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Article

German Economy Winter 2022 - Recovery temporarily on hold

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KIEL INSTITUTE **ECONOMIC OUTLOOK**

German Economy Winter 2022

Finalized December 14, 2022

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No. 98 (2022 | Q4)

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

GERMAN ECONOMY WINTER 2022: RECOVERY TEMPORARILY ON HOLD

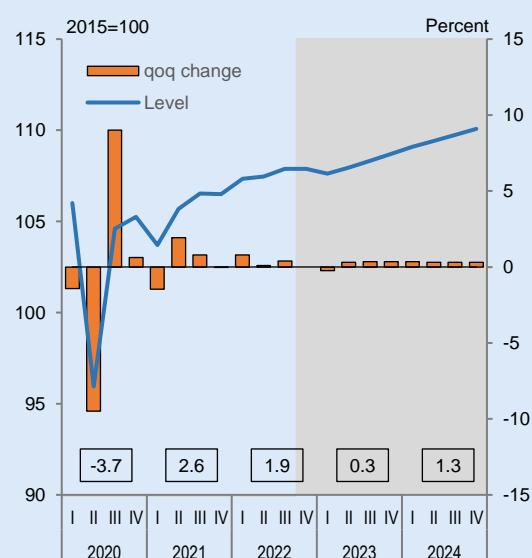
Jens Boysen-Hogrefe, Dominik Groll, Timo Hoffmann, Nils Jannsen, Stefan Kooths, Nils Sonnenberg und Vincent Stamer

The German economy is facing a weak winter half-year. High energy prices are weighing on the purchasing power of private households and are dampening private consumption. The global economic environment is weak and does not provide positive impulses for the economy. Since autumn, however, the economic outlook has brightened. Wholesale prices for gas and electricity have fallen significantly in recent months - even though they are still at a high level. In addition, the burdens on private households and companies caused by high energy costs are to be cushioned by so-called price brakes. Overall, inflation in 2023 will be much lower at 5.4 percent than we had expected in our autumn forecast (8.7 percent). Although real disposable income and, as a result, private consumption are likely to decrease next year, the decline will be much smaller than had been expected a few months ago. As a result, we now expect a slight increase in GDP of 0.3 percent for 2023 (autumn: -0.7 percent). In 2024, GDP is expected to grow somewhat more strongly again at 1.3 percent (autumn: 1.7 percent). The labour market is robust despite the economic slowdown, partly because companies are still desperately seeking skilled workers. The public fiscal balance is likely to deteriorate significantly in 2023 due to the aid packages in response to the energy crisis and displays a deficit of around 4 percent relative to GDP. With the expiry of the aid packages, the deficit will decrease again in 2024.

GDP is expected to decline slightly in the winter half-year. Compared to our autumn forecast, leading indicators point to a slightly more favourable development in the next two quarters. According to forecasting models GDP will stagnate in the fourth quarter. Firms assessed their business situation including up to November weaker than in the third quarter. However, industrial production held up quite well in October and truck mileage points to a further increase. For the first quarter of next year, forecasting models even signal a relatively strong increase in GDP. All in all, private consumption is likely to have only a fairly low weight in these models, as it was not a major economic driver in earlier cycles and there are hardly any reliable leading indicators available for consumption. Since private consumption is likely to significantly weaken due to high inflation, we assume in our forecast a weaker development than in the model forecasts, especially for the first quarter of 2023. Against this backdrop, we expect GDP to stagnate in the fourth quarter of the current year and to decline by 0.2 percent in the first quarter of 2023 (Figure 1).

In the third quarter, foreign trade proved to be resilient despite falling sentiment indicators worldwide. While exports to Russia continued to fall after significant losses in the first half of the year, exports of goods to the euro area increased.

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.

Positive trade figures in the third quarter have also been bolstered by a one-time statistical effect relating to inward processing – the practice of processing goods in a country without ownership change. According to surveys among German companies, supply chain bottlenecks have eased, allowing firms to fulfil orders from the stock of orders from abroad. The stock of orders from abroad remains substantial, which supports exports despite sluggish growth in partner countries such as the United States, China, and Scandinavian countries. For the current quarter, we predict a slight reduction of exports and a more substantial fall of imports. We predict for 2023 increases of 2.0 and 1.8 percent for exports and imports, respectively. As import prices again increased noticeably in the third quarter, Germany’s terms of trade worsened for a tenth month in a row. Although prices are likely to increase in the fourth quarter as well, the pace of expansion has slowed down significantly, as evidenced by the monthly commodity prices.

Inflation will remain high, but is expected to decline in the course of 2023. After the record highs in August and September, the wholesale prices for electricity and gas declined. In the past months, the increased procurement prices for gas and electricity were gradually passed on to consumers by the energy suppliers. In addition to the wholesale prices on the spot markets, the prices on futures markets, which are included in the forecast of consumer prices for gas and electricity, adjusted sharply downwards in October and November and indicate that prices are rising far less than was expected in August and September. For our forecast of gas and electricity prices, we use the median of traded daily futures contracts since the beginning of October. Accordingly, without policy intervention in electricity and gas prices, the energy component would continue to drive inflation strongly in 2023, increasing by around 27 percent. In 2024 the energy component would ease by around 8 percent, as consumer prices for gas and electricity would decline slightly from high levels.

The price brakes adopted for electricity and gas will limit the increase in the energy component in 2023. Especially from the second quarter of 2023 onwards, when the price brakes are expected to take full effect in the consumer price index, prices will be reduced, so that the energy component is likely to increase by only around 9 percent in 2023. In the forecast, the price brakes for electricity and gas are taken into account as follows: It is assumed that the December payment, as the first part of the gas price brake, reaches only one third of households in December. The price brake of 12 cents/kWh is taken into account from March 2023. As households have currently already reduced their consumption by around 20 percent, we assume an effective price of 12 cents/kWh from March 2023 to April 2024. The electricity price brake is taken into account from January 2023 to April 2024. The relevant price for the consumer index is the weighted average between the base price of 40 cents/kWh for 80 percent of consumption and 20 percent of our electricity price projection. If the price brakes and the VAT reduction on gas prices

Table 1:
Key indicators

	2021	2022	2023	2024
Gross domestic product (GDP), price-adjusted	2.6	1.9	0.3	1.3
Gross domestic product, deflator	3.1	4.7	3.4	3.7
Consumer prices	3.1	8.0	5.4	2.2
Labor productivity (per hour worked)	0.9	0.2	0.2	1.3
Employment (1000 persons)	44,980	45,535	45,635	45,543
Unemployment rate (percent)	5.7	5.3	5.5	5.4
<i>in relation to nominal GDP</i>				
Public sector net lending	-3.7	-1.7	-4.0	-2.2
Gross public debt	68.7	67.1	68.8	67.7
Current account balance	7.4	3.5	2.5	3.3

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.

expire as intended by April 2024, energy prices for consumers will rise again. Overall, the energy component will therefore only fall by around 1 percent on average in 2024.

Price inflation excluding energy (core rate) is likely to remain high for the time being. This is supported by the continued high price pressure in the upstream production stages, which is reflected in the further noticeable increase in producer prices. Food prices continue to rise strongly and contribute to high inflation. Higher electricity and gas prices will cause additional indirect effects on the core rate, although price brakes will also limit these effects in the industry and service sectors. The decline in supply and raw material bottlenecks will have a dampening effect on prices. The cooling of the global economy is also putting downward pressure on prices. We do not expect the fairly high wage increases to lead to major second-round effects on prices. Firms have already raised their prices sharply during the recovery from the pandemic, so that real unit labour costs are at a relatively low level. Thus, wage increases in themselves are helping to bring real unit labour costs closer to their long-term average and are therefore unlikely to induce firms to raise prices further, especially as their pricing power will be reduced by the slowdown in economic activity and easing supply constraints.

The energy price brakes are temporarily moderating inflation. After the record level of 8 percent in the current year, inflation is expected to remain at an elevated level of 5.4 percent in 2023 despite the electricity and gas price brakes (Table 1). Without taking the price brakes into account, inflation would – in a simple counterfactual calculation - be around 7.8 percent. In 2024, we expect inflation rates to continue to fall steadily, so that the average inflation rate for the year is expected to be 2.2 percent. Without the price brakes, the decline in electricity and gas prices would be stronger in 2024 and annual inflation would fall to around 1 percent.

Loss of purchasing power weighs on private consumption. We expect private consumption to decline in the winter half-year, as real disposable income will fall in the face of high inflation. Nominal disposable income of private households will quite strongly expand in the next years, also because gross wages and salaries are on a steep upward path due to the good shape of the labour market. However, high consumer price inflation will lead to a decline in real disposable income in 2023 – the third year in a row, private households will face declining real disposable incomes – before it will increase again in 2024. The decline in private consumption is likely to be particularly pronounced in the fourth quarter of this year. This is supported by the available monthly retail sales figures and the historically low consumer climate according to surveys. In addition, the discontinuation of the 9-euro ticket and fuel discounts are likely to dampen private consumption after lifting consumption in the third quarter. A stronger decline will probably be counteracted by the ongoing upswing in car sales, as the easing of supply bottlenecks in automobile production continues to increase supply. To stabilize consumption, private households will probably increasingly draw on the extra-savings they accumulated during the pandemic. They amount to about 200 billion euros or almost 10 percent of annual disposable income. For the forecast, we assume that in the next two years about 20 percent of these additional savings will be spent on private consumption and that the savings rate will be 9.6 percent in the coming year and 10 percent in 2024, after 10.6 percent in the current year. Since the burdens from the energy price increases will probably be significantly lower, we assume that private households will draw on their extra savings to a lesser extent than we had assumed in our autumn forecast (about 30 percent). With real disposable income rising over the forecast period, private consumption should also gradually increase. After an increase of 4.4 percent in the current year, private consumption is expected to decline by 0.5 percent in 2023. For 2024, we expect private consumption to increase by 1.2 per cent.

Investment in machinery and equipment will increase despite the weak economy. Over the course of the year, investment in machinery and equipment has increased quite strongly, and in the third quarter it even rose by 2.7 percent. An important factor for this were large order backlogs, which piled up as a

result of the supply bottlenecks, and can now be processed with the easing bottlenecks. Most recently, domestic orders on hand for capital goods were still more than 40 percent above their pre-crisis level. Domestic orders for capital goods have recently fallen significantly. However, they are so far only slightly below their pre-crisis level - similar to investments in machinery and equipment. All in all, the high order backlog will lead to an increase in investment in the forecast period, unlike in earlier phases of economic downturns. An increase is also likely if order intake temporarily would continue to decline, if the supply bottlenecks - as we have assumed for this forecast - gradually further ease. For the fourth quarter, however, the leading indicators do not provide clear signals. While domestic sales of capital goods in October point to a decline in equipment investment, production of capital goods, which also shows a relatively high correlation with investment in machinery and equipment, suggests a fairly significant increase. Other indicators, such as price-adjusted imports of goods, which fell sharply in October, and new vehicle registrations, which have recently shown a clear upward trend, also point into different directions. Overall, we expect machinery and equipment investment to decline slightly in the fourth quarter before picking up again in the rest of the forecast period. For the next two years we expect increases of 2.2 percent and 4.9 percent, respectively, after 2.9 percent in the current year. Investment in machinery and equipment is supported by public investment, which accounts for a share of about 10 percent and is expected to expand strongly in the next two years.

High prices, material shortages, and deteriorating financing conditions are further slowing down construction activity. Although leading indicators point to a fairly significant increase in the fourth quarter, the general conditions for the construction industry have deteriorated massively in the course of the year. Construction prices rose sharply. The deflator for construction investments increased by 2.5 percent in the fourth quarter compared to the previous quarter and by 15.6 percent compared to the previous year. Rising material costs contributed to this. The value-added deflator of the construction industry has risen even more strongly than construction prices, by 5.4 percent compared to the previous quarter and 23.3 percent compared to the previous year. In addition, the financing conditions have recently deteriorated due to higher interest rates. Overall, the gloomy general conditions have led to a slump in new orders. In November alone, new orders fell by 3.6 percent compared to the previous month. Compared to the beginning of the year, they fell by 18.4 percent. Business climate surveys in the construction industry have plummeted to the low level of 2015 while business expectations fell to a record low since 1991. However, construction investment is unlikely to fully reflect the recent slump in new orders. Although the order backlog declined recently, it is still at a high level. In addition, the number of companies complaining about material bottlenecks fell. Overall, the construction industry is still well utilised despite significant declines in production and continues to complain about a shortage of labour. Freed-up capacities in the main construction industry (e.g., new buildings) could also be shifted to specialised construction activities (e.g., renovation and extension) if, in view of the high energy prices, there is an increased demand for more energy-efficient construction in existing buildings. However, falling real incomes will limit these effects. In perspective, construction investments will be supported by the in general high demand for housing, which also results from net immigration. Compared to our autumn forecast, we expect construction investments to be significantly lower, as incoming orders have once again declined considerably and more and more construction companies are reporting cancellations, so that the rather high order backlog has less of a stabilising effect. Within construction investments, the development is uneven. Due to the doubling of long-term housing interest rates in October compared to the previous year and the falling real income of private households, residential construction has been hit hardest by the downturn. Overall, construction investment is expected to decline by 1.9 percent in 2023 after a minus of 1.2 percent and to increase again slightly by 0.5 percent in 2024.

Wages and salaries per employee will increase as strongly as they last did 30 years ago, but will lag behind consumer price inflation. In 2022, negotiated wages and salaries are estimated to have

risen by 2.5 percent year-on-year. This would be a stronger rate than in 2021, when growth was as low as 1.6 percent in response to the COVID crisis, but much weaker than consumer price inflation. According to the recent collective bargaining agreement in the important metal and electrical engineering industry, employees will see an estimated 7.2 percent (2023) and 4.1 percent (2024) increase in their pay on a calendar-year basis, compared with an average of 0.5 percent in the years 2020 to 2022. For the upcoming negotiations in other sectors, we are assuming rates of around 5 percent per year. However, in a number of sectors, the contracts for the coming year have already been agreed in full or for the most part, at a time when inflation was still comparatively low. Against this backdrop, we anticipate an overall increase in negotiated wages and salaries of 4.5 percent in 2023; this would be the highest growth rate since 1995. For 2024, we expect an increase of 4.7 percent. Effective earnings (gross wages and salaries per employee) are expected to continue to rise faster than negotiated wages. While the significantly lower level of short-time work was the main factor in 2022, higher domestic price inflation and the resulting increase in the scope for wage increases will play an increasingly important role as time goes on. In addition, labour shortages continue to be at a historically high level. The increase in the statutory minimum wage to 12 euros per hour as of October 1, 2022 is expected to raise average per capita earnings by 0.2 percent (2022) and 0.6 percent (2023), respectively, taking into account job losses and reductions in working hours. All in all, we expect effective earnings per employee to increase by 4.9 percent (2023) and 5.2 percent (2024), compared with 4.3 percent in the current year.

Employment is going to peak in the forecast period. After a year and a half of recovery from the COVID crisis, the number of employed hardly rose at all during the summer months of this year; a notable increase was recorded again in October. Short-time work increased slightly in September, albeit at a low level. Seasonally-adjusted registered unemployment continued to rise slightly to 2.5 million persons in November (unemployment rate: 5.6 percent). The number of unemployed persons with Ukrainian citizenship has recently declined slightly following the sharp rise in the summer, but underemployment has continued to rise, largely due to increased participation in integration courses. Leading indicators, such as the ifo Employment Barometer and the IAB Labour Market Barometer, have deteriorated significantly since May from high levels, but still point to a slight increase in employment in the coming months. Employment is expected to peak in the course of the coming year. Labour demand of firms will be reduced primarily by the economic consequences of the energy crisis, but the sharp hike in the minimum wage to 12 euros is likely to have a negative impact on employment as well. However, labour shortages, which had already been worsening for years, have likely led to a situation in which the workforce in companies is currently lower than planned. As a result, the impact of reduced labour demand on employment is likely to be less severe. Finally, as time goes on, the aging of the population will become more and more noticeable in the labour force. This implies - irrespective of the energy crisis - a decline in employment toward the end of the forecast period and in the medium term. To some extent, this will be counteracted by the integration of Ukrainian refugees into the German labour market. Registered unemployment is expected to rise from 5.3 percent in the current year to 5.5 percent in the coming year, and to decline again slightly to 5.4 percent in 2024. Working time per employee has been relatively low this year, mainly due to a persistently high level of sick leave, which has reduced working hours by an estimated 1.6 percent on average in the first three quarters of the current year. We expect the sickness rate and thus working hours to normalize over the forecast period, but only gradually. Short-time work is expected to increase only slightly in response to the energy crisis.

In 2023, there will be a substantial fiscal impulse. Payments to customers of natural gas and electricity and transfers to companies, heavily affected by the energy crisis, lead to fast rising expenditures. Revenues increase at a much lower pace. 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 increase

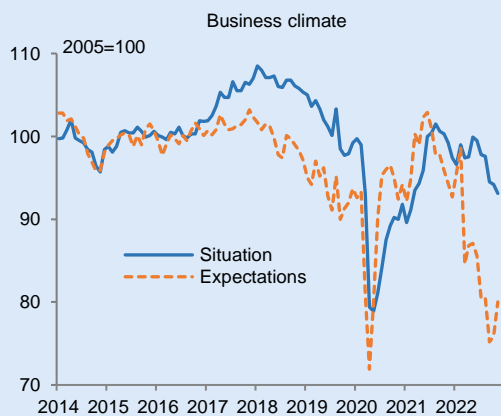
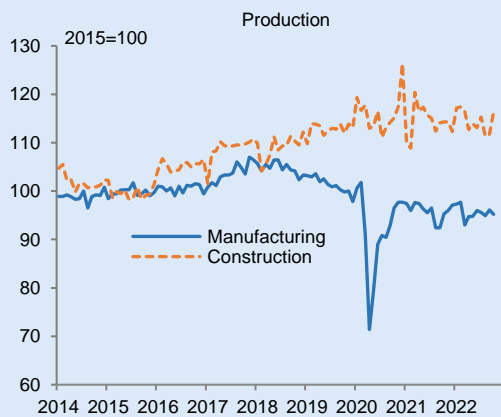
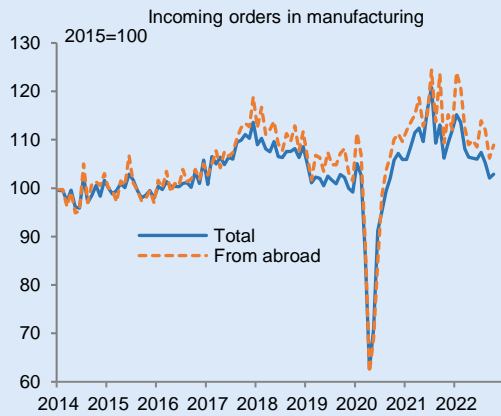
again to 4 percent relative to GDP. In 2024, as a result of the end of energy related payments in April, the budget deficit will decrease, but it will remain elevated.

CONTENTS

1. Leading indicators	9
2. Monetary conditions and prices	10
3. External trade.....	12
4. Domestic expenditure.....	14
5. Industries.....	16
6. Wages.....	17
7. Employment.....	18
8. Public finances.....	20
9. GDP and its components	22
10. The German economy.....	23
11. National accounts	24

1. Leading indicators

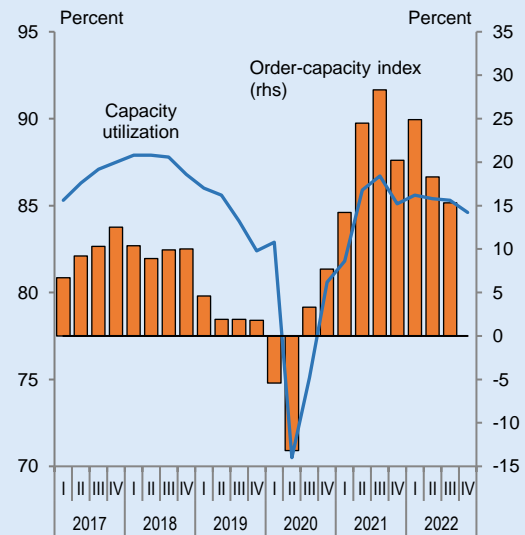
Figure 1.1:
Leading indicators



Monthly data, seasonally adjusted.

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

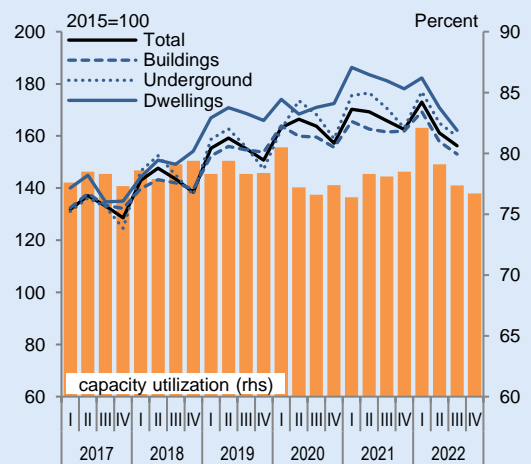
Figure 1.2:
Capacity utilization



Quarterly data, seasonally adjusted; capacity utilization in manufacturing (axes cross at normal capacity utilization).

Source: EU Commission, *Business Survey*; Deutsche Bundesbank, *Monthly Report*.

Figure 1.3:
Order stocks and capacity utilization in construction industry

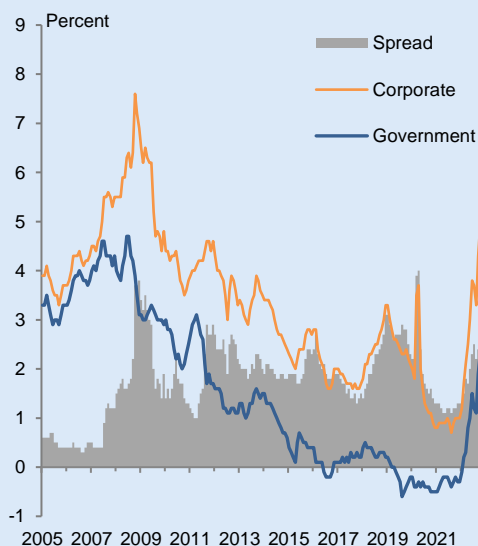


Quarterly data. Capacity utilization (deviation from normal level): seasonally adjusted; order stocks: price, seasonally and working-day adjusted.

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

2. Monetary conditions and prices

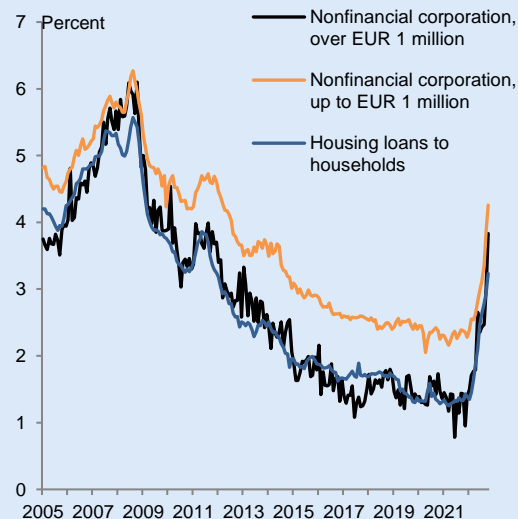
Figure 2.1:
Bond yields



Monthly data, average maturities above three years.

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

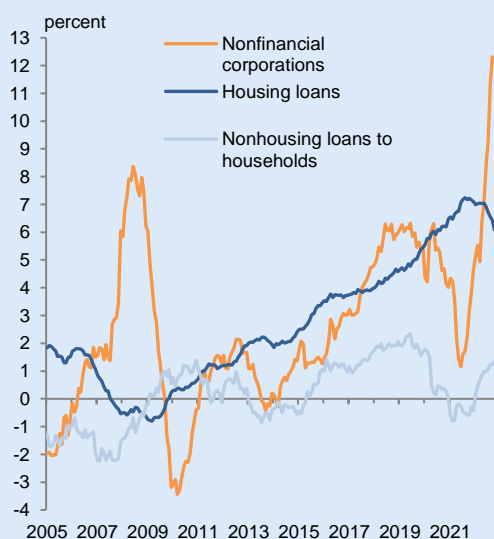
Figure 2.2:
Loan interest,



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

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

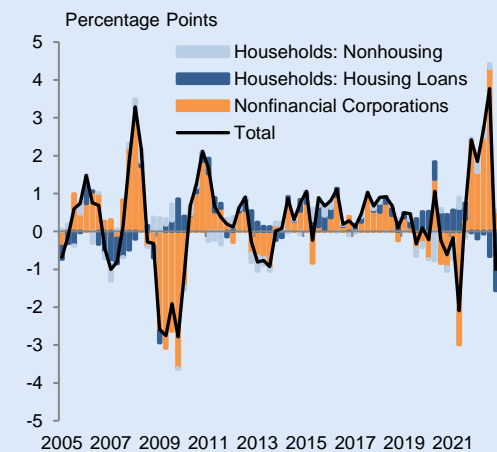
Figure 2.3:
Credit growth



Change compared to one year ago; Monthly data.

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

Figure 2.4:
Credit impulse

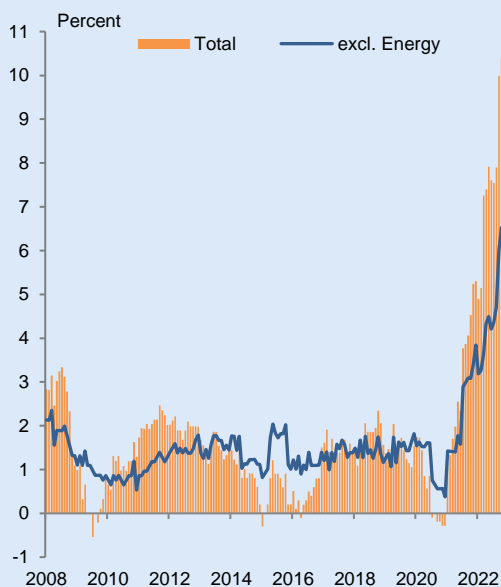


Quarterly data, most recent quarter based on first month; calculations follow Biggs et al. (2009), *Credit and economic recovery*, DNB Working Paper 218, De Nederlandsche Bank, Amsterdam.

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

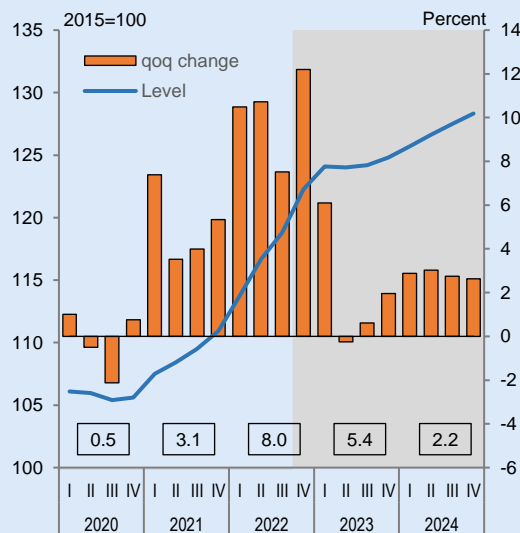
Source: Deutsche Bundesbank, *Seasonally Adjusted Business Statistics*; Kiel Institute calculations.

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 2020–2023

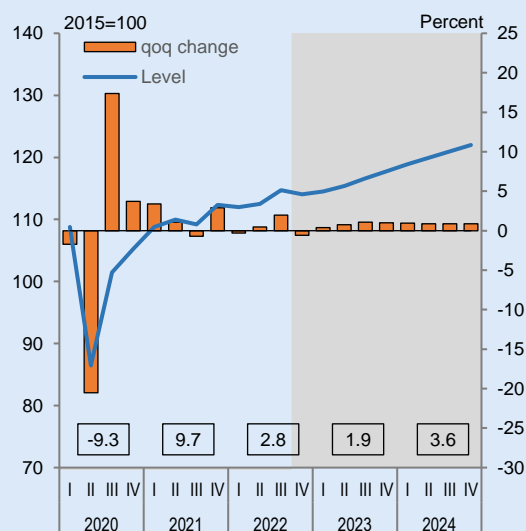
	2021				2022				2023				2024			
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
ECB key interest rate	0.00	0.00	0.00	0.00	0.00	0.00	1.25	2.50	3.00	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Long-term interest rate	-0.46	-0.28	-0.45	-0.30	0.10	1.05	1.30	2.06	2.00	2.20	2.40	2.60	2.80	2.80	2.80	2.80
US-dollar/euro exchange rate	1.20	1.21	1.18	1.14	1.12	1.06	1.01	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Price competitiveness	91.5	91.6	91.0	89.8	89.70	88.9	87.9	88.5	89.0	89.2	89.4	89.4	89.0	88.6	88.2	87.7
Export markets	0.6	2.1	1.6	1.1	0.74	0.29	-0.1	0.1	0.1	0.2	0.3	0.4	0.5	0.6	0.6	0.7
Oil price	60.9	68.8	73.5	79.5	100.9	113.8	100.5	89.0	86.8	85.9	84.6	83.3	82.0	80.9	79.8	79.0

ECB key interest rate: main refinancing operations; 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.

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

3. External trade

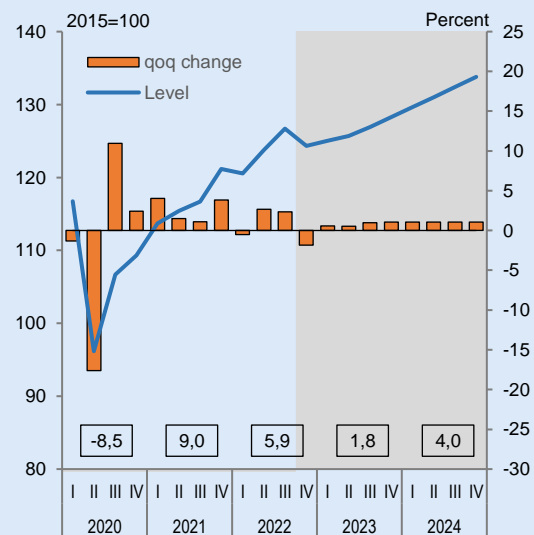
Figure 3.1:
Exports



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.

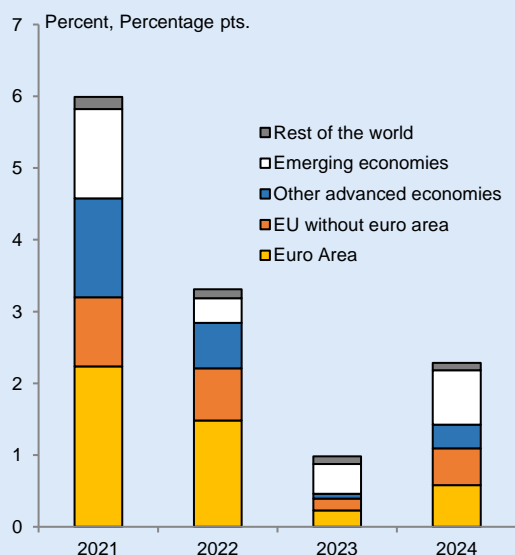
Figure 3.2:
Imports



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.

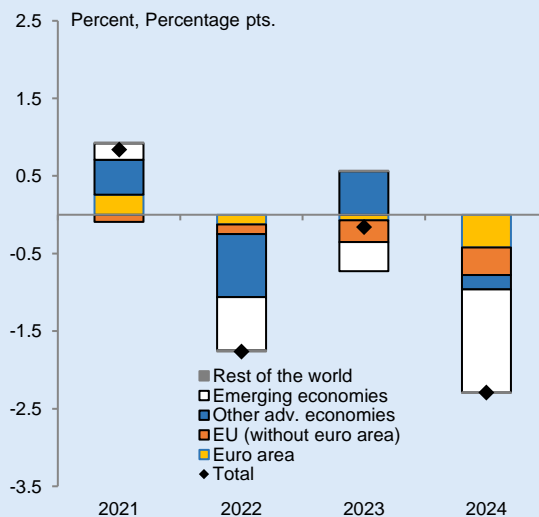
Figure 3.3:
German export markets



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

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

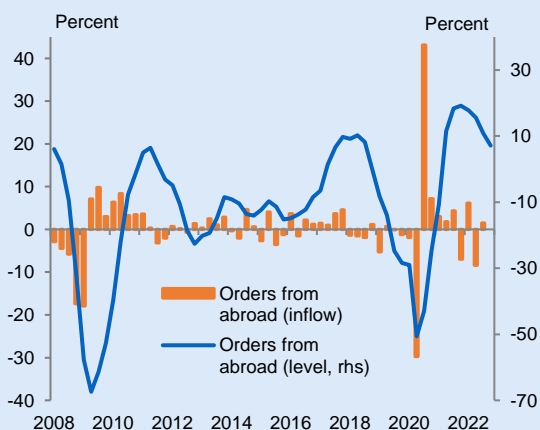
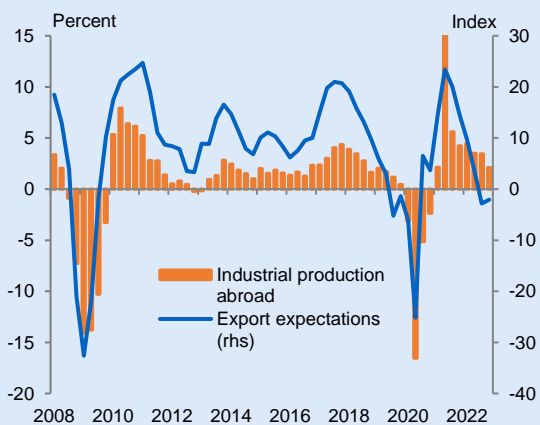
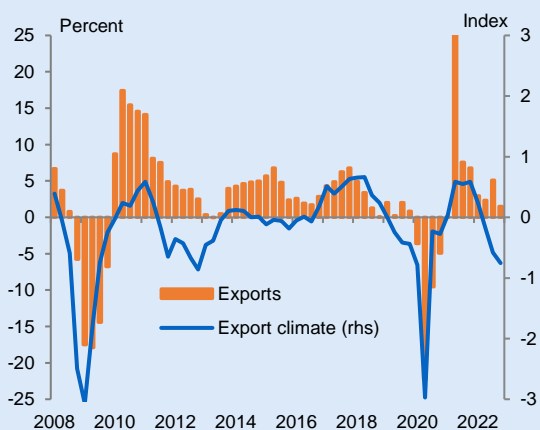
Figure 3.4:
Germany's price competitiveness



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.

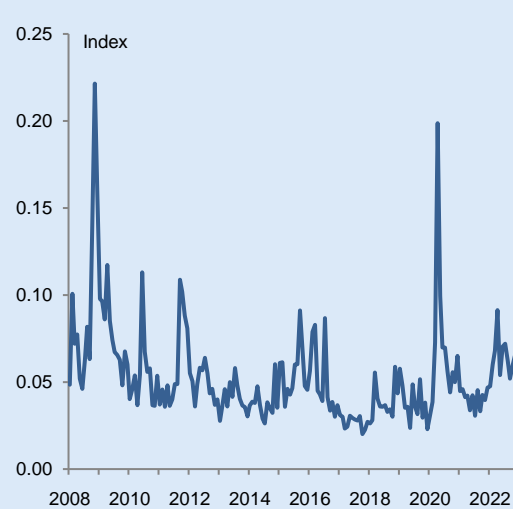
Figure 3.5:
Export indicators



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.

Figure 3.5:
Uncertainty in German export markets

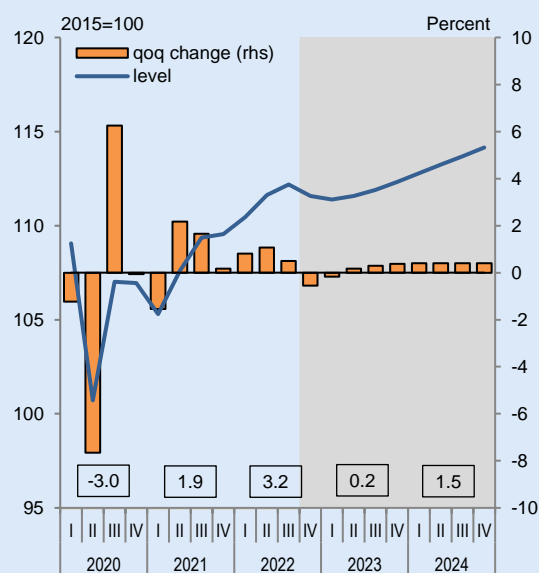


Monthly data; realized stock market volatilities based on daily stock price indices in 46 countries, weighted by shares of German exports. Last value: 31.08.2022.

Source: National sources; Kiel Institute calculations.

4. Domestic expenditure

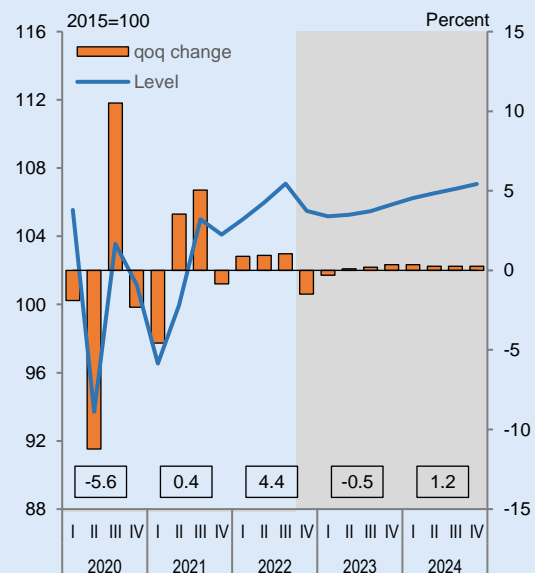
Figure 4.1:
Domestic expenditure



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.

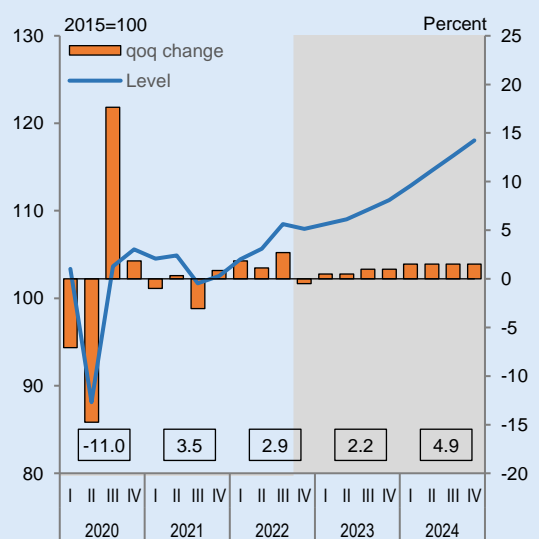
Figure 4.2:
Private consumption



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.

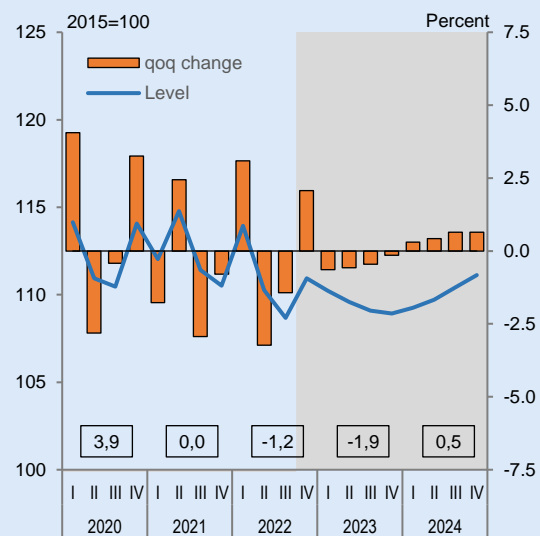
Figure 4.3:
M&E investments



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.

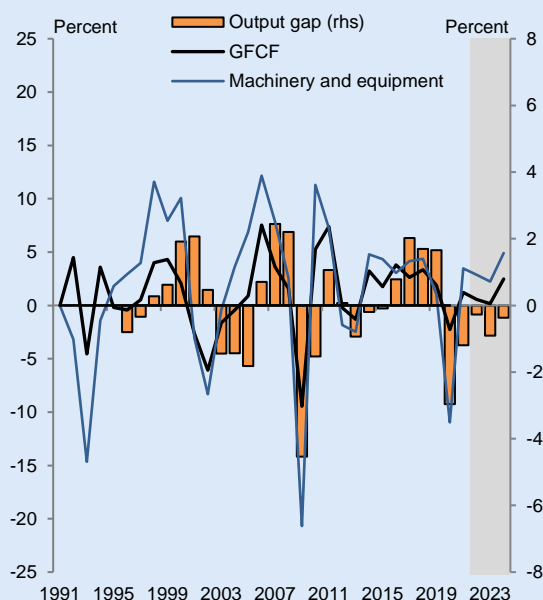
Figure 4.4:
Construction



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.

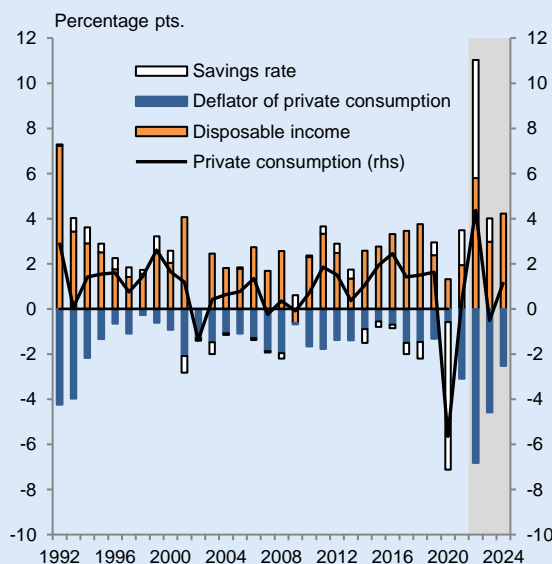
Figure 4.5:
Investment cycles



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*; own calculations; shaded: Kiel Institute forecast.

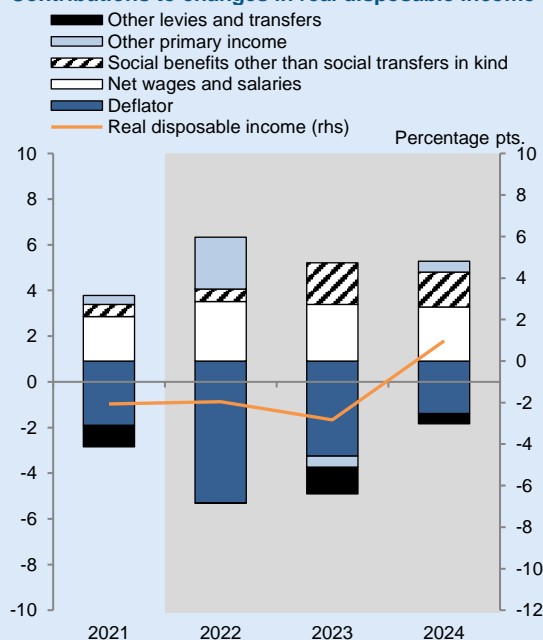
Figure 4.6:
Contributions to change in private consumption



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	0.5	0.2	2.5
Corporate investment	2.0	1.6	1.9	3.8
Machinery and equipment	3.5	2.9	2.2	4.9
Construction (nondwellings)	0.1	-1.5	-0.7	0.6
Other	1.1	2.0	3.4	4.7
Dwellings	0.6	-1.2	-2.7	-0.1
Public (nondwellings)	-2.9	-0.6	-0.4	3.3
<i>Memorandum item:</i>				
Construction	0.0	-1.2	-1.9	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 2021-2022

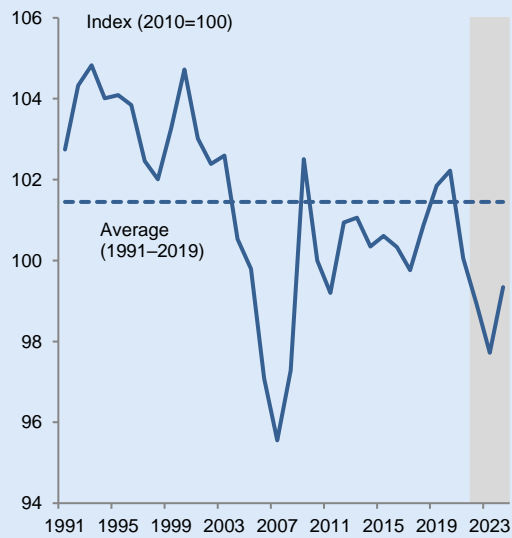
	2022				2023				2024			
	I	II	III	IV	I	II	III	IV	I	II	III	IV
	Seasonally and calendar-adjusted, q-o-q change in percent											
Gross domestic product	0.8	0.1	0.4	0.0	-0.2	0.3	0.4	0.4	0.4	0.3	0.3	0.3
Gross value added	1.6	-0.6	1.4	0.0	-0.2	0.3	0.4	0.4	0.4	0.3	0.3	0.3
Industry excl. construction	-0.2	-0.2	0.6	0.0	0.3	1.0	1.0	0.7	0.5	0.4	0.4	0.4
Manufacturing	0.0	-0.2	0.9	0.5	0.5	1.2	1.2	0.8	0.5	0.5	0.5	0.5
Energy, Water etc.	-0.8	0.5	-1.6	-4.0	-1.5	-0.5	-0.5	0.0	0.3	0.3	0.3	0.3
Construction	3.3	-2.4	-4.2	3.0	-1.0	-1.0	0.0	0.5	0.5	0.5	0.5	0.5
Trade, transport, accomodation, food services	1.8	-1.5	3.3	-1.1	-1.1	0.0	0.2	0.3	0.3	0.3	0.3	0.3
Information and communication	1.2	0.2	0.1	0.3	0.3	0.5	0.8	0.8	0.8	0.8	0.8	0.8
Financial and insurance services	3.5	0.5	1.6	-0.5	-0.5	-0.3	0.0	0.0	0.3	0.3	0.3	0.3
Real estate activities	0.6	0.3	-0.4	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Business services	1.5	0.0	-0.5	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5
Public services, education, health	2.9	-1.5	4.5	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2
Other services	5.9	1.3	5.4	-1.0	-0.5	0.0	0.2	0.2	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

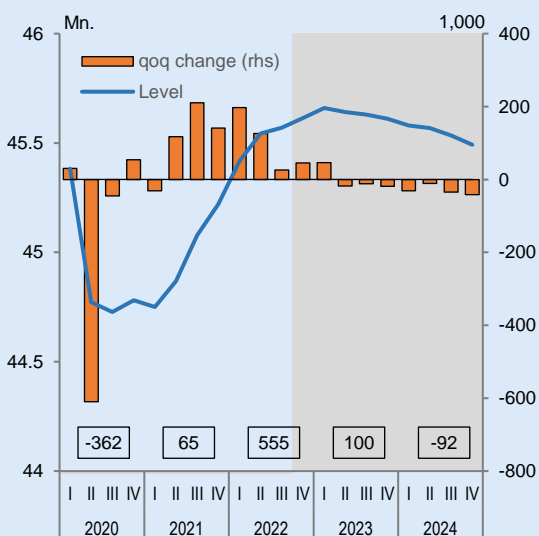
	2020	2021	2023	2024
<i>Per hour</i>				
Negotiated wages	1.5	2.5	4.5	4.7
Gross wages and salaries	1.6	4.1	5.0	4.8
Wage drift	0.0	1.6	0.5	0.1
Compensation of employees	1.3	3.6	5.0	4.7
Labor productivity	0.9	0.2	0.2	1.3
Unit labor costs	0.7	3.3	4.8	3.3
Unit labor costs (real)	-2.3	-1.3	1.3	-0.3
<i>Per capita</i>				
Negotiated wages	1.6	2.5	4.5	4.7
Gross wages and salaries	3.3	4.3	4.9	5.2
Wage drift	1.7	1.9	0.3	0.5
Compensation of employees	3.1	4.0	4.9	5.1
Labor productivity	2.5	0.6	0.0	1.5
Unit labor costs	0.6	3.4	4.9	3.5
Unit labor costs (real)	-2.4	-1.3	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

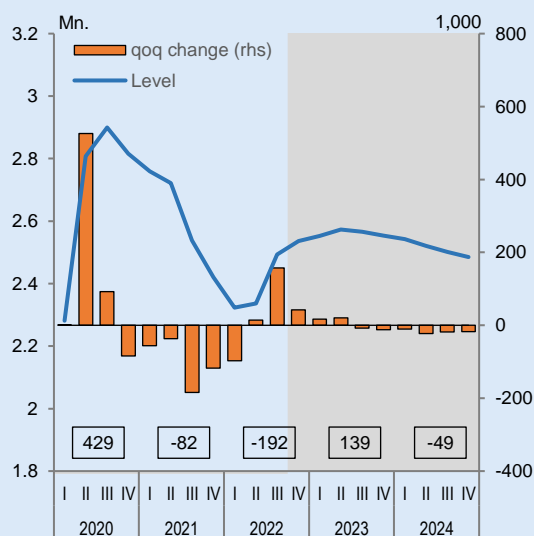
Figure 7.1:
Employment



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.

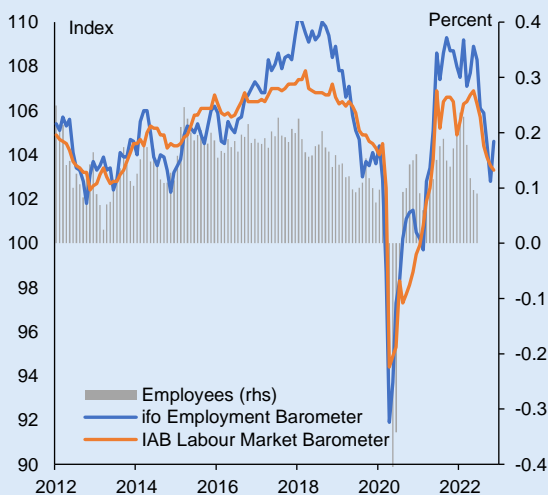
Figure 7.2:
Unemployment.



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: 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)

	2020	2021	2022	2023	2024
Hours worked (domestic concept. mn. hours)	59.249	60.281	61.261	61.279	61.267
Persons in employment (domestic concept)	44.914	44.980	45.535	45.635	45.543
Self-employed	4.055	3.958	3.899	3.842	3.782
Employees (domestic concept)	40.859	41.022	41.636	41.793	41.761
Employees subject to social security contributions	33.577	33.922	34.533	34.852	35.012
Minijobs	4.273	4.100	4.108	3.976	3.785
Net commuting	94	114	139	145	145
Persons in employment (national concept)	44.821	44.866	45.396	45.491	45.399
Employees (national concept)	40.766	40.908	41.497	41.648	41.616
Unemployed persons (registered)	2.695	2.613	2.421	2.561	2.512
Unemployment rate (registered; percent)	5.9	5.7	5.3	5.5	5.4
Unemployment rate (ILO; percent)	3.4	3.3	2.8	3.0	3.1

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

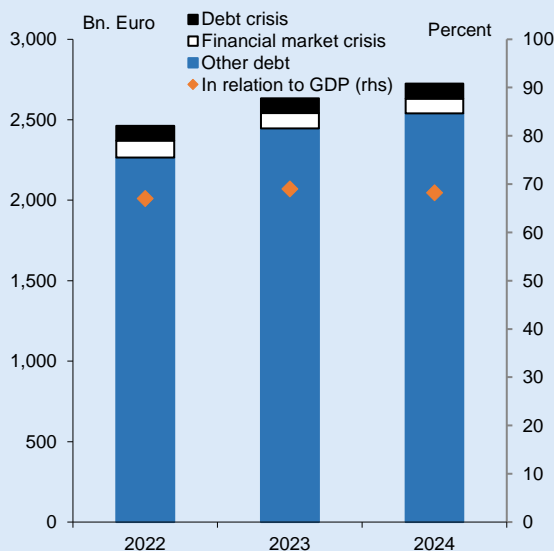
Revenues and expenditures of the general government (bn. Euro)

	2020	2021	2022	2023	2024
Revenues	1,569.1	1,711.7	1,826.4	1,907.0	1,997.9
→relative to GDP	46.1	47.5	47.6	48.1	48.2
Taxes	774.5	877.8	952.6	980.7	1,023.9
→relative to GDP	22.7	24.4	24.8	24.7	24.7
Social contributions	608.1	633.7	665.9	707.6	745.6
→relative to GDP	17.9	17.6	17.3	17.8	18.0
Other revenues	186.5	200.3	207.9	218.7	228.5
→relative to GDP	5.5	5.6	5.4	5.5	5.5
Expenditures	1,716.6	1,846.0	1,892.4	2,067.5	2,090.4
→relative to GDP	50.4	51.3	49.3	52.2	50.5
Compensation of employees	284.3	294.4	306.3	318.3	335.0
Intermediate consumption	209.4	227.2	235.0	242.4	253.3
Social transfers in kind	304.9	330.0	359.5	375.2	389.3
Gross capital formation	93.2	93.4	103.5	117.7	133.1
Capital transfers	21.5	20.8	25.0	31.0	37.0
Social benefits	600.0	610.9	622.0	664.6	701.1
Subsidies	73.4	111.6	66.9	149.1	74.4
Other current transfers	82.6	90.4	108.0	96.0	95.4
Other capital transfers and investment grants	48.1	68.1	67.2	74.0	72.7
Other expenditures	-1.2	-1.2	-1.3	-1.3	-1.3
Net lending/ net borrowing	-147.6	-134.3	-66.0	-160.4	-92.5
→relative to GDP	-4.3	-3.7	-1.7	-4.0	-2.2
Revenues of central, state, and local governments	1,003.8	1,116.4	1,204.6	1,234.5	1,288.5
Net of transfers from social security funds	993.2	1,109.8	1,193.2	1,233.3	1,287.3
Transfers from social security funds	10.6	6.6	11.3	1.2	1.2
Expenditures of central, state, and local governments	1,116.5	1,255.0	1,274.5	1,394.3	1,372.3
Net of transfers to social security funds	975.2	1,097.3	1,101.0	1,239.5	1,225.1
Transfers to social security funds	141.4	157.7	173.5	154.8	147.2
Net lending/ net borrowing central, state, and local governments	-112.7	-138.5	-69.9	-159.8	-83.8
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	633.2	673.7	710.6
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	791.4	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

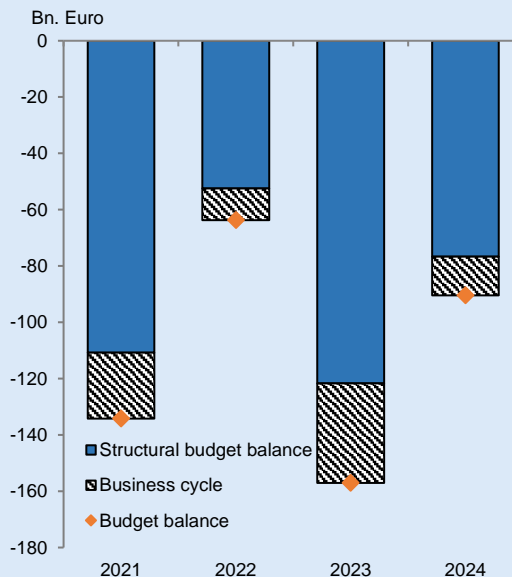


Debt crisis: Liabilities due to first Greece adjustment programme, deposits at the ESM, guarantees for EFSF credits.

Financial market crisis: Liabilities 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

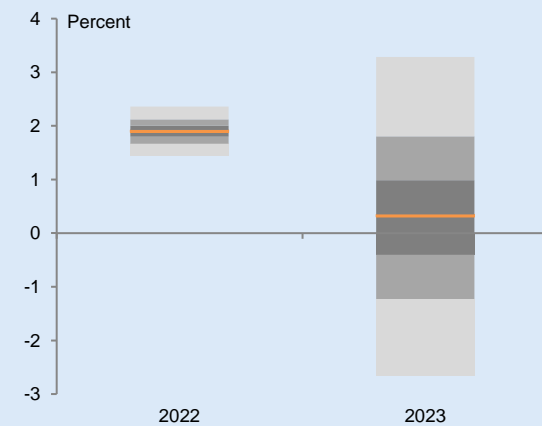
Table 9.1:
Quarterly data

	2022				2023				2024			
	I	II	III	IV	I	II	III	IV	I	II	III	IV
Gross domestic product	0.8	0.1	0.4	0.0	-0.2	0.3	0.4	0.4	0.4	0.3	0.3	0.3
Private consumption	0.9	0.9	1.0	-1.5	-0.3	0.1	0.2	0.4	0.4	0.3	0.3	0.3
Government consumption	0.7	0.5	0.0	0.0	-0.2	0.5	0.5	0.5	0.3	0.2	0.2	0.3
Machinery and equipment	1.9	1.1	2.7	-0.5	0.5	0.5	1.0	1.0	1.5	1.5	1.5	1.5
Constructions	3.1	-3.2	-1.4	2.1	-0.6	-0.6	-0.5	-0.1	0.3	0.4	0.6	0.6
Other investment	-0.1	0.8	1.0	0.5	0.8	1.0	1.0	1.0	1.2	1.3	1.3	1.2
Change in inventories	-0.3	0.7	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Domestic expenditure	0.8	1.1	0.5	-0.5	-0.2	0.2	0.3	0.4	0.4	0.4	0.4	0.4
Exports	-0.3	0.5	2.0	-0.6	0.4	0.8	1.1	1.0	1.0	0.9	0.9	0.9
Imports	-0.5	2.7	2.4	-1.9	0.6	0.5	1.0	1.1	1.1	1.1	1.1	1.1
Net exports	0.0	-0.9	-0.1	0.5	-0.1	0.1	0.1	0.0	-0.1	-0.1	-0.1	-0.1
Employment (domestic)	45.416	45.543	45.569	45.614	45.660	45.642	45.630	45.611	45.580	45.569	45.534	45.493
Unemployment (registered)	2.323	2.337	2.494	2.536	2.553	2.573	2.566	2.553	2.543	2.521	2.502	2.485

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.

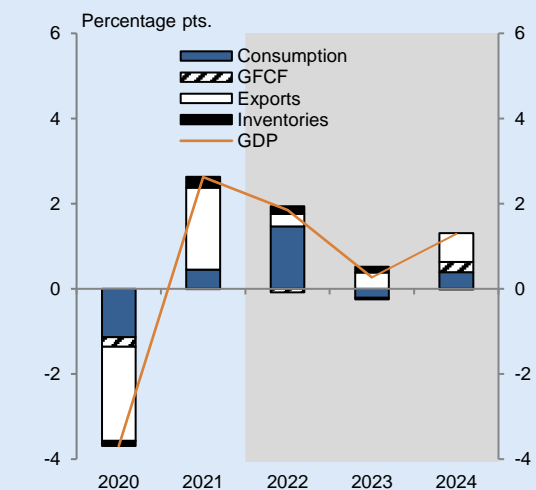
Figure 9.1:
Forecast intervals for GDP growth



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 1994–2021.

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

Tabelle 10.1:
The german economy –

	2021	2021	2022	2023	2024
	Bn. Euro	Change over previous year in percent			
Use of gross domestic product, price-adjusted					
GDP		2.6	1.9	0.3	1.3
Private consumption expenditure		0.4	4.4	-0.5	1.2
Public consumption expenditure		3.8	1.7	0.6	1.4
Total fixed investment		1.2	0.5	0.2	2.5
Machinery and equipment		3.5	2.9	2.2	4.9
Construction		0.0	-1.2	-1.9	0.5
Other equipment		1.1	2.0	3.4	4.7
Changes in stocks		0.5	0.4	0.3	0.0
Domestic Demand		1.9	3.2	0.2	1.5
Exports		9.7	2.8	1.9	3.6
Imports		9.0	5.9	1.8	4.0
Net exports		0.8	-1.1	0.1	-0.2
Use of gross domestic product at current prices					
GDP	3,601.8	5.8	6.6	3.6	5.0
Private consumption expenditure	1,773.8	3.5	11.5	4.0	3.7
Public consumption expenditure	797.5	6.6	6.4	4.0	4.3
Total fixed investment	783.8	6.5	11.7	4.9	5.0
Machinery and equipment	229.4	5.5	10.4	6.0	6.7
Construction	416.7	8.3	14.7	4.2	3.6
Other equipment	137.7	2.9	5.0	5.1	6.8
Changes in stocks (€ bn.)		55.1	79.4	93.2	95.7
Domestic Demand	3,410.2	6.1	10.9	4.5	4.1
Exports	1,693.9	15.6	15.2	6.9	6.0
Imports	1,502.4	18.0	26.0	8.8	4.3
Net exports (€ bn.)		191.6	59.3	28.7	64.8
Gross national income	3,729.5	6.4	6.5	3.5	4.9
Deflators					
GDP		3.1	4.7	3.4	3.7
Private consumption expenditure		3.1	6.8	4.6	2.5
Public consumption expenditure		2.7	4.7	3.3	2.9
Investment in machinery and equipment		1.9	7.3	3.7	1.7
Investment in construction		8.3	16.1	6.3	3.1
Investment in other equipment		1.8	2.9	1.6	2.0
Exports		5.4	12.1	4.9	2.3
Imports		8.3	19.0	6.8	0.3
<i>Addendum: Consumer prices</i>		3.1	8.0	5.4	2.2
Income distribution					
Net national income (factor costs)	2,743.4	6.7	3.1	5.7	2.6
Compensation of employees	1,918.0	3.5	5.5	5.3	5.0
in percent of national income		69.9	71.5	71.3	73.0
Property and entrepreneurial income	825.4	15.0	-2.4	6.7	-3.5
Disposable income	2,031.2	2.1	6.0	2.9	4.3
Savings rate		15.1	10.6	9.5	9.9
Wages and salaries	1,570.6	3.7	5.9	5.2	5.1
Wage per hour		1.6	4.1	5.0	4.8
Unit labor costs		0.7	3.3	4.8	3.3
Productivity per hour		0.9	0.2	0.2	1.3
Unemployment (1,000)	2,613.5	2,421.5	2,560.5	2,511.7	
Rate of unemployment (percent)	5.7	5.3	5.5	5.4	
Total employment (1,000)	44,979.8	45,535.0	45,635.3	45,543.3	
Public sector budget balance					
Public sector budget balance (€ bn.)		-134.3	-66.0	-160.4	-92.5
Public sector budget balance (in percent of GDP)		-3.7	-1.7	-4.0	-2.2
Public debts (in percent)		68.7	67.1	68.8	67.7

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 preceding year in %									
Persons in employment	1.2	0.2	-0.2	1.5	1.0	0.4	0.1	-0.2	-0.2
Hours worked	1.6	0.0	0.0	2.0	1.3	0.5	-0.4	-0.2	0.2
Hours worked by person in employment	0.4	-0.2	0.2	0.5	0.3	0.1	-0.4	0.0	0.4
Labor productivity ¹	0.2	0.2	1.3	0.8	-0.3	-0.2	0.6	1.4	1.2
Gross domestic product, price-adjusted	1.9	0.3	1.3	2.8	0.9	0.3	0.2	1.2	1.4

2. Use of gross domestic product at current prices

a) EUR bn.

Consumption expenditure	2 826.1	2 940.2	3 055.4	1 365.6	1 460.5	1 434.8	1 505.4	1 490.3	1 565.1
Private households ²	1 977.6	2 057.7	2 134.7	952.1	1 025.6	1 007.3	1 050.4	1 039.7	1 095.0
Government	848.4	882.5	920.7	413.5	434.9	427.5	455.0	450.6	470.1
Gross fixed capital formation	875.7	918.6	964.8	417.3	458.4	446.7	471.9	462.8	502.0
Machinery and equipment	253.2	268.4	286.4	118.1	135.0	128.4	140.0	135.4	151.0
Construction	478.0	498.3	516.2	230.6	247.5	246.8	251.5	251.2	264.9
Other products	144.5	151.9	162.2	68.6	75.9	71.5	80.3	76.2	86.0
Changes in inventories ¹	79.4	93.2	95.7	48.1	31.4	60.4	32.9	63.1	32.7
Domestic expenditure	3 781.3	3 952.0	4 115.9	1 831.0	1 950.3	1 941.9	2 010.1	2 016.2	2 099.8
Net exports	59.3	28.7	64.8	50.9	8.4	14.0	14.8	29.9	34.9
Exports	1 952.2	2 087.5	2 212.1	940.1	1 012.2	1 023.9	1 063.6	1 086.8	1 125.3
Imports	1 892.9	2 058.8	2 147.4	889.2	1 003.8	1 009.9	1 048.9	1 057.0	1 090.4
Gross domestic product	3 840.6	3 980.7	4 180.7	1 881.9	1 958.6	1 955.8	2 024.9	2 046.0	2 134.6

b) Change over the same period of the preceding year in %

Consumption expenditure	9.9	4.0	3.9	11.8	8.2	5.1	3.1	3.9	4.0
Private households ²	11.5	4.0	3.7	13.8	9.4	5.8	2.4	3.2	4.2
Government	6.4	4.0	4.3	7.4	5.4	3.4	4.6	5.4	3.3
Gross fixed capital formation	11.7	4.9	5.0	11.5	11.9	7.0	2.9	3.6	6.4
Machinery and equipment	10.4	6.0	6.7	7.0	13.4	8.7	3.7	5.5	7.9
Construction	14.7	4.2	3.6	16.0	13.5	7.0	1.6	1.8	5.3
Other products	5.0	5.1	6.8	5.3	4.7	4.2	5.8	6.5	7.1
Domestic expenditure	10.9	4.5	4.1	12.6	9.3	6.1	3.1	3.8	4.5
Exports	15.2	6.9	6.0	15.7	14.8	8.9	5.1	6.2	5.8
Imports	26.0	8.8	4.3	27.2	24.9	13.6	4.5	4.7	4.0
Gross domestic product	6.6	3.6	5.0	8.2	5.2	3.9	3.4	4.6	5.4

3. Use of gross domestic product, price-adjusted (chain-linked, 2010=100)

a) EUR bn.

Consumption expenditure	2 415.2	2 411.2	2 441.3	1 190.4	1 224.8	1 189.4	1 221.8	1 204.1	1 237.1
Private households ²	1 698.5	1 689.9	1 709.9	833.6	864.9	831.6	858.2	840.3	869.5
Government	715.2	719.8	729.8	355.9	359.3	357.0	362.8	363.0	366.8
Gross fixed capital formation	676.3	677.4	694.3	329.4	346.9	330.5	346.9	335.3	359.0
Machinery and equipment	222.0	227.0	238.1	105.3	116.8	108.7	118.3	113.0	125.2
Construction	324.7	318.6	320.2	161.9	162.9	158.4	160.2	157.2	163.0
Other products	129.1	133.5	139.8	61.4	67.7	63.3	70.2	66.1	73.7
Domestic expenditure	3 119.4	3 125.5	3 171.7	1 538.7	1 580.8	1 546.1	1 579.4	1 566.1	1 605.6
Exports	1 616.2	1 647.6	1 706.4	797.4	818.8	815.2	832.4	843.2	863.2
Imports	1 477.5	1 504.8	1 564.4	721.2	756.3	741.5	763.2	768.7	795.7
Gross domestic product	3 263.2	3 272.0	3 314.3	1 617.0	1 646.2	1 621.8	1 650.2	1 641.2	1 673.0

b) Change over the same period of the preceding year in %

Consumption expenditure	3.5	-0.2	1.2	5.8	1.4	-0.1	-0.2	1.2	1.3
Private households ²	4.4	-0.5	1.2	7.6	1.5	-0.2	-0.8	1.0	1.3
Government	1.7	0.6	1.4	2.1	1.2	0.3	1.0	1.7	1.1
Gross fixed capital formation	0.5	0.2	2.5	0.2	0.9	0.3	0.0	1.5	3.5
Machinery and equipment	2.9	2.2	4.9	0.8	4.8	3.3	1.3	3.9	5.8
Construction	-1.2	-1.9	0.5	-0.7	-1.8	-2.2	-1.6	-0.7	1.7
Other products	2.0	3.4	4.7	1.7	2.2	3.1	3.7	4.4	5.0
Domestic expenditure	3.2	0.2	1.5	4.5	1.9	0.5	-0.1	1.3	1.7
Exports	2.8	1.9	3.6	2.8	2.7	2.2	1.7	3.4	3.7
Imports	5.9	1.8	4.0	6.8	5.0	2.8	0.9	3.7	4.3
Gross domestic product	1.9	0.3	1.3	2.8	0.9	0.3	0.2	1.2	1.4

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

	2022	2023	2024	2022		2023		2024	
				H1	H2	H1	H2	H1	H2
4. Deflators (2010=100)									
Change on the same period of the preceding year in %									
Private consumption ¹	6.8	4.6	2.5	5.8	7.8	6.1	3.2	2.1	2.9
Government consumption	4.7	3.3	2.9	5.2	4.1	3.1	3.6	3.6	2.2
Gross fixed capital formation	11.1	4.7	2.5	11.3	11.0	6.7	2.9	2.1	2.8
Machinery and equipment	7.3	3.7	1.7	6.2	8.2	5.2	2.4	1.5	1.9
Construction	16.1	6.3	3.1	16.8	15.6	9.4	3.4	2.5	3.5
Exports	12.1	4.9	2.3	12.5	11.8	6.5	3.4	2.6	2.0
Imports	19.0	6.8	0.3	19.1	19.0	10.5	3.5	1.0	-0.3
Gross domestic product	4.7	3.4	3.7	5.2	4.2	3.6	3.1	3.4	4.0
5. National income									
a) EUR bn.									
Primary income of private households ²	2 621.1	2 716.7	2 834.6	1 287.5	1 333.6	1 336.0	1 380.7	1 392.6	1 442.0
Employers social contributions	360.4	380.6	397.0	174.1	186.3	183.6	197.0	191.5	205.5
Gross wages and salaries	1 663.0	1 750.1	1 839.9	788.8	874.2	831.1	918.9	873.4	966.5
Other primary income ⁴	597.7	586.1	597.8	324.6	273.1	321.3	264.7	327.7	270.0
Primary income of other sectors	559.3	546.9	604.0	260.1	299.2	250.6	296.3	270.2	333.8
Net national income	3 180.4	3 263.6	3 438.6	1 547.6	1 632.8	1 586.6	1 676.9	1 662.9	1 775.8
Consumption of fixed capital	791.7	846.7	873.2	387.4	404.4	421.1	425.6	434.8	438.4
Gross national income	3 972.1	4 110.3	4 311.8	1 935.0	2 037.1	2 007.7	2 102.5	2 097.7	2 214.1
memorandum item:									
Net national income (factor costs)	2 828.9	2 989.8	3 066.3	1 368.9	1 459.9	1 450.0	1 539.8	1 489.3	1 577.0
Property and entrepreneurial income	805.5	859.2	829.4	406.0	399.5	435.3	423.9	424.4	405.0
Compensation of employees	2 023.4	2 130.6	2 236.9	962.9	1 060.5	1 014.7	1 115.9	1 064.9	1 172.0
b) Change over the same period of the preceding year in %									
Primary income of private households ²	6.3	3.6	4.3	7.6	5.1	3.8	3.5	4.2	4.4
Employers social contributions	3.7	5.6	4.3	3.5	4.0	5.4	5.7	4.3	4.3
Gross wages and salaries	5.9	5.2	5.1	6.7	5.1	5.4	5.1	5.1	5.2
... per employee	4.3	4.9	5.2	4.9	3.9	4.8	4.9	5.1	5.3
Other primary income ⁴	9.3	-1.9	2.0	12.2	6.0	-1.0	-3.1	2.0	2.0
Primary income of other sectors	0.0	-2.2	10.4	4.1	-3.4	-3.7	-1.0	7.8	12.7
Net national income	5.2	2.6	5.4	7.0	3.5	2.5	2.7	4.8	5.9
Consumption of fixed capital	12.3	6.9	3.1	12.5	12.1	8.7	5.2	3.2	3.0
Gross national income	6.5	3.5	4.9	8.1	5.1	3.8	3.2	4.5	5.3
memorandum item:									
Net national income (factor costs)	3.1	5.7	2.6	4.0	2.3	5.9	5.5	2.7	2.4
Property and entrepreneurial income	-2.4	6.7	-3.5	-0.6	-4.2	7.2	6.1	-2.5	-4.5
Compensation of employees	5.5	5.3	5.0	6.1	4.9	5.4	5.2	4.9	5.0
6. Disposable income of private households ³									
a) EUR bn.									
Mass income	1 663.4	1 758.5	1 846.2	790.6	872.8	841.5	917.0	881.7	964.5
Net wages and salaries	1 120.8	1 179.7	1 237.4	525.2	595.6	553.7	626.0	580.3	657.1
Social benefits other than social transfers in kind	688.7	731.9	768.9	337.7	351.0	363.7	368.1	380.6	388.4
less: Levies on social benefits, taxes on consumption	146.2	153.1	160.2	72.4	73.8	75.9	77.1	79.3	81.0
Other primary income ⁴	597.7	586.1	597.8	324.6	273.1	321.3	264.7	327.7	270.0
Other transfers received (net) ⁵	-108.8	-129.5	-133.2	-58.0	-50.8	-60.1	-69.5	-62.1	-71.1
Disposable income	2 152.3	2 215.0	2 310.7	1 057.2	1 095.1	1 102.7	1 112.3	1 147.3	1 163.4
Change in pension entitlements	59.0	59.3	59.6	28.6	30.4	28.8	30.5	28.9	30.6
Consumption expenditure	1 977.6	2 057.7	2 134.7	952.1	1 025.6	1 007.3	1 050.4	1 039.7	1 095.0
Saving	233.7	216.5	235.6	133.7	99.9	124.2	92.4	136.5	99.1
Saving ratio (%) ⁶	10.6	9.5	9.9	12.3	8.9	11.0	8.1	11.6	8.3
b) Change over the same period of the preceding year in %									
Mass income	4.3	5.7	5.0	3.0	5.5	6.4	5.1	4.8	5.2
Net wages and salaries	5.5	5.2	4.9	6.1	5.0	5.4	5.1	4.8	5.0
Social benefits other than social transfers in kind	1.8	6.3	5.1	-2.0	5.7	7.7	4.9	4.6	5.5
less: Levies on social benefits, taxes on consumption	1.7	4.7	4.7	0.7	2.8	4.9	4.5	4.4	5.0
Other primary income ⁴	9.3	-1.9	2.0	12.2	6.0	-1.0	-3.1	2.0	2.0
Disposable income	6.0	2.9	4.3	4.8	7.1	4.3	1.6	4.0	4.6
Consumption expenditure	11.5	4.0	3.7	13.8	9.4	5.8	2.4	3.2	4.2
Saving	-26.1	-7.3	8.8	-33.3	-13.5	-7.1	-7.6	10.0	7.3

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 ¹

a) EUR bn.

	2022	2023	2024	2022 H1	2022 H2	2023 H1	2023 H2	2024 H1	2024 H2
Revenue									
Taxes	952.6	980.7	1 023.9	467.4	485.1	481.2	499.6	502.4	521.5
Social contributions	665.9	707.6	745.6	321.7	344.2	342.0	365.5	360.0	385.6
Property income	16.7	16.2	15.7	9.2	7.5	8.9	7.3	8.6	7.0
Other current transfers	27.0	28.4	29.8	12.0	15.0	12.7	15.7	13.4	16.4
Capital transfers	20.2	21.4	22.7	9.0	11.2	9.6	11.9	10.2	12.5
Sales	143.9	152.6	160.2	66.9	77.0	70.9	81.8	74.2	86.0
Other subsidies	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total	1 826.4	1 907.0	1 997.9	886.2	940.2	925.3	981.8	968.8	1 029.1
Expenditure									
Intermediate consumption ²	594.8	617.9	643.0	287.3	307.5	296.9	321.0	310.0	332.9
Compensation of employees	306.3	318.3	335.0	148.4	157.9	152.1	166.3	162.8	172.1
Property income (interest)	25.0	31.0	37.0	12.7	12.4	15.7	15.4	18.7	18.4
Subsidies	66.9	149.1	74.4	29.0	37.8	73.4	75.8	48.4	26.1
Social benefits	622.0	664.6	701.1	304.4	317.6	330.1	334.5	346.7	354.4
Other current transfers	108.0	96.0	95.4	43.6	64.4	45.7	50.3	44.9	50.4
Capital transfers	67.2	74.0	72.7	23.3	43.9	30.8	43.3	30.1	42.6
Gross capital formation	103.5	117.7	133.1	44.6	58.9	50.5	67.3	56.3	76.8
Net acquisitions of non-produced non-financial assets	-1.3	-1.3	-1.3	-0.6	-0.7	-0.6	-0.7	-0.6	-0.7
Total	1 892.4	2 067.5	2 090.4	892.7	999.7	994.5	1 073.0	1 017.4	1 073.0
Net lending	-66.0	-160.4	-92.5	-6.5	-59.5	-69.2	-91.2	-48.6	-43.9

b) Change over the same period of the preceding year in %

	2022	2023	2024	2022 H1	2022 H2	2023 H1	2023 H2	2024 H1	2024 H2
Revenue									
Taxes	8.5	3.0	4.4	12.4	5.0	2.9	3.0	4.4	4.4
Social contributions	5.1	6.3	5.4	5.1	5.1	6.3	6.2	5.2	5.5
Property income	10.0	-3.3	-3.1	12.7	6.9	-3.1	-3.6	-2.9	-3.3
Other current transfers	-10.2	5.2	5.0	-19.3	-1.3	5.7	4.8	5.4	4.7
Capital transfers	-0.5	6.0	5.8	6.2	-5.2	6.7	5.4	6.5	5.3
Sales	6.9	6.1	5.0	8.4	5.6	6.0	6.2	4.7	5.2
Other subsidies	-0.7	0.0	0.0	7.3	-5.8	0.0	0.0	0.0	0.0
Total	6.7	4.4	4.8	8.7	4.9	4.4	4.4	4.7	4.8
Expenditure									
Intermediate consumption ²	6.7	3.9	4.1	8.0	5.5	3.4	4.4	4.4	3.7
Compensation of employees	4.0	3.9	5.2	4.9	3.3	2.4	5.3	7.1	3.5
Property income (interest)	20.4	24.0	19.3	14.8	26.9	23.7	24.3	19.1	19.5
Subsidies	-40.1	123.0	-50.1	-49.4	-30.2	152.8	100.2	-34.1	-65.6
Social benefits	1.8	6.9	5.5	-2.4	6.2	8.5	5.3	5.0	6.0
Other current transfers	19.4	-11.1	-0.7	0.5	36.9	4.8	-21.8	-1.7	0.2
Capital transfers	-1.3	10.2	-1.8	13.9	-7.8	32.4	-1.6	-2.3	-1.4
Gross capital formation	10.9	13.7	13.1	12.1	10.0	13.0	14.2	11.6	14.1
Net acquisitions of non-produced non-financial assets	8.1	0.0	0.0	-6.1	22.4	0.0	0.0	0.0	0.0
Total	2.5	9.3	1.1	0.2	4.7	11.4	7.3	2.3	0.0

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