



# CAPACITY OVERUTILISATION IN THE GERMAN ECONOMY CONTINUES TO RISE

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This is a translated version of the original German-language chapter "Zunehmende Überauslastung der deutschen Wirtschaft", which is the sole authoritative text. Please cite the original German-language chapter if any reference is made to this text.

## Summary

The German economy is experiencing a **strong and sustained upturn**. The German Council of Economic Experts (GCEE) forecasts real GDP growth of 2.0 % for 2017 and 2.2 % for 2018. Adjusted for the different number of working days, expected growth is 2.3 % for 2017 and 2.2 % for 2018. The economy is gradually entering a boom phase. In both years Germany's rate of expansion is ahead of the potential growth rate, currently estimated at around 1.4 %. There are now clear signs of an over-utilisation of capacities in the German economy. The forecast assumes that quarterly growth will therefore slow down again somewhat.

The economic upturn is founded on an increasingly broader base: while consumer spending, public expenditure and investment in the construction sector have been growing robustly for some time, businesses are now investing more heavily again in machinery and equipment and in research and development. This reflects **increasingly limited production capacities** on the one hand, and the more optimistic outlook on the other. In addition, developments in key sales markets, particularly the euro area, have been very dynamic recently. Tightening conditions in the German economy are manifested, for instance, in the fact that businesses are finding it increasingly difficult to fill vacant positions. Capacity overutilisation appears to be particularly pronounced in the construction sector. In light of this, the effect of expansionary monetary and fiscal policy is pro-cyclical: instead of gradually slowing down growth, the risk of misallocating resources is increased.

Given the above-average level of capacity utilisation, inflationary and wage developments appear moderate. This might be partially due to the fact that high inward migration, particularly from other member states of the European Union, is increasing the supply of labour in Germany. This has helped to largely head off shortages in the German labour market in recent years. However, prices and wages are already experiencing a moderate upward trend, driven by **increasing shortages of labour**. Core inflation is likely to rise to 1.9 % in 2018 and consumer price inflation to 1.8 %. With wage growth outpacing productivity and inflation developments since the financial crisis, it is safe to say that the period of wage moderation ended several years ago. The comparatively strong development of wages in Germany coupled with the subdued development of wages in many other Member States contributes to convergence in price competitiveness within the European Monetary Union.

In this economic climate, employment is likely to increase further and unemployment is likely to fall. This positive development contributes to Germany's **favourable budget situation** and drives up the general government surplus. The latter is expected to reach €31.3 bn (1 % of nominal GDP) this year - the highest level since reunification - and increase again next year.

## I. OVERVIEW

259. The **strong upturn** in the German economy continues. Driven by strong domestic demand, the economic recovery in the euro area and an ongoing expansionary economic policy, Germany's price-adjusted gross domestic product (GDP) rose sharply in the first half year. A higher semi-annual growth was last seen in 2011. Growth therefore significantly exceeded the expectations of the March 2017 forecast. [↘ BOX 6 PAGE 132](#) There are now clear indications of an overutilisation of production capacities. Despite this, monetary and fiscal policies remain expansionary, and their effect is therefore pro-cyclical.
260. Early indicators suggest that **growth rates** can be expected to remain **above potential growth** in the second half of 2017. Capacity utilisation is likely to increase further and the German economy will gradually enter a boom period. The German Council of Economic Experts (GCEE) is revising its GDP growth forecast for 2017 upwards, and now expects GDP growth of 2.0 % (calendar-adjusted: 2.3 %). Given increasing shortages in the production process and the tightening of conditions in the labour market, it will probably be difficult to sustain this pace of growth in 2018. Therefore an annual average GDP growth of 2.2 % (also 2.2 % following calendar adjustments) is expected for 2018.

### 1. Capacity utilisation already high

261. In the first half of 2017, GDP grew at an annual rate of 2.5 % compared to the preceding six months, meaning that the upturn accelerated once again in the first half of 2017. The economic upturn is founded on an increasingly broader base: while consumer spending, public expenditure and investment in the construction sector have seen robust expansion for some time, **investment in machinery and equipment** and in **research and development** has also picked up again. Investment in machinery and equipment and investment in intellectual property registered growth rates of above 4 % and roughly 6 %, respectively, in the first half year. The weak investment trend witnessed in 2016 therefore appears to be overcome.
262. The **rise in investment activity** is probably also a reflection of the positive economic development of key sales markets. In particular, the economic recovery in the other member states of the euro area - still Germany's biggest sales market accounting for 40 % of German goods exports - has stabilised. [↘ ITEMS 231 FF.](#) Furthermore, the fact that the phase of weak growth experienced by petroleum-exporting emerging countries is now abating as oil prices stabilise is also having a positive effect. German exports experienced very strong growth overall in winter 2016 and spring 2017.
263. **Consumer spending** continues to be the biggest driver of the upturn. Growth in private consumption expenditure remains at a very high level. This is closely linked to the ongoing increase in employment and the strong growth in real disposable incomes. Private consumption alone is responsible for around half of

the current growth in GDP. [↘ TABLE 6](#) Given the high import content of consumer goods, this development goes hand in hand with a **sharp increase in imports**, which was so pronounced in recent quarters that the growth contributions of net exports were mostly negative despite the growth in exports.

264. There are now clear signs of an **overutilisation of capacities** in the German economy. Using a macroeconomic production function approach (Breuer and Elstner, 2017), the German Council of Economic Experts estimates that GDP will outstrip macroeconomic potential output in 2017 by 0.6%. [↘ CHART 23 TOP LEFT](#) Other institutions obtain different estimates, however. While the European Commission continues to forecast a slight underutilisation of capacities for 2017, the OECD predicts a very considerable overutilisation of capacities. This wide margin is a reflection of the well-known problem that estimates of the **output gap** at the end of the sample are associated with substantial uncertainty (Orphanides and Van Norden, 2002; Marcellino and Musso, 2011; Deutsche Bundesbank, 2014; GCEE Annual Report 2016, Box 6). [↘ BOX 3 PAGE 100](#) It therefore makes sense to include additional indicators into any assessment of the level of capacity utilisation.
265. An important source for such indicators are **business surveys**, as they are more transparent, available more quickly and less prone to revision than the output gap. For the most part, the surveys currently point to an exceptionally good economic climate. In the course of this year the corresponding indicators of the ifo Institute and the Association of German Chambers of Commerce and Industry (DIHK) have reached their highest levels yet since reunification. Other business surveys which directly capture overall capacity utilisation indicate an overutilisation of capacities (Wohlrabe and Wollmershäuser, 2017). That said, the level of overutilisation is still below the peaks reached in previous economic booms. In addition, these surveys also reveal considerable differences between

[↘ TABELLE 6](#)

**Contributions to growth of gross domestic product by expenditure components<sup>1</sup>**

Percentage points

|  | 2012       | 2013       | 2014       | 2015       | 2016       | 2017 <sup>2</sup> | 2018 <sup>2</sup> |
|--|------------|------------|------------|------------|------------|-------------------|-------------------|
| <b>Domestic demand</b>                           | - 0.8      | 0.9        | 1.2        | 1.5        | 2.2        | 2.0               | 2.2               |
| Final consumption expenditure                    | 0.9        | 0.6        | 0.8        | 1.5        | 1.8        | 1.3               | 1.3               |
| Private consumption <sup>3</sup>                 | 0.7        | 0.3        | 0.5        | 0.9        | 1.1        | 1.0               | 1.0               |
| Government consumption                           | 0.2        | 0.3        | 0.3        | 0.6        | 0.7        | 0.3               | 0.4               |
| Gross fixed capital formation                    | - 0.1      | - 0.3      | 0.7        | 0.3        | 0.6        | 0.7               | 0.8               |
| Investment in machinery & equipment <sup>4</sup> | - 0.2      | - 0.2      | 0.4        | 0.3        | 0.1        | 0.2               | 0.3               |
| Construction investment                          | 0.1        | - 0.1      | 0.2        | - 0.1      | 0.3        | 0.4               | 0.3               |
| Other products                                   | 0.0        | 0.0        | 0.1        | 0.2        | 0.2        | 0.2               | 0.2               |
| Changes in inventories                           | - 1.6      | 0.5        | - 0.3      | - 0.3      | - 0.2      | - 0.1             | 0.0               |
| Net exports                                      | 1.3        | - 0.4      | 0.7        | 0.2        | - 0.3      | 0.0               | 0.0               |
| Exports of goods and services                    | 1.3        | 0.8        | 2.1        | 2.4        | 1.2        | 1.7               | 2.1               |
| Imports of goods and services                    | 0.0        | - 1.2      | - 1.4      | - 2.2      | - 1.5      | - 1.7             | - 2.1             |
| <b>Gross domestic product (%)</b>                | <b>0.5</b> | <b>0.5</b> | <b>1.9</b> | <b>1.7</b> | <b>1.9</b> | <b>2.0</b>        | <b>2.2</b>        |

1 – Deviations in sums due to rounding. 2 – Forecast of the GCEE. 3 – Including non-profit institutions serving households. 4 – Including military weapon systems.

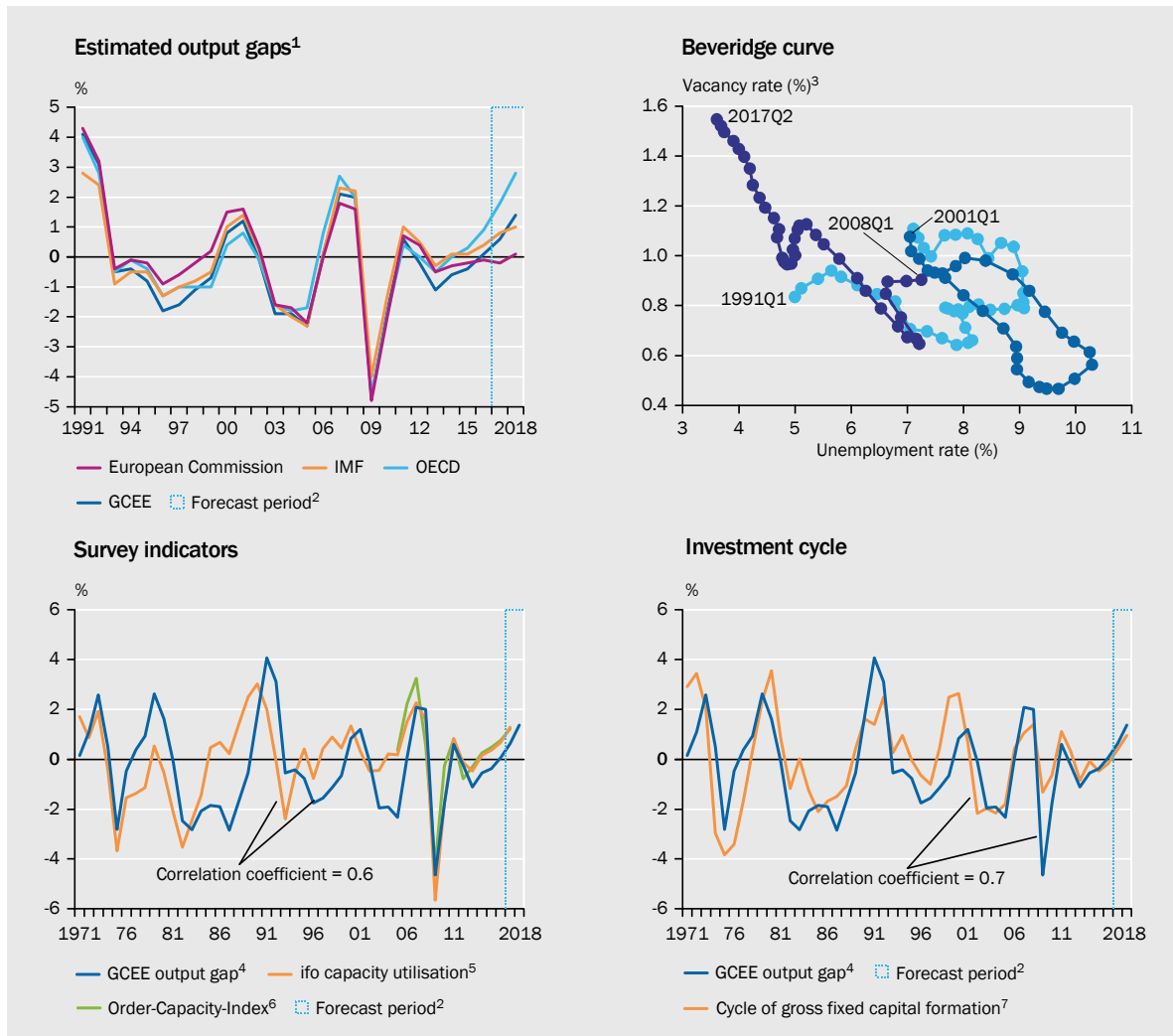
Sources: Federal Statistical Office, own calculations

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the economic sectors: while capacity utilisation in the services sector is only moderately above average, there appears to be a considerable **overutilisation of capacities in the construction sector**.

266. A correlation analysis shows that the ifo capacity utilisation in the manufacturing sector has correlated closely in the past with the values observed ex post for the output gap estimated by the GCEE. Therefore, it appears to be particularly suited for assessing the current position in the business cycle. [↪ CHART 23 BOTTOM LEFT](#) In retrospect, there is also a strong correlation between the cyclical component of the real rate of investment and the output gap. [↪ CHART 23 BOTTOM RIGHT](#), This indicator also suggests that capacity utilisation is currently above normal levels. However, due to the real-time data problem and the end-of-sample problem of the filter methods, the latter results must be interpreted with caution.

↪ CHART 23  
Indicators of capacity utilisation in the German economy



1 – GDP minus potential output in relation to potential output 2 – Forecast of the individual institution. 3 – Reported number of non-subsidised vacancies in relation to the labour force. 4 – Output gap estimate by the GCEE. 5 – Adjusted to the standard deviation of the GCEE output gap. Capacity utilisation in the manufacturing sector, mean-adjusted beforehand. Actual values up to September 2017 6 – Start of data: 2005. 7 – Cyclical component of the real investment rate. Calculated by using HP filter (Lambda=100).

Sources: Deutsche Bundesbank, European Commission, FEA, ifo, IMF, OECD, Federal Statistical Office, own calculations

267. The **performance of the labour market** provides additional indicators for assessing the level of capacity utilisation. **Unemployment** is currently at the lowest level since reunification. However, estimates for the equilibrium rate of unemployment (NAIRU) indicate that a substantial part of this fall in unemployment is structural, rather than cyclical, in nature. [▶ BOX 5](#) The labour market reforms introduced as part of the Agenda 2010 and wage moderation are likely to have played a central role in this development (Dustmann et al., 2014; Burda and Seele, 2017). Therefore, the labour market may be considerably less tight than the unemployment rate would at first suggest.

▶ BOX 5

**NAIRU estimation according to the method of the German Council of Economic Experts (GCEE)**

The structural unemployment rate (NAIRU) plays a central role in the estimate of the macroeconomic output gap and therefore of structural net lending/borrowing (Hristov and Roeger, 2017). It refers to the rate of unemployment below which inflation would accelerate. The GCEE calculates the structural unemployment rate as part of the process of estimating macroeconomic potential output (Breuer and Elstner, 2017). The estimation technique used follows that of the European Commission (Havik et al., 2014) and is based on a state-space model. In contrast to the European Commission, however, the GCEE makes estimates using **several models with different measures of inflation** and then calculates the mean of the different variants. In addition, the GCEE not only considers **backward-looking** but also **forward-looking inflation expectations** by factoring past inflation forecasts into the NAIRU estimate. The aim here is to better capture price developments and inflation expectations in the German economy and to produce a robust estimate for the structural unemployment rate.

The Phillips curve forms the basis for calculating the NAIRU:

$$(1) \pi_t = \pi_t^e + \beta(u_t - u_t^{nairu})$$

Here,  $\pi_t$  denotes inflation,  $\pi_t^e$  expected inflation,  $u_t$  the rate of unemployment and  $u_t^{nairu}$  the NAIRU. The difference between the actual unemployment rate  $u_t$  and the structural unemployment rate  $u_t^{nairu}$  reflects the degree of labour market slack, denoted by  $u_t^{gap}$ . The consumer price index, actual earnings per hour or the GDP deflator are used as the measure of inflation, depending on the model. The different model specifications also vary in terms of their assumptions regarding inflation expectations (backward-looking, hybrid, or forward-looking) and as to whether they consider additional price variables as explanatory variables, such as terms of trade or import prices.

The NAIRU is modelled as time-varying. The general specification of the state-space model corresponds to the standard approach (see Hristov et al., 2017, for example). The example below explains how the estimation is made for the model variant that uses the consumer price index as the measure of inflation. This model approximates inflation expectations using the GCEE forecasts from the autumn of the previous year, and also factors in the annual rate of change of terms of trade. The model is based on the following two observation equations:

$$(2) \pi_t = \beta_1 \pi_t^e + \beta_2 u_t^{gap} + \beta_3 TOT_t + \varepsilon_{1,t}, \quad \varepsilon_{1,t} \sim N(0, \sigma_{1,t}^2)$$

$$(3) u_t = u_t^{gap} + u_t^{nairu}$$

The unobservable parts of these equations are given by the following equations of motion:

$$(4) u_t^{nairu} = u_{t-1}^{nairu} + u_{t-1}^{slope} + \varepsilon_{2,t}, \quad \varepsilon_{2,t} \sim N(0, \sigma_{2,t}^2)$$

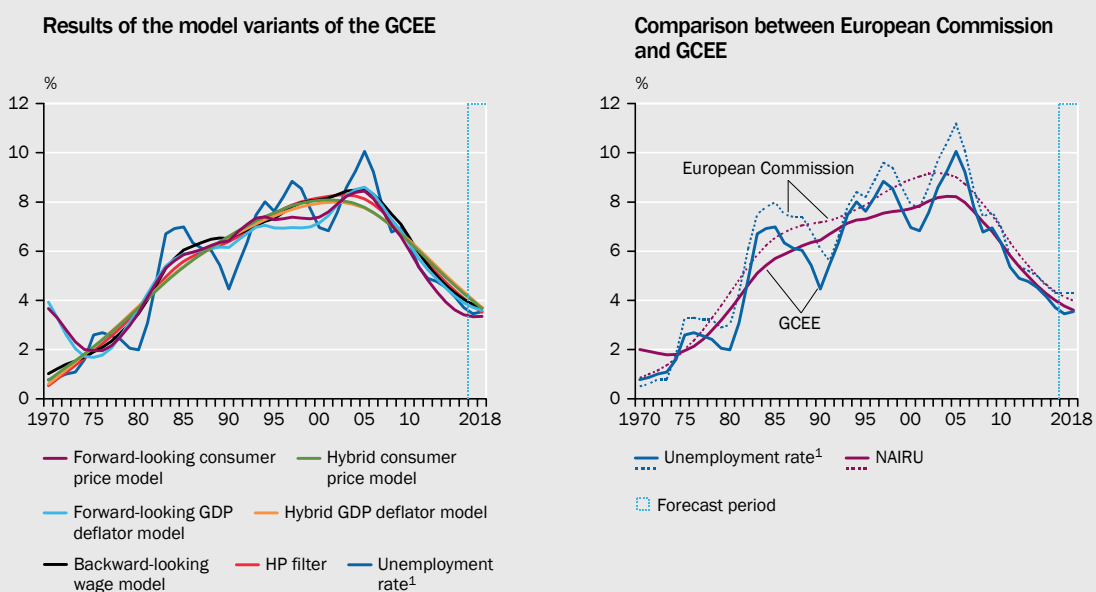
$$(5) u_t^{slope} = u_{t-1}^{slope} + \varepsilon_{3,t}, \quad \varepsilon_{3,t} \sim N(0, \sigma_{3,t}^2)$$

$$(6) u_t^{gap} = \beta_4 u_{t-1}^{gap} + \beta_5 u_{t-2}^{gap} + \varepsilon_{4,t}, \quad \varepsilon_{4,t} \sim N(0, \sigma_{4,t}^2)$$

In contrast to the GCEE method, the European Commission also assumes in its state-space representation that the structural unemployment rate will converge to a certain value after a certain period of time (usually ten years) after the short-term forecast horizon (anchoring). This anchor is determined for all EU countries by running a panel regression (Orlandi, 2012). So far, however, the German unemployment rate has shown little signs of long-term mean stationarity. Furthermore, the process of determining the anchor by running a panel regression on multiple countries is subject to much uncertainty. The GCEE therefore refrains from using an anchor value.

▸ CHART 24

Results of the NAIRU estimation



1 – GCEE:  $100 \cdot (LF-PE)/LF$ . LF: labour force (national concept); PE: persons in employment (domestic concept). European Commission: definition of the International Labour Organisation (ILO).

Sources: European Commission, own calculations

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In sum, the GCEE's model variants deliver similar, but not completely identical, estimates for the structural unemployment rate ▸ CHART 24 LEFT Compared with the European Commission's results, there is a difference in the level because the European Commission uses the unemployment rate according to the ILO definition, while the GCEE uses a slightly modified unemployment rate according to the concept of the German national accounts as the reference series. Nonetheless, according to both estimates the structural unemployment rate has dropped considerably in recent years. ▸ CHART 24 RIGHT For 2017, the actual unemployment rate is just 0.3 percentage points below the estimated NAIRU.

- 268. Similar limitations apply to the assessment of survey-based labour market indicators. For example, the surveys conducted by the Institute for Employment Research on the **number of vacancies** indicate that businesses are finding it increasingly difficult to fill open positions, and the ratio of vacancies to the size of the labour force (vacancy rate) is unusually high. ▸ CHART 23, TOP RIGHT However, this indicator does not give adequate consideration to the elasticity of the supply of labour in the German economy, particularly owing to the freedom of movement within the European Union (EU).

In recent years, the high demand for labour coincided with **strong growth in the supply of labour**, not least due to the high level of **net immigration**. For example, the number of foreign-national workers with compulsory social security coverage has increased by around 1.7 million since 2010. Of these individuals, roughly 930,000 came from countries that joined the EU as part of the enlargement of the EU to the East. The survey-based labour market indicators therefore probably tend to overstate the shortage of labour in much the same way as the unemployment rate does. While there are shortages in individual sectors, a economy-wide shortage of skilled labour is not yet in sight.

↘ ITEMS 772 F.

269. In total, the indicators analysed present a picture of visible **overutilisation of production capacities in the overall economy**. This is, however, still below the level of overutilisation experienced in previous periods of economic boom. This finding has **implications for Germany's economic outlook**. On the one hand, the high level of capacity utilisation coupled with the positive situation as regards incoming orders will likely mean that investments to expand capacity will increase and the upturn will continue. On the other hand, with increasing capacity overutilisation, the existing capacity limitations and the labour shortages already being felt will probably make it more and more difficult to sustain the current pace of growth. Fewer free resources will be available that can be tapped into quickly. This will lead to delays between order intake and order execution. The resulting shortages will likely put upward pressure on prices, causing them to increase more sharply than in previous years.
270. Lastly, the findings also have **implications for the appraisal of economic policy**. Monetary and fiscal policy are still expansionary, and their effect on the business cycle is pro-cyclical. ↘ ITEMS 316 F., 350 FF. This must be seen in a critical light, not least because boom periods pose the **risk of the misallocation of resources**, which is difficult to spot in real time. The German building boom following reunification and undesirable developments in several European economies before the onset of the financial crisis are cautionary examples. Therefore, additional measures, and specifically those with near-term expansionary effects, should be avoided.

## 2. Wage and price developments still moderate

271. Given the above-average level of capacity utilisation, the question is how current **inflation and wage developments** should be regarded. Any assessment in this context not only involves the domestic situation in Germany, but must also factor in the potential ramifications of such developments for the processes of adjustment in the euro area with regard to the competitiveness of individual member states. Furthermore, this question also concerns the potential difficulties of monetary policy to reach the inflation target.
272. Looking at the development of inflation, it is clear that consumer price inflation in Germany has risen significantly since the end of 2016. ↘ ITEMS 303 FF. It stood at 1.8 % in the third quarter of 2017. In addition, **core inflation** - defined as



inflation excluding energy and food - is **trending upwards**, having increased from 1.2 % in Q1 2016 to 1.6 % in Q3 2017. It is therefore already well above the long-term average of 1.1 % since 1999. In the previous economic cycle, core inflation peaked at 2.2 % in 2007. The current inflation trend is therefore not unusual for a period of capacity overutilisation.

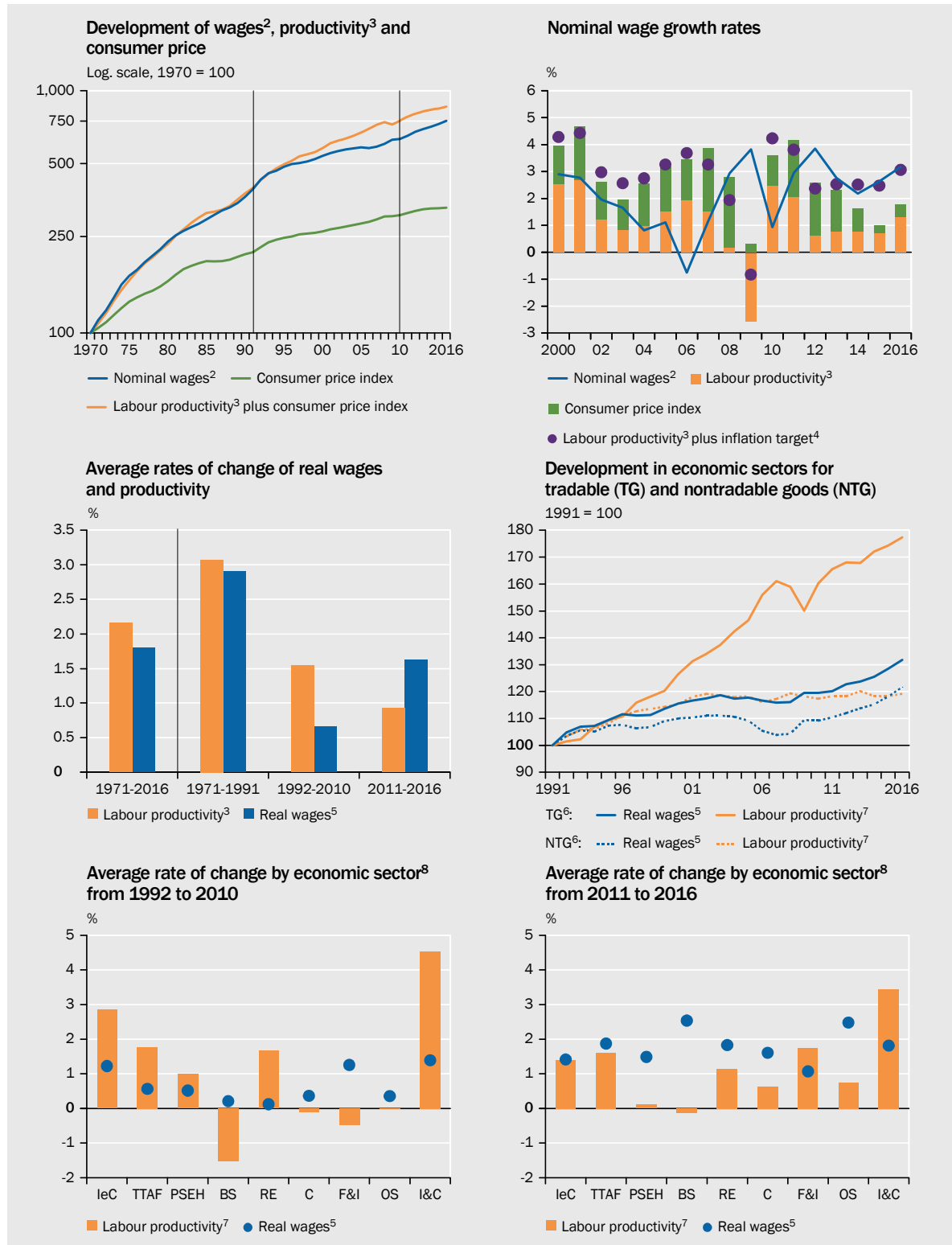
273. The development in wages can be assessed from many angles. A domestically oriented approach is geared towards the joint **development of nominal wages, inflation and productivity**. Underlying this is the question of how the **sum of price and productivity increases** is divided between workers and employers over time. The long-term comparison would suggest a division of the previous decades into **three phases**. The first phase spans the period from the 1970s to German reunification. During this period, the growth in gross salaries and wages per hour in West Germany was almost perfectly aligned with aggregate gains from hourly productivity and inflation. [↘ CHART 25 TOP LEFT](#)
274. Following **reunification**, which - from an economic perspective - **was akin to a supply shock in the labour market**, wage growth remained below the sum of productivity growth and inflation. With the fall of the Iron Curtain, German businesses faced heightened competitive pressure. This, together with the decline in the level of worker organisation, prompted unions to forgo larger pay increases from the mid-1990s in order to safeguard jobs in Germany (Dustmann et al., 2014). Similar developments were witnessed in many other advanced economies during the 1980s and 1990s. [↘ BOX 4 PAGE 105](#)

Therefore real wages rose at a slower pace than productivity for the benefit of a higher rate of employment. This second phase is known as the **period of wage moderation**. It lasted about 15 years and ended around the time the global financial crisis hit in 2007 and 2008. The actual crisis years themselves are difficult to assign to either of these phases.

275. The **period of wage moderation** ended at the very latest with the **end of the financial crisis**. Germany stands out among advanced economies in this respect (IMF, 2017). In the past six years, real wages have risen at a faster pace than hourly productivity by an average of 0.7 percentage points per annum. [↘ CHART 25 CENTRE LEFT](#) At the same time, unit labour costs increased at an average rate of 1.6 %. The real wage growth rates of 2.3 % and 2.7 % seen in the past two years were the highest since 2009. In this context it is worth noting that the wage increases would still have been close to the sum of productivity growth and inflation if inflation had met the European Central Bank's (ECB) inflation target for the euro area of "below, but close to, 2 %". [↘ CHART 25 TOP RIGHT](#) Pronounced second-round effects deriving from the decline in oil prices are therefore not immediately visible.
276. However, a more detailed analysis at the business sector level reveals **considerable differences between the individual sectors**. It is interesting that while real wage development in industry (IeC) and in the information and communications sector (I&C), for example, was above average during the period of wage moderation, it significantly lagged behind the productivity gains in these sectors during this time. [↘ CHART 25 BOTTOM LEFT](#)

CHART 25

Wage developments in Germany<sup>1</sup>



1 – Before 1991 former territory of the Federal Republic of Germany. 2 – Nominal gross wages and salaries per hour worked. 3 – GDP per hour worked. 4 – Following Bletzinger and Wieland (2017), a value of 1.75 % is assumed for the estimated inflation target. 5 – Real gross wages and salaries per worker hour. 6 – Tradable goods: industry, excluding construction, information and communication, trade, transportation, accommodation and food services; nontradable goods: public services, education and healthcare, business services, real estate, construction, finance and insurance, other services, agriculture, forestry and fishing. 7 – Real gross value added per hour worked. 8 – Industry, excluding construction (IeC), trade, transportation, accommodation and food services (TTAF), public services, education and healthcare (PSEH), business services (BS), real estate (RE), construction (C), financial and insurance activities (F&I), other services (OS), information and communication (I&C).

Sources: Federal Statistical Office, own calculations

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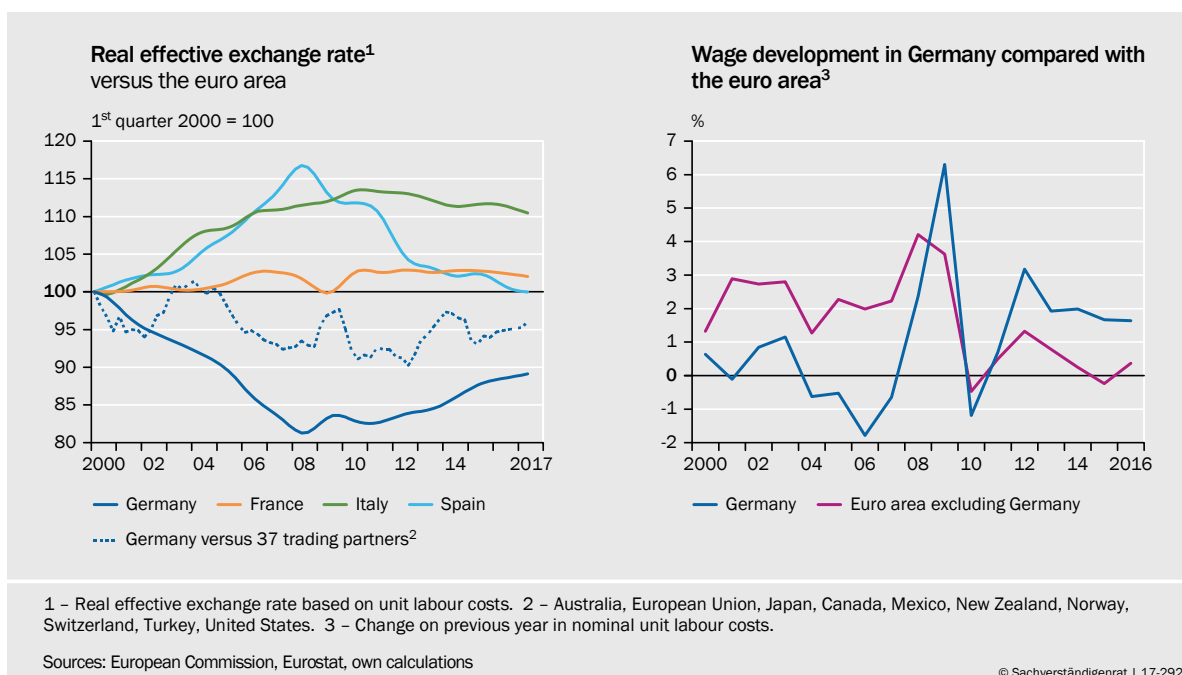
In addition, both sectors experienced a moderate development in wages compared to productivity developments even after the financial crisis. [↪ CHART 25 BOTTOM RIGHT](#)

277. One possible explanation for the pronounced wage moderation in industry and the I&C sector could be that these sectors face more international competition than sectors focussed on the domestic market. Therefore, they are likely to have very strict requirements in terms of efficiency, which is apparently factored into pay negotiations. Splitting the economic sectors into those for the production of tradable goods and nontradable goods it is clear that **wage moderation has been concentrated by far in the sectors for tradable goods.**

By contrast, in the **other sectors** the comparatively strong wage trends in recent years has meant that the **gap between real wages and productivity developments** has **completely closed** again at this stage. In this context it is important to note, however, that this result only applies with respect to productivity in the individual sector. In absolute terms, real wages have risen much more sharply in the economic sectors for tradable goods than in the remaining sectors. [↪ CHART 25 CENTRE RIGHT](#)

278. Wage developments can also be discussed from the **angle of price competitiveness**. The focus here is often on the development of competitiveness within the euro area. The combination between wage moderation in Germany and strong growth in wages in many other member states caused a considerable divergence in price competitiveness in the euro area in the years prior to the crisis. [↪ CHART 26 LEFT](#) At the maximum point, Germany had devalued in real effective terms by around 20 % in relation to the other member states.

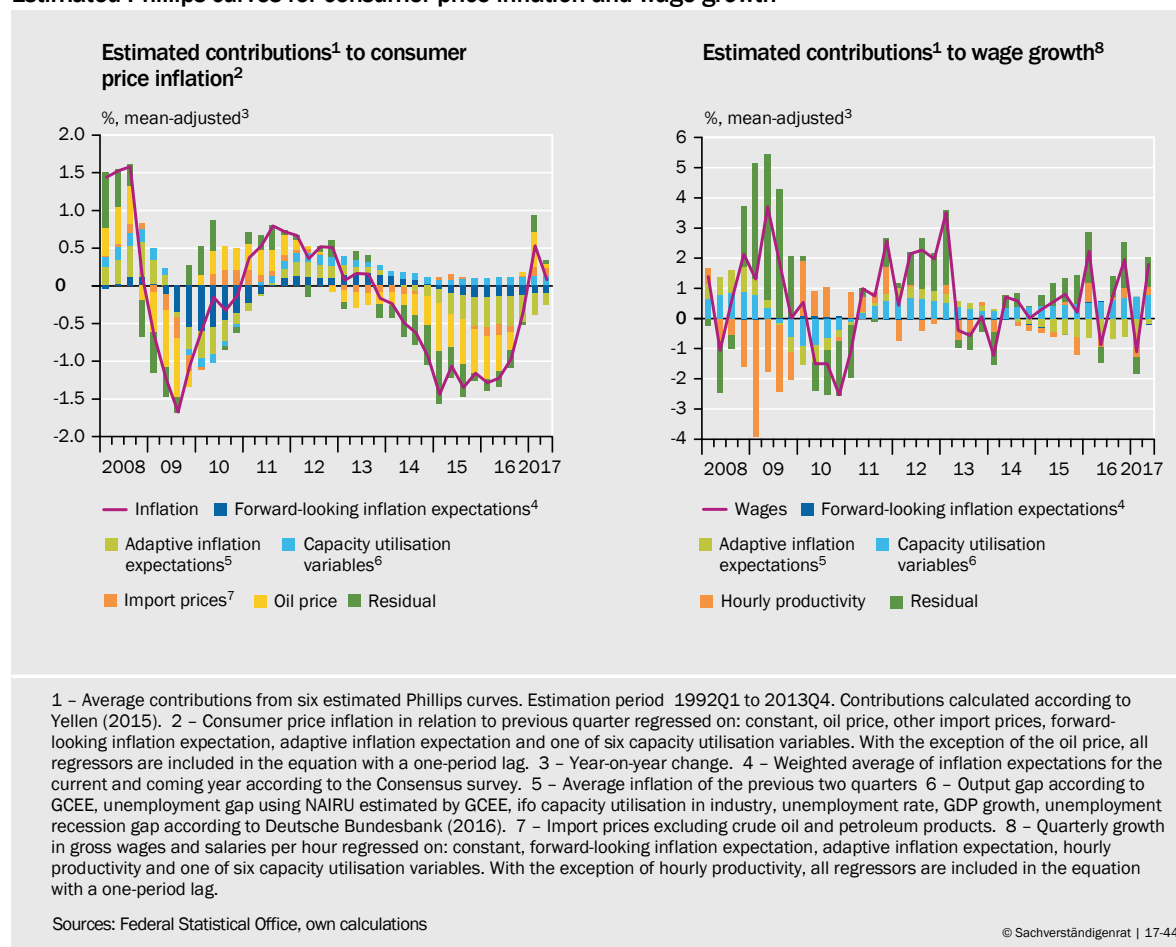
[↪ CHART 26](#)  
Germany's price competitiveness



279. This trend reversed, however, after the financial crisis. [↘ CHART 26 RIGHT](#) Since then, nominal unit labour costs in Germany are rising more quickly than in the rest of the euro area, and the price competitiveness of member states is converging again. Almost half of Germany's **original devaluation in real effective terms** in relation to the remaining member states has **already been reversed** as a result. While stronger wage developments in Germany would certainly spur on the convergence process, it is important to remember that, on the global market, German exports not only compete with the products of the other member states in the euro area. The German economy has appreciated in real effective terms by 5.5 % in relation to a larger group of 37 trading partners since 2008.
280. Taken together, the analyses so far indicate that current **wage growth in Germany is not unusually weak**. First, real wage growth has outstripped productivity gains for several years. Second, nominal wages do not show serious signs of second-round effects of the drop in consumer price inflation. Third, current wage developments are associated with a convergence in price competitiveness in the euro area and a decline in Germany's price competitiveness overall.
281. Econometrically **estimated Phillips curves**, which represent the relationship between inflation, inflation expectations and the level of capacity utilisation in the economy, can also be used to assess wage and inflation trends. As the Deutsche Bundesbank (2016) demonstrates using a number of Phillips curves with different specifications, estimated Phillips curves are still good at explaining and forecasting the rate of headline inflation in Germany. No substantial change in the Phillips curve relationship is evident in the case of Germany (Deutsche Bundesbank, 2016). To assess recent inflation and wage developments, the GCEE estimated Phillips curves based on the Deutsche Bundesbank analysis. The contributions of individual components to the headline inflation rate and wage inflation were computed using simulations in line with Yellen (2015), Deutsche Bundesbank (2016) and ECB (2016).
282. With regard to consumer price inflation, the results show that the latest developments are captured quite successfully by the average of the estimated Phillips curves. [↘ CHART 27 LEFT](#) Significant contributions in recent times came from oil price trends and a decline in short-term inflation expectations, which are modelled forward- and backward-looking. Overall, the models are considerably less helpful in explaining the far more volatile quarterly series of hourly wages. One point to note is that actual wage developments on average over the past number of years were by no means lower than the development indicated by the model. [↘ CHART 27 RIGHT](#) In addition, the simulations point to a **positive effect of capacity utilisation** on wage growth and inflation.
283. The results of the individual Phillips curve specifications are quite heterogeneous, however. In particular, the specifications that primarily capture the level of capacity utilisation in the economy using labour market data tend to indicate higher wage growth. This is consistent with the findings of the Deutsche Bundesbank (2016). One explanation could be that the labour market indicators

↪ CHART 27

### Estimated Phillips curves for consumer price inflation and wage growth



used do not properly depict the **increased elasticity of labour supply** as a result of inward migration. ↪ CHART 34 RIGHT

284. It could also be the case that workers are using their good bargaining position in **collective negotiation agreements** more for **non-monetary demands**, such as more flexible working times and measures to strike a better work/life balance. In addition, work time in general was a negotiating point in recent pay negotiations. For example, in recent collective agreements with Deutsche Bahn, the German Railway and Transport Workers Union (*Eisenbahn- und Verkehrsgewerkschaft, EVG*) gave its members the option of additional days of leave or a pay increase. More than half of the members opted for additional leave instead of a pay increase (EVG, 2017). A similar elective model to reduce work time is part of the demands of IG Metall. It must be noted here, however, that this can primarily explain a weaker pay growth per worker, but not per hour.

### 3. Growth remains strong

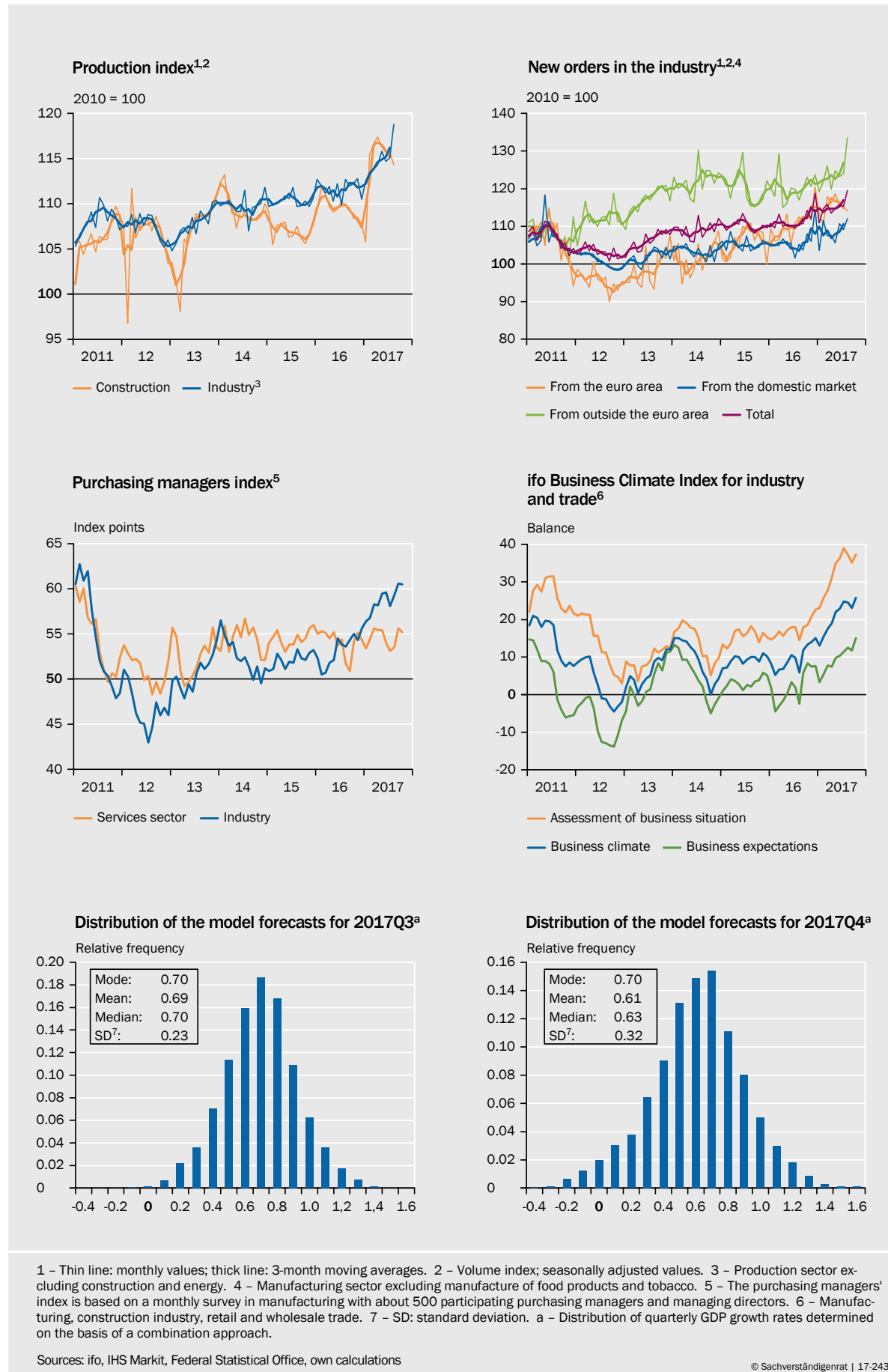
285. Germany's economic upturn has been ongoing since 2009, albeit with a temporary phase of weak economic growth in 2012 and 2013. ↪ BOX 7 PAGE 133 **Early indicators** suggest that Germany can continue to expect robust growth for the second half of 2017. Following a brief soft patch at the start of the third

quarter, the vast majority of **real economic indicators** are back on a clear upward trajectory. [↘ CHART 28, TOP LEFT](#) Industrial production rose sharply on average for the months of July and August, expanding by around 1.8 % on the second-quarter average. With producers of capital and intermediate goods registering particularly strong growth, the signs are that investment activity will remain buoyant.

286. Growth in **new orders** was even more dynamic than growth in industrial production, rising in the same period by around 2.4 % on the second quarter. [↘ CHART 28, TOP RIGHT](#) A breakdown of data by country of origin reveals that orders from countries outside the euro area expanded again at a faster pace in the third quarter. Compared with other real economic indicators, **production in the construction sector** declined somewhat. Following the sharp rise in the first half year, growth in this sector has been rather weak. [↘ CHART 28 TOP LEFT](#) According to the ifo surveys, however, the outlook in the construction sector remains exceptionally positive and the number of building permits is high.
287. The **survey-based indicators** present a **very positive picture** on the whole. Economic sentiment in the German economy, to the extent captured by the ifo business situation and expectations, has brightened considerably since the start of 2017 [↘ CHART 28 CENTRE RIGHT](#), with the ifo business climate index now at an all-time high. The purchasing managers' index for the manufacturing industry also suggests that growth will remain strong. Both this index and the indicator for the services sector are well above the 50 point mark, which is a signal for growth. [↘ CHART 28 CENTRE LEFT](#)
288. A **short-term forecast based on the early indicators** suggests that price-, seasonally- and calendar-adjusted GDP will probably increase by 0.7 % and 0.6%, respectively, in the third and fourth quarter of this year. [↘ CHART 28 BOTTOM LEFT AND RIGHT](#) Taking these results into account, the GCEE expects an annual average GDP growth of 2.0 % (2.3 % following calendar adjustments) for 2017. [↘ CHART 29 LEFT](#) The forecast from March this year is therefore revised upwards by 0.6 percentage points. [↘ BOX 6](#) GDP per capita - a more accurate indicator for measuring material wealth (GCEE Annual Report 2013, Item 908) - will grow at an appreciably lower rate of 1.4 %, however, as the population continues to rise as a result of net immigration.
289. For 2018, the GCEE expects the level of capacity overutilisation in the German economy to continue to rise. Projected **quarterly growth rates outstrip potential growth**, and the output gap is forecast to increase to around 1.4 % in the course of 2018. [↘ CHART 29 RIGHT](#) As capacities are stretched, investment activity is likely to remain high. It will take time **to build up new capacities**, however. In the interim, there will be further tightening of conditions in the economy, businesses will encounter greater difficulties in finding workers and there will be increasing bottlenecks in production, causing a backlog of orders and longer turnaround times.

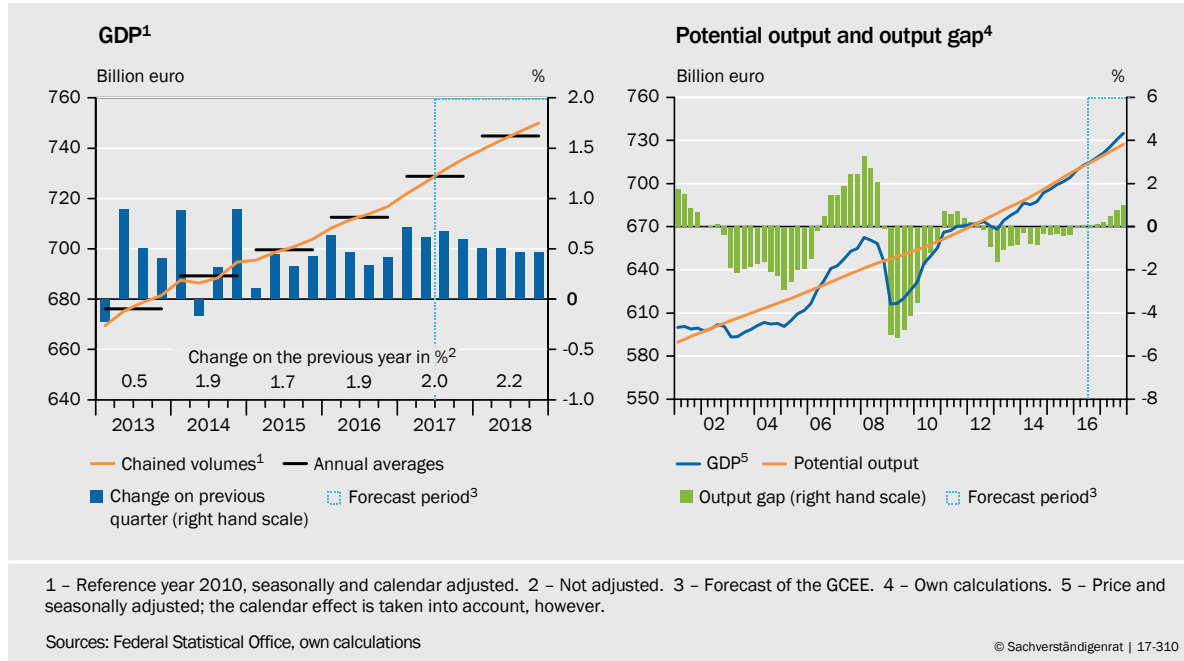
↘ CHART 28

Selected indicators for the economic forecast



↪ CHART 29

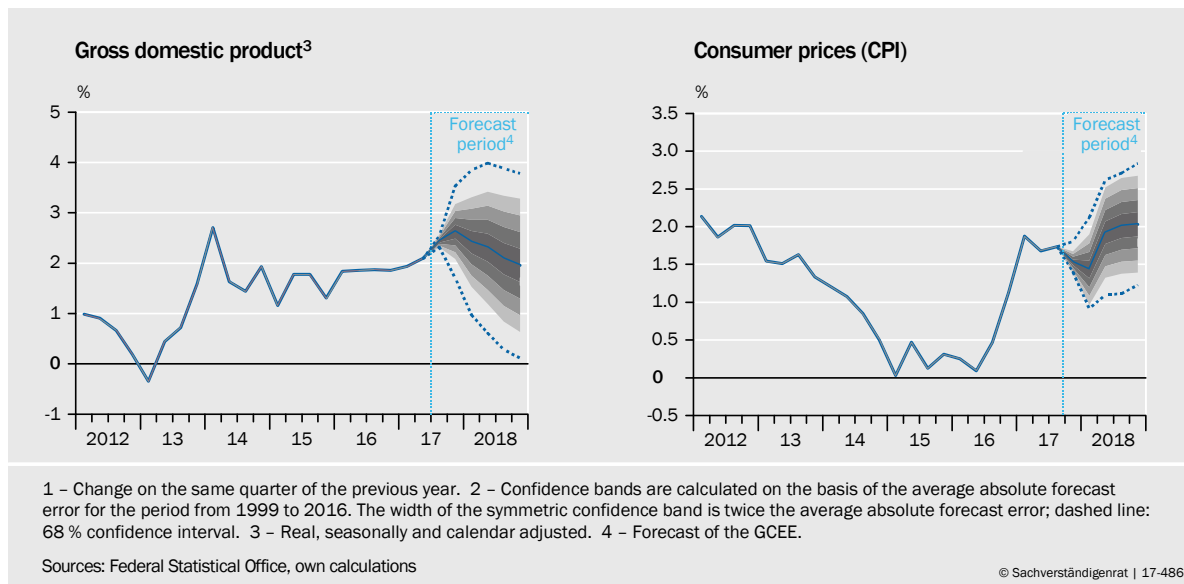
Expected economic development in Germany



Against this backdrop, aggregate output is expected to grow at a slightly slower pace in the forecast period than recently. In addition, with inflation higher than in previous years ↪ CHART 30 RIGHT, this has a dampening effect on the development of real wages. Therefore, growth in private consumption is not expected to be as strong in the coming year. In all likelihood, it will **not be possible to sustain the current pace of growth** in 2018. The year-on-year rates of quarterly GDP growth drop to below 2 % in the forecast period. ↪ CHART 30 LEFT Nevertheless, due to the considerable statistical overhang from the current year 2017, an annual average GDP growth of 2.2 % (calendar-adjusted: 2.2 %) can be expected for 2018. ↪ TABLE 8

↪ CHART 30

Confidence intervals for gross domestic product and consumer prices<sup>1,2</sup>





↘ BOX 6

### On the revision of the forecast for 2017

In March 2017, the German Council of Economic Experts forecast GDP growth of 1.4 % for the current year. This was based on the assumption that quarterly growth rates would be stronger at the start of the year than in the second half of 2016, but would slow slightly in the course of the year. In terms of expenditure aggregates, the expectation was that the increase would - statistically - be solely attributable to domestic demand, which was expected to contribute 1.8 percentage points to growth. Despite anticipated strong developments in exports, the contribution of foreign trade was estimated at -0.4 percentage points as an even stronger increase in demand for imports was forecast.

↘ TABLE 7

The national accounts results published for the first two quarters and the regular revision of national accounts data for the previous years have shown that the **economic forecast in March 2017 was considerably too pessimistic**. GDP growth in the first half of 2017 was stronger than expected in both quarters. Furthermore, underlying economic activity in 2016 turned out to be somewhat stronger than appeared to be the case in March 2017.

↘ TABLE 7

### Comparison of the spring and the autumn forecasts for the year 2017

|  | Forecast of the German Council of Economic Experts |                                   |                                  |                                   |                                  |                                   |
|--|--|-----------------------------------|----------------------------------|-----------------------------------|----------------------------------|-----------------------------------|
|  | March 2017   |                                   | Annual Report 2017               |                                   | Difference                       |                                   |
|  | Year-on-Year change                                | Growth contributions <sup>2</sup> | Year-on-Year change <sup>1</sup> | Growth contributions <sup>2</sup> | Year-on-Year change <sup>1</sup> | Growth contributions <sup>2</sup> |
| <b>Gross domestic product<sup>2</sup></b>        | <b>1.4</b>   | <b>x</b>                          | <b>2.0</b>                       | <b>x</b>                          | <b>0.6</b>                       | <b>x</b>                          |
| Domestic demand                                  | 1.9  | 1.8                               | 2.2                              | 2.0                               | 0.3                              | 0.2                               |
| Final consumption expenditure                    | 1.4  | 1.0                               | 1.8                              | 1.3                               | 0.4                              | 0.3                               |
| Private consumption <sup>3</sup>                 | 1.0  | 0.5                               | 1.9                              | 1.0                               | 0.9                              | 0.5                               |
| Government consumption                           | 2.6  | 0.5                               | 1.7                              | 0.3                               | - 0.9                            | - 0.2                             |
| Investment in machinery & equipment <sup>4</sup> | 1.2  | 0.1                               | 2.3                              | 0.2                               | 1.1                              | 0.1                               |
| Construction investment                          | 2.6  | 0.3                               | 4.3                              | 0.4                               | 1.7                              | 0.1                               |
| Net exports                                      | x  | - 0.4                             | x                                | 0.0                               | x                                | 0.4                               |
| Exports of goods and services                    | 4.5  | 2.1                               | 3.8                              | 1.7                               | - 0.8                            | - 0.4                             |
| Imports of goods and services                    | 6.4  | - 2.4                             | 4.6                              | - 1.7                             | - 1.8                            | 0.7                               |

1 - In %; Deviations in the differences due to rounding. 2 - In percentage points. 3 - Including non-profit institutions serving households.

4 - Including military weapon systems.

Source: own calculations

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Of the expenditure components, this is particularly true of the **development in private consumption**. The quarterly rates for the second half of 2016 have been revised upwards substantially by the Federal Statistical Office. ↘ CHART 36 In addition, the GCEE underestimated the development in the first half year, due in large part to the stronger-than-expected growth in the labour market and the unanticipated drop in oil prices, which in turn triggered an increase in real income. The strong development seen in the first half of 2017 and the stable outlook for the rest of the year mean that private consumption is now expected to grow by 1.9 % instead of 1.0 %.

**Investment activity** is also greater than expected. According to current figures, all private investment components had experienced stronger expansion in 2016 than was known to be the case in March 2017. The upward revision of investment in intellectual property was particularly pronounced, with growth of 5.5 % in 2016 more than twice that originally announced. This data revision aside, the

underestimated development in the first half year is the main reason why investment forecasts for 2017 need to be **revised upwards**. Business confidence in the upturn has apparently risen much more than expected. In addition, capacity limitations are obviously being felt more than anticipated. The development of investment in construction was also underestimated, but this is due in part to a one-off effect deriving from a change in statistical data collection (Federal Statistical Office, 2017).

With regard to the domestic expenditure components, the **development in government consumption was overestimated**. In particular, there was no further increase in the social non-cash benefits of the *Länder* and municipalities following the sharp rise in 2016 due to the high influx of refugees. And finally, quite a considerable proportion of the forecast revision can be put down to **external trade**. Despite positive developments in the global economy and Germany's strong domestic economy, both exports and imports saw weaker growth than projected in March. The downward adjustment is predominantly concentrated on the import side, however, with the result that the forecast for the growth contribution from net exports in 2017 is now no longer negative.

#### ↳ BOX 7

##### **Business cycles of the German economy**

In this year's Annual Report, the German Council of Economic Experts presents a chronology of **Germany's business cycles since 1950**. In this chronology, the GCEE identifies six periods of recession. Currently, the German economy is experiencing its seventh upturn of the post-war era.

#### ↳ CHART 31

In terms of **methodology**, the GCEE models its approach on that of the National Bureau of Economic Research (NBER, 2012) and the Centre for Economic Policy Research (CEPR, 2017). According to this methodology, every economic cycle can be divided into two phases: a period of expansion and a period of contraction (recession). The period of expansion is characterised by a significant increase in economic activity, and ends with a significant decline in economic activity spread across large parts of the economy and lasting several months or years (recession). The peaks and troughs of economic activity separate these two phases.

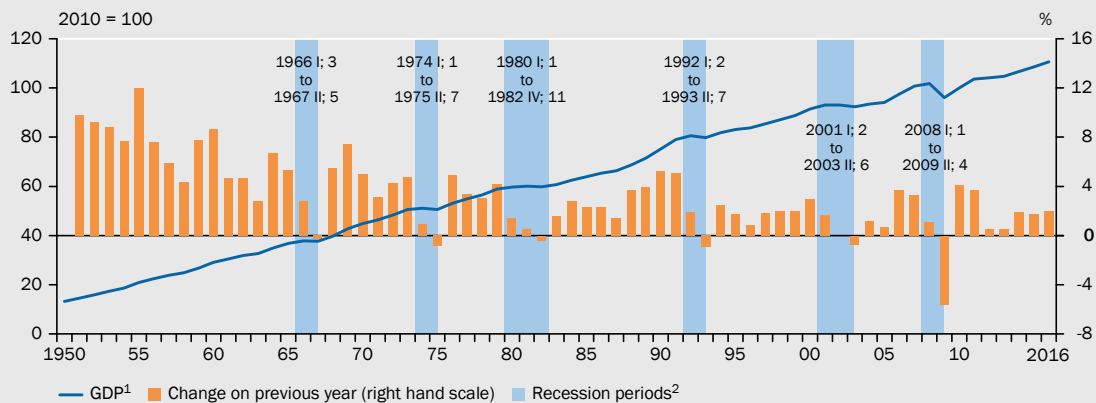
As with the NBER and CEPR methodology, peaks and troughs are identified using a **multi-dimensional and expert-based approach**. Here, the GCEE makes an expert assessment of the overall economic situation for all quarters and months since 1950 on the basis of multiple central macroeconomic indicators. The GCEE considers, on a case by case basis, whether a momentary upward or downward movement in the overall view constitutes a separate period of expansion or recession in its own right, and when this period started and ended (Breuer et al., 2017). With this methodology, the GCEE differs from existing datings of the German business cycles, which are largely based on formal approaches. For example, the RWI Leibniz Institute for Economic Research uses discriminant analysis (Döhrn, 2014; Döhrn et al., 2017), while the ifo Institute (Wollmershäuser et al., 2016) and the IMK Macroeconomic Policy Institute (Horn et al., 2017) use modified versions of the Bry and Boschan (1971) method, and Schirwitz (2009) applies several parametric and non-parametric techniques.

To identify the business cycles, the GCEE uses the real and seasonally adjusted quarterly values currently available for GDP and the expenditure components. In addition to GDP itself, the level of **investment activity** is also an important factor in this context, as it proves, on average, to be a very reliable indicator for dating the cycle. In addition, the GCEE uses the number of persons in employment and the rate of unemployment as variables to assess the **situation on the labour**

market. Furthermore, monthly indicators, such as industrial output, incoming orders and retail sales, feed into the assessment of economic development in the individual quarters.

↘ CHART 31

**Recession periods since 1950**



1 – Germany from 1991 onwards, before that former territory of the Federal Republic. Data up to 1959 contain estimates for Saarland and West Berlin. Indexed with constant prices prior to 1970, and in previous year's prices from 1970 onwards. Data in previous year's prices are chain-linked Laspeyres indices using the annual overlap technique. Data basis: according to ESA 1995 from 1970 to 1990, and according to ESA 2010 from 1991 onwards. 2 – Roman numerals denote the quarter, arabic numerals denote the month.

Sources: Deutsche Bundesbank, own calculations

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With this approach, the GCEE dates **six periods of recession in the period since 1950**. ↘ CHART 31 The GCEE does not see the period of weak economic activity in late 2012/early 2013 as a recession, but rather considers this period as just a temporary pause in the economic upturn. In the opinion of the GCEE, the fairly robust performance of the labour market and the duration and intensity of the decline in output do not warrant this period to be identified as a recession in its own right. According to this analysis, the upturn that commenced in 2010 has been two-phased, which puts the length of the upturn in perspective to a certain extent. The GCEE will continue to date the business cycle in the coming years. To preclude subsequent revisions as much as possible, the cycles are, however, not dated in real time but with a lag of a few years. This gives due consideration to the problem of the revision of economic data.

## II. DEVELOPMENTS IN DETAIL

290. The GCEE's forecast is to be interpreted as a modal value, that is the most likely scenario for overall economic development. The expected annualised growth rate of GDP in the second half of 2017 of 2.6 % results in an annual average rate of change of 2.0 %. The **statistical overhang** for 2018 is 0.9 %. This contributes to the rise in the forecast growth rate to 2.2 % in 2018. ↘ TABLE 8

However, the calendar-adjusted rates of growth over the course of the year are a better indicator of economic development. A comparison of the fourth quarter in 2017 with the same quarter in the previous year shows a change rate of 2.6 %. The change rate in the fourth quarter of 2018 will probably amount to only 2.0 % compared to the same quarter in the previous year. The forecast therefore indicates an economic slowdown.

TABLE 8

## Components of the forecast for real GDP (in %)

|   | 2012  | 2013  | 2014 | 2015 | 2016 | 2017 <sup>1</sup> | 2018 <sup>1</sup> |
|---|-------|-------|------|------|------|-------------------|-------------------|
| Statistical overhang at the end of the previous year <sup>2</sup> | - 0.2 | 0.8   | 0.8  | 0.6  | 0.6  | 0.9               | 0.7               |
| Growth rate over the course of the year <sup>3</sup>              | 0.2   | 1.6   | 1.9  | 1.3  | 1.9  | 2.6               | 2.0               |
| Annual rate of change of GDP, calendar adjusted                   | 0.7   | 0.6   | 1.9  | 1.5  | 1.9  | 2.3               | 2.2               |
| Calendar effect (in percentage points)                            | - 0.2 | - 0.1 | 0.0  | 0.2  | 0.1  | - 0.3             | 0.0               |
| Annual rate of change of GDP <sup>4</sup>                         | 0.5   | 0.5   | 1.9  | 1.7  | 1.9  | 2.0               | 2.2               |

1 – Forecast of the GCEE. 2 – Percentage difference between the level of GDP in the last quarter of year t and the average level of quarterly GDP in the total year t (Annual Report 2005 Box 5). 3 – Percentage change of the fourth quarter on the fourth quarter of the previous year. 4 – Deviations in sums due to rounding.

Sources: Federal Statistical Office, own calculations © Sachverständigenrat | 17-302

## 1. Expansionary conditions

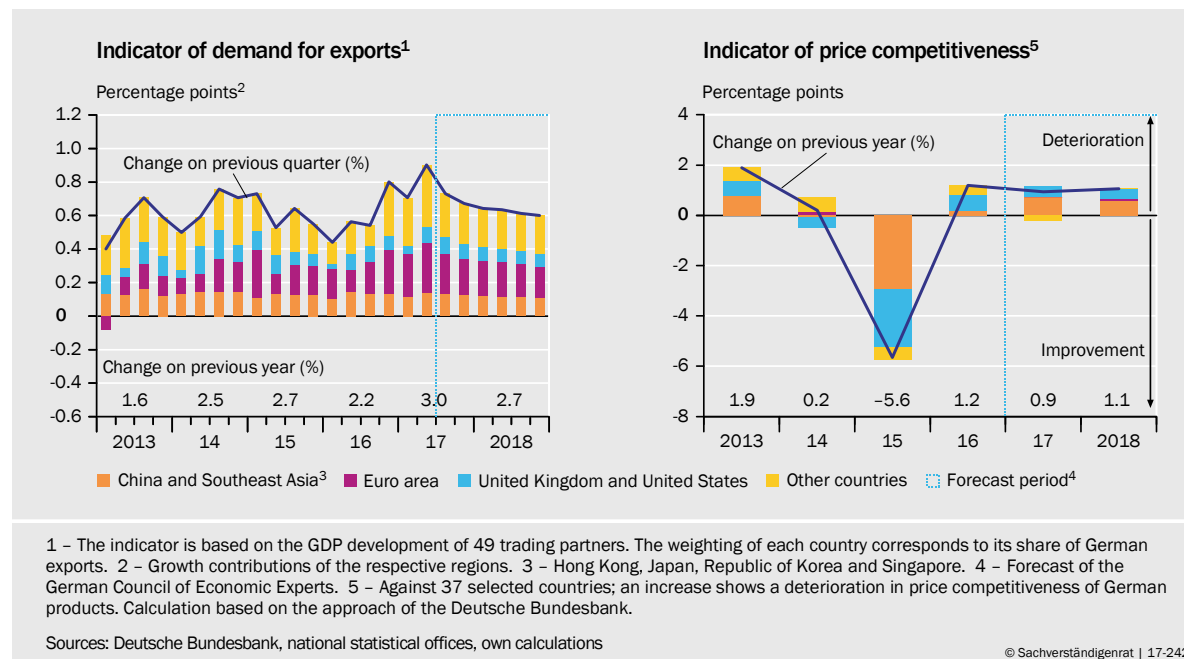
291. Overall economic conditions are even more expansionary in the autumn of 2017 than in the previous year. The political situation in the euro area looks less shaky in general, despite the emergence of some new risks such as the political crisis in Spain. [ITEM 204](#) An improved **external economic environment** is having a positive effect. Global trade grew more strongly in the first half of the year than before, which was mainly driven by the economic recovery in Asia, the euro area and the rest of Europe.

The GCEE's **export indicator**, which reflects the export-weighted development of 49 key trade partners, points to continued growth in export prospects. [CHART 32 LEFT](#) Following a rise of 3.0 % in 2017, the indicator will increase by 2.7 % in 2018. With regard to global trade, the GCEE expects growth rates of 4.1 % this year and 3.4 % next year. [ITEM 200](#)

292. Aside from global economic developments, **price competitiveness** plays an important role in the development of German exports. Compared with September 2016, the price competitiveness of German products versus 37 trade partners based on consumer prices, as defined by the Deutsche Bundesbank indicator, declined by 2.3 %. This was largely due to the rise in the value of the euro in the first half of 2017. The forecast assumes constant exchange rates. However, price competitiveness shows a moderate decline over the forecast period. This is because Germany's inflation growth is likely to be slightly higher than that of its trade partners. [CHART 32 RIGHT](#)
293. **Financing conditions** remain highly favourable. According to the Bank Lending Survey of the Deutsche Bundesbank (2017), German banks have eased the credit standards for companies and households in recent quarters. At the same time, lending rates for companies and households are at an extremely low level. The financing conditions are expected to remain generally favourable over the forecast period. However, monetary policy will likely be gradually tightened as a result of brighter economic prospects and higher price dynamics in the euro area. For this reason, slightly increasing long-term interest rates are expected over the forecast period.

↪ CHART 32

### Expected development of the external environment



294. There was a noticeable increase in lending by banks to domestic companies and private households over the course of the year. With rates of 3.4 % for companies and 3.5 % for private households from the previous year, the **volume of credit** grew slightly stronger in June. Comparable rates of growth were last observed in early 2012. However, there has been no remarkable development in credit volume in relation to nominal GDP. In fact, the ratio has dropped slightly. In addition, the credit-to-GDP gap, which is an indicator of financial stability (Tente et al., 2015), remains negative and does not signal any risks to stability. ↪ CHART 51 PAGE 233 Nevertheless there are striking price developments on the property market which require greater attention. ↪ ITEM 473 The risk of interest rate changes in the banking sector is also on the rise. ↪ ITEMS 475 FF.

295. In sum, the discretionary **fiscal measures** continue to have an expansionary effect. For 2017 and 2018, the GCEE predicts a fiscal impulse of approximately 0.4 % and 0.2 % of GDP. The estimated structural surplus will experience a slight drop this year of 0.1 percentage points and, based on current assumptions, a somewhat bigger drop of 0.3 percentage points next year. ↪ ITEMS 316 F. Fiscal measures that may be implemented by the new Federal Government cannot be taken into account here.

## 2. Dynamic growth of expenditure components

### Foreign trade on the rise

296. The **higher rate of growth in the global economy** had the effect of stimulating global trade in the winter of 2016 and spring of 2017. It is also striking that the elasticity between global trade and global GDP has again increased. This may in part be due to cyclical factors, and reflects the fact that

there is a renewed increase in demand for particularly trade-intensive capital goods. Spurred on by this development, German exports experienced strong growth in the winter of 2016 and spring of 2017. In terms of trade partners, growth in exports to the other member states in the euro area and other European countries is particularly strong, while exports to the United States and Asia have seen relatively little growth.

**Euro appreciation** may be another factor contributing to the economic growth momentum in target regions, as it has a negative impact on price competitiveness. For example, the single currency is up by more than 11 % on the US dollar since the start of 2017. According to calculations by the Bank for International Settlements, Germany's nominal effective exchange rate appreciated by around 3 % in the same period.

297. Early indicators, such as the monthly visible trade balance, ifo export expectations and the Container Throughput Index of the RWI Leibniz Institute for Economic Research, **continue** to point to **strong growth in exports** in the second half of 2017. However, the rate of increase may gradually decline in the forecast period in line with slightly decreasing growth rates in the global

TABLE 9

Key economic indicators for Germany

|   | Unit  | 2015   | 2016   | 2017 <sup>1</sup> | 2018 <sup>1</sup> |
|---|-------|--------|--------|-------------------|-------------------|
| Gross domestic product <sup>2</sup>                       | %     | 1.7    | 1.9    | 2.0               | 2.2               |
| Final consumption expenditure                             | %     | 2.0    | 2.5    | 1.8               | 1.8               |
| Private consumption <sup>3</sup>                          | %     | 1.7    | 2.1    | 1.9               | 1.8               |
| Government consumption                                    | %     | 2.9    | 3.7    | 1.7               | 1.8               |
| Gross fixed capital formation                             | %     | 1.5    | 3.1    | 3.6               | 3.8               |
| Investment in machinery & equipment <sup>4</sup>          | %     | 3.9    | 2.2    | 2.3               | 5.1               |
| Construction investment                                   | %     | - 1.4  | 2.7    | 4.3               | 2.6               |
| Other products  | %     | 5.5    | 5.5    | 4.2               | 4.9               |
| Domestic demand   | %     | 1.6    | 2.4    | 2.2               | 2.3               |
| Net exports (growth contribution in percentage points)    |       | 0.2    | - 0.3  | 0.0               | 0.0               |
| Exports of goods and services                             | %     | 5.2    | 2.6    | 3.8               | 4.5               |
| Imports of goods and services                             | %     | 5.6    | 3.9    | 4.6               | 5.3               |
| Current account balance <sup>5</sup>                      | %     | 8.5    | 8.3    | 7.7               | 7.6               |
| Persons employed (domestic)                               | 1,000 | 43,069 | 43,638 | 44,298            | 44,810            |
| Persons employed, covered by social security <sup>6</sup> | 1,000 | 30,822 | 31,485 | 32,183            | 32,732            |
| Registered unemployment, stocks <sup>6</sup>              | 1,000 | 2,795  | 2,691  | 2,561             | 2,473             |
| Unemployment rate <sup>6,7</sup>                          | %     | 6.4    | 6.1    | 5.8               | 5.5               |
| Consumer prices <sup>8</sup>                              | %     | 0.3    | 0.5    | 1.7               | 1.8               |
| General government balance <sup>9</sup>                   | %     | 0.6    | 0.8    | 1.0               | 1.1               |
| Gross domestic product per capita <sup>10</sup>           | %     | 0.9    | 1.0    | 1.4               | 1.8               |

1 – Forecast of the GCEE. 2 – Year-on-year change. Also applies to all listed components of GDP. 3 – Including non-profit institutions serving households. 4 – Including military weapon systems. 5 – In relation to nominal GDP. 6 – Source for 2014 and 2015: Federal Employment Agency. 7 – Registered unemployed in relation to civil labour force. 8 – Year-on-year change. 9 – Regional authorities and social security according to national accounts; in relation to nominal GDP. 10 – Own calculations, year-on-year change.

Sources: Federal Statistical Office, own calculations

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economy. ↘ [CHART 7 PAGE 79](#) Provided that there is no further appreciation of the euro, the partially negative effects of appreciation to date are likely to remain moderate and to be more than offset by the demand effects of economic developments in Europe and other partner countries. The GCEE expects exports to increase by 2.6 %, and predicts growth rates of 3.8 % in 2017 and 4.5 % in 2018. ↘ [TABLE 9](#), ↘ [CHART 36 TOP LEFT](#)

298. Bolstered by the considerable expansion of private consumption expenditure and increasing investment activity, **import demand** is also very high at present. Total imports are likely to rise by 4.6 % in 2017 and 5.3 % in 2018. At the same time, the terms of trade are set to deteriorate by 0.8 % this year, primarily as a result of the increase in the prices of raw materials at the start of the year. Combined with the decrease in the secondary income balance, in which remittances of immigrant workers play a key role, in 2017 a **decline in the absolute current account balance** can be expected for the first time since 2013. The GCEE forecasts current account balances of 7.7 % of nominal GDP in 2017, dropping to 7.6 % in 2018.

### Investment is recovering from its slump

299. **Gross fixed capital formation in machinery and equipment** has recovered from the slump it experienced in 2016. ↘ [CHART 36 CENTRE LEFT](#) The upturn in the global economy and rising exports are likely to have contributed to this, in addition to the reduced political uncertainty in the euro area. In the first six months of 2017, gross fixed capital formation in machinery and equipment experienced an annualised growth of 4 % compared with the previous year. Both capacity utilisation in manufacturing and the order capacity index indicate that **production capacities** in the industrial sector are already **overutilised**. ↘ [CHART 23, BOTTOM LEFT](#) Taken alongside export prospects, this points to further growth in gross fixed capital formation in machinery and equipment. In light of the favourable economic situation both at home and abroad, **sales expectations of companies** are **strong**. Financing conditions are also very positive.

All of these factors have a positive effect on the growth of corporate investments. Against this backdrop, one can expect **gross fixed capital investment in machinery and equipment** to grow by 2.3 % in 2017 and by 5.1 % in 2018. It should be noted in this context that the annual average growth rate does not adequately reflect actual growth in 2017, as it is dragged down by a considerable statistical underhang from 2016. At 6.3 %, the growth rate over the course of the year provides a much more accurate reflection of actual growth in 2017. In terms of gross fixed capital formation in other products, which primarily consists of investment in **research and development**, the GCEE expects the strong growth rates to continue in light of the healthy earnings situation currently enjoyed by companies, as well as the challenges associated with the digital transformation. Following a climb of 5.5 % in 2016, the GCEE forecasts that this figure will rise by 4.2 % in 2017 and by 4.9 % in 2018.

TABLE 10

**Wage developments in Germany**

Change on the previous year in %

|                   | Collectively agreed wages (hourly concept) | Effective wages <sup>1</sup> | Wage drift <sup>2</sup> | Compensation of employees per working hour | Labour productivity <sup>3</sup> | Unit labour costs (nominal) <sup>4</sup> | Unit labour costs (real) <sup>5</sup> |
|-------------------|--|------------------------------|-------------------------|--|----------------------------------|--|---------------------------------------|
| 2013              | 2.4  | 2.8                          | 0.4                     | 2.6  | 0.8                              | 1.7                                      | - 0.2                                 |
| 2014              | 2.9  | 2.2                          | -0.7                    | 2.2  | 0.8                              | 1.4                                      | - 0.4                                 |
| 2015              | 2.3  | 2.6                          | 0.4                     | 2.5  | 0.7                              | 1.8                                      | - 0.3                                 |
| 2016              | 2.1  | 3.2                          | 1.0                     | 2.9  | 1.3                              | 1.6                                      | 0.2                                   |
| 2017 <sup>6</sup> | 2.3  | 2.8                          | 0.4                     | 2.7  | 0.9                              | 1.8                                      | 0.2                                   |
| 2018 <sup>6</sup> | 2.4  | 3.0                          | 0.6                     | 3.0  | 1.2                              | 1.8                                      | - 0.4                                 |

1 – Gross wages and salaries (domestic concept) per employees hour worked. 2 – Difference between the increase in effective wages and the increase in collectively agreed wages in percentage points. 3 – Real GDP per working hour (employed person concept). 4 – Compensation of employees per working hour (employee concept) in relation to real GDP per working hour (employed person concept). 5 – Compensation of employees per working hour (employee concept) in relation to nominal GDP per working hour (employed person concept). 6 – Forecast of the GCEE.

Sources: Deutsche Bundesbank, Federal Statistical Office, own calculations

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300. **Construction investment** is likely to experience stronger growth in 2017 than in 2016. There are already signs of a significant upward revision, which would put the expected growth rate for 2017 at around 4 %. However, for various reasons, this growth is unlikely to continue. For example, growth in the first half of the year was distorted upwards by an adjustment in the way the statistics are handled. In addition, capacity bottlenecks are particularly severe in the construction sector. The development of the monthly production indices is already indicating that the high speed of expansion experienced in the past is not sustainable. [↪ CHART 28 CENTRE RIGHT](#)

### Vigorous growth in private consumption

301. Private consumption for the year to date has **significantly outperformed expectations**, experiencing very strong growth in the second quarter of 2017 in particular. [↪ CHART 36 BOTTOM LEFT](#) With an annualised growth rate of 3.4 %, reported growth for the quarter was exceptionally strong. This development is largely attributable to the confluence of two factors. Firstly, the **oil price** unexpectedly fell again in the second quarter by almost 10 %. Secondly, the **euro** appreciated strongly. Both developments were accompanied by real gains in purchasing power, which, as a result of the virtually unchanged savings ratio, flowed into consumption. Private consumption has been receiving further stimulation for quite some time from nominal disposable income, which is enjoying robust growth, not least due to the very positive **employment situation** and rising wages.
302. For the forecast period, it is expected that household final consumption expenditure will continue to experience strong growth. Due to **stable labour market growth** [↪ ITEMS 306 FF.](#) and **significant wage increases** [↪ TABLE 10](#), the GCEE predicts that net wages and salaries will grow by around 4 % in both 2017 and 2018. Consumer sentiment is very optimistic, and both the propensity to buy and income expectations are trending upwards. However, consumer price inflation increases slightly in the forecast period. [↪ TABLE 9](#) Against this backdrop,

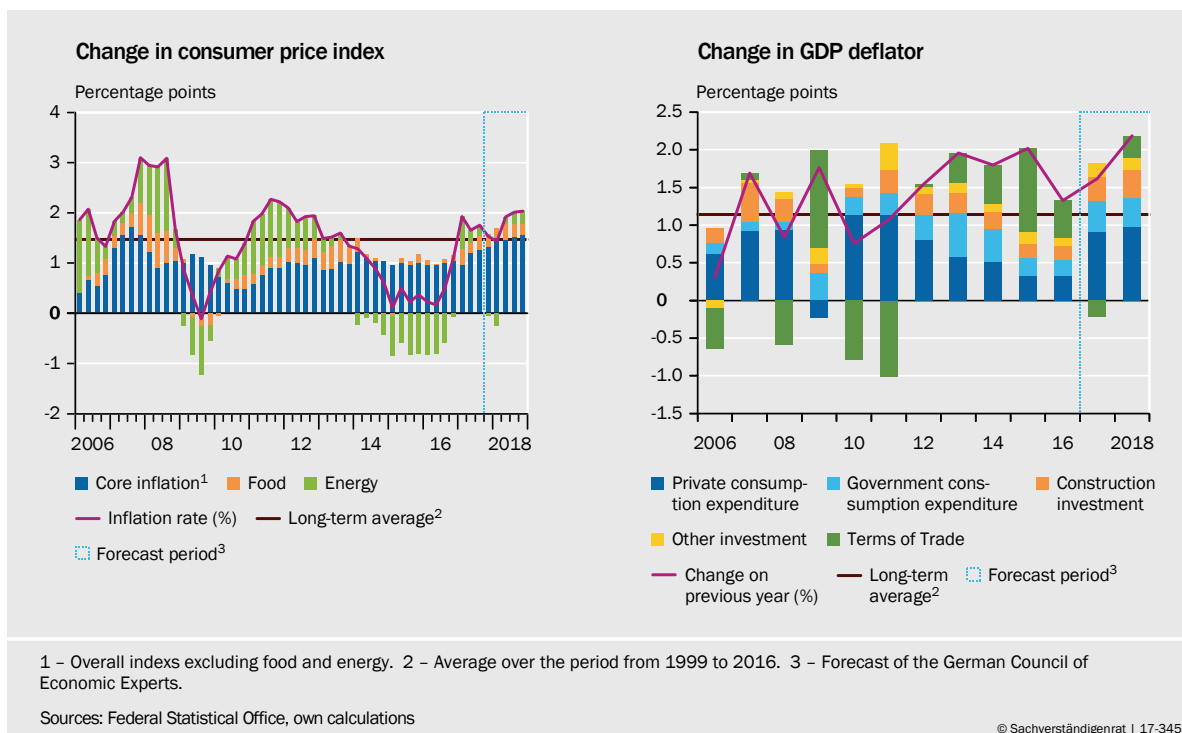


the GCEE expects an increase in household final consumption expenditure both for the current year (1.9 %) and for next year (1.8 %). This results in a contribution to GDP growth of one percentage point for each year. [TABLE 6](#) Household private consumption will thus remain the primary driver of economic growth.

### 3. Consumer price inflation is normalising

- 303.** As expected, consumer price inflation jumped to over 2 % at the start of 2017, one year since the oil price trough in 2016. Since then, consumer price inflation dropped again temporarily due to a **renewed decline in the oil price**. Euro appreciation also played a role in this drop. Inflation normalised again somewhat in the middle of this year, and amounted to 1.8 % in September 2017. [CHART 33 LEFT](#) However, base effects and the current growth in energy prices continue to have a strong impact on the overall inflation rate.
- 304.** There are other reasons too for the return of a higher rate of consumer price inflation. This is boosted, for example, by food prices, which increased significantly over the course of the year. In addition, the above-average utilisation of economic capacities is reflected in the increase in the **core inflation rate**, i.e., the inflation rate excluding food and energy. Over the first six months of 2017, it climbed from 1.2 % to around 1.6 % in the third quarter and, by autumn 2017, is now noticeably higher than the average rate from 1999 onwards of around 1.1 %.
- 305.** In the **forecast period**, the continued rise in capacity utilisation is likely to generate increasing price buoyancy. The GCEE expects the core inflation rate to

[CHART 33](#)  
Measures of inflation and their components



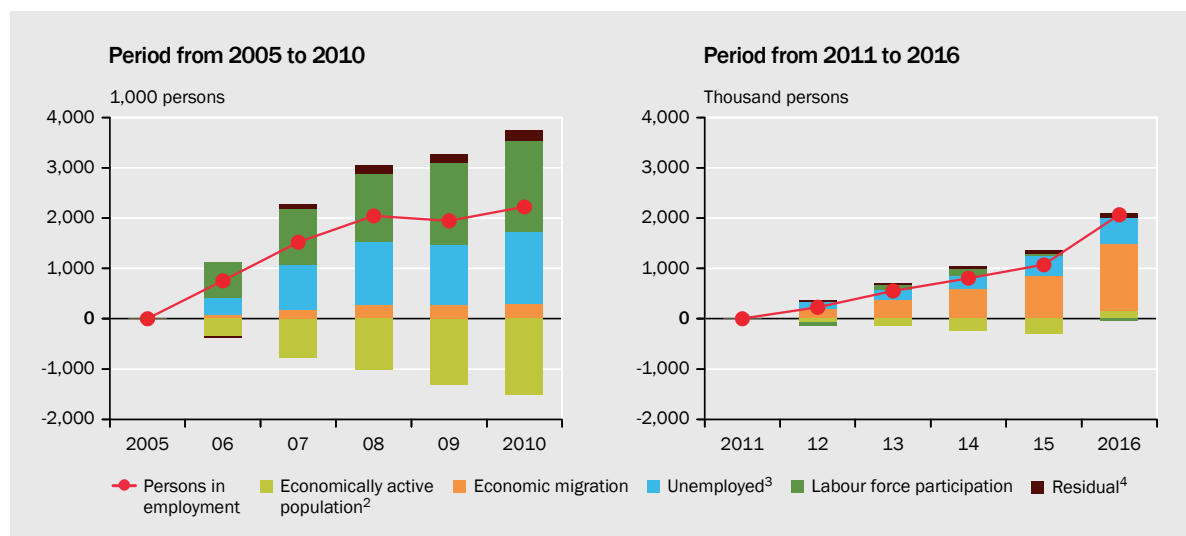
rise to 1.9 % in 2018. Overall consumer price inflation is likely to increase to a slightly lesser degree to 1.8 % in 2018 due to the persistent base effects of the energy price component. Due to the high level of price dynamics in the construction industry and the improved terms of trade in 2018, the GDP deflator is likely to rise somewhat more strongly than consumer prices to a figure of around 2.2 %. [↘ CHART 33 RIGHT](#)

## 4. Growth in employment remains high

306. The labour market continued to experience dynamic growth in the first half of 2017, with **employment growing strongly** again and **unemployment dropping**. An annual average of around 44.3 million people in employment can be expected, up 660,000 on the previous year. This means that the employment figure has risen by close to 5 million people since 2005.
307. In the period 2005 to 2010, this increase was primarily due to the lower rate of unemployment and increased labour force participation, in particular by women and older people. Conversely, the microcensus indicates that the labour force shrank, thereby dampening the rise in employment. [↘ CHART 34 LEFT](#) The **structure of the growth in employment** then changed over the subsequent years. Since 2011, increased economic migration has made the greatest contribution to job growth. [↘ CHART 34 RIGHT](#) There was a particularly sharp increase in the number of migrants from Poland and Romania. In comparison with January 2011, there were approximately 300,000 additional people from Poland and approximately 260,000 additional people from Romania in employment subject to social insurance contributions in July 2017 (Federal

[↘ CHART 34](#)

### Contributions to cumulated growth in employment<sup>1</sup>



1 – For people aged between 15 and 64. 2 – Not including additional economic migration since the relevant baseline year. 3 – Positive contribution represents a fall in unemployment. Based on Brixy et al. (2002), it is assumed that 15 % of the annual fall in unemployment is due to people moving from unemployment to employment. According to this assumption, the remaining 85 % of the fall in unemployment is due to people moving from unemployment to employment. 4 – A residual exists because the distinction between population groups is not absolutely accurate. For this reason, double counting of positive and negative figures can occur. The residual may be positive, for example, if foreign nationals shift from unemployment to take up a job. These people are taken into account at the same time in the fall in unemployment and the rise in economic migration. Conversely, the residual may be negative, for example, when foreign nationals in employment become unemployed. In this case, these people reduce the fall in unemployment, while also reducing economic migration.

Sources: Microcensus of the Federal Statistics Office, own calculations

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Employment Agency, 2017a).

- 308.** The **downward trend in the rate of registered unemployed continued** in the first half of 2017. [↘ TABLE 11](#) With an annual average of 2.56 million people, the number of unemployed will have fallen for the fourth year in a row. The number of registered unemployed will fall by 130,000 in 2017, that is, at a slightly higher rate than in the previous year.
- 309.** As the economic climate was better than expected, labour market development has been more positive than had been forecast in March 2017. Growth in employment is much stronger compared to autumn last year due to the **considerable upward revision of the employment figure** by the Federal Employment Agency (FEA) (Federal Employment Agency, 2017b). In view of the unemployment trend, the Federal Office for Migration and Refugees has

↘ TABLE 11

### Labour market in Germany

1,000 persons

|   | 2015            | 2016   | 2017 <sup>1</sup> | 2018 <sup>1</sup> | 2017 <sup>1</sup>            | 2018 <sup>1</sup> |
|---|-----------------|--------|-------------------|-------------------|------------------------------|-------------------|
|   | yearly averages |        |                   |                   | change on previous year in % |                   |
| Labour force potential <sup>2</sup>                             | 45,911          | 46,482 | 47,053            | 47,316            | 1.2                          | 0.6               |
| Labour force <sup>3,4</sup>                                     | 44,940          | 45,318 | 45,857            | 46,329            | 1.2                          | 1.0               |
| Unemployed persons <sup>5</sup>                                 | 1,950           | 1,774  | 1,662             | 1,628             | - 6.3                        | - 2.0             |
| Commuter balance <sup>6</sup>                                   | 79              | 94     | 104               | 109               | 10.1                         | 4.8               |
| Employed persons <sup>7</sup>                                   | 43,069          | 43,638 | 44,298            | 44,810            | 1.5                          | 1.2               |
| Self employed persons   | 4,359           | 4,333  | 4,317             | 4,293             | - 0.4                        | - 0.6             |
| Employees   | 38,710          | 39,305 | 39,981            | 40,517            | 1.7                          | 1.3               |
| Employees subject to social security contributions <sup>8</sup> | 30,822          | 31,485 | 32,183            | 32,732            | 2.2                          | 1.7               |
| Marginally employed persons (ILO concept) <sup>9</sup>          | 5,504           | 5,429  | 5,414             | 5,385             | - 0.3                        | - 0.6             |
| Marginally employed persons (FEA concept) <sup>8,10</sup>       | 7,338           | 7,389  | 7,419             | 7,400             | 0.4                          | - 0.3             |
| Exclusively marginally employed                                 | 4,856           | 4,805  | 4,769             | 4,746             | - 0.7                        | - 0.5             |
| Marginally employed in second job                               | 2,482           | 2,584  | 2,650             | 2,654             | 2.5                          | 0.2               |
| Registered unemployed persons <sup>8</sup>                      | 2,795           | 2,691  | 2,561             | 2,473             | - 4.8                        | - 3.4             |
| Underemployment excluding short-time work <sup>8,11</sup>       | 3,631           | 3,577  | 3,613             | 3,705             | 1.0                          | 2.6               |
| Short-time workers (employment equivalence) <sup>8</sup>        | 50              | 48     | 46                | 42                | - 4.2                        | - 8.4             |
| Volume of work (million hours) <sup>12</sup>                    | 58,923          | 59,286 | 59,940            | 60,513            | 1.1                          | 1.0               |
| Unemployment rate (FEA) <sup>8,13,14</sup>                      | 6.4             | 6.1    | 5.8               | 5.5               | - 0.3                        | - 0.2             |
| Unemployment rate (ILO) <sup>14,15</sup>                        | 4.6             | 4.1    | 3.8               | 3.7               | - 0.3                        | - 0.1             |

1 – Forecast of the GCEE. 2 – Source: IAB. 3 – Persons in their working age with residence in Germany (national concept). 4 – As defined by the national accounts systems. 5 – ILO concept. 6 – Difference of employed workers commuting from foreign countries to Germany and those commuting from Germany to foreign countries. 7 – Employed persons in Germany independent of their residence (domestic concept). 8 – Source: Federal Employment Agency (FEA). 9 – Employees not fully subject to social security contributions but who are employed according to the ILO labour force concept, especially exclusively marginally employed workers and persons with employment opportunities („1-Euro-Jobs“). 10 – Employed workers with a wage up to 450 Euro (§ 8 Absatz 1 Nr. 1 SGB IV). 11 – According to the concept of underemployment by the FEA. 12 – Working hours of employed persons working in Germany. 13 – Registered unemployed persons in relation to civilian labour force. 14 – Yearly averages in %; change on previous year in percentage points. 15 – Unemployed persons in relation to the labour force, in each case persons in private households aged from 15 to 74 years. Source: Eurostat.

Sources: Eurostat, Federal Statistical Office, Institute for Employment Research (IAB), Federal Employment Agency (FEA), own calculations

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established more integration courses than expected for registered asylum seekers. As a result, the rate of unemployment among registered asylum seekers increased less than had been forecast over the course of the year 2017.

310. The early employment indicators published by the Institute for Employment Research and the ifo institute suggest that the remainder of the current year will see continued growth in employment. Both indicators are currently reaching the highest values recorded in many years. In addition, the number of vacancies posted by the Federal Employment Office demonstrates that the **demand for labour remains high**. The survey of vacancies conducted by the Institute for Employment Research indicates that job vacancy numbers reached a record high of 1.1 million in the second quarter of 2017. This represents an increase of 12 % compared with the same quarter the previous year. Given that the baby boomers born in the 1950s and 1960s will be leaving the labour market within the next decade, it is likely that labour shortages will gradually intensify over the coming years. [↘ ITEMS 769 FF.](#)
311. At present, however, the decline in the working population due to the ageing of society is more than offset by the increasing participation of women, older people and registered asylum seekers in the workforce, as well as the high level of immigration (Fuchs et al., 2017). According to the medium-term forecast of the GCEE, net immigration is set to rise by 500,000 immigrants in 2017 and by another 400,000 immigrants in 2018. [↘ TABLE 14 Employment](#) is expected to **continue to rise** by approximately 500,000 workers in 2018. As in previous years, percentage employment gains are likely to be higher for employment subject to social insurance contributions than for marginal employment. Atypical employment is expected to decline somewhat in significance. For the year 2018, the GCEE predicts that there will be 32.7 million employees subject to social insurance and 4.7 million exclusively marginally employed persons. [↘ TABLE 11](#)
312. The number of registered unemployed is set to fall below 2.5 million in 2018. However, it is likely that this **reduction will decelerate**. This is indicated, for example, by the early indicator for unemployment published by the Institute for Employment Research, which has been trending downwards in recent months, giving rise to expectations that some less favourable developments as regards unemployment figures are on the way. In particular, an increase in the level of unemployment among registered asylum seekers may be a likely contributor to this. For the majority of registered asylum seekers, the coming months will see an end to the integration measures that currently exclude them from the unemployment figures. [↘ ITEM 742](#)

Increasing unemployment among these individuals will critically depend on the degree to which they avail of further training programmes following completion of integration measures. Based on a figure of around 220,000 unemployed registered asylum seekers at the end of the year 2017, the GCEE expects to see an increase to around 300,000 by the end of the year 2018. This would increase the portion of registered asylum seekers among the number of registered unemployed to around 12 %.

## 5. High tax and contribution burden – record surpluses

313. The **general government financial surplus** is likely to reach the **highest level since reunification** at € 31.3 billion (1.0 % in relation to nominal GDP).  
 ↘ CHART 63 Even the repayment of approximately € 7.1 billion in nuclear fuel tax to energy companies, which was entered in the national accounts in the first half of the year, failed to prevent this record being achieved. For the coming year, the GCEE expects a surplus of € 38.8 billion (1.1 % in relation to nominal GDP). The debt-to-GDP ratio is likely to drop to € 61.9 % by the end of the coming year.  
 ↘ TABLE 12
314. The consistently **strong growth momentum** with rising employment and high corporate profits is generating increasing tax revenues and contributing to a healthy financial position as regards public budgets. Revenues from direct taxation in particular exceeded expectations by far in the current year. Profit-related taxes increased to a greater extent than expected given overall economic development. Possible reasons for this include an increased number of advance payments and expiring loss carry-forwards.

The low levels of income tax relief are only having a slight dampening effect on the increases in direct taxation. This year, additional burdens due to "cold progression" (i.e., bracket creep) may even increase. ↘ CHART 66 RIGHT In this case, the tax ratio will increase. At the same time, the contribution rate for statutory long-term care insurance was increased, leading to a concurrent rise in the social contributions ratio. ↘ CHART 66 LEFT Overall, this means that the **tax and contribution ratio** may reach **the highest level since the year 2000 at 39.5 %**. This represents an increase of more than one percentage point compared with the year 2014. If the ratio had remained constant since then, a financial surplus could not have been achieved this year or in interim years.

For the coming year, a reduction in the additional contribution to health insurance to 1 % on average is assumed. Together with the small income tax rate adjustment that has already been decided upon, this could result in a slight decrease in the tax burden. A possible adjustment of the contribution rate for unemployment insurance ↘ ITEM 588 is not included in the forecast.

315. **Total expenditure** in this year and the coming year is likely to **rise slightly less** than in the previous year. ↘ TABLE 12 For one thing, steadily declining interest expenditure will relieve pressure on the budgets of central, regional and local authorities over the entire projection period. For another, social benefits other than social transfers in kind will not increase to the same extent in future. While SGB II expenditure is on the rise because the labour market integration of registered asylum seekers is a process that will take some time to complete, ↘ ITEMS 738 FF. pensions were increased significantly in the middle of last year as a result of catch-up effects. On the other hand, employee compensation may rise to a greater extent due to workforce expansion and more significant rate increases. Social benefits in kind will continue to grow strongly due to the extension of benefits in relation to statutory long-term care insurance and

vigorous health care expenditure. In addition, public investment is expected to be further expanded.

- 316. Fiscal policy remains expansionary.** This is reflected, for example, in a positive fiscal impulse. In 2017, it is expected that discretionary measures will total around 0.4 % of nominal GDP. These include, in particular, expenditure measures, such as additional spending on infrastructure and in the military, as well as benefit extensions in relation to statutory long-term care insurance. For the coming year, measures in the order of, on balance, around 0.2 % of nominal GDP are already foreseen. This does not take account of any fiscal policy measures that currently form part of the coalition negotiations.

▾ TABLE 12

Public revenues and expenditures and fiscal indices<sup>1</sup>

|   | 2016           | 2017 <sup>2</sup> | 2018 <sup>2</sup> | 2017 <sup>2</sup>                | 2018 <sup>2</sup> |
|---|----------------|-------------------|-------------------|----------------------------------|-------------------|
|   | billion euro   |                   |                   | change on the previous year in % |                   |
| <b>Total revenues</b>                               | <b>1,414.2</b> | <b>1,470.6</b>    | <b>1,528.4</b>    | 4.0                              | 3.9               |
| Taxes   | 732.0          | 766.1             | 797.4             | 4.7                              | 4.1               |
| Social contributions                                | 523.8          | 547.3             | 568.6             | 4.5                              | 3.9               |
| Other revenues <sup>3</sup>                         | 158.5          | 157.3             | 162.3             | - 0.8                            | 3.2               |
| <b>Total expenditures</b>                           | <b>1,388.6</b> | <b>1,439.3</b>    | <b>1,489.6</b>    | 3.7                              | 3.5               |
| Intermediate consumption                            | 150.0          | 155.3             | 160.9             | 3.6                              | 3.6               |
| Compensation of employees                           | 236.5          | 244.6             | 254.1             | 3.4                              | 3.9               |
| Property income (including interest) payable        | 41.6           | 39.5              | 38.5              | - 5.1                            | - 2.5             |
| Subsidies payable                                   | 27.8           | 28.4              | 29.2              | 2.2                              | 2.7               |
| Social benefits other than social transfers in kind | 486.3          | 506.9             | 522.6             | 4.2                              | 3.1               |
| Social benefits in kind                             | 268.6          | 280.0             | 291.0             | 4.3                              | 3.9               |
| Gross capital formation                             | 66.8           | 70.1              | 74.8              | 4.9                              | 6.7               |
| Other expenditures <sup>4</sup>                     | 111.0          | 114.5             | 118.5             | 3.2                              | 3.5               |
| <b>Net borrowing/net lending</b>                    | <b>25.7</b>    | <b>31.3</b>       | <b>38.8</b>       | x                                | x                 |
| <b>Fiscal indices (%)<sup>5</sup></b>               |                |                   |                   |                                  |                   |
| Public spending ratio <sup>6</sup>                  | 44.2           | 44.2              | 43.8              | x                                | x                 |
| Government consumption ratio                        | 19.6           | 19.6              | 19.5              | x                                | x                 |
| Social contributions ratio <sup>7</sup>             | 15.5           | 15.7              | 15.6              | x                                | x                 |
| Tax ratio <sup>8</sup>                              | 23.7           | 23.9              | 23.8              | x                                | x                 |
| Tax and contribution ratio <sup>9</sup>             | 39.2           | 39.5              | 39.2              | x                                | x                 |
| Net lending/net borrowing                           | 0.8            | 1.0               | 1.1               | x                                | x                 |
| Structural balance <sup>10</sup>                    | 0.8            | 0.7               | 0.4               | x                                | x                 |
| Debt-to-GDP ratio <sup>11</sup>                     | 68.1           | 65.3              | 61.9              | x                                | x                 |
| Interest-to-tax ratio <sup>12</sup>                 | 5.6            | 5.1               | 4.8               | x                                | x                 |

1 - National accounts (nominal values). 2 - Forecast of the GCEE. 3 - Sales, other subsidies on production, property income, other current transfers, capital transfers. 4 - Other current transfers, capital transfers, other taxes on production, and net acquisition of non-financial non-produced assets. 5 - In relation to nominal GDP. 6 - Total expenditures. 7 - Social contributions without imputed social contributions. 8 - Taxes including inheritance tax and taxes to the EU. 9 - Taxes including inheritance tax and taxes to the EU, and actual social contributions. 10 - Cyclically adjusted budget balance net of temporary measures. 11 - General government gross debt as defined in the Maastricht Treaty. 12 - Interest payable in relation to taxes including inheritance tax.

Sources: Federal Statistical Office, own calculations

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317. In addition, the **declining structural government balance** likewise indicates the expansionary nature of the current fiscal policy. [▶ ITEM 575](#) For this year, the structural surplus may drop from 0.8 % of nominal GDP to 0.7 %, before sliding further to 0.4 % in 2018, provided that the future Federal Government does not implement any further fiscal policy measures that result in a structural burden on the overall budget. The structural balance differs from the actual financial balance (net lending/borrowing of general government) because the economic climate is currently reducing the burden on the overall budget to a significant degree, the lower rate of interest expenditure is not permanent, and extraordinary effects such as the repayment of nuclear fuel tax affect the balance on a one-off basis only. The balance may decrease significantly in the coming year, for example, due to higher contributions to the EU budget.



The GCEE has refined the method it uses for a disaggregated estimate of the structural government balance (GCEE Annual Report 2007 appendix IV D). For cyclical adjustment of the individual components of the financial balance (net lending/borrowing of general government) that are sensitive to economic cycles, the univariate Hodrick-Prescott filter has now been replaced by a method that also takes account of the GCEE's estimate of the output gap. [▶ CHART 29 RIGHT](#) The trend components of selected income and expenditure items are calculated using the Kalman filter. This innovation addresses the boundary value problem associated with the Hodrick-Prescott filter, while also improving consistency with the estimate of potential output.

### III. MEDIUM-TERM PROJECTION

318. In order to estimate the medium-term potential for growth in the German economy, the GCEE has, since the Annual Report 2014, published a projection of **potential output** for the next five years together with its economic forecast. This corresponds to the production level that would exist in the case of normal capacity utilisation of production factors. The rate of growth in potential output provides a more accurate reflection of structural changes in the German economy, such as the effects of demographic shifts, than do the volatile rates of growth in GDP. This is because the former is adjusted to take account of cyclical effects.
319. The method used by the GCEE to estimate potential output uses an **aggregated production function** (GCEE Annual Report 2014, box 10). This corresponds to the approach used by the European Commission (Havik et al., 2014), whose estimates play a central role in fiscal surveillance in the EU. At a granular level, however, there are many differences between the estimation approaches used by the GCEE and the European Commission (Breuer and Elstner, 2017). The main differences can be summarised as follows:
- The GCEE takes account of **demographic factors** to a greater extent, using a comprehensive population model to do so.

- **Refugee immigration** since 2014 is considered separately (GCEE Annual Report 2016, items 274 ff.).
  - In addition, the approaches deviate considerably in terms of how the **structural unemployment rate (NAIRU)** [↘ BOX 5](#) and **total factor productivity (TFP)** are estimated.
- 320.** In the current year, the GCEE has also adopted a **capital utilisation concept** for the purpose of calculating the capital employed in the economy as a whole. In place of gross capital stock, the GCEE will, from now on, follow the Deutsche Bundesbank (2012) in using a measure of the capital that is actually employed. The difference between the measurement concepts relates to the way in which the individual capital goods, such as residential buildings and equipment, are aggregated into the total capital stock. With the previously used real gross capital stock (gross stock of fixed assets), the weighting of a specific capital good is determined by its nominal stock value. A high weighting is therefore assigned to construction. With the concept of capital utilisation costs, in contrast, the focus is on the actual use of a capital good. As a result, equipment and other assets, such as investment in research and development, carry greater weight. The capital utilisation concept is preferable to gross capital stock from a production theory perspective (Stiroh, 2001; OECD, 2009; Deutsche Bundesbank, 2012).
- 321.** Using this method, the GCEE estimates annual average potential growth of 1.3 % **for the years 2016 to 2022.** [↘ TABLE 13](#) It can be assumed that **TFP**, which is expected to rise by an average of 0.7 % and will therefore increase to a slightly greater degree than in the mid-2000s, will make the largest contribution to growth. [↘ CHART 35 RIGHT](#) This may be attributable to the fact that the composition effects arising from the labour market reforms in the 2000s are gradually levelling off (GCEE Annual Report 2016, items 279 ff.; GCEE Annual Report 2015, items 599 ff.).

[↘ TABLE 13](#)**Results of the medium-term projection<sup>1</sup>**

|   | 1995 to 2016 |              |            |              | 2016 to 2022 |              |
|---|--------------|--------------|------------|--------------|--------------|--------------|
|   | actual       |              | potential  |              |              |              |
| <b>Gross domestic product (GDP)</b>         | <b>1.4</b>   |              | <b>1.3</b> |              | <b>1.3</b>   |              |
| <b>Capital stock</b>                        | <b>1.7</b>   | <b>(0.6)</b> | <b>1.7</b> | <b>(0.6)</b> | <b>1.4</b>   | <b>(0.5)</b> |
| <b>Solow-residual</b>                       | <b>0.7</b>   | <b>(0.7)</b> | <b>0.7</b> | <b>(0.7)</b> | <b>0.7</b>   | <b>(0.7)</b> |
| <b>Volume of labour</b>                     | <b>0.1</b>   | <b>(0.1)</b> | <b>0.0</b> | <b>(0.0)</b> | <b>0.3</b>   | <b>(0.2)</b> |
| Working age population                      | 0.0          | (0.0)        | 0.0        | (0.0)        | 0.1          | (0.1)        |
| Participation rate                          | 0.4          | (0.3)        | 0.4        | (0.3)        | 0.4          | (0.2)        |
| Unemployment rate                           | 0.2          | (0.1)        | 0.1        | (0.1)        | 0.2          | (0.1)        |
| Average working time                        | - 0.6        | (- 0.4)      | - 0.5      | (- 0.3)      | - 0.3        | (- 0.2)      |
| For information purposes:<br>GDP per capita | 1.2          |              | 1.2        |              | 1.1          |              |

1 - Calculations of the German Council of Economic Experts; average annual changes in %. In brackets: growth contributions in percentage points. Differences in sums are due to rounding.

Sources: Federal Statistical Office, own calculations

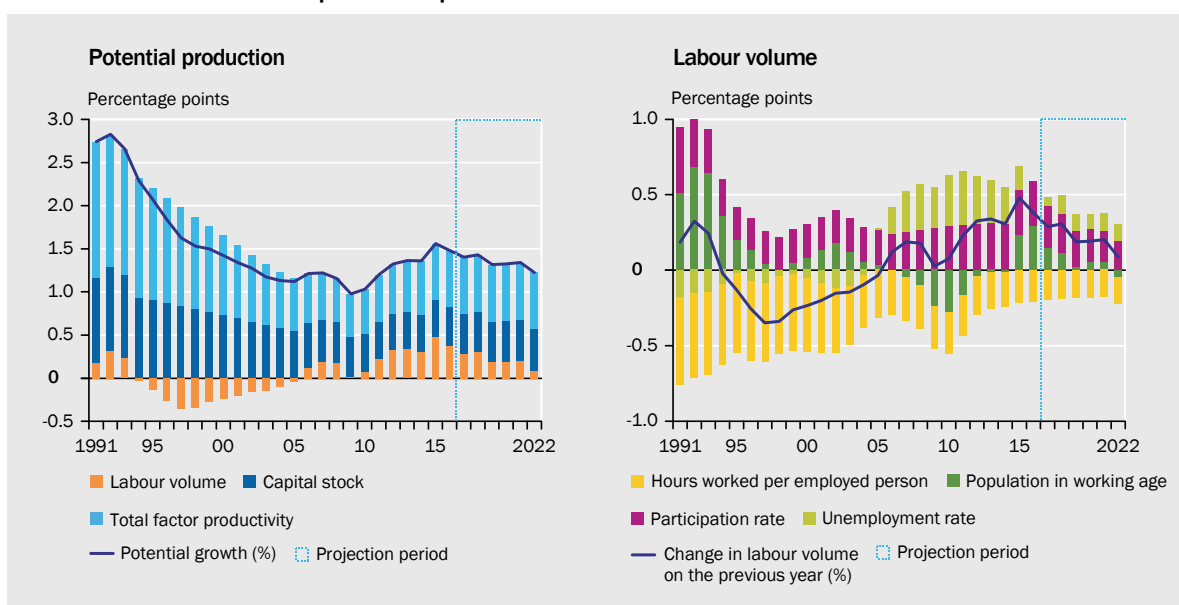
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322. In the forecast period, the **development of the number of hours worked** will also make a positive contribution to potential growth, even though this figure is gradually decreasing. [↘ CHART 35 LEFT](#) This is largely due to a slight increase in the economically active population, driven by (an assumed) lower net immigration figure and the increasingly significant ageing of the population. [↘ TABLE 14](#) Compared with the economically active population, the contributions made by the other components of the number of hours worked will remain relatively stable. For example, it is expected that a slight decline in the NAIRU will continue in the period 2016 to 2022.
323. The structural participation rate, which is calculated using a projection from the population model, continues to make a positive contribution to potential growth, although this contribution will diminish over time. In terms of the actual participation rate, however, we can expect to see some stagnation as early as the beginning of the 2020s because the **participation of women** is unlikely to continue to rise and older age cohorts will become increasingly significant. Finally, the declining working time per employed person over the entire projection period will adversely affect the volume of labour. This can be explained primarily by the ongoing growth in part-time employment and, to a lesser extent, by the slight drop in the self-employment rate.
324. The estimated **potential growth has been only moderately revised** in comparison with the estimate for the previous year. For the years 2016 to 2022, the estimated average potential growth is increased by just 0.1 percentage points. The slight upward revision is distributed over all three components. Firstly, the volume of labour rises to a somewhat greater extent because the current estimate takes account of the higher figures from the updated 13th coordinated population projection and the assumed slight increase in immigration. In addition, the transition to the concept of capital utilisation is

↘ CHART 35

**Growth contributions of components to potential GDP<sup>1</sup>**



1 – Calculations of the German Council of Economic Experts.

Sources: Federal Statistical Office, own calculations

associated with slightly greater structural dynamism in relation to capital employment. Finally, technological progress is projected somewhat more optimistically than in the previous year. Compared with the Joint Economic Forecast (2017), the estimated potential growth is lower by around 0.3 percentage points. This is explained, in part, by the different projection of the TFP and average working time.

▾ TABLE 14

**Projection of key figures of the potential labour volume<sup>1</sup>**

|  | Unit  | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|--|-------|------|------|------|------|------|------|------|
| <b>Population<sup>2</sup></b>                                    |       |      |      |      |      |      |      |      |
| Total net immigration  | 1,000 | 640  | 500  | 400  | 300  | 250  | 200  | 200  |
| Including: refugees  | 1,000 | 74   | 8    | 24   | 2    | 101  | 50   | 39   |
| Working-age net immigration                                      | 1,000 | 554  | 439  | 349  | 264  | 211  | 172  | 173  |
| Including: refugees  | 1,000 | 56   | 6    | 19   | 2    | 80   | 40   | 32   |
| <b>Structural participation rate<sup>3</sup></b>                 |       |      |      |      |      |      |      |      |
| Total  | %     | 72.8 | 73.1 | 73.4 | 73.7 | 73.9 | 74.1 | 74.4 |
| Refugees   | %     | 32.4 | 49.7 | 58.7 | 66.8 | 68.2 | 69.8 | 71.4 |
| Proportion of refugees <sup>4</sup> in population <sup>5</sup>   | %     | 1.2  | 1.2  | 1.3  | 1.3  | 1.4  | 1.4  | 1.5  |
| <b>Structural unemployment rate<sup>6</sup></b>                  |       |      |      |      |      |      |      |      |
| Total  | %     | 4.4  | 4.3  | 4.2  | 4.0  | 3.9  | 3.7  | 3.5  |
| Refugees   | %     | 76.2 | 66.4 | 56.0 | 48.3 | 43.1 | 38.0 | 34.1 |
| Proportion of refugees <sup>4</sup> in labour force <sup>7</sup> | %     | 0.6  | 0.9  | 1.1  | 1.2  | 1.4  | 1.5  | 1.6  |

1 – Assumptions of the GCEE. 2 – Effective date: 31 December of the respective year. 3 – Projection of the participation rate without refugees is done with a demographic model that represents age-, cohorts- and gender-specific developments. The trend adjustment is conducted with the HP-filter. 4 – Proportion of refugees is calculated on the basis of the cumulative total of refugees of working-age since 2014. 5 – In working-age. 6 – The structural unemployment rate (NAIRU) without refugees is determined by state-space models that incorporate various measures of inflation and inflation expectations. 7 – Proportion of refugees is calculated on the basis of the cumulative total of refugees seeking employment since 2014.

Sources: Federal Statistical Office, Institute for Employment Research (IAB), own calculations

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# APPENDIX

CHART 36

## Components of GDP

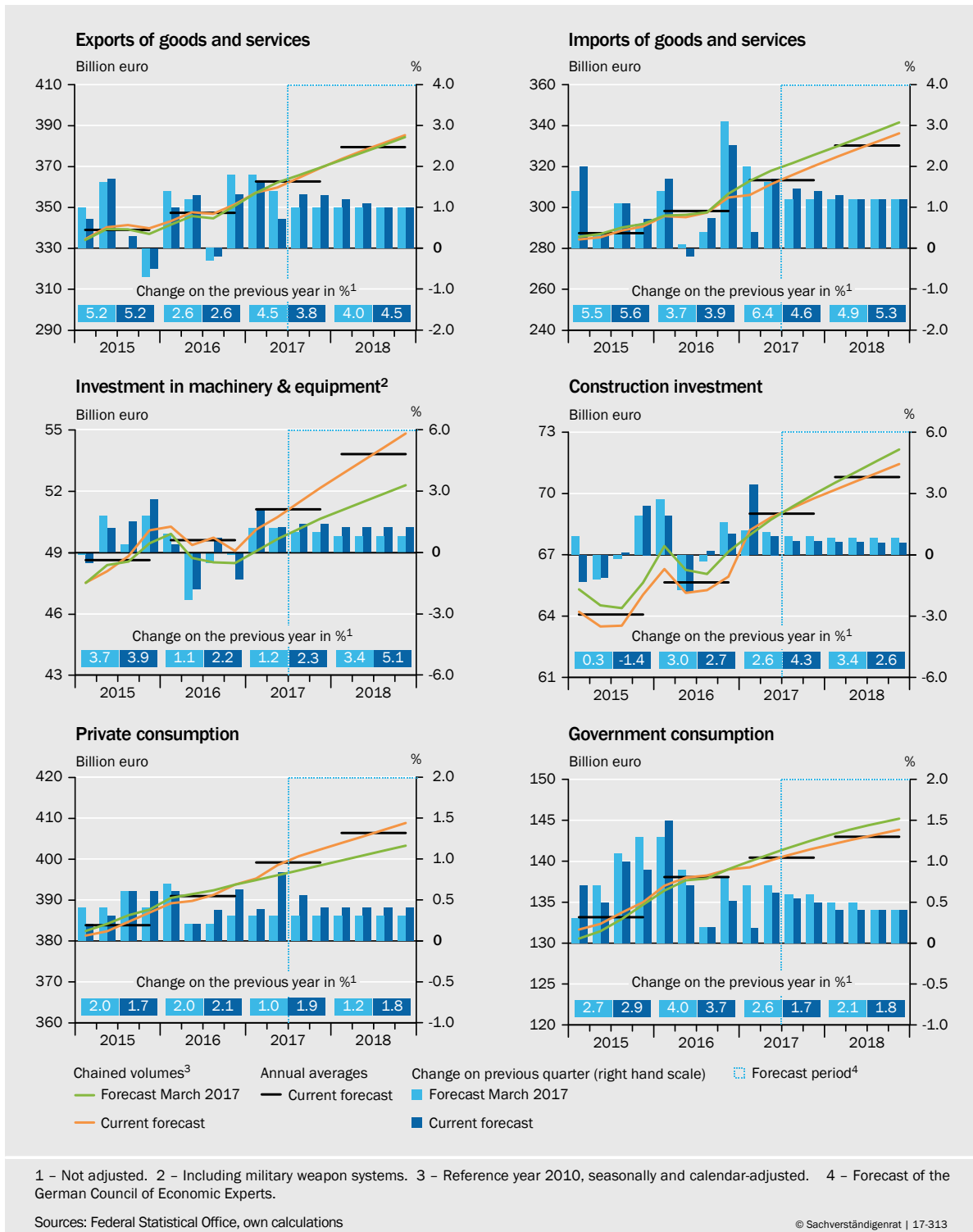


TABLE 15

## Key figures of the national accounts

Absolute values

|  | Unit                | 2016           | 2017 <sup>1</sup> | 2018 <sup>1</sup> | 2017 <sup>1</sup>         |                           | 2018 <sup>1</sup>         |                           |
|--|---------------------|----------------|-------------------|-------------------|---------------------------|---------------------------|---------------------------|---------------------------|
|  |                     |                |                   |                   | 1 <sup>st</sup> half-year | 2 <sup>nd</sup> half-year | 1 <sup>st</sup> half-year | 2 <sup>nd</sup> half-year |
| <b>Use of domestic product</b>                       |                     |                |                   |                   |                           |                           |                           |                           |
| <b>at current prices</b>                             |                     |                |                   |                   |                           |                           |                           |                           |
| Final consumption expenditure                        | billion euro        | 2,289.8        | 2,374.4           | 2,462.7           | 1,156.5                   | 1,217.9                   | 1,199.6                   | 1,263.1                   |
| Private consumption <sup>2</sup>                     | billion euro        | 1,674.4        | 1,735.3           | 1,799.5           | 846.2                     | 889.2                     | 877.0                     | 922.5                     |
| Government consumption                               | billion euro        | 615.4          | 639.1             | 663.2             | 310.4                     | 328.7                     | 322.6                     | 340.6                     |
| Gross fixed capital formation                        | billion euro        | 630.0          | 665.0             | 704.9             | 319.7                     | 345.3                     | 338.9                     | 366.0                     |
| Investment in machinery & equipment <sup>3</sup>     | billion euro        | 205.8          | 211.0             | 222.2             | 100.5                     | 110.5                     | 105.6                     | 116.7                     |
| Construction investment                              | billion euro        | 304.5          | 327.8             | 348.7             | 157.9                     | 169.9                     | 168.2                     | 180.5                     |
| Other products                                       | billion euro        | 119.7          | 126.2             | 134.0             | 61.3                      | 64.8                      | 65.2                      | 68.8                      |
| Domestic demand                                      | billion euro        | 2,893.4        | 3,014.7           | 3,147.8           | 1,470.9                   | 1,543.9                   | 1,537.0                   | 1,610.8                   |
| Exports of goods and services                        | billion euro        | 1,450.0        | 1,528.5           | 1,603.6           | 759.6                     | 768.8                     | 795.2                     | 808.4                     |
| Imports of goods and services                        | billion euro        | 1,199.4        | 1,284.8           | 1,349.2           | 631.6                     | 653.2                     | 659.9                     | 689.3                     |
| <b>Gross domestic product</b>                        | <b>billion euro</b> | <b>3,144.1</b> | <b>3,258.4</b>    | <b>3,402.2</b>    | <b>1,599.0</b>            | <b>1,659.5</b>            | <b>1,672.3</b>            | <b>1,729.9</b>            |
| <b>Chained volumes</b>                               |                     |                |                   |                   |                           |                           |                           |                           |
| Final consumption expenditure                        | billion euro        | 2,119.2        | 2,158.4           | 2,197.7           | 1,058.3                   | 1,100.0                   | 1,078.9                   | 1,118.7                   |
| Private consumption <sup>2</sup>                     | billion euro        | 1,566.5        | 1,596.2           | 1,625.3           | 780.9                     | 815.3                     | 795.9                     | 829.3                     |
| Government consumption                               | billion euro        | 552.2          | 561.8             | 572.0             | 277.2                     | 284.6                     | 282.7                     | 289.3                     |
| Gross fixed capital formation                        | billion euro        | 572.3          | 593.0             | 615.6             | 285.9                     | 307.0                     | 296.8                     | 318.8                     |
| Investment in machinery & equipment <sup>3</sup>     | billion euro        | 199.6          | 204.2             | 214.6             | 96.7                      | 107.5                     | 101.4                     | 113.2                     |
| Construction investment                              | billion euro        | 263.9          | 275.1             | 282.2             | 133.7                     | 141.4                     | 137.2                     | 145.0                     |
| Other products                                       | billion euro        | 109.4          | 114.0             | 119.6             | 55.6                      | 58.4                      | 58.3                      | 61.3                      |
| Domestic demand                                      | billion euro        | 2,657.5        | 2,715.4           | 2,778.5           | 1,337.4                   | 1,377.9                   | 1,369.8                   | 1,408.7                   |
| Exports of goods and services                        | billion euro        | 1,395.1        | 1,447.6           | 1,512.6           | 718.9                     | 728.6                     | 751.1                     | 761.5                     |
| Imports of goods and services                        | billion euro        | 1,196.7        | 1,251.5           | 1,317.6           | 611.1                     | 640.4                     | 644.6                     | 673.0                     |
| <b>Gross domestic product</b>                        | <b>billion euro</b> | <b>2,855.4</b> | <b>2,912.1</b>    | <b>2,975.5</b>    | <b>1,444.8</b>            | <b>1,467.3</b>            | <b>1,476.6</b>            | <b>1,499.0</b>            |
| <b>Price Development (deflators)</b>                 |                     |                |                   |                   |                           |                           |                           |                           |
| Final consumption expenditure                        | 2010=100            | 108.1          | 110.0             | 112.1             | 109.3                     | 110.7                     | 111.2                     | 112.9                     |
| Private consumption <sup>2</sup>                     | 2010=100            | 106.9          | 108.7             | 110.7             | 108.4                     | 109.1                     | 110.2                     | 111.2                     |
| Government consumption                               | 2010=100            | 111.4          | 113.8             | 115.9             | 112.0                     | 115.5                     | 114.1                     | 117.7                     |
| Gross fixed capital formation                        | 2010=100            | 110.1          | 112.2             | 114.5             | 111.8                     | 112.5                     | 114.2                     | 114.8                     |
| Investment in machinery & equipment <sup>3</sup>     | 2010=100            | 103.2          | 103.4             | 103.5             | 103.9                     | 102.8                     | 104.1                     | 103.1                     |
| Construction investment                              | 2010=100            | 115.4          | 119.2             | 123.6             | 118.2                     | 120.1                     | 122.6                     | 124.5                     |
| Other products                                       | 2010=100            | 109.4          | 110.7             | 112.0             | 110.4                     | 111.0                     | 111.7                     | 112.3                     |
| Domestic demand                                      | 2010=100            | 108.9          | 111.0             | 113.3             | 110.0                     | 112.0                     | 112.2                     | 114.4                     |
| Terms of Trade                                       | 2010=100            | 103.7          | 102.9             | 103.5             | 102.2                     | 103.5                     | 103.4                     | 103.6                     |
| Exports of goods and services                        | 2010=100            | 103.9          | 105.6             | 106.0             | 105.7                     | 105.5                     | 105.9                     | 106.2                     |
| Imports of goods and services                        | 2010=100            | 100.2          | 102.7             | 102.4             | 103.4                     | 102.0                     | 102.4                     | 102.4                     |
| <b>Gross domestic product</b>                        | <b>2010=100</b>     | <b>110.1</b>   | <b>111.9</b>      | <b>114.3</b>      | <b>110.7</b>              | <b>113.1</b>              | <b>113.3</b>              | <b>115.4</b>              |
| <b>Production of domestic product</b>                |                     |                |                   |                   |                           |                           |                           |                           |
| Employed persons (domestic)                          | 1,000               | 43,638         | 44,298            | 44,810            | 43,984                    | 44,613                    | 44,585                    | 45,034                    |
| Labour volume  | million hours       | 59,286         | 59,940            | 60,513            | 29,492                    | 30,548                    | 29,866                    | 30,902                    |
| Labour productivity (per hour)                       | 2010=100            | 106.4          | 107.4             | 108.7             | 108.4                     | 106.5                     | 109.7                     | 107.7                     |
| <b>Distribution of net national income</b>           |                     |                |                   |                   |                           |                           |                           |                           |
| Net national income                                  | billion euro        | 2,338.0        | 2,423.8           | 2,530.5           | 1,177.0                   | 1,246.8                   | 1,231.4                   | 1,299.1                   |
| Compensation of employees                            | billion euro        | 1,600.3        | 1,667.3           | 1,738.7           | 797.4                     | 869.9                     | 831.3                     | 907.4                     |
| Gross wages and salaries                             | billion euro        | 1,311.5        | 1,367.4           | 1,426.5           | 652.5                     | 714.9                     | 680.2                     | 746.3                     |
| among them: net wages and salaries <sup>4</sup>      | billion euro        | 869.1          | 903.9             | 942.9             | 427.0                     | 476.9                     | 443.9                     | 499.0                     |
| property and entrepreneurial income                  | billion euro        | 737.7          | 756.5             | 791.8             | 379.6                     | 376.9                     | 400.1                     | 391.7                     |
| Disposable income of private households <sup>2</sup> | billion euro        | 1,805.0        | 1,872.8           | 1,941.8           | 928.9                     | 943.9                     | 960.1                     | 981.7                     |
| Savings rate of private households <sup>2,5</sup>    | %                   | 9.7            | 9.7               | 9.7               | 11.2                      | 8.2                       | 10.9                      | 8.4                       |
| For information purposes:                            |                     |                |                   |                   |                           |                           |                           |                           |
| nominal unit labour costs <sup>6</sup>               | 2010=100            | 110.3          | 112.3             | 114.3             | 108.3                     | 116.2                     | 110.0                     | 118.2                     |
| real unit labour costs <sup>7</sup>                  | 2010=100            | 100.2          | 100.4             | 99.9              | 97.8                      | 102.8                     | 97.1                      | 102.4                     |
| Consumer prices                                      | 2010=100            | 107.4          | 109.3             | 111.3             | 108.8                     | 109.7                     | 110.6                     | 111.9                     |

1 – Forecast of the GCEE. 2 – Including non-profit institutions serving households. 3 – Including military weapon systems. 4 – Compensation of employees minus social contributions of employers and employees and income tax of employees. 5 – Savings relative to disposable income. 6 – Compensation of employees per working hour (employee concept) in relation to real GDP per working hour (employed person concept). 7 – Compensation of employees per working hour (employee concept) in relation to nominal GDP per working hour (employed person concept).

Sources: Federal Employment Agency, Federal Statistical Office, own calculations

## Key figures of the national accounts

Change on the previous year in %

| 2017  | 2017 <sup>1</sup> | 2018 <sup>1</sup> | 2017 <sup>1</sup>         |                           | 2018 <sup>1</sup>         |                           |  |
|---|-------------------|-------------------|---------------------------|---------------------------|---------------------------|---------------------------|--|
|   |                   |                   | 1 <sup>st</sup> half-year | 2 <sup>nd</sup> half-year | 1 <sup>st</sup> half-year | 2 <sup>nd</sup> half-year |  |
| <b>Use of domestic product</b>                  |                   |                   |                           |                           |                           |                           |  |
| <b>at current prices</b>                        |                   |                   |                           |                           |                           |                           |  |
| 3.3   | 3.7               | 3.7               | 3.5                       | 3.9                       | 3.7                       | 3.7                       | Final consumption expenditure                        |
| 2.7   | 3.6               | 3.7               | 3.5                       | 3.8                       | 3.6                       | 3.7                       | Private consumption <sup>2</sup>                     |
| 4.8   | 3.8               | 3.8               | 3.6                       | 4.1                       | 3.9                       | 3.6                       | Government consumption                               |
| 4.3   | 5.6               | 6.0               | 4.8                       | 6.2                       | 6.0                       | 6.0                       | Gross fixed capital formation                        |
| 2.5   | 2.5               | 5.3               | 1.5                       | 3.5                       | 5.0                       | 5.5                       | Investment in machinery & equipment <sup>3</sup>     |
| 4.6   | 7.7               | 6.4               | 7.1                       | 8.2                       | 6.5                       | 6.3                       | Construction investment                              |
| 6.4   | 5.4               | 6.2               | 4.9                       | 5.9                       | 6.3                       | 6.2                       | Other products                                       |
| 3.3   | 4.2               | 4.4               | 4.0                       | 4.3                       | 4.5                       | 4.3                       | Domestic demand                                      |
| 1.6   | 5.4               | 4.9               | 5.8                       | 5.0                       | 4.7                       | 5.1                       | Exports of goods and services                        |
| 1.4   | 7.1               | 5.0               | 8.4                       | 5.9                       | 4.5                       | 5.5                       | Imports of goods and services                        |
| <b>3.3</b>                                      | <b>3.6</b>        | <b>4.4</b>        | <b>3.2</b>                | <b>4.1</b>                | <b>4.6</b>                | <b>4.2</b>                | <b>Gross domestic product</b>                        |
| <b>Chained volumes</b>                          |                   |                   |                           |                           |                           |                           |  |
| 2.5   | 1.8               | 1.8               | 1.7                       | 2.0                       | 1.9                       | 1.7                       | Final consumption expenditure                        |
| 2.1   | 1.9               | 1.8               | 1.7                       | 2.1                       | 1.9                       | 1.7                       | Private consumption <sup>2</sup>                     |
| 3.7   | 1.7               | 1.8               | 1.6                       | 1.9                       | 2.0                       | 1.7                       | Government consumption                               |
| 3.1   | 3.6               | 3.8               | 3.1                       | 4.1                       | 3.8                       | 3.8                       | Gross fixed capital formation                        |
| 2.2   | 2.3               | 5.1               | 1.2                       | 3.4                       | 4.9                       | 5.3                       | Investment in machinery & equipment <sup>3</sup>     |
| 2.7   | 4.3               | 2.6               | 4.1                       | 4.4                       | 2.7                       | 2.5                       | Construction investment                              |
| 5.5   | 4.2               | 4.9               | 3.7                       | 4.7                       | 5.0                       | 4.9                       | Other products                                       |
| 2.4   | 2.2               | 2.3               | 2.1                       | 2.2                       | 2.4                       | 2.2                       | Domestic demand                                      |
| 2.6   | 3.8               | 4.5               | 3.9                       | 3.7                       | 4.5                       | 4.5                       | Exports of goods and services                        |
| 3.9   | 4.6               | 5.3               | 4.6                       | 4.6                       | 5.5                       | 5.1                       | Imports of goods and services                        |
| <b>1.9</b>                                      | <b>2.0</b>        | <b>2.2</b>        | <b>2.0</b>                | <b>2.0</b>                | <b>2.2</b>                | <b>2.2</b>                | <b>Gross domestic product</b>                        |
| <b>Price Development (deflators)</b>            |                   |                   |                           |                           |                           |                           |  |
| 0.7   | 1.8               | 1.9               | 1.8                       | 1.8                       | 1.3                       | 2.0                       | Final consumption expenditure                        |
| 0.6   | 1.7               | 1.8               | 1.7                       | 1.7                       | 1.7                       | 2.0                       | Private consumption <sup>2</sup>                     |
| 1.1   | 2.1               | 1.9               | 2.0                       | 2.1                       | 1.9                       | 1.9                       | Government consumption                               |
| 1.2   | 1.9               | 2.1               | 1.7                       | 2.0                       | 2.1                       | 2.1                       | Gross fixed capital formation                        |
| 0.4   | 0.2               | 0.2               | 0.3                       | 0.1                       | 0.1                       | 0.2                       | Investment in machinery & equipment <sup>3</sup>     |
| 1.9   | 3.3               | 3.7               | 2.9                       | 3.6                       | 3.7                       | 3.7                       | Construction investment                              |
| 0.8   | 1.2               | 1.2               | 1.2                       | 1.2                       | 1.2                       | 1.2                       | Other products                                       |
| 0.9   | 2.0               | 2.0               | 1.9                       | 2.1                       | 2.0                       | 2.1                       | Domestic demand                                      |
| 1.5   | - 0.8             | 0.7               | - 1.7                     | 0.1                       | 1.2                       | 0.2                       | Terms of Trade                                       |
| - 1.0   | 1.6               | 0.4               | 1.9                       | 1.3                       | 0.2                       | 0.6                       | Exports of goods and services                        |
| - 2.5   | 2.4               | - 0.3             | 3.7                       | 1.3                       | - 0.9                     | 0.4                       | Imports of goods and services                        |
| <b>1.3</b>                                      | <b>1.6</b>        | <b>2.2</b>        | <b>1.2</b>                | <b>2.0</b>                | <b>2.3</b>                | <b>2.0</b>                | <b>Gross domestic product</b>                        |
| <b>Production of domestic product</b>           |                   |                   |                           |                           |                           |                           |  |
| 1.3   | 1.5               | 1.2               | 1.5                       | 1.5                       | 1.4                       | 0.9                       | Employed persons (domestic)                          |
| 0.6   | 1.1               | 1.0               | 1.4                       | 1.1                       | 1.3                       | 1.2                       | Labour volume  |
| 1.3   | 0.9               | 1.2               | 0.6                       | 1.2                       | 1.2                       | 1.1                       | Labour productivity (per hour)                       |
| <b>Distribution of net national income</b>      |                   |                   |                           |                           |                           |                           |  |
| 3.2   | 3.7               | 4.4               | 3.2                       | 4.2                       | 4.6                       | 4.2                       | Net national income                                  |
| 3.8   | 4.2               | 4.3               | 4.3                       | 4.1                       | 4.3                       | 4.3                       | Compensation of employees                            |
| 4.0   | 4.3               | 4.3               | 4.4                       | 4.1                       | 4.3                       | 4.4                       | Gross wages and salaries                             |
| among them: net wages and salaries <sup>4</sup> |                   |                   |                           |                           |                           |                           |  |
| 3.9   | 4.0               | 4.3               | 4.1                       | 3.9                       | 4.0                       | 4.6                       | property and entrepreneurial income                  |
| 2.1   | 2.6               | 4.7               | 0.9                       | 4.3                       | 5.4                       | 3.9                       | Disposable income of private households <sup>2</sup> |
| 2.9   | 3.8               | 3.7               | 3.7                       | 3.8                       | 3.4                       | 4.0                       | Savings rate of private households <sup>2,5</sup>    |
| For information purposes:                       |                   |                   |                           |                           |                           |                           |  |
| 1.6   | 1.8               | 1.8               | 1.8                       | 1.7                       | 1.6                       | 1.7                       | nominal unit labour costs <sup>6</sup>               |
| 0.2   | 0.2               | - 0.4             | 0.6                       | - 0.3                     | - 0.7                     | - 0.4                     | real unit labour costs <sup>7</sup>                  |
| 0.5   | 1.7               | 1.8               | 1.8                       | 1.7                       | 1.7                       | 2.0                       | Consumer prices                                      |

1 – Forecast of the GCEE. 2 – Including non-profit institutions serving households. 3 – Including military weapon systems. 4 – Compensation of employees minus social contributions of employers and employees and income tax of employees. 5 – Savings relative to disposable income. 6 – Compensation of employees per working hour (employee concept) in relation to real GDP per working hour (employed person concept). 7 – Compensation of employees per working hour (employee concept) in relation to nominal GDP per working hour (employed person concept).

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