Loan interest



Monthly data; new business, 1–5 years, fixed.

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

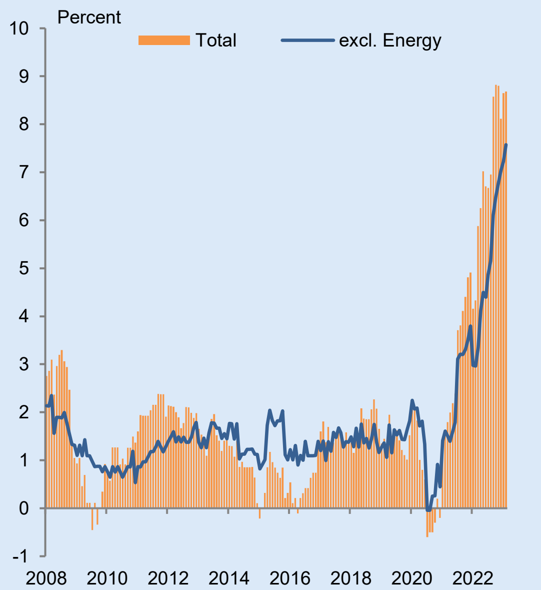
Figure 2.4:
Credit impulse



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.

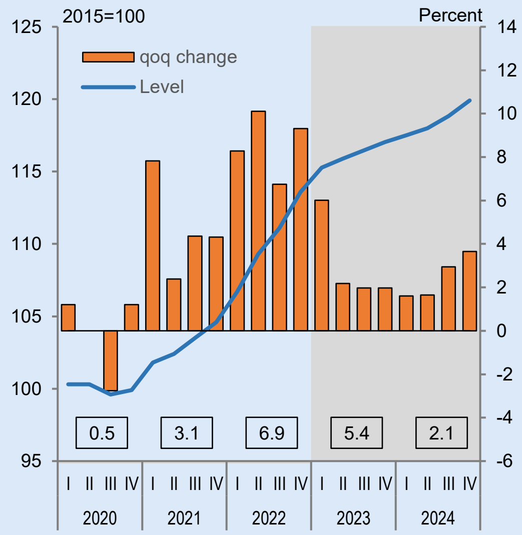
Source: Deutsche Bundesbank, *Seasonally Adjusted Business Statistics*; Kiel Institute calculations.

Figure 2.5:
Consumer prices



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

Figure 2.6:
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.

Tabelle 2.1:
Projections and assumptions on the international enviroment

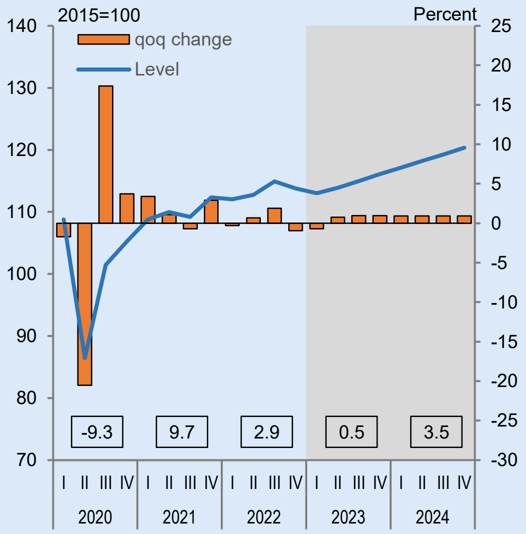
	2021				2022				2023				2024			
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
ECB key interest rate	0.00	0.00	0.00	0.00	0.00	0.00	1.25	2.50	3.50	4.00	4.00	4.00	4.00	3.50	3.50	3.25
Long-term interest rate	-0.46	-0.28	-0.45	-0.30	0.10	1.05	1.30	2.12	2.32	2.50	2.70	2.90	3.00	3.00	3.00	3.00
US-dollar/euro exchange rate	1.20	1.21	1.18	1.14	1.12	1.06	1.01	1.02	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Price competitiveness	91.5	91.6	91.0	89.8	89.7	88.9	87.9	88.5	89.0	89.2	89.2	88.9	88.4	87.9	87.5	87.0
Export markets	0.6	2.1	1.6	1.1	0.7	0.3	-0.1	0.1	0.3	0.6	0.6	0.7	0.6	0.5	0.5	0.5
Oil price	61	69	73	79	101	114	101	89	83	83	81	80	79	78	77	76
Gas price	18	25	49	97	101	101	205	124	56	53	54	60	62	57	57	59
Electricity price	53	66	104	193	202	203	410	205	120	132	150	178	182	138	141	180

ECB key interest rate: main refinancing operations (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

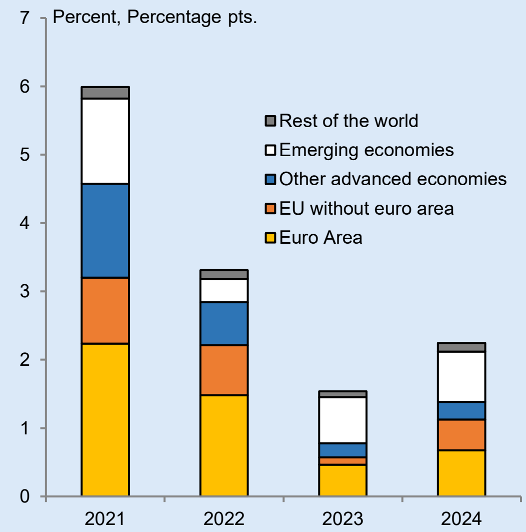
Figure 3.1:
Exports



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.

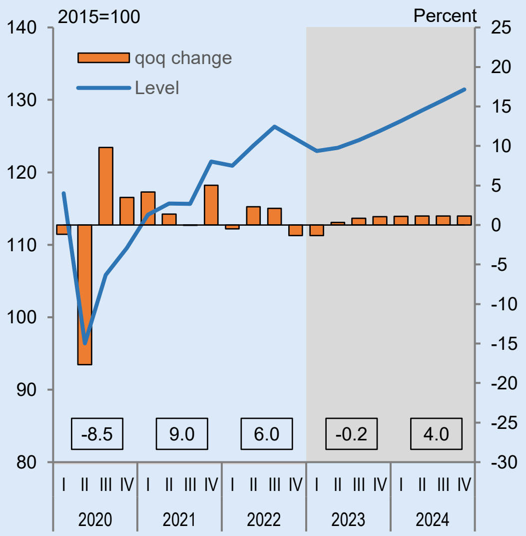
Figure 3.3:
German export markets



Annual data, volumes; GDP growth in 59 countries, weighted with shares in German exports.

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

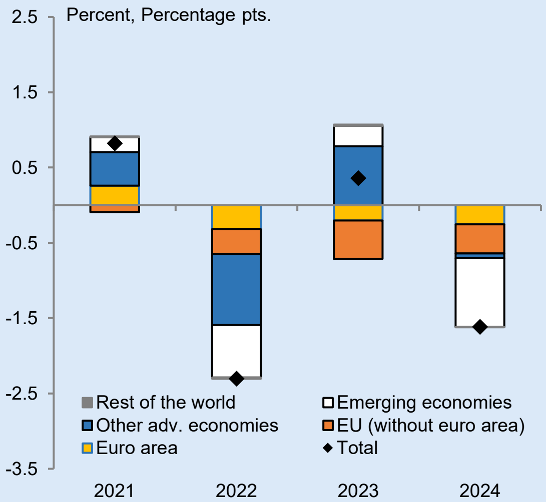
Figure 3.2:
Imports



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.

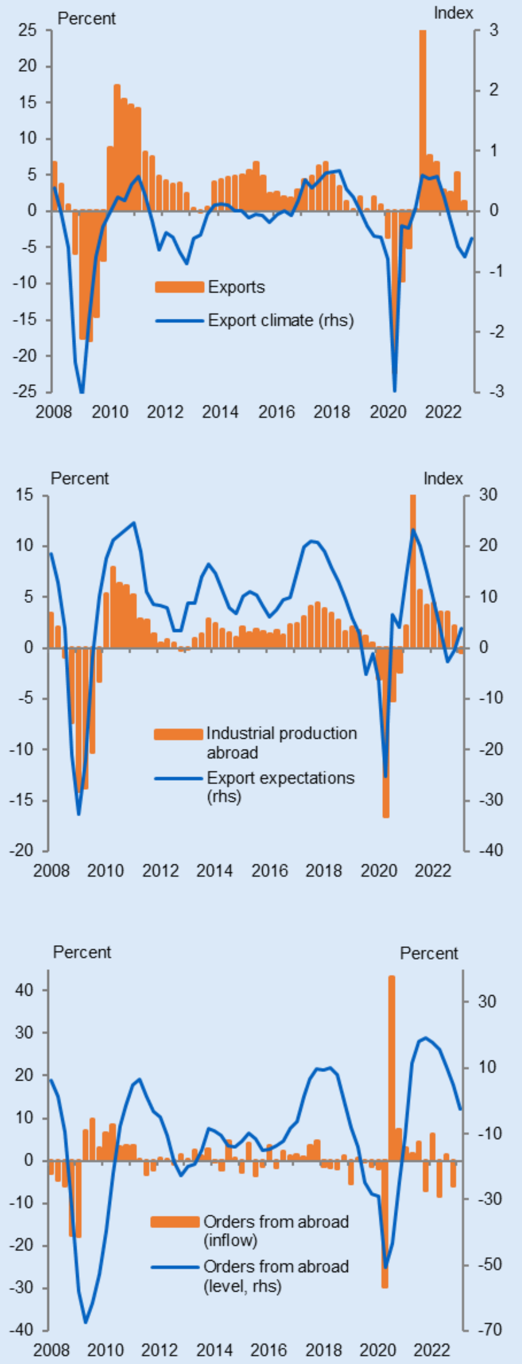
Figure 3.4:
Germany's price competitiveness



Annual data; vis-à-vis 55 countries based on consumer prices and exchange rates; weights according to Germany's price competitiveness indicator vis-à-vis 61 trading partners based on consumer price indices from the Deutsche Bundesbank. Increase reflects worsening of price competitiveness.

Source: Bundesbank, *Monthly Report* 8.2020; national sources; Kiel institute calculations and forecast.

Figure 3.5:
Export indicators

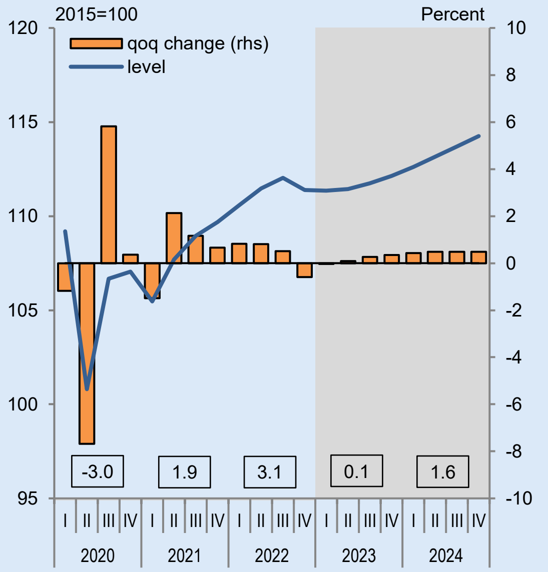


Quarterly data; exports, industrial production, volumes, change on previous year; order inflow: volumes, change on previous quarter; export expectations, foreign orders on hand: volumes; business expectations, industrial production: based on 42 countries weighted by shares of German exports.

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

4. Domestic expenditure

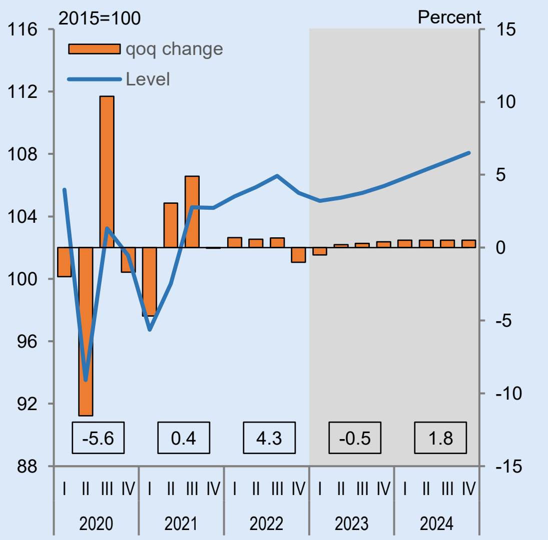
Figure 4.1:
Final domestic expenditure



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.

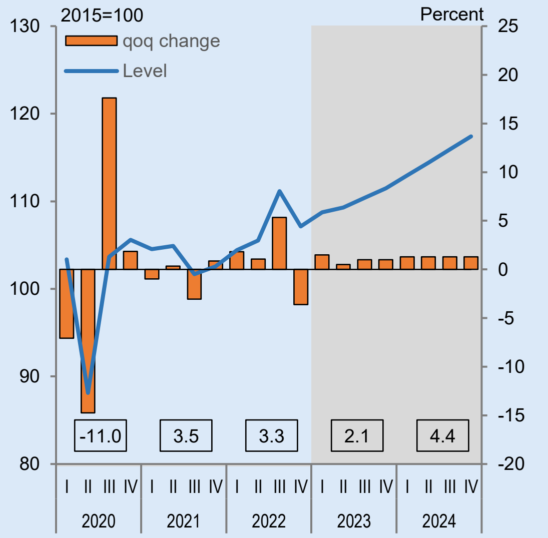
Figure 4.2:
Private consumption



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.

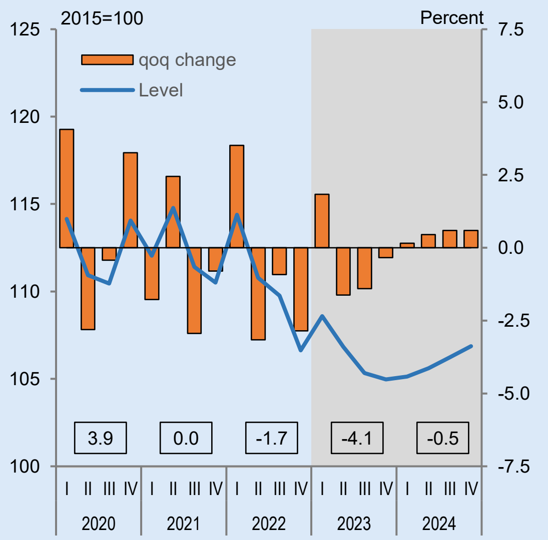
Figure 4.3:
M&E investments



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.

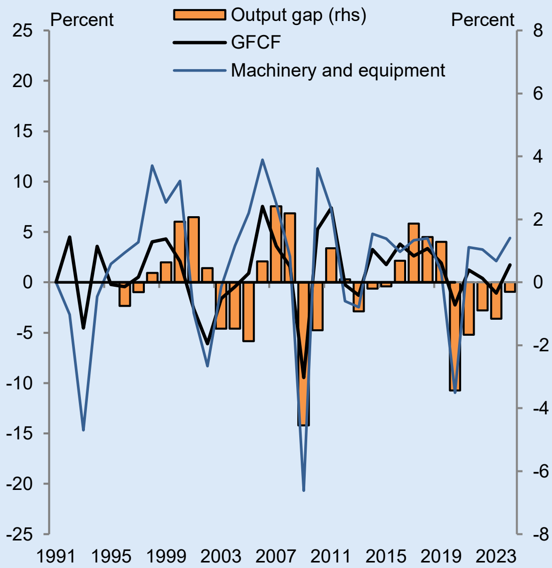
Figure 4.4:
Construction



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.

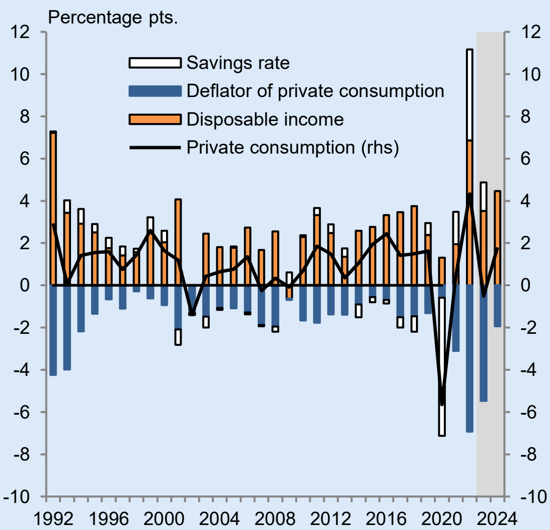
Figure 4.5:
Investment cycles



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*; own calculations; shaded: Kiel Institute forecast.

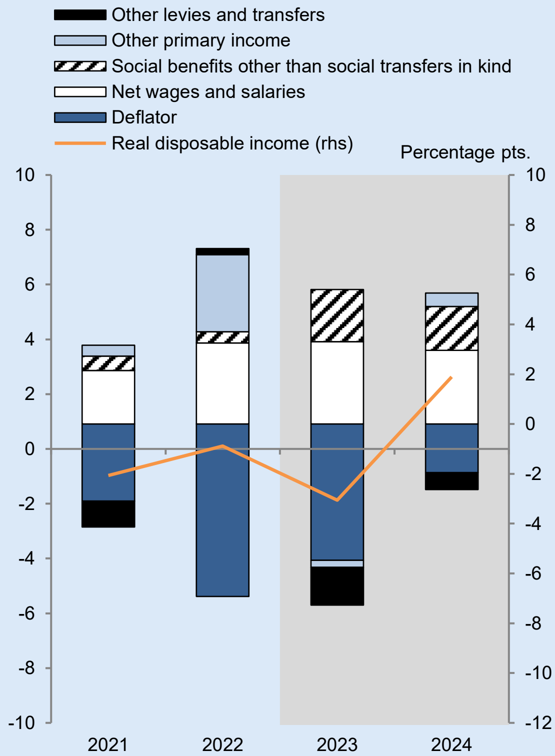
Figure 4.6:
Decomposition of growth in private consumption



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.

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

Table 4.1:
Gross fixed capital formation

	2021	2022	2023	2024
Total	1.2	0.4	-1.1	1.7
Corporate investment	2.0	1.9	1.8	3.4
Machinery and equipment	3.5	3.3	2.1	4.4
Construction (non-dwell-ings)	0.1	-1.0	-0.6	0.2
Other	1.1	2.1	3.3	4.3
Dwellings	0.6	-2.2	-6.1	-1.8
Public (non-dwellings)	-2.9	-1.1	-1.7	4.2
Memorandum item:				
Construction	0.0	-1.7	-4.1	-0.5

Volumes; change over previous year in percent.

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

5. Industries

Table: 5.1
Gross value added for industries

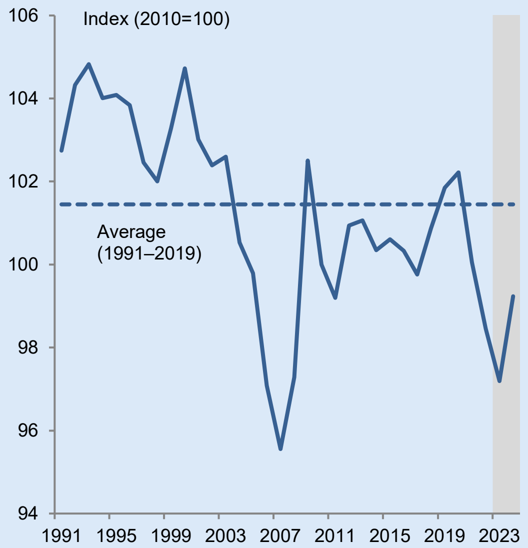
	2022				2023				2024			
	I	II	III	IV	I	II	III	IV	I	II	III	IV
	Seasonally and calendar-adjusted, q-o-q change in percent											
Gross domestic product	0.8	0.1	0.5	-0.4	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.4
Gross value added	1.5	-0.6	1.6	-1.4	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.4
Industry excl. construction	-0.1	-0.2	0.6	-1.1	1.5	0.9	0.7	0.5	0.4	0.4	0.4	0.4
Manufacturing	0.1	-0.2	1.0	-0.6	1.5	1.0	0.8	0.5	0.4	0.4	0.4	0.4
Energy, Water etc.	-0.7	0.5	-2.5	-4.5	1.0	0.0	0.1	0.2	0.3	0.3	0.3	0.3
Construction	2.5	-3.5	-2.2	-2.4	1.5	-1.5	-1.5	-0.5	0.2	0.5	0.5	0.5
Trade, transport, accomodation, food services	1.8	-1.4	2.9	-2.9	-2.0	0.5	0.2	0.3	0.5	0.5	0.5	0.5
Information and communication	1.3	0.5	1.4	0.9	0.3	0.5	0.8	0.8	0.8	0.8	0.8	0.8
Financial and insurance services	1.7	0.3	1.2	-1.0	-0.5	-0.3	0.0	0.0	0.3	0.3	0.3	0.3
Real estate activities	0.7	0.3	-0.3	0.4	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Business services	1.8	-0.1	-0.3	0.1	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5
Public services, education, health	2.8	-1.5	4.4	-1.7	1.0	0.2	0.3	0.4	0.5	0.5	0.5	0.5
Other services	6.2	1.1	6.2	-6.8	-2.5	0.0	0.2	0.5	0.5	0.5	0.5	0.5

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

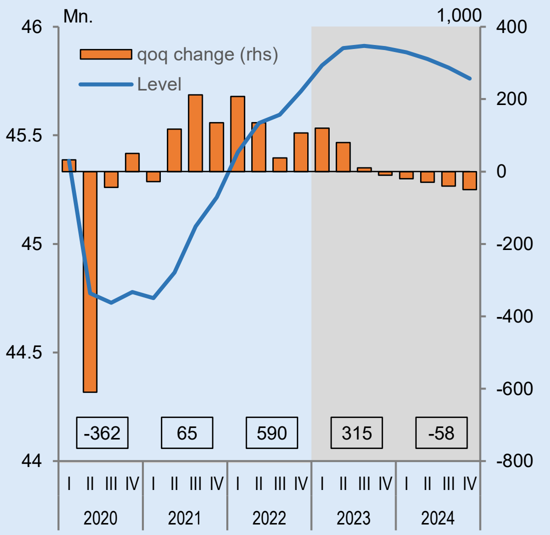
	2021	2022	2023	2024
Per hour				
Negotiated wages	1.5	2.7	5.3	5.4
Gross wages and salaries	1.6	4.8	5.9	4.3
Wage drift	0.0	2.2	0.6	-1.1
Compensation of employees	1.3	4.3	5.8	4.4
Labor productivity	0.9	0.4	0.2	0.3
Unit labor costs	0.7	3.8	5.7	4.0
Unit labor costs (real)	-2.3	-1.6	-0.5	1.8
Per capita				
Negotiated wages	1.5	2.6	5.3	5.4
Gross wages and salaries	3.3	4.7	5.6	5.8
Wage drift	1.8	2.1	0.2	0.5
Compensation of employees	3.1	4.2	5.6	5.9
Labor productivity	2.5	0.5	-0.2	1.6
Unit labor costs	0.6	3.7	5.8	4.2
Unit labor costs (real)	-2.4	-1.7	-0.4	2.0

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: Kiel Institute forecast.

7. Employment

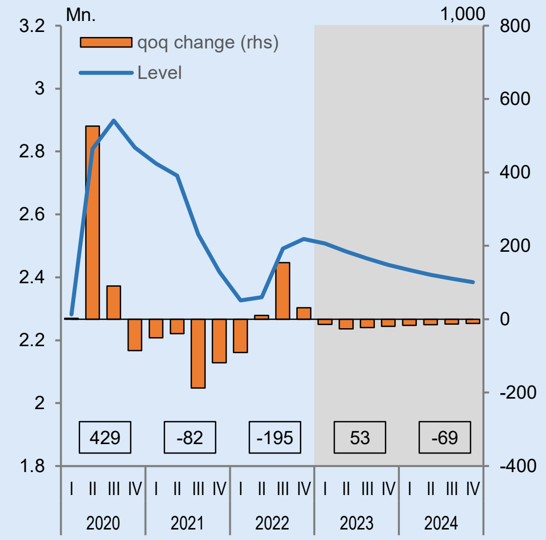
Figure 7.1:
Persons employed



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:
Unemployed persons (registered)



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.

Table 7.1:
Employment (1,000 persons)

	2020	2021	2022	2023	2024
Hours worked (domestic concept, mn. hours)	59,249	60,281	61,103	61,288	61,976
Persons in employment (domestic concept)	44,914	44,980	45,570	45,885	45,827
Self-employed	4,055	3,958	3,908	3,872	3,832
Employees (domestic concept)	40,859	41,022	41,662	42,013	41,995
Employees subject to social security contributions	33,577	33,922	34,528	34,865	34,925
Minijobs	4,273	4,100	4,129	4,164	4,086
Net commuting	94	114	139	147	147
Persons in employment (national concept)	44,821	44,866	45,431	45,738	45,681
Employees (national concept)	40,766	40,908	41,523	41,866	41,848
Unemployed persons (registered)	2,695	2,613	2,418	2,471	2,402
Unemploymend rate (registered; percent)	5.9	5.7	5.3	5.4	5.2
Unemployment rate (ILO; percent)	3.4	3.3	2.8	2.7	2.5

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 Institut forecast.

8. Public finances

Table 8.1

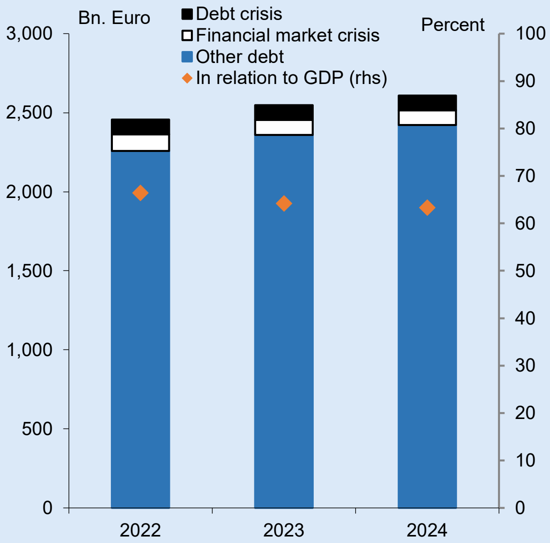
Revenues and expenditures of the general government (bn. Euro)

	2020	2021	2022	2023	2024
Revenues	**1,569.1**	**1,711.7**	**1,820.8**	**1,917.1**	**2,027.1**
→relative to GDP	*46.1*	*47.5*	*47.1*	*46.5*	*47.4*
Taxes	774.5	877.8	948.3	983.2	1,034.5
→relative to GDP	*22.7*	*24.4*	*24.5*	*23.8*	*24.2*
Social contributions	608.1	633.7	665.8	716.4	765.5
→relative to GDP	*17.9*	*17.6*	*17.2*	*17.4*	*17.9*
Other revenues	186.5	200.3	206.7	217.5	227.1
→relative to GDP	*5.5*	*5.6*	*5.3*	*5.3*	*5.3*
Expenditures	**1,716.6**	**1,846.0**	**1,922.1**	**2,000.0**	**2,080.5**
→relative to GDP	*50.4*	*51.3*	*49.7*	*48.5*	*48.6*
Compensation of employees	284.3	294.4	306.7	316.4	336.5
Intermediate consumption	209.4	227.2	236.9	248.7	256.9
Social transfers in kind	304.9	330.0	355.6	371.5	388.5
Gross capital formation	93.2	93.4	101.6	111.6	124.5
Capital transfers	21.5	20.8	26.1	27.0	31.1
Social benefits	600.0	610.9	618.7	663.9	703.1
Subsidies	73.4	111.6	72.8	78.2	58.4
Other current transfers	82.6	90.4	113.4	98.6	98.0
Other capital transfers and investment grants	48.1	68.1	91.4	85.2	84.7
Other expenditures	-1.2	-1.2	-1.3	-1.3	-1.3
Net lending/ net borrowing	**-147.6**	**-134.3**	**-101.3**	**-82.9**	**-53.4**
→relative to GDP	*-4.3*	*-3.7*	*-2.6*	*-2.0*	*-1.2*
Revenues of central, state, and local governments	**1,003.8**	**1,116.4**	**1,199.4**	**1,235.8**	**1,297.8**
Net of transfers from social security funds	993.2	1,109.8	1,187.7	1,234.6	1,296.6
Transfers from social security funds	10.6	6.6	11.7	1.2	1.2
Expenditures of central, state, and local governments	**1,116.5**	**1,255.0**	**1,307.4**	**1,324.2**	**1,359.7**
Net of transfers to social security funds	975.2	1,097.3	1,129.1	1,175.5	1,208.1
Transfers to social security funds	141.4	157.7	178.3	148.6	151.6
Net lending/ net borrowing central, state, and local governments	**-112.7**	**-138.5**	**-108.0**	**-88.4**	**-61.9**
Revenues of social security funds	**717.9**	**783.5**	**806.7**	**828.6**	**857.8**
Net of transfers from central, state, and local governments	576.6	625.8	628.3	679.9	706.2
Expenditures of social security funds	**752.7**	**779.2**	**802.8**	**829.2**	**866.5**
Net of transfers to central, state, and local governments	742.1	772.6	791.1	828.0	865.3
Net lending/ net borrowing social security funds	**-34.8**	**4.3**	**3.9**	**-0.7**	**-8.7**

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

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

Figure 8.1:
Government gross debt

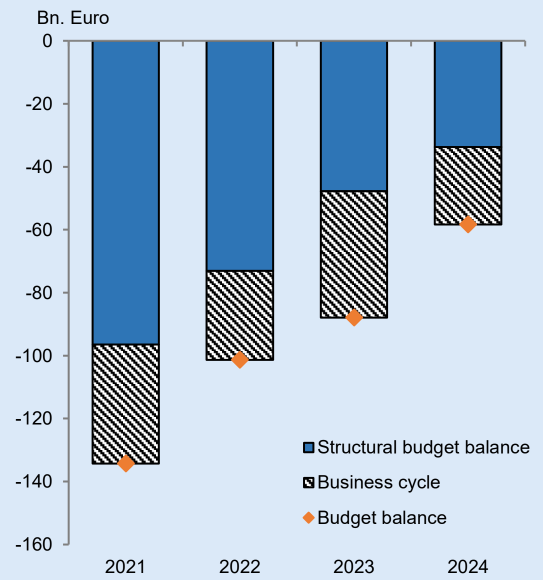


Debt crisis: Liabilities due to first Greece adjustment programme, deposits at the ESM, guarantees for EFSF credits.

Financial market crisis: Liabilitites due to bank rescue packages.

Source: Deutsche Bundesbank, *Monatsbericht*; BMF, *Monatsbericht*; Kiel Institute calculations and forecasts.

Figure 8.2:
Structural budget balance



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

9. GDP and its components

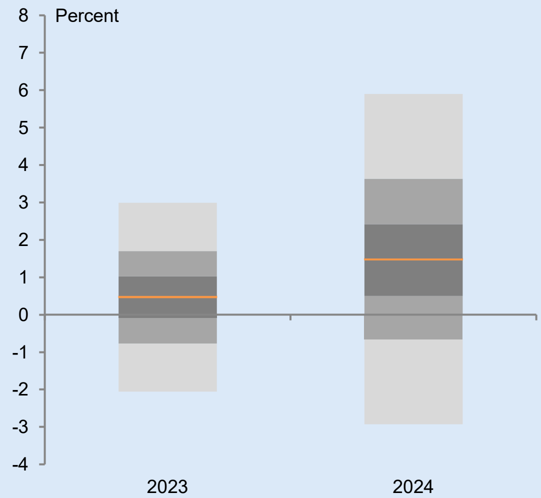
Table 9.1:
Quarterly data

	2022				2023				2024			
	I	II	III	IV	I	II	III	IV	I	II	III	IV
Gross domestic product	0.8	0.1	0.5	-0.4	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.4
Private consumption	0.7	0.6	0.7	-1.0	-0.5	0.2	0.3	0.4	0.5	0.5	0.5	0.5
Government consumption	0.6	0.5	-1.2	0.6	-0.4	0.7	0.8	0.3	0.2	0.2	0.2	0.1
Machinery and equipment	1.8	1.1	5.4	-3.6	1.5	0.5	1.0	1.0	1.3	1.3	1.3	1.3
Constructions	3.5	-3.2	-0.9	-2.9	1.8	-1.6	-1.4	-0.3	0.2	0.5	0.6	0.6
Other investment	-0.1	0.8	1.0	0.7	0.5	1.0	1.0	1.0	1.0	1.0	1.3	1.2
Change in inventories	-0.3	0.6	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Domestic expenditure	0.8	0.8	0.5	-0.6	0.0	0.1	0.3	0.4	0.4	0.5	0.5	0.5
Exports	-0.3	0.7	1.9	-1.0	-0.7	0.8	1.0	1.0	0.9	0.9	0.9	0.9
Imports	-0.5	2.3	2.1	-1.3	-1.3	0.3	0.9	1.0	1.1	1.1	1.1	1.1
Net exports	0.0	-0.7	0.0	0.1	0.3	0.2	0.1	0.0	0.0	-0.1	-0.1	-0.1
Employment (domestic)	45,418	45,553	45,595	45,711	45,822	45,902	45,912	45,902	45,882	45,852	45,812	45,762
Unemployment (registered)	2,327	2,337	2,491	2,522	2,508	2,482	2,459	2,440	2,423	2,408	2,396	2,385

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.

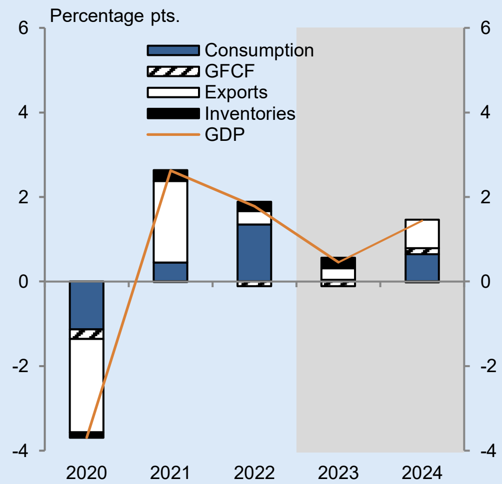
Figure 9.1:
Forecast intervals for GDP growth



GDP: volumes, change over previous year. Point forecasts: orange lines. Forecast intervalls greay 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 first quarter 1994–2022 .

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, 2020–2023

	2021	2021	2022	2023	2024
	Bn. Euro	Change over previous year in percent			
Use of gross domestic product, price-adjusted					
GDP		2.6	1.8	0.5	1.4
Private consumption expenditure		0.4	4.3	-0.5	1.8
Public consumption expenditure		3.8	1.2	0.6	1.3
Total fixed investment		1.2	0.4	-1.1	1.7
Machinery and equipment		3.5	3.3	2.1	4.4
Construction		0.0	-1.7	-4.1	-0.5
Other equipment		1.1	2.1	3.3	4.3
Changes in stocks		0.5	0.4	0.5	0.0
Domestic Demand		1.9	3.1	0.1	1.6
Exports		9.7	2.9	0.5	3.5
Imports		9.0	6.0	-0.2	4.0
Net exports		0.8	-1.2	0.3	-0.1
Use of gross domestic product at current prices					
GDP	3,601.8	5.8	7.4	6.7	3.7
Private consumption expenditure	1,773.8	3.5	11.6	4.9	3.8
Public consumption expenditure	797.5	6.6	6.4	4.4	4.7
Total fixed investment	783.8	6.5	11.3	3.0	3.2
Machinery and equipment	229.4	5.5	10.6	5.8	6.2
Construction	416.7	8.3	13.9	0.7	0.4
Other equipment	137.7	2.9	4.6	5.6	6.5
Changes in stocks (€ bn.)		55.1	87.9	113.7	114.6
Domestic Demand	3,410.2	6.1	11.1	4.9	3.8
Exports	1,693.9	15.6	14.9	0.5	4.4
Imports	1,502.4	18.0	24.3	-3.3	4.6
Net exports (€ bn.)		191.6	79.5	152.3	155.4
Gross national income	3,729.5	6.4	7.2	6.6	3.7
Deflators					
GDP		3.1	5.5	6.2	2.2
Private consumption expenditure		3.1	6.9	5.5	1.9
Public consumption expenditure		2.7	5.1	3.8	3.4
Investment in machinery and equipment		1.9	7.1	3.6	1.7
Investment in construction		8.3	15.9	5.0	1.0
Investment in other equipment		1.8	2.4	2.2	2.1
Exports		5.4	11.7	0.1	0.8
Imports		8.3	17.3	-3.2	0.6
Addendum: Consumer prices		3.1	6.9	5.4	2.1
Income distribution					
Net national income (factor costs)	2,743.4	6.7	4.2	7.5	3.0
Compensation of employees	1,918.0	3.5	5.8	6.4	5.8
in percent of national income		69.9	71.0	70.3	72.3
Property and entrepreneurial income	825.4	15.0	0.4	10.1	-3.8
Disposable income	2,031.2	2.1	7.0	3.6	4.6
Savings rate		15.1	11.4	10.2	10.8
Wages and salaries	1,570.6	3.7	6.3	6.4	5.7
Wage per hour		1.6	4.8	5.9	4.3
Unit labor costs		0.7	3.8	5.7	4.0
Productivity per hour		0.9	0.4	0.2	0.3
Unemployment (1,000)		2,613.5	2,418.1	2,471.2	2,401.7
Rate of unemployment (percent)		5.7	5.3	5.4	5.2
Total employment (1,000)		44,979.8	45,569.7	45,884.8	45,827.3
Public sector budget balance					
Public sector budget balance (€ bn.)		-134.3	-101.3	-87.9	-58.4
Public sector budget balance (in percent of GDP)		-3.7	-2.6	-2.1	-1.4
Public debts (in percent)		68.6	66.4	64.3	63.5

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: 2022 to 2024

	2022	2023	2024	2022		2023		2024	
				H1	H2	H1	H2	H1	H2
1. Production									
Change over the same period of the prec									
Persons in employment	1.3	0.7	- 0.1	1.5	1.1	0.8	0.6	0.0	- 0.3
Hours worked	1.4	0.3	1.1	1.9	0.8	0.1	0.5	1.1	1.2
Hours worked by person in employment	0.1	- 0.4	1.2	0.4	- 0.3	- 0.7	- 0.1	1.1	1.4
Labor productivity [1]	0.4	0.2	0.3	0.8	0.0	0.3	0.0	0.2	0.5
Gross domestic product, price-adjus	1.8	0.5	1.4	2.8	0.8	0.4	0.5	1.2	1.6
2. Use of gross domestic product at current prices									
a) EUR bn.									
Consumption expenditure	2 827.3	2 962.6	3 082.7	1 367.2	1 460.2	1 443.0	1 519.6	1 499.6	1 583.1
Private households [2]	1 978.9	2 076.6	2 155.0	953.5	1 025.5	1 014.2	1 062.4	1 047.7	1 107.3
Government	848.4	886.0	927.7	413.7	434.7	428.8	457.2	451.9	475.8
Gross fixed capital formation	872.3	898.3	926.9	418.2	454.1	440.4	457.9	444.9	482.0
Machinery and equipment	253.7	268.3	284.9	118.0	135.7	128.3	140.0	135.0	149.9
Construction	474.6	477.9	480.1	231.6	243.0	240.5	237.4	233.9	246.2
Other products	144.0	152.1	161.9	68.6	75.4	71.5	80.5	76.1	85.8
Changes in inventories [3]	87.9	113.7	114.6	48.4	39.5	67.3	46.4	68.4	46.2
Domestic expenditure	3 787.5	3 974.5	4 124.2	1 833.8	1 953.8	1 950.6	2 023.9	2 012.9	2 111.3
Net exports	79.5	152.3	155.4	53.8	25.7	86.2	66.0	83.4	72.0
Exports	1 946.6	1 956.9	2 042.8	941.6	1 005.0	969.5	987.4	1 004.5	1 038.2
Imports	1 867.1	1 804.6	1 887.4	887.8	979.3	883.3	921.3	921.2	966.3
Gross domestic product	3 867.1	4 126.8	4 279.6	1 887.6	1 979.5	2 036.9	2 089.9	2 096.3	2 183.3
b) Change over the same period of the preceding year in %									
Consumption expenditure	10.0	4.8	4.1	11.9	8.2	5.5	4.1	3.9	4.2
Private households [2]	11.6	4.9	3.8	14.0	9.4	6.4	3.6	3.3	4.2
Government	6.4	4.4	4.7	7.5	5.4	3.6	5.2	5.4	4.1
Gross fixed capital formation	11.3	3.0	3.2	11.7	10.9	5.3	0.8	1.0	5.3
Machinery and equipment	10.6	5.8	6.2	6.9	14.0	8.8	3.1	5.2	7.1
Construction	13.9	0.7	0.4	16.6	11.5	3.9	- 2.3	- 2.8	3.7
Other products	4.6	5.6	6.5	5.3	4.0	4.3	6.8	6.4	6.6
Domestic expenditure	11.1	4.9	3.8	12.7	9.5	6.4	3.6	3.2	4.3
Exports	14.9	0.5	4.4	15.9	14.0	3.0	- 1.8	3.6	5.2
Imports	24.3	- 3.3	4.6	27.0	21.9	- 0.5	- 5.9	4.3	4.9
Gross domestic product	7.4	6.7	3.7	8.5	6.3	7.9	5.6	2.9	4.5
3. Use of gross domestic product, price-adjusted (chain-linked, 2010=100)									
a) EUR bn.									
Consumption expenditure	2 411.2	2 406.9	2 446.4	1 191.5	1 219.8	1 186.3	1 220.7	1 205.1	1 241.4
Private households [2]	1 697.9	1 689.3	1 719.7	834.8	863.2	830.9	858.5	843.3	876.3
Government	711.8	716.1	725.2	355.8	356.1	354.6	361.5	360.9	364.3
Gross fixed capital formation	675.3	668.0	679.6	330.0	345.3	327.1	340.9	328.3	351.4
Machinery and equipment	222.9	227.6	237.6	105.1	117.7	109.0	118.6	112.9	124.6
Construction	323.0	309.8	308.1	162.6	160.4	155.2	154.6	151.2	156.8
Other products	129.2	133.5	139.1	61.4	67.9	63.3	70.2	65.8	73.3
Domestic expenditure	3 117.6	3 121.8	3 170.8	1 536.5	1 581.1	1 541.8	1 580.0	1 561.1	1 609.7
Exports	1 617.7	1 625.2	1 682.4	798.8	818.9	804.7	820.5	830.9	851.5
Imports	1 479.5	1 476.8	1 535.5	720.2	759.2	725.6	751.3	750.4	785.1
Gross domestic product	3 260.9	3 275.7	3 322.8	1 617.0	1 643.8	1 623.9	1 651.8	1 643.8	1 679.0
b) Change over the same period of the preceding year in %									
Consumption expenditure	3.4	- 0.2	1.6	5.9	1.0	- 0.4	0.1	1.6	1.7
Private households [2]	4.3	- 0.5	1.8	7.7	1.3	- 0.5	- 0.5	1.5	2.1
Government	1.2	0.6	1.3	2.0	0.3	- 0.3	1.5	1.8	0.8
Gross fixed capital formation	0.4	- 1.1	1.7	0.4	0.4	- 0.9	- 1.3	0.4	3.1
Machinery and equipment	3.3	2.1	4.4	0.7	5.7	3.7	0.7	3.6	5.1
Construction	- 1.7	- 4.1	- 0.5	- 0.2	- 3.2	- 4.6	- 3.6	- 2.5	1.4
Other products	2.1	3.3	4.3	1.7	2.5	3.1	3.5	4.0	4.5
Domestic expenditure	3.1	0.1	1.6	4.3	1.9	0.3	- 0.1	1.3	1.9
Exports	2.9	0.5	3.5	3.0	2.7	0.7	0.2	3.3	3.8
Imports	6.0	- 0.2	4.0	6.6	5.4	0.7	- 1.0	3.4	4.5
Gross domestic product	1.8	0.5	1.4	2.8	0.8	0.4	0.5	1.2	1.6

National Accounts (cont.)
Forecast period: 2022 to 2024

	2022	2023	2024	2022 H1	2022 H2	2023 H1	2023 H2	2024 H1	2024 H2
4. Deflators (2010=100)									
Change on the same period of the preceding year in %									
Private consumption [2]	6.9	5.5	1.9	5.8	8.1	6.9	4.2	1.8	2.1
Government consumption	5.1	3.8	3.4	5.3	5.0	4.0	3.6	3.5	3.3
Gross fixed capital formation	10.8	4.1	1.4	11.3	10.4	6.2	2.1	0.7	2.1
Machinery and equipment	7.1	3.6	1.7	6.2	7.8	4.9	2.4	1.5	1.9
Construction	15.9	5.0	1.0	16.8	15.2	8.8	1.4	- 0.2	2.2
Exports	11.7	0.1	0.8	12.5	11.0	2.2	- 2.0	0.3	1.3
Imports	17.3	- 3.2	0.6	19.1	15.7	- 1.2	- 4.9	0.8	0.4
Gross domestic product	5.5	6.2	2.2	5.5	5.5	7.5	5.1	1.7	2.8
5. National income									
a) EUR bn.									
Primary income of private households [2]	2 639.7	2 763.7	2 901.4	1 291.2	1 348.5	1 353.4	1 410.3	1 418.8	1 482.6
Employers social contributions	359.7	382.5	406.0	174.0	185.7	185.0	197.6	196.6	209.4
Gross wages and salaries	1 670.0	1 777.3	1 879.5	788.8	881.2	843.3	934.0	890.6	988.8
Other primary income [4]	609.9	603.8	615.9	328.4	281.5	325.1	278.7	331.6	284.3
Primary income of other sectors	566.6	657.8	656.2	261.6	305.0	317.9	339.9	305.8	350.4
Net national income	3 206.2	3 421.5	3 557.6	1 552.8	1 653.5	1 671.3	1 750.2	1 724.7	1 833.0
Consumption of fixed capital	792.7	841.7	863.8	387.9	404.8	420.7	421.0	429.1	434.7
Gross national income	3 998.9	4 263.1	4 421.4	1 940.7	2 058.3	2 092.0	2 171.2	2 153.8	2 267.6
memorandum item:									
Net national income (factor costs)	2 858.5	3 072.0	3 162.7	1 373.9	1 484.6	1 494.3	1 577.6	1 527.5	1 635.2
Property and entrepreneurial income	828.7	912.1	877.2	411.1	417.6	466.0	446.1	440.3	437.0
Compensation of employees	2 029.8	2 159.9	2 285.5	962.8	1 067.0	1 028.3	1 131.6	1 087.2	1 198.3
b) Change over the same period of the preceding year in %									
Primary income of private households [2]	7.1	4.7	5.0	7.9	6.3	4.8	4.6	4.8	5.1
Employers social contributions	3.5	6.3	6.1	3.4	3.7	6.3	6.4	6.3	6.0
Gross wages and salaries	6.3	6.4	5.7	6.7	6.0	6.9	6.0	5.6	5.9
... per employee	4.7	5.6	5.8	4.8	4.6	5.9	5.3	5.5	6.1
Other primary income [4]	11.5	- 1.0	2.0	13.5	9.2	- 1.0	- 1.0	2.0	2.0
Primary income of other sectors	1.3	16.1	- 0.2	4.7	- 1.5	21.5	11.5	- 3.8	3.1
Net national income	6.0	6.7	4.0	7.3	4.8	7.6	5.9	3.2	4.7
Consumption of fixed capital	12.5	6.2	2.6	12.7	12.2	8.5	4.0	2.0	3.2
Gross national income	7.2	6.6	3.7	8.4	6.2	7.8	5.5	3.0	4.4
memorandum item:									
Net national income (factor costs)	4.2	7.5	3.0	4.4	4.0	8.8	6.3	2.2	3.7
Property and entrepreneurial income	0.4	10.1	- 3.8	0.6	0.2	13.4	6.8	- 5.5	- 2.0
Compensation of employees	5.8	6.4	5.8	6.1	5.6	6.8	6.1	5.7	5.9
6. Disposable income of private households [2]									
a) EUR bn.									
Mass income	1 667.3	1 775.8	1 874.0	790.4	876.9	849.2	926.6	893.4	980.5
Net wages and salaries	1 128.8	1 200.6	1 267.3	525.1	603.7	562.2	638.4	591.9	675.4
Social benefits other than social transfer	685.5	731.3	771.0	337.6	348.0	363.8	367.4	382.0	389.0
less: Levies on social benefits, taxes on consumption	147.0	156.1	164.3	72.2	74.8	76.9	79.2	80.5	83.8
Other primary income [4]	609.9	603.8	615.9	328.4	281.5	325.1	278.7	331.6	284.3
Other transfers received (net) [5]	- 103.0	- 127.1	- 134.3	- 58.0	- 45.0	- 60.2	- 66.9	- 64.2	- 70.1
Disposable income	2 174.2	2 252.5	2 355.5	1 060.7	1 113.5	1 114.1	1 138.4	1 160.8	1 194.7
Change in pension entitlements	59.0	59.3	59.6	28.6	30.3	28.8	30.5	28.9	30.6
Consumption expenditure	1 978.9	2 076.6	2 155.0	953.5	1 025.5	1 014.2	1 062.4	1 047.7	1 107.3
Saving	254.2	235.1	260.1	135.9	118.3	128.7	106.5	142.0	118.1
Saving ratio (%) [6]	11.4	10.2	10.8	12.5	10.3	11.3	9.1	11.9	9.6
b) Change over the same period of the preceding year in %									
Mass income	4.5	6.5	5.5	2.9	6.0	7.4	5.7	5.2	5.8
Net wages and salaries	6.2	6.4	5.6	6.0	6.4	7.1	5.7	5.3	5.8
Social benefits other than social transfer	1.3	6.7	5.4	- 2.0	4.8	7.8	5.6	5.0	5.9
less: Levies on social benefits, taxes on consumption	2.3	6.1	5.3	0.6	4.1	6.4	5.9	4.7	5.9
Other primary income [4]	11.5	- 1.0	2.0	13.5	9.2	- 1.0	- 1.0	2.0	2.0
Disposable income	7.0	3.6	4.6	5.2	8.9	5.0	2.2	4.2	4.9
Consumption expenditure	11.6	4.9	3.8	14.0	9.4	6.4	3.6	3.3	4.2
Saving	- 19.6	- 7.5	10.6	- 32.2	2.4	- 5.3	- 10.0	10.4	10.9

National Accounts (cont.)
Forecast period: 2022 to 2024

	2022	2023	2024	2022		2023		2024	
				H1	H2	H1	H2	H1	H2
7. Revenue and expenditure by general government [7]									
a) EUR bn.									
Revenue									
Taxes	948.3	983.2	1 034.5	467.7	480.6	486.7	496.5	511.5	523.0
Social contributions	665.8	716.4	765.5	321.6	344.2	346.1	370.3	370.4	395.1
Property income	16.6	16.0	15.4	9.1	7.5	8.8	7.2	8.5	6.9
Other current transfers	28.0	29.4	30.8	12.1	15.9	12.8	16.6	13.5	17.3
Capital transfers	19.0	20.1	21.3	9.0	10.0	9.6	10.5	10.2	11.1
Sales	143.0	151.9	159.4	66.5	76.5	70.7	81.2	74.0	85.4
Other subsidies	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total	1 820.8	1 917.1	2 027.1	886.0	934.7	934.7	982.4	988.2	1 039.0
Expenditure									
Intermediate consumption [8]	592.8	620.5	645.7	287.2	305.5	298.1	322.4	312.1	333.6
Compensation of employees	306.7	316.4	336.5	148.3	158.4	151.3	165.1	161.2	175.3
Property income (interest)	26.1	36.0	40.1	12.5	13.6	17.5	18.4	19.6	20.4
Subsidies	72.8	78.2	58.4	29.0	43.8	36.3	41.9	28.3	30.1
Social benefits	618.7	663.9	703.1	304.2	314.5	330.2	333.7	348.1	355.0
Other current transfers	113.4	98.6	98.0	43.7	69.7	45.8	52.8	45.0	53.0
Capital transfers	91.4	81.2	80.7	22.9	68.4	31.6	49.5	32.1	48.6
Gross capital formation	101.6	111.6	124.5	43.8	57.9	47.3	64.3	52.3	72.1
Net acquisitions of non-produced non-fir	- 1.3	- 1.3	- 1.3	- 0.6	- 0.7	- 0.6	- 0.7	- 0.6	- 0.7
Total	1 922.1	2 005.0	2 085.5	891.1	1 031.0	957.6	1 047.4	998.2	1 087.3
Net lending	- 101.3	- 87.9	- 58.4	- 5.0	- 96.3	- 22.9	- 65.0	- 10.1	- 48.3
b) Change over the same period of the preceding year in %									
Revenue									
Taxes	8.0	3.7	5.2	12.4	4.1	4.1	3.3	5.1	5.3
Social contributions	5.1	7.6	6.9	5.1	5.1	7.6	7.6	7.0	6.7
Property income	9.1	- 3.7	- 3.4	11.3	6.7	- 3.1	- 4.4	- 2.9	- 4.1
Other current transfers	- 6.9	5.1	4.9	- 18.7	4.6	5.7	4.6	5.4	4.5
Capital transfers	- 6.6	6.1	5.9	6.4	- 15.9	6.7	5.5	6.5	5.4
Sales	6.3	6.2	5.0	7.9	4.9	6.2	6.2	4.7	5.2
Other subsidies	1.4	0.0	0.0	9.1	- 3.5	0.0	0.0	0.0	0.0
Total	6.4	5.3	5.7	8.7	4.3	5.5	5.1	5.7	5.8
Expenditure									
Intermediate consumption [8]	6.3	4.7	4.1	8.0	4.8	3.8	5.5	4.7	3.5
Compensation of employees	4.2	3.2	6.3	4.8	3.6	2.0	4.3	6.6	6.1
Property income (interest)	25.8	37.6	11.4	13.5	39.7	39.8	35.4	12.0	10.9
Subsidies	- 34.8	7.5	- 25.3	- 49.5	- 19.3	25.4	- 4.4	- 22.0	- 28.2
Social benefits	1.3	7.3	5.9	- 2.5	5.2	8.5	6.1	5.4	6.4
Other current transfers	25.4	- 13.0	- 0.6	0.6	48.3	4.8	- 24.2	- 1.7	0.4
Capital transfers	34.2	- 11.2	- 0.6	12.3	43.6	38.0	- 27.6	1.4	- 1.9
Gross capital formation	8.8	9.8	11.6	9.8	8.1	8.1	11.1	10.7	12.2
Net acquisitions of non-produced non-fir	7.3	0.0	0.0	- 6.1	20.7	0.0	0.0	0.0	0.0
Total	4.1	4.3	4.0	0.0	8.0	7.5	1.6	4.2	3.8

[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 payed 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, *Fachserie 18: National Accounts*; Kiel Institute calculations and forecasts.