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Economic structures 20 years into the euro

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Abstract

Well-functioning economic structures are key for resilient and prospering euro area economies. The global financial and sovereign debt crises exposed the limited resilience of the euro area's economic structures. Economic growth was masking underlying weaknesses in several euro area countries. With the inception of the crises, significant efforts have been undertaken by Member States individually and collectively to strengthen resilience of economic structures and the smooth functioning of the euro area. National fiscal policies were consolidated to keep the increase in government debt contained and structural reform momentum increased notably in the second decade, particularly in those countries most hit by the crisis. The strengthened national economic structures were supported by a reformed EU crisis and economic governance framework. However, overall economic structures in euro area countries are still not fully commensurate with the requirements of a monetary union. Moreover, remaining challenges, such as population ageing, low productivity and the implications of digitalisation, will need to be addressed to increase economic resilience and long-term growth.

Keywords: economic structures, euro area, resilience, growth.

JEL codes: E31, E32, E60, E62, F10, J11, O43.

Executive summary

Well-functioning economic structures are key for resilient and prospering euro area economies. In this paper, economic structures are understood as the key set of framework conditions, structures of production and consumption (including prices), and sectoral regulations and policies that determine the incentives of economic actors to invest, consume and trade within and across borders. This paper focuses on structural policies aimed at addressing prevailing rigidities in economic structures more generally, and product and labour markets in particular, as well as the achievement of convergence in growth and inflation dynamics, and the prudence of fiscal policies. As already noted in the ECB Monthly Bulletin published on the tenth anniversary of the euro and detailed further in this paper, sound structural and fiscal policies are crucial for overall macroeconomic stability, including price stability, as well as for good performance at country level in terms of high employment and output growth, low natural unemployment and convergence across euro area economies.

Smooth real economic trends and sound economic policies also facilitate monetary policy and its transmission. Well-designed structural policies that aim to address economic rigidities have the potential to strengthen economic resilience to shocks and economic convergence among Member States. Both aspects are not only important for macroeconomic stability and higher living standards but also bring the euro area closer to the requirements of an optimal currency area, thus improving the transmission of monetary policy (see Masuch et al., 2018 for more details).

The global financial and sovereign debt crises exposed the limited resilience of the euro area's economic structures right after its tenth anniversary in 2008. Real GDP growth had masked underlying weaknesses in several euro area countries up until that time, including a structural decline in productivity growth. This was widely overlooked before 2008 with observers often attributing stronger economic growth by countries with lower per capita income than the euro area on average as a natural development. However, instead of building buffers, fiscal policies were often pro-cyclical and expansionary during the good economic times. At the same time, governments made only limited effort to implement growth-enhancing structural policies during those years. While inflation for the euro area was close to 2% on average, a significant inflation differential among Member States persisted. Those inflation differentials mirrored divergences in cost competitiveness, often fuelled by prevailing rigidities in economic structures that led to a misallocation of resources. With the start of the crisis, those weaknesses became clearly exposed. Real GDP growth declined significantly, in particular through a compression of domestic demand, triggered in turn by deleveraging needs of firms, households and the public sector in many euro area economies.

With the start of the crises, national and EU policies implemented measures to strengthen resilience and the smooth functioning of the euro area. National fiscal policies were consolidated to contain the increase in government debt. At the same time, structural reform momentum increased somewhat in the second decade,

although this was largely confined to those countries that underwent a macroeconomic adjustment programme. The strengthened national economic structures were supported by a reformed EU crisis and economic governance framework, including measures to deepen the banking union. Overall, those actions taken at national and EU level strengthened the euro area's resilience to shocks.

This notwithstanding, challenges remain that require further improvements to economic structures in the euro area, in order to raise growth prospects and strengthen resilience. Such challenges regarding economic structures include, among others,

- **…increasing adaptability in labour and product markets as well as framework conditions for doing business.** Reform efforts to improve euro area countries' economic structures have stalled again in recent years, despite a significant distance to best practice economic structures in many Member States. Initiatives at the EU level to strengthen economic policy coordination could help this process.
- **…reviving GDP per capita convergence among Member States.** Several countries did indeed manage to begin the process of catching up in the first decade. However, they experienced divergence in the last ten years, markedly affected by the adjustment needs of their economies. Sustainable real convergence would in turn then also support further convergence of inflation levels among euro area countries.
- **…increasing productivity growth to strengthen euro area growth prospects.** While weaker productivity is a trend that has also been seen in other advanced economies, the decrease is particularly pronounced for euro area countries. In particular, better diffusion of productivity growth across firms remains essential.
- **…reducing the overall high public debt burden.** Favourable cyclical conditions should be used to build fiscal buffers, in particular in countries with already high public debt levels. Overall, prudent and growth-friendly fiscal policies are needed going forward, in order to increase the sustainability of public finances and support economic growth.
- **…preparing for the projected population ageing.** The demographic projections for the next decades reveal a significant ageing of the EU's population. This will not only reduce labour supply, among other things, but will also increase age-related expenditures, placing a substantial burden on public finances.
- **…managing the impact of digitalisation.** The trend of digitalisation started decades ago but is increasingly gaining pace. Digital transformation is ongoing and will affect macroeconomic aggregates across economic structures through different channels (such as competition, productivity and employment). Against the changing nature of digitalisation, its impact, including on employment but also on price developments, will need to be carefully monitored.

1 Introduction

Well-functioning economic structures are key for resilient and prospering euro area economies. On the occasion of the tenth anniversary of the common currency in 2008 the ECB Monthly Bulletin stressed this point. In this paper, economic structures are understood as the key set of framework conditions with respect to activity and prices as well as sectoral regulations and policies that determine the incentives of economic actors to invest, consume and trade within and across borders. Sound structural policies[1] and fiscal policies are crucial for overall macroeconomic stability as well as good performance in terms of high employment and output growth, low natural unemployment and convergence across euro area economies. Cross-country cost and inflation differentials, which are due to inappropriate wage developments as well as structural rigidities and public sector inefficiencies, could cause losses in competitiveness and have an adverse impact on employment and output growth.

Smooth real economic trends and sound economic policies also facilitate monetary policy and its transmission. Well-designed structural policies that aim to address economic rigidities have the potential to strengthen economic resilience to shocks and economic convergence among Member States. Both aspects are not only important for macroeconomic stability and higher living standards, but also bring the euro area closer to the requirements of an optimal currency area, thus improving the transmission of monetary policy.[2]

The global financial and sovereign debt crises exposed the limited resilience of the euro area's economic structures right after its tenth anniversary in 2008. Economic developments during the first decade masked several underlying weaknesses in euro area economic structures. The first decade of the euro was marked by buoyant economic activity. However, real GDP growth was not always sustainable. Domestic demand was supported by fiscal policies that did not build sufficient buffers during the upswing, by buoyant construction investment in many countries that was fuelled by dramatically increasing property prices, and by high private consumption growth. At the same time, real GDP growth gradually came to be less supported by productivity growth, which continuously declined. Akin to the rather accommodative fiscal policies during those years, Member States' governments made only minimal effort to implement growth-enhancing structural policies. Significant cross-country heterogeneity existed, for example in relation to sector-specific regulations and framework conditions before the onset of the crisis. Countries with relatively weaker structures and framework conditions (as well as high public debt) on average experienced lower long-term cumulated growth and employment in the aftermath of the crisis. While inflation for the euro area was close to 2% on average, significant inflation differentials among Member States persisted. Those inflation

1 This paper focuses on various dimensions of economic structures, but does not focus on economic policies, which are only touched upon to some extent in Chapters 4 and 5. For a more detailed review, see Masuch et al (2018), "Structural policies in the euro area", ECB Occasional Paper, No 210.

2 For a review of the relation of structural policies for monetary policy, see Masuch et al (2018), pp. 11-12.

differentials mirrored divergences in cost competitiveness. Several euro area countries accumulated unit labour cost increases (i.e. annual wage growth significantly above productivity increases) above that seen for the euro area on average. Others, by contrast, experienced very low unit labour cost increases. Those differentials were fuelled by prevailing rigidities in economic structures that led to a misallocation of resources.

With the start of the crises, significant efforts have been undertaken by Member States individually and jointly to strengthen resilience and increase the smooth functioning of the euro area. National fiscal policies were determined by consolidation efforts in many euro area countries, in order to keep the increase in government debt contained. Fiscal-structural measures were undertaken to increase the growth friendliness of fiscal policies and support economic growth. Moreover, the structural reform momentum increased notably in the second decade, particularly in those countries most hit by the crisis. The strengthened national economic structures were supported by a reformed EU crisis and economic governance framework. The six- and two-pack regulations[3] strengthened fiscal and macroeconomic surveillance, the European Financial Stability Facility (EFSF) and the European Stability Mechanism (ESM) were created were created to improve crisis management capabilities and the Single Supervisory Mechanism (SSM) and the Single Resolution Mechanism (SRM) were founded with a view to better supervising the banking system and enhance the banking union. Overall, those measures taken at national and EU level strengthened the euro area's resilience to shocks.

Economic growth in the second decade of the euro was determined by the recovery from the crises. Consolidation efforts decreased fiscal policies' contributions to growth. At the same time, households and firms in many countries started a process of deleveraging, weighing on consumption and investment. This process of adjustment in economic activity also impacted inflation in the second decade, which fell to significantly below 2%. Inflation was impacted by lower services inflation. This was due, among other things, to the more subdued wage growth during and after the crises.

Despite the progress, challenges for euro area economic structures remain, which are likely to weigh on growth and resilience going forward and which require policy efforts individually in Member States and jointly at euro area level.

Labour and product markets as well as framework conditions for doing business still lack the adaptability that is required for countries in a monetary union. Rigidities in those economic structures, which facilitated the misallocation of resources prior to the crisis, continue to persist in many euro area countries and reform efforts have stalled in recent years. Moreover, despite the strengthened EU governance framework, further deepening EMU could better facilitate the necessary improvements in national economic structures.

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[3] For more details on the six-pack see "Stronger EU economic governance framework comes into force", *Monthly Bulletin*, ECB, December 2011. For the two-pack, please refer to "The "two-pack" regulations to strengthen economic governance in the euro area", *Monthly Bulletin*, ECB, April 2013.

More efficient economic structures would also help revive GDP per capita convergence for Member States further away from the euro area average. Several countries did indeed manage to begin the process of catching up in the first decade. However, in several cases vulnerabilities persisted, resulting in periods of sharp economic downturns, markedly affected by the adjustment of their economies in the wake of the financial crisis. More recently, some countries have managed to resume the catching up process while others have continued diverging. At the same time, some of the newer Member States have successfully begun the process of catching up to the euro average that seems to be driven by sustainable growth above that of their euro area peers.

Reversing the trend of declining productivity would be essential to strengthen euro area growth prospects. While weaker productivity is a trend that has also been seen in other advanced economies, the decrease is particularly pronounced for euro area countries. Among other things, the lower absorption of information and communication technology compared to the United States is often mentioned as a significant driver of lower productivity growth. In addition, a widening dispersion in productivity performance across firms also seems to weigh on average productivity growth. Frontier firms across advanced economies, including the euro area, have been enjoying strong productivity gains, but laggards have been more or less stagnant since the early 2000s, highlighting the notion that diffusion of innovations may be hindered, but not the production of innovation itself.

Fiscal policies will need to become more growth friendly, not least given the high public debt levels in many Member States. Learning from the experience of the crisis suggests using the times of favourable cyclical conditions to build fiscal buffers, in particular in countries with already high public debt levels. Overall, prudent and growth-friendly fiscal policies are needed going forward, in order to increase the sustainability of public finances and support economic growth.

Population ageing is expected to reduce labour supply and thus potential growth, while at the same time increasing the burden for fiscal policies. On a positive note, participation increased during the last decades and became more balanced, with increasing participation by females and older workers. However, the demographic projections for the next decades reveal a significant ageing of the EU's population. In particular, the working-age population will decrease significantly by 2070, thereby potentially shrinking the labour force. Age-related expenditure can be expected to substantially burden public finances even further. Thus, to ensure fiscal sustainability in the long run further reforms of social security systems are necessary, mainly in the area of pensions, which is the largest area of age-related spending.

Significant evolution in digitalisation started to impact euro area economic structures. The trend of digitalisation started decades ago but is increasingly gaining pace. Digital transformation is ongoing and will affect macroeconomic aggregates across economic structures through different channels (such as competition, productivity and employment). Against the changing nature of digitalisation, its impact, including on employment but also on price developments, will need to be carefully monitored. What is already evident is that since the start of the euro the share of

electronic sales to consumers and businesses in total turnover has increased substantially in most euro area countries.

2 Real economy

Economic structures have a significant bearing on productivity and real GDP growth. This chapter reviews the main trends of economic growth among Member States from 1999 until 2018. For this, growth is broken down into demand and sectoral contributions. Moreover, the degree of per capita income convergence and business cycle synchronisation across Member States is analysed. To the extent that economic cycles play an important role in influencing price determination, having more synchronised and similar business cycles also facilitates the implementation of a common monetary policy. In addition, the chapter reviews structural changes that affected productivity growth and the scope for advancing productivity growth going forward.

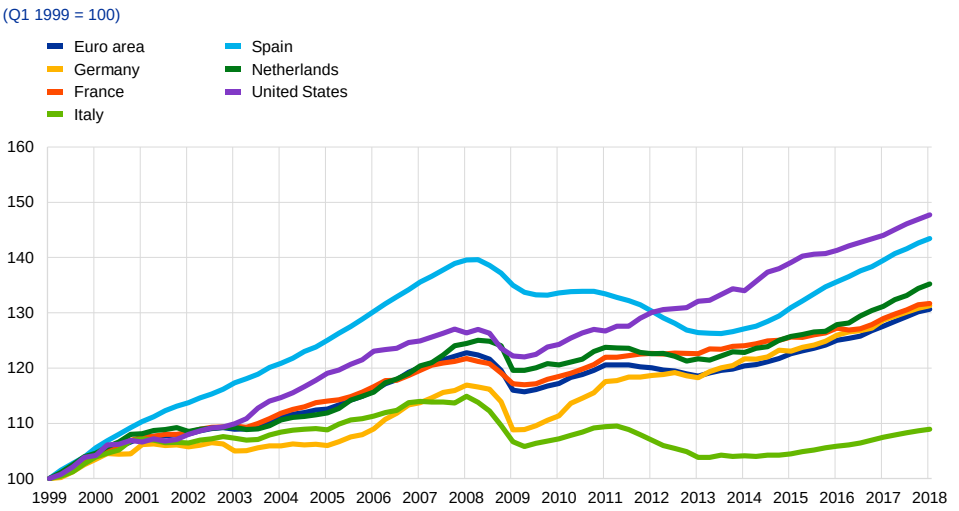
2.1 Euro area business cycles since 1999

In its first twenty years the euro area experienced an exceptionally long economic expansion and two recessions. The long period of economic expansion started even before the inception of EMU in 1993 and lasted until Q4 2007. The recessions lasted from Q1 2008 until Q2 2009, the global financial crisis, and from Q3 2011-Q1 2013, the sovereign-debt crisis.[4] These major cyclical episodes have determined the average statistics over the last 20 years.[5] During the last 20 years, real GDP in the euro area grew on average by 1.6% per year, which is relatively lower than the United States (2.5%, see Chart 1). However, before the financial crisis (1999-2007), real GDP in the euro area grew by 2.5% per year on average, compared to 1.9% over the same time span in the years that preceded stage 3 of EMU (1990-1998) and somewhat lower than the average growth in the United States (3.0%). In contrast, over the period 2008-18 annual growth averaged a mere 0.6%, given the noticeable impact of the crisis. The United States experienced average growth nearly three times as high with average annual GDP growth of 1.7%. In terms of volatility, the standard deviation of real GDP growth in the euro area during the euro period (1.9%) is clearly above the pre-euro period (1.3%), yet only slightly higher than in the United States (1.7%). The fluctuation is largely explained by the financial and sovereign debt crises. When considering only the pre-crisis years (1999-2007), the volatility is significantly lower (1.1%). This stylised fact is also observed in the United States and is related to the absence of severe shocks during this period (referred to as the “Great Moderation”).

4 The two consecutive recessions in the euro area can be considered as a double dip recession with an anaemic interceding recovery. The chronology of expansions and recessions in the euro area is from the CEPR Euro Area Business Cycle Dating Committee.

5 See for example the work by Stracca (2018) presented at the conference entitled “The Euro at 20” organised by the IMF and the Central Bank of Ireland.

Chart 1
Real GDP



Sources: Eurostat and Bureau of Economic Analysis (BEA).
Note: Latest observation corresponds to the first quarter of 2018.

Growth has been rather heterogeneous among the five largest euro area countries. Since the creation of the euro Spain grew most strongly (2.3% average annual growth), followed by the Netherlands (1.9%), and France and Germany (both 1.6%). In contrast, Italy has been growing by only 0.5% on average per year. The business cycle in all five countries is characterised by positive growth in the pre-crisis period and a double-dip recession. The first recession was the global financial crisis, while the second was the euro area sovereign debt crisis that reflected unsustainable economic and fiscal policies[6] in a number of (smaller) Member States. The severity of the crisis and the subsequent recovery varied substantially across countries. The euro area aggregate output loss was 3.4%, with Germany and France having been only marginally affected by the sovereign debt crisis. By contrast, Spain and Italy experienced the most severe loss in output during the crises periods of the five large countries, with a total output loss of 9.6%. Spanish economic growth before the crisis was characterised by a significant construction boom (see also the discussion on house price developments in Chapter 3.1). Supported by an EU financial assistance programme, Spain returned to strong growth rates as early as 2015. Italy, by contrast, was already experiencing anaemic growth before the crisis and has still not recovered its pre-crisis level of output, reflecting a problem of structurally low growth.

Real GDP per capita convergence towards the euro area average has been very heterogeneous. As analysed in great detail in a dedicated ECB Occasional Paper (Diaz del Hoyo et al., 2017), there is mixed evidence that lower-income economies have been catching up with higher-income economies (as measures in real GDP per capita) since the start of monetary union. Chart 2 shows that some countries have even diverged further since 1999. This is particularly the case for Italy. The divergence

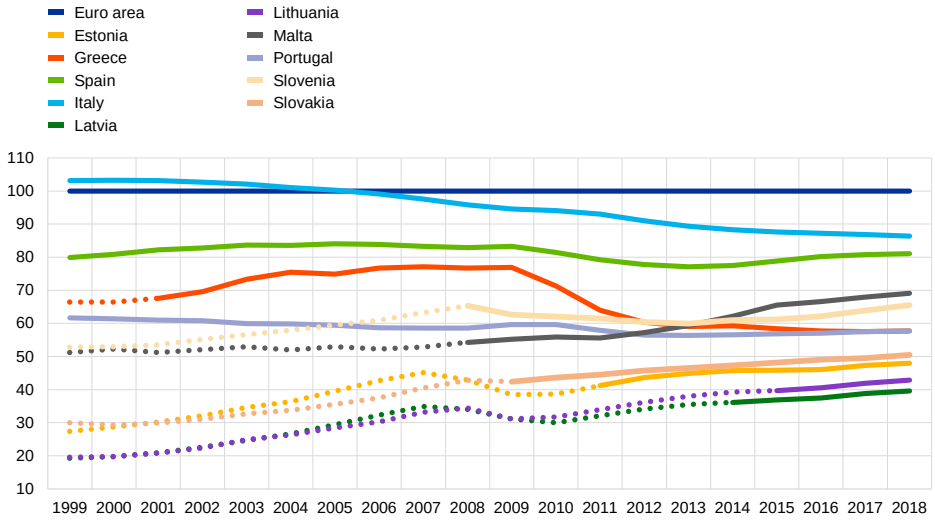
6 For more detail on the build-up and adjustment of macroeconomic imbalances in euro area countries, see Pierluigi and Sondermann (2018), "Macroeconomic Imbalances in the euro area: where do we stand?", ECB Occasional Paper, No 211 . For fiscal imbalances, see Chapter 6 of this paper.

is caused by the structurally lower economic (and in particular productivity) growth mentioned above. Other countries that started with a significant distance to the euro area average twenty years ago – in particular Portugal and Greece, but also Spain – have on balance not been able to close the gap considerably. By contrast, other euro area countries have experienced income convergence. These include countries with levels of real GDP per capita in 1999 far below the euro area average (20%-30%), particularly the Baltic countries (Estonia, Latvia and Lithuania) and Slovakia, as well as Malta and Slovenia. In these countries, GDP per capita is now on average 20 percentage points higher than in 1999, yet in the Baltic countries and Slovakia it remains below 50% of the euro area average.

Chart 2

Income convergence in the euro area

(real GDP per capita in relation to the euro area average (100))



Source: European Commission.

The cross-country correlations of real GDP growth among euro area countries are stronger than the correlation between the euro area and the United States and have increased since the inception of the euro. Growth synchronisation can be assessed for individual countries in terms of the correlation with the euro area aggregate (Table 1).[7] The correlation with the United States is also used as a proxy for global factors that could have contributed to synchronisation. According to this measure, euro area countries' growth is strongly correlated with the euro area aggregate (excluding the country in question) over the euro period – with Spain being the only country where this correlation is below 50%. However, the observed degree of synchronisation does not appear to be very different from the one between the euro area as a whole and the United States – which would be anticipated for countries that are part of a monetary union. This empirical fact appears to be heavily influenced by the crisis, which contributed to increased synchronisation across all advanced

[7] The correlation of each country is calculated against a euro area aggregate that excludes the country itself.

economies in its aftermath.[8] Indeed, synchronisation between each of the five big euro area countries and the euro area aggregate (excluding the corresponding country) is substantially higher than the US-euro area synchronisation in the first part of the sample (1999-2007, except for Spain). Further, compared to the 20 years preceding the euro (1979-1998), synchronisation increased markedly after the inception of the euro in Italy and to a lesser extent in Spain and the Netherlands (not shown). A clearer picture arises regarding the cyclical synchronisation among the major euro area countries (Table 2). Each country's GDP growth is much less correlated with the United States than with the other major euro area countries, and the degree of cross-country GDP growth synchronisation is higher over the euro period than over the 20 years preceding the common currency. Therefore, the creation of the common currency appears to have contributed to a higher degree of synchronisation.[9]

Table 1

GDP growth correlations with euro area GDP growth

	Germany	France	Italy	Spain	Netherlands	United States – euro area
1999-2007	0.55	0.50	0.50	0.35	0.59	0.29
2008-2018	0.57	0.68	0.69	0.49	0.68	0.57
EMU period	0.56	0.57	0.59	0.36	0.63	0.53

Sources: ECB calculations based on real GDP data from Eurostat and Bureau of Economic Analysis (BEA).
Note: The correlations of each one of the five big euro area countries with the euro area are calculated using the euro area GDP excluding that particular country.

Table 2

GDP growth correlations – euro period (1999-2018)

	Germany	France	Italy	Spain	Netherlands
Germany	-				
France	0.72	-			
Italy	0.72	0.80	-		
Spain	0.41	0.61	0.71	-	
Netherlands	0.69	0.70	0.72	0.64	-
United States	0.39	0.55	0.49	0.43	0.46

Source: ECB calculations.

For the period ahead it is likely that synchronisation across euro area countries could increase further. Policies that are going to shape the euro area (e.g. deepening EMU, including the banking union and the common resolution mechanism) could contribute to higher synchronisation of business cycles. Moreover, global factors, such as increased importance of global value chains, will also support this trend (as shown in more detail in Chapter 7). Lastly, technological and other

8 Perri and Quadrini (2018) show that the degree of business cycle synchronisation across advanced countries increased dramatically in the aftermath of the financial crisis.

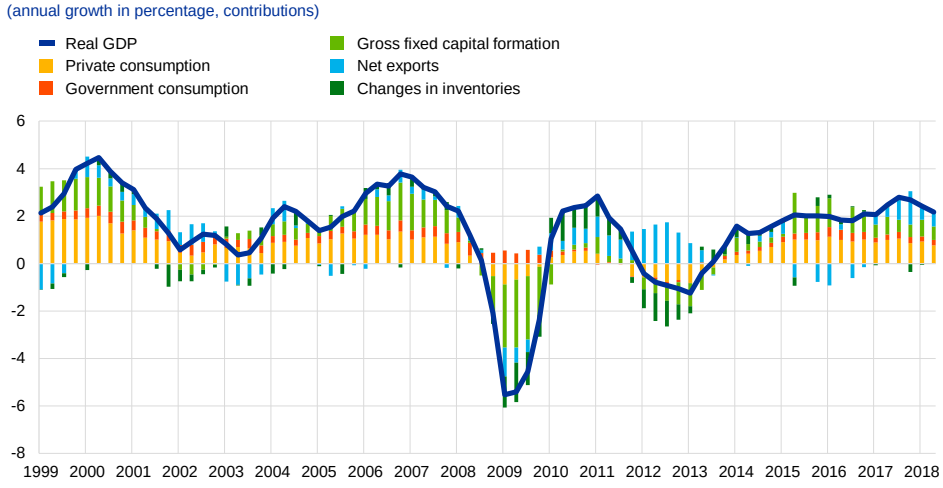
9 Campos et al. (2017) find an increase in business cycle synchronisation in Europe due to the introduction of the euro. De Grauwe and Ji (2016) also document a high correlation of the business cycle of euro area countries over 1995-2014 using HP-filter techniques. On the other hand, Giannone et al. (2010) do not find any significant change in the euro area business cycles following the introduction of the euro insofar that there has not been a convergence in real GDP per capita (in PPP terms) across the euro area countries.

innovations also affect the euro area economy and its citizens, as they do in other countries. The digital economy and investment in intangibles are gaining pace and it remains to be seen what the impact will be on growth, on the business cycle and on long-term productivity of factor input. These features will be discussed further in the next section on the evolution of euro area productivity.

As regards the demand components of GDP, during the last 20 years private consumption has been the main driver of real GDP growth in the euro area. Private consumption has been quite buoyant during periods of economic recovery and expansion but also relatively robust during recessions (Chart 3). By contrast, gross fixed capital formation (GFCF), which is the demand component most sensitive to cyclical conditions, declined sharply during the financial and sovereign debt crises, especially investment in residential and non-residential construction and machinery and equipment. Net exports contributed positively to growth in the aftermath of the financial crisis, but on average its contribution has been almost neutral.[10] Beyond growth contributions, the statistical features of GDP demand components over the euro period share the salient features of business cycles. Domestic demand components are strongly contemporaneously correlated with GDP growth, especially private consumption and investment. However, strong counter-cyclicality in government consumption was observed since the onset of the financial crisis (see Chapter 6 for more details). Looking at volatility, private consumption has been less volatile, while investment has been 2-3 times more volatile than overall economic output developments. Overall, these statistical properties of GDP demand components are in line with what could be expected from theory and business cycle stylised facts.[11]

Chart 3

Real GDP and demand components in the euro area



Source: Eurostat.

[10] However, some parts of the imports in any country serve domestic demand (in particular domestic private sector investment). Netting all demand components of their import content, it would become clear that exports have in fact overall contributed to euro area GDP over time.

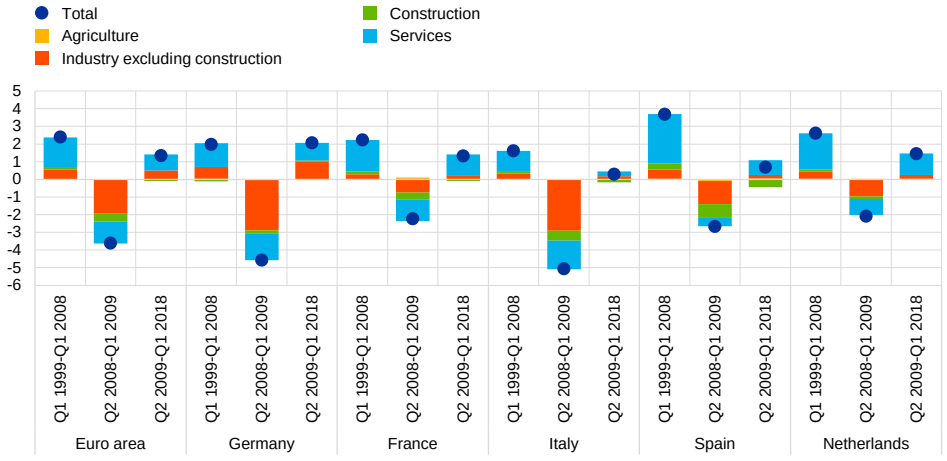
[11] See for example Chapter 1 in S. Schmitt-Grohé and M. Uribe, “Open Economy Macroeconomics”, Princeton University Press, 2017.

In terms of sectoral developments, the services sector has been the most important contributor to growth in value added in the euro area. Over the last 20 years on average, service sector contributions to value added have exceeded those stemming from industry (excluding construction), although there is a significant difference among countries (Chart 4). Construction and agriculture contributed little to overall value added. The contribution of the services sector to total value added growth has been, nevertheless, much lower after the financial crisis compared to before, notably affected by developments in retail and in financial and real estate services. In contrast, the contribution of industry (excluding construction) before and after the financial crisis remained largely stable. This is explained by the fact that the sharp decline experienced by value added in the industry sector during the global financial crisis, amplified by the global trade collapse, was followed by a strong recovery in the euro area and most of the euro area countries (Chart 4). Last but not least, the construction sector has been the one most severely hit by the crisis, particularly in countries like Spain and Ireland which experienced a very strong construction boom before the crisis. The impact of the subsequent adjustment during the crisis is still noticeable: on the supply side, real value added in the construction sector, and on the demand side, real residential and non-residential construction investments are still 15-20% below levels observed in 2008.

Chart 4

Value added and sectoral contributions in the euro area and the largest euro area countries

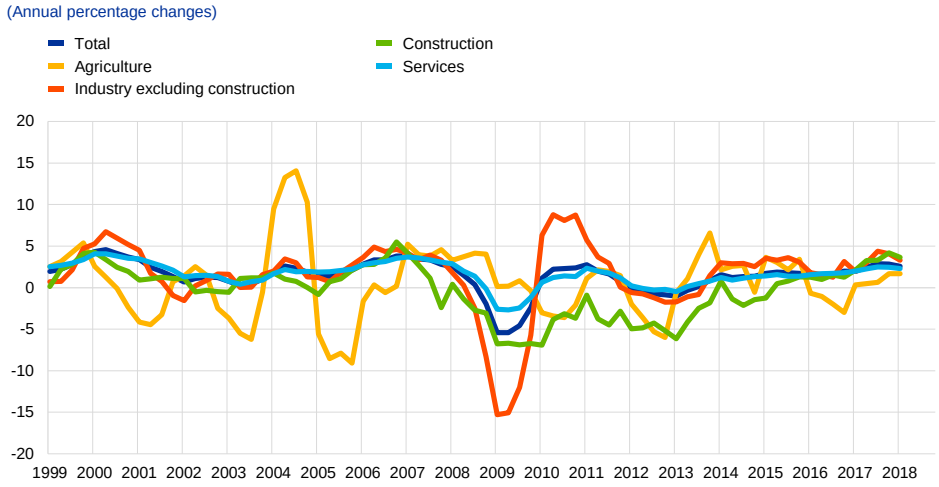
(average annual percentage change; average annual contribution in percentage)



Source: Eurostat.

Chart 5

Value added in the euro area's main sectors of activity



Source: Eurostat.
Note: The latest observation corresponds to the first quarter of 2018.

2.2 A key driver of economic growth: productivity

Growth in productivity is essential for improving living standards. In the absence of working-age population growth and in the presence of diminishing returns from factor accumulation, productivity growth is the only way to sustainably grow an economy. Productivity, however, is not traditionally considered to be a variable that monetary policy can, or should, try to affect.

Economists typically focus on two different concepts of productivity: labour productivity and total factor productivity (TFP). Labour productivity is given by the ratio of output to labour input, either in terms of employees (LPE) or aggregate hours (LPH). There has been a longstanding decline in the average hours worked per employee, which has continued since the start of monetary union, and consequently LPE will understate the improvement in the efficiency of production. LPH will be used as the measure of labour productivity from hereon in, but as this is a single-factor concept it cannot account for the intensity with which capital is utilised. TFP removes capital and labour input from total output, and hence reflects the efficiency with which resources are used in production, embodying elements such as organisational changes (related to so-called intangible investments) and spillovers from new technologies.

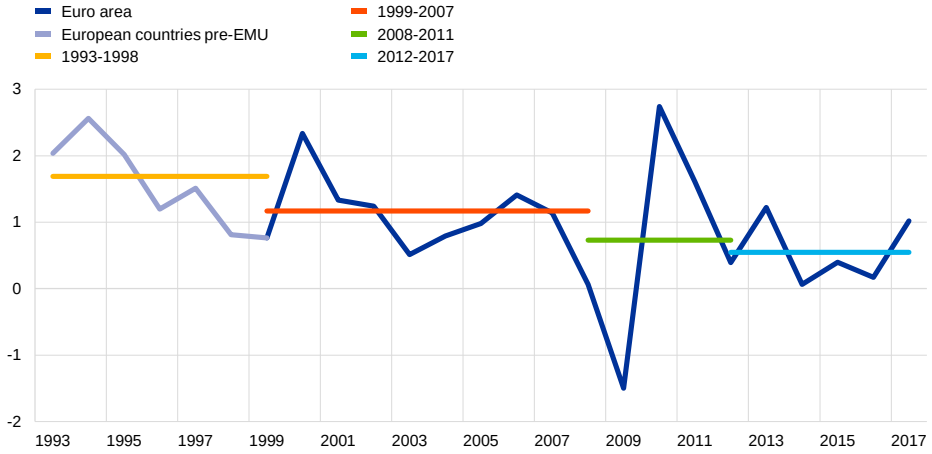
There has been a substantial reduction in productivity growth in advanced economies over the past two decades, including in the euro area. Chart 6 shows the evolution of LPH growth before the inception of the euro area since 1993. From an average of 1.7% per year in the 1993-1998 period, LPH growth slowed to around 1% in the pre-crisis years. It became quite volatile during the initial crisis years (2008-11), with an initial substantial output decline accompanied by labour hoarding followed by relatively stable output growth but with more labour shedding, before reaching a

relatively stable but low average of around 0.5% after 2012. Table 3 reports a sectoral decomposition of labour productivity growth for the 2001-15 period (based on a shift-share analysis[12]), to get a sense of the underlying source of the slowdown. Given the global nature of the slowdown, it is unsurprising that it is relatively broad-based and not driven by structural changes in the euro area economy. The 0.49pp annual loss of productivity growth since the crisis (i.e. going from an annual average of 0.85% in 2001-07 to 0.36% in 2008-15) was largely driven by lower within-sector growth (0.63pp), with a small positive contribution from compositional effects.[13]

Chart 6

Labour productivity growth, before the euro area (1993-1998) and thereafter (1999-2017)

(percentage year-on-year growth of LPH)



Sources: BdF Long-Term Productivity Database and ECB staff calculations.
Notes: The blue lines give the annual % growth of labour productivity per hour (LPH). The horizontal lines give the period averages.

Table 3

Sectoral decomposition of growth in labour productivity (real GDP per hour worked)

(percentage annual average period growth of LPH)

	1997-2000	2001-2007	2008-2015
Total	1.63	0.85	0.36
Within sector growth	1.41	0.91	0.28
Growth due to sectoral shift	0.26	-0.03	0.08
Interaction	-0.04	-0.03	0.00

Sources: EU KLEMS and ECB staff calculations.
Notes: Decomposition based on shift-share analysis of LPH growth for 13 sectors comprising the market economy. The figures for 1997-2000 come from an aggregation of AT, DE, ES, FI, FR and IT, which comprise around 86% of euro area GDP for the period.

12 A shift-share analysis breaks down the change over time of productivity growth into growth within sectors (holding sectoral share fixed) and between sectors (accounting for the fact that some sectors shrink and others grow). The interaction term, typically negligible, is positive if sectors with high productivity growth also grow in size.

13 The slowdown was already underway in the euro area by 2001, but earlier data for the whole of the euro area are not available. Looking at a subsample of countries that do have adequate data (and account for over 85% of euro area output), the pattern is almost identical for the 1996-2000 period.

Some simple growth accounting exercises can shed light on the forces behind productivity developments, at the aggregate level. Following a standard Solow-type exercise, growth in labour productivity can be broken down into the contribution of TFP, capital services per hour (capital deepening), and labour quality (LQ).[14] In turn, capital services can be split into services from ICT (information and communication technology) and non-ICT capital. The results of this breakdown are shown in Chart 7. The most significant source of slow productivity growth since the 1997-2000 period is the reduction in the contribution of TFP[15]; while it accounted for one-third of total growth during that period, its contribution fell by half in the pre-crisis era, and was on average negative thereafter. The second most important contributor to slow productivity growth has been the slowdown in the contribution of ICT capital, which has been gradually shrinking since the start of the sample, to the point that it contributed around 0.1pp every year since 2010. On the other hand, non-ICT capital (primarily buildings and non-ICT equipment) accounted on average for over 100% of total growth in the first crisis years (due to the negative TFP component) and more than half over the 2012-14 period. Finally, the labour quality component has been much more important over the past decade, almost doubling its contribution to around 0.25pp.

The falling contributions of ICT capital and TFP are more pronounced in the euro area compared to other major regions in the world. As the productivity slowdown in the euro area had preceded that of the United States by around a decade, a substantial body of research had attributed this divergence to the comparative lack of adequate ICT investment and much slower growth in TFP, especially in market services, and in particular in the business services sector (van Ark et al., 2008).[16] Business services remain a productivity laggard, declining in productivity by an average of -1.14% per year over the 2008-15 period, more than any other sector. While ICT capital can be viewed as a normal piece of equipment (Stiroh, 2002), it has been argued that ICT investments can have TFP-enhancing spillovers, or at the very least that ICT adoption is a reflection of management quality. Indeed, there is increasing evidence that European companies lag behind their American counterparts in how they utilise ICT, even when operating in the same country (Bloom et al, 2012). Overall, the falling contribution from what van Ark et al. (2008) call the knowledge economy (sum of the contributions from ICT capital, TFP, and labour quality) is key in explaining the slowdown since the early 2000s, much as it was in

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14 As Fernald et al. (2017) point out, even assuming an exogenous technology process, capital deepening is still endogenous and will react to changes in technology (reflected in changes in TFP) or changes in labour (e.g. due to ageing- or participation-related changes in hours per worker). In addition, growth accounting exercises merely quantify the source of growth, but cannot give an explanation of how this process works (Stiroh, 2002). It should therefore be stressed that the exercise here is merely meant to break down productivity growth into its constituent components, and is not meant to elicit a causal interpretation.

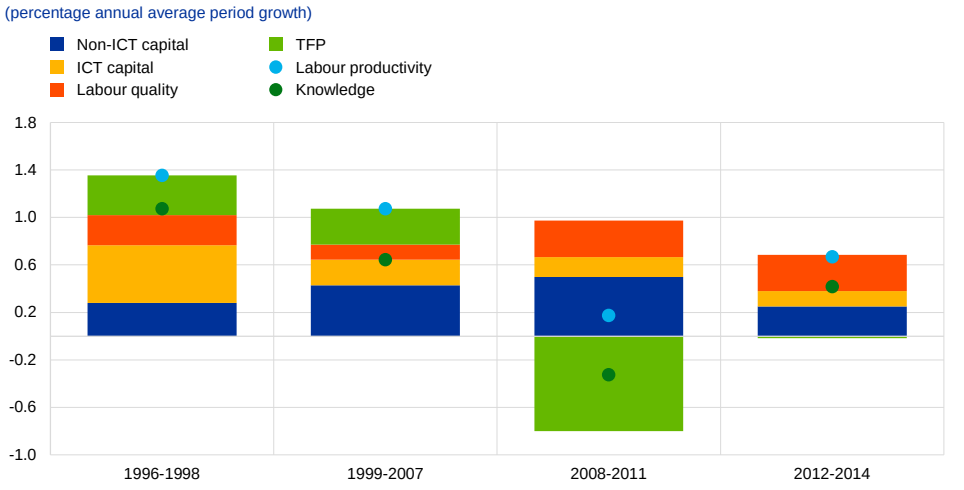
15 TFP is a residual estimate once the contribution of other factors is accounted for, and hence may be affected by the choice of production function and the datasets used. While it may be noisy for specific points in time, it is typically robust when averaged over a number of years. Here we employ data from EU KLEMS, which assume competitive factor markets, full input utilisation and constant returns to scale, and a translog production function. See O'Mahony and Timmer (2009) for a detailed discussion. The Banque de France database uses a Cobb-Douglas production function (Bergeaud et al., 2016).

16 It should be stressed that the slowdown started around the mid-1990s. As such, the 1996-2000 period was already a low-growth period relative to previous decades (and contemporaneously relative to the United States).

explaining why Europe was slowing when the United States was accelerating in the 1990s. However, other factors have also been identified in the recent literature as being the key drivers of the slowdown.

Chart 7

Contributions to labour productivity growth (per hour) before (1996-1998) and after inception of the euro area (1999-2014)



Sources: EU KLEMS and ECB staff calculations.
Notes: LPH is the sum of non-ICT and ICT capital, labour composition and TFP. The contribution to the knowledge economy is given by the sum of the latter three. Data focus on the market economy, which excludes real estate, health, education, public administration and defence. The reported euro area aggregate consists only of AT, DE, ES, FR, FI and IT, the only countries with data dating back to 1996. Including BE and NL for the period after 2000 does not change the results meaningfully. The same goes for LV, LU, SK and SI after 2008. CY, EE, GR, IE, LT, MT and PT do not have adequate growth account data.

First, a widening dispersion in productivity performance across firms seems to weigh on productivity growth. Frontier firms across advanced economies, including the euro area, have been enjoying strong productivity gains, but laggards have been more or less stagnant since the early 2000s, highlighting the notion that diffusion of innovations may be hindered, but not the production of innovation itself (Andrews et al., 2016). In this connection, even if the diffusion of innovation itself were unobstructed, the increasing complexity of the knowledge economy (requiring tacit learning-by-doing, sophisticated management, experienced workers and intangible investments) may imply that the adoption of new technologies is more difficult than before.

Second, a sustained increase in resource misallocation in the pre-crisis era may have exerted a drag on productivity growth. This resource misallocation has been particularly prevalent in southern Europe and has persisted during the recovery (Gopinath et al., 2017; Gamberoni et al., 2016). It could have contributed to the lack of a 'cleansing' effect that conventional wisdom attributes to recessions, namely that they provide opportunities for productivity-enhancing reallocation and firm-restructuring (Bartelsman et al., 2017). In this connection, there has been an increase in the number of distressed firms, which are too weak to survive in a competitive market but are being kept alive through a combination of forces (such as weak banks and inefficient insolvency regimes) and hold back the growth of healthy firms. This has been shown to have important consequences for productivity growth as it inhibits the reallocation of

resources to productive firms, an integral driver of aggregate productivity growth (Andrews and Petroulakis, 2017; Storz et al., 2017).

The measurement of productivity growth may have become more challenging with the emergence of new technologies. It should be mentioned that some commentators point out that it is puzzling to have slow productivity growth in the age of such great inventions, and argue that productivity gains from new technologies are hard to measure and hence measured productivity growth is lower than its "true" value. Syverson (2016) and Byrne et al. (2016), among others, point out that the question is not whether productivity is being mismeasured, but whether the degree of mismeasurement has changed, and second, that the value of "non-market" activities that technology has made possible (e.g. user-generated content) is too small to explain the slowdown. Brynjolfsson et al. (2018) contrast the productivity effects of artificial intelligence (AI) with those of two previous general purpose technologies (GPT), electricity and conventional IT. They show that in both these cases, substantial gains in productivity came decades after the technology had been established, with significant implementation lags relating to the need to accumulate enough new capital stock and a sufficiently trained labour force, introduce new complementary products, and introduce organisational changes. For a description of the channels through which digitalisation could impact potential growth and productivity, see also ECB (2018a).

Higher productivity growth requires structural policies that promote competition and adaptability so that resources can be put to the most efficient use. The discussion here has focused on the evolution and drivers of productivity growth from an accounting perspective. However, these drivers are the results of the actions of individuals and firms, and there is an important role for policy in shaping these incentives. As the paper will argue in greater detail in Chapter 5 on product markets, it is necessary to promote institutions that minimise market power and allow the entry of new firms. This will facilitate the diffusion of ideas in the affected sectors (by raising the gains linked to adopting innovations), or encouraging improvement in management quality. Reforms in upstream services sectors could also spill over to downstream industries, which now face a more competitive pool of buyers and hence have larger gains to be made by adopting innovations. It is also necessary to promote efficient insolvency regimes that allow the orderly restructuring of viable but stressed firms and the exit of unviable ones, together with an appropriate degree of entrepreneur protection in order to allow necessary experimentation. Similarly, as the paper will lay out more specifically in Chapter 4 on labour markets, there is a need for sufficient flexibility to allow firms to respond to demand and supply shocks so as not to hinder efficient production choices (Cette et al., 2016), while ensuring a minimum of protection for workers, coupled with strong active labour market policies, to reduce inefficient turnover that prevents workers from building up expertise and incentivises human capital investment.

3 Nominal side

Economic structures have a significant impact on the adaptability of wages and prices to business cycle fluctuations and structural changes. This chapter reviews inflation developments and their main drivers over 20 years of the common currency. It discusses the role of structural changes in consumption patterns (looking at HICP weights) and changes in distribution channels via online shopping/e-commerce. The last subsection analyses convergence and dispersion of inflation across countries and their drivers. The section does not discuss the effects of monetary policy on inflation, which is covered extensively in Hartmann and Smets (2018)[17].

Higher volatility and lower inflation rates have raised questions as to whether there have been structural changes with respect to the drivers of inflation in the euro area. This chapter will review differences in inflation developments between the first and the second decade and examine to what extent they are linked to changes in the pass-through of exchange rate developments or in the role of global factors (for example an increased direct influence of global slack on domestic inflation). In the same vein, it will discuss whether the domestic relationship between growth and inflation has changed between the two decades of the common currency.[18]

3.1 Inflation developments in the euro area

After an adjustment phase at the beginning of the euro, headline inflation fluctuated around the ECB's target of below but close to 2% over most of the period 1999-2008 (see Chart 8). This stability was achieved despite significant exogenous price shocks. These included large increases in oil prices in 1999 and 2000, as well as in 2004-06 and 2008 (see Chart 11). Furthermore, in the context of the outbreak of animal diseases in a number of euro area countries, food prices pushed headline inflation up dramatically in 2001-02.

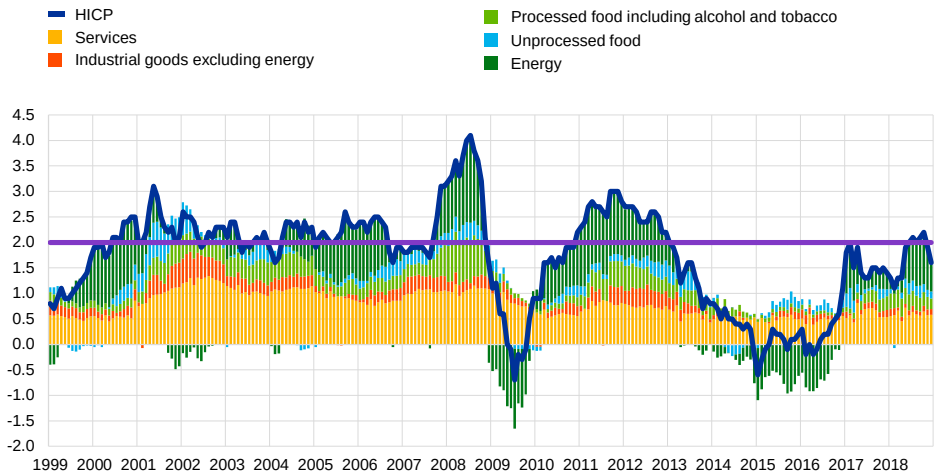
[17] See Hartmann and Smets (2018): "The first twenty years of the European Central Bank: monetary policy"; ECB Working Paper, No 2219.

[18] This section includes data up to end 2018. The HICP data presented in this section abstracts from the changes of the HICP methodology implemented in January/February 2019. See for more details https://ec.europa.eu/eurostat/documents/272892/272974/Improved_calculations_and_methods_change.pdf and https://www.ecb.europa.eu/pub/economic-bulletin/focus/2019/html/ecb.ebbox201902_05~8d798731bd.en.html .

Chart 8

HICP inflation and contributions of main items

(annual percentage changes; percentage point contributions)



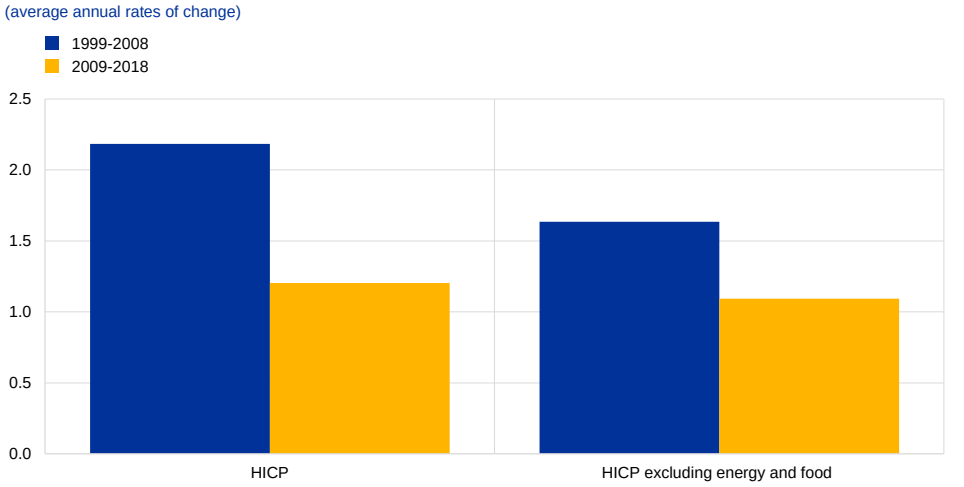
Source: Eurostat.

Developments of headline inflation became a lot more volatile in the second decade of the euro. After the start of the global financial crisis headline inflation collapsed and turned negative in the summer of 2009 – for the first time since the start of the common currency (see Chart 8). The global financial crisis was transmitted to inflation developments most directly via oil prices, which collapsed in 2008-09. Despite the great recession that followed, as well as the collapse of international trade in 2008-10 and the unfolding of the sovereign debt crisis in 2010-13, headline inflation recovered strongly and exceeded 2% over the years 2011-12, pushed up in particular by energy and food prices (see also Chart 11). Starting in 2013, however, headline inflation strongly declined and remained very low until 2016. This was on account of falling energy prices but also based on very weak underlying inflation. Since 2017, headline inflation has significantly increased again to levels closer to the ECB's target. This is on the back of higher energy inflation, while underlying inflation has recovered only very gradually.

Since the crisis both headline and underlying inflation have remained substantially below pre-crisis averages. On average, HICP headline inflation averaged 2.2% from 1999 to 2008, compared to only 1.2% from 2009 to 2018 (Chart 9). For HICP, excluding the volatile components of food and energy inflation (HICPX), a similar but less pronounced development was observable: this fell from an average of 1.6% in 1999-2008 to 1.1% from 2009-18.

Chart 9

EA inflation before and after the start of the crisis

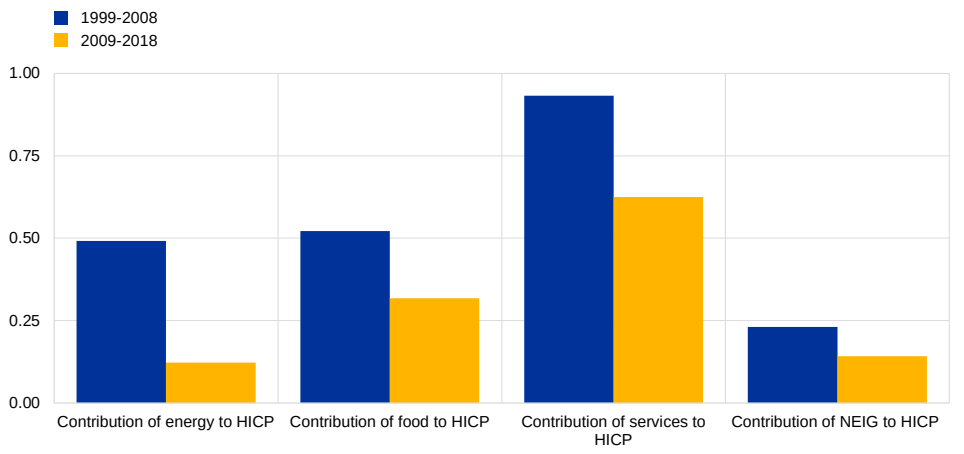


Source: Eurostat.

Around half of the lower average headline inflation is directly attributable to lower inflation rates in the volatile energy and – to a much lesser extent – food components (Chart 10). The average contribution of energy inflation decreased significantly from 0.5 pp in 1999-2008 to 0.1 pp in 2009-18. Additionally, the average contribution of food inflation, which is also strongly affected by global developments, decreased from 0.5 pp to 0.3 pp over the same time periods.

Chart 10

Contributions of main HICP items



Source: Eurostat.

Underlying inflation has been held back especially by service inflation, for which wage costs play a decisive role. For example, three-quarters of the reduction in HICPX when comparing 1999-2008 to 2009-18 was due to services inflation, which accounts for the largest share in HICP (see the discussion in Chapter 3.2). This

weaker underlying inflation is to some extent also attributable to indirect effects of lower energy inflation via production costs (for example in transportation services).[19] The most important factor, however, was the high level of economic slack since the start of the crisis, which pushed down price inflation but also wage inflation (see also the discussion of wage inflation in Chapter 3.3). In this context, the double-dip recession in the euro area, which led to higher negative output gaps in the euro area after 2012 than in the rest of the OECD, played an important role.[20] However, rebalancing needs based on unsustainable developments[21] in several euro area Member States before the crisis also contributed to holding back underlying inflation in the second decade of the euro, given that countries with significant losses in cost competitiveness before the crisis underwent a substantial correction of unit labour costs thereafter (see discussion in Chapter 3.3).

Structural changes in the transmission of external developments to euro area inflation appear not to be a main driver of differences between inflation developments in the first and the second decade of the euro. As illustrated in Chart 4 there is a fairly close relationship between movements in the price of crude oil and overall consumer energy prices.[22] This relationship is driven especially by consumer prices for liquid fuels, which account for the lion's share of HICP energy and reflect a direct, complete and quick pass-through of crude oil prices. As illustrated in Chart 4 the pass-through of oil price fluctuations to HICP energy inflation did not change fundamentally in the second decade of the euro when compared to the first. With respect to developments in the exchange rate, the nominal effective exchange rate (NEER) of the euro was stronger during the first decade of the euro than in the second. A lower NEER should have increased inflation, everything else being equal, given the higher price of imported goods. Thus, the exchange rate can hardly contribute to explaining why inflation was lower in the second decade. In addition, the available evidence tends to point towards a declining role of exchange rate developments for inflation in the euro area.[23] Finally there has been a relatively high commonality in euro area inflation developments with other advanced economies (Chart 12). This has fuelled a debate on "global inflation" – i.e. the notion that domestic inflation rates have converged because of an increased influence of global developments on domestic inflation, for example via an increasing international contestability of labour and product markets. One way to assess the direct role of global developments on euro area inflation – beyond effects via exchange rate developments, import prices for energy, non-energy goods and effects of foreign demand on domestic slack – is to augment traditional Phillips curve analyses with a measure of foreign slack. In this context, recent empirical studies have argued that the increasing integration of global value chains (GVCs) plays an important role (see

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19 See "Indirect effects of oil price developments on euro area inflation", *Monthly Bulletin*, ECB, December 2014.

20 See for a detailed discussion: Matteo Ciccarelli and Chiara Osbat (editors 2017), "Low inflation in the euro area: causes and consequences", ECB Occasional Paper, No 181.

21 For more detail on the build-up and adjustment of macroeconomic imbalances in euro area countries, see Pierluigi and Sondermann (2018), "Macroeconomic Imbalances in the euro area: where do we stand?", ECB Occasional Paper, No 211. For fiscal imbalances see Chapter 6 in this paper.

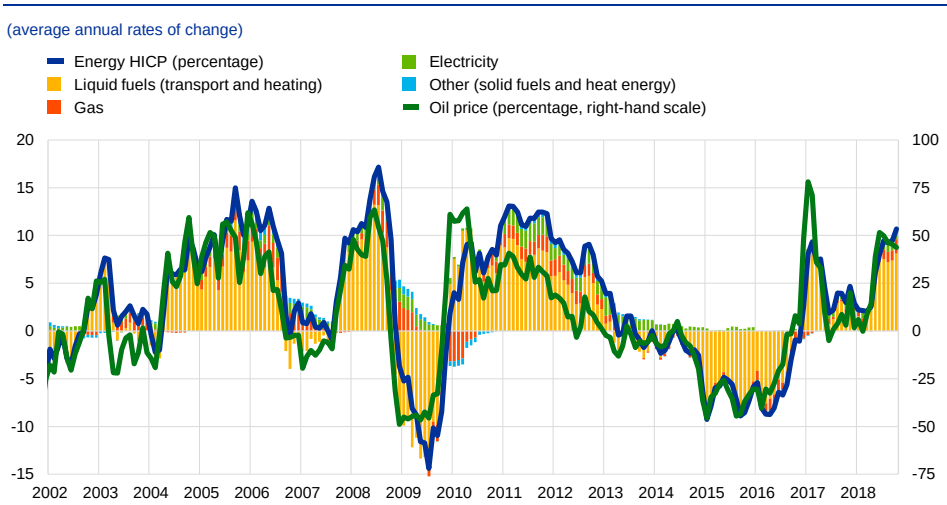
22 See also "Oil prices and euro area consumer energy prices", *Economic Bulletin*, Issue 2, ECB, 2016.

23 See "Exchange rate pass-through into euro area inflation", ECB Economic Bulletin, Issue 7/ 2016.

discussion on this in Chapter 7). Auer, Borio and Filardo[24] argue that the difference in the sensitivity of domestic inflation with respect to foreign and domestic slack can be explained by differences in the integration in GVCs. However, structural changes towards a globalisation of euro area inflation are hard to capture empirically. There is for example only limited support for including measures of global slack and of the integration in global value chains in Phillips curve analyses of inflation in the euro area.[25]

Chart 11

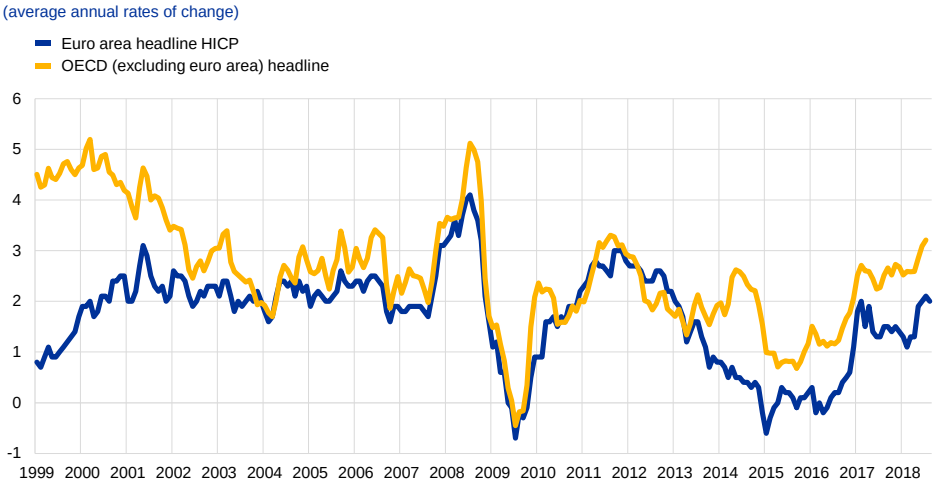
Oil prices, energy prices and HICP energy inflation



Source: Eurostat.

Chart 12

Inflation developments in advanced economies



Sources: Eurostat, OECD and ECB calculations.

[24] Auer, R., C. Borio, and A. Filardo, "The globalisation of inflation: the growing importance of global value chains", BIS Working Papers, No 602.

[25] See "Domestic and global drivers of inflation in the euro area", *Economic Bulletin*, Issue 4, ECB, 2017.

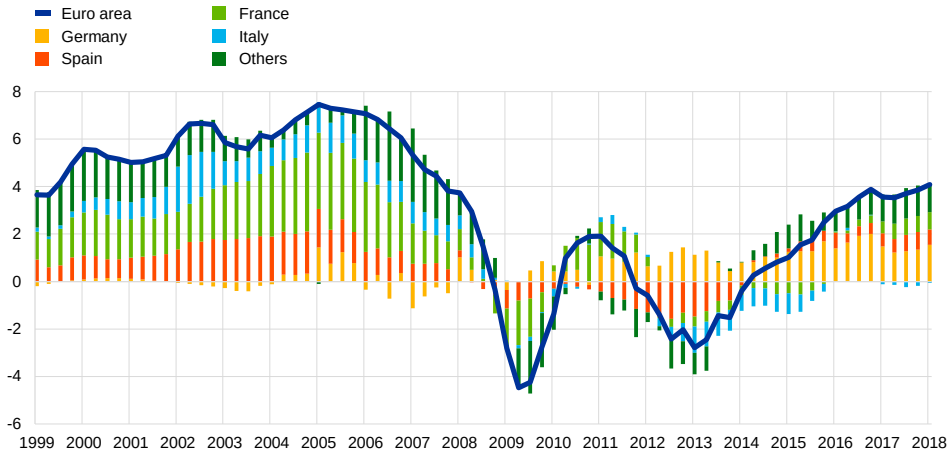
Turning to domestic factors, recent empirical work overall does not point to a changing slope of the Phillips curve. A comprehensive assessment of the structural and cyclical factors behind the low inflation period[26] since 2014 found that the growth-inflation relationship in the euro area continues to broadly hold, specifically when that relationship is expressed as a Phillips curve in terms of underlying inflation. While little evidence for a flattening of the Phillips curve was found, adverse cyclical factors were diagnosed as having played a crucial role in explaining the low underlying inflation over recent years.

House price developments changed substantially in the second decade of the euro. In the first decade of the common currency residential property prices increased significantly, on average by 5.4% every year (1999-2008), mainly driven by upward price pressures in Spain, France and Italy as well as in Ireland, which were in some cases linked to unsustainable bubbles in the real estate sector (see Chart 13 and the discussion in Chapter 2.1). These significant increases partly reversed during the second decade of the common currency (2009-18), when residential property prices rose on average by only 0.5% year-on-year, with the highest positive contribution coming from Germany.

Chart 13

Residential property price developments in the euro area and country contributions

(annual percentage changes; percentage point contributions)



Sources: Eurostat and ECB calculations.

3.2 Structural changes in consumption patterns and distribution channels and their link to inflation

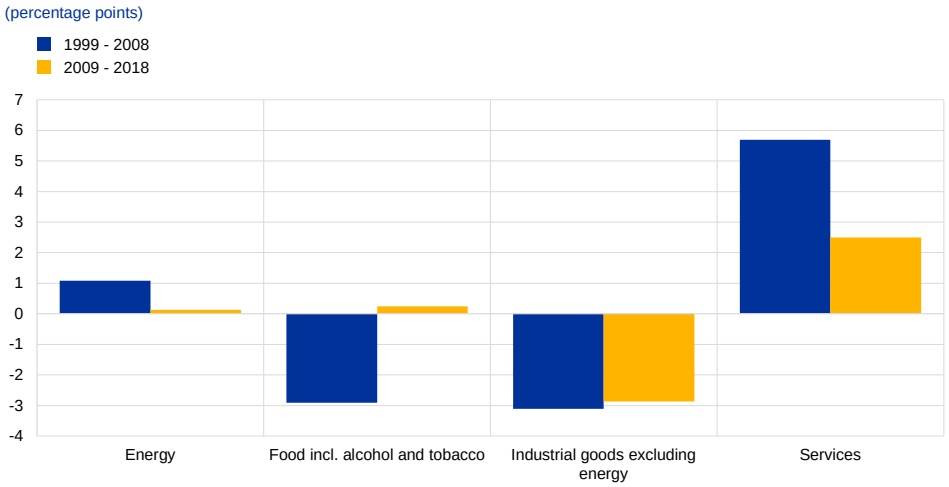
Since the inception of the euro, services have increasingly gained a more important role in consumer spending. The main categories of the consumption basket underlying the HICP are services – with a weight of 44% in the 2018 HICP

[26] For a detailed discussion, see: Matteo Ciccarelli and Chiara Osbat (editors 2017), "Low inflation in the euro area: causes and consequences", ECB Occasional Paper, No 181.

basket – and non-energy industrial goods (NEIG) inflation – with a weight of 26%.[27] The importance of services price developments reflects the significant role of this sector for the real economy, as discussed in Chapter 2.1. Compared to the start of the common currency the weight of services in the consumption basket underlying the HICP increased by nine percentage points, while the weight of non-energy industrial goods (NEIG) decreased by around six percentage points (see Chart 14). The increase in the weight of services was therefore more pronounced in the first decade of the common currency, but also continued in the second. As a relatively large share of services is non-tradable and domestic inputs, especially in form of wages, account for the largest share of costs, the increased role of services inflation has (all other things being equal) strengthened the role of domestic drivers of inflation in the euro area.

Chart 14

Changes in weights of main HICP components since the beginning of the euro



Sources: Eurostat and ECB calculations.

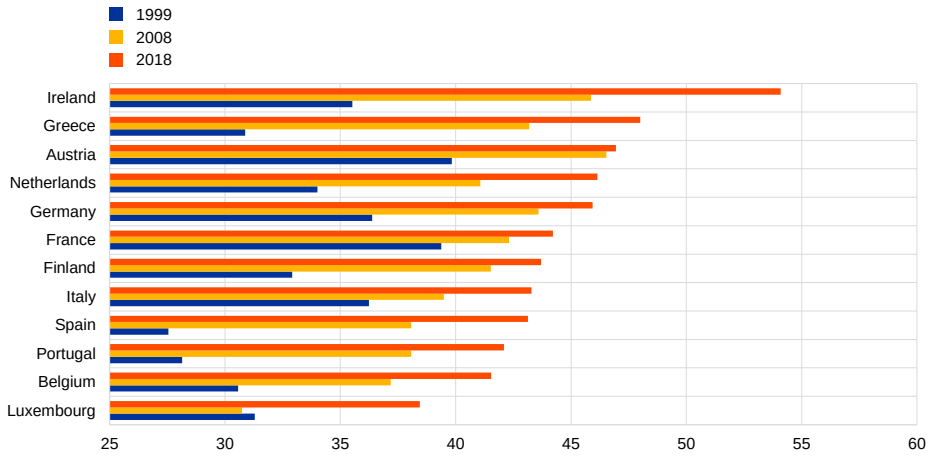
Across euro area countries, significant differences in the relative consumption baskets prevail. Across all euro area (EA) 12 countries, the role of services has strongly increased since the beginning of the euro (see Chart 15). However, there continue to be quite significant differences in the weight of services in the consumption basket. In Ireland, for example, services have a weight of 54% in the HICP basket, while they account for only 38% in Luxembourg. The share of food on the other hand has decreased in all 12 euro area countries except for Luxembourg. The weight tends to be higher in the southern European countries and lower in the northern European countries. In 2018, it varied in the consumption basket from 25% in Greece to 15% in Austria (Chart 16). The importance of actual rents in the HICP basket also varies significantly across euro area countries and partly depends on the home ownership ratio, which is currently lowest in Germany and highest in Spain. Consequently, the weight of actual rents accounts, for example, for roughly 10% in the HICP basket of Germany, but only for roughly 3% in the HICP basket for Spain (Chart 17).

[27] Food (including alcohol and tobacco) has a weight of 20% and energy has a weight of 10%.

Chart 15

Weights of services in HICP basket by country

(percentage points)

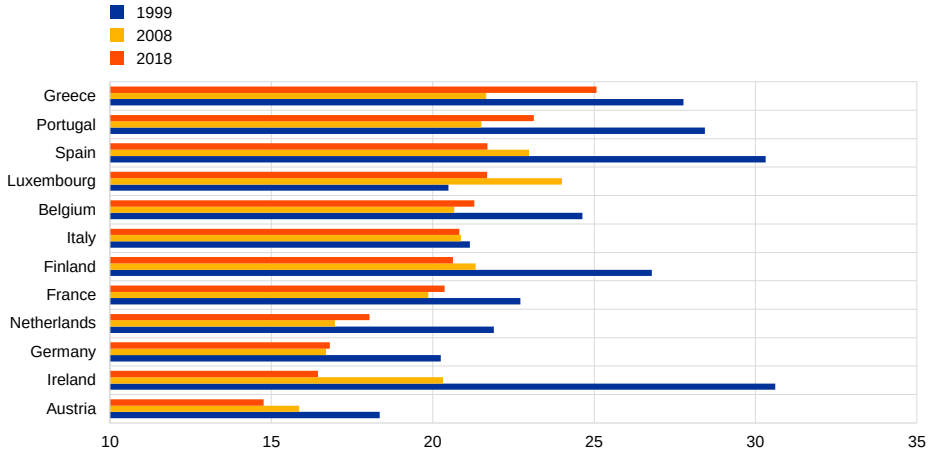


Sources: Eurostat and ECB calculations.

Chart 16

Weight of food in HICP basket by country

(percentage points)

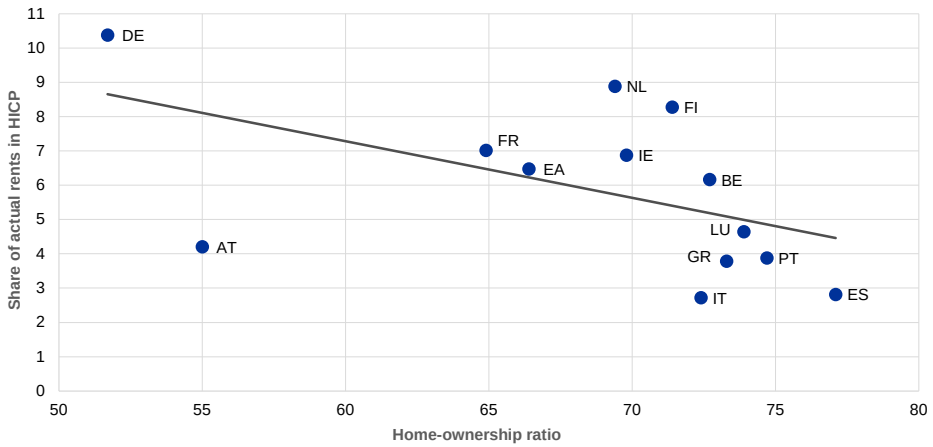


Source: Eurostat.

Chart 17

Weight of actual rents in HICP and home ownership ratio

(percentage points)



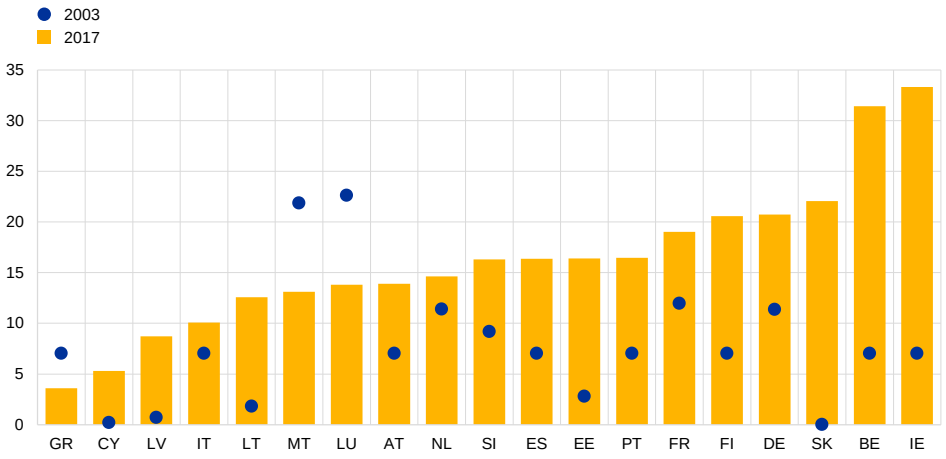
Source: Eurostat.

Costs for housing continue to be only partly covered in the HICP. Housing costs currently enter the HICP through actual rentals and minor repairs, but ideally the HICP would cover all housing-related consumption expenditures. Since 2016, Eurostat publishes a measure of owner-occupied housing (OOH) costs, which allows an assessment of the extent to which including such own-occupied housing costs would change overall inflation developments. However, based on the available experimental data, expanding the coverage of HICP to take account of OOH costs would not have materially affected the inflation assessment for the period for which data are available (since 2011).[28]

Chart 18

Electronic sales by enterprises as a percentage of total turnover

(annual percentage changes; percentage point contributions)



Sources: Eurostat and European Commission.

[28] For details see "Assessing the impact of housing costs on HICP inflation", *Economic Bulletin*, Issue 8, ECB, 2016.

The increasing role of e-commerce can be considered a structural change with a potentially important role for inflation developments. Not only have the weights of different items in the HICP basket changed, so too has the role of different distribution channels. Since the start of the common currency, the share of electronic sales to consumers and businesses in total turnover has increased substantially in most euro area countries, with the relative importance remaining quite heterogeneous (see Chart 18). So far, electronic sales play only a limited role in the HICP statistics – one example is the relatively common use of internet prices for package holidays. In general, there are three key channels through which the growth in e-commerce affects prices. First, e-commerce provides scope for cost savings based on more efficient distribution, which could be passed on. Second, e-commerce can increase competition among suppliers via increased price transparency and thereby reduce profit margins. On the other hand, however, the rise of 'superstar' firms through e-commerce (the so-called 'Amazon effect') has led to market concentration, which might ultimately become a source of upward price pressure via increased profit mark-ups. Evidence of actual effects of e-commerce on consumer price changes is still scarce and surrounded by measurement problems. So far, however, there is not much evidence that points to substantial effects of e-commerce on inflation.[29]

3.3 Inflation developments in euro area countries – convergence and dispersion[30]

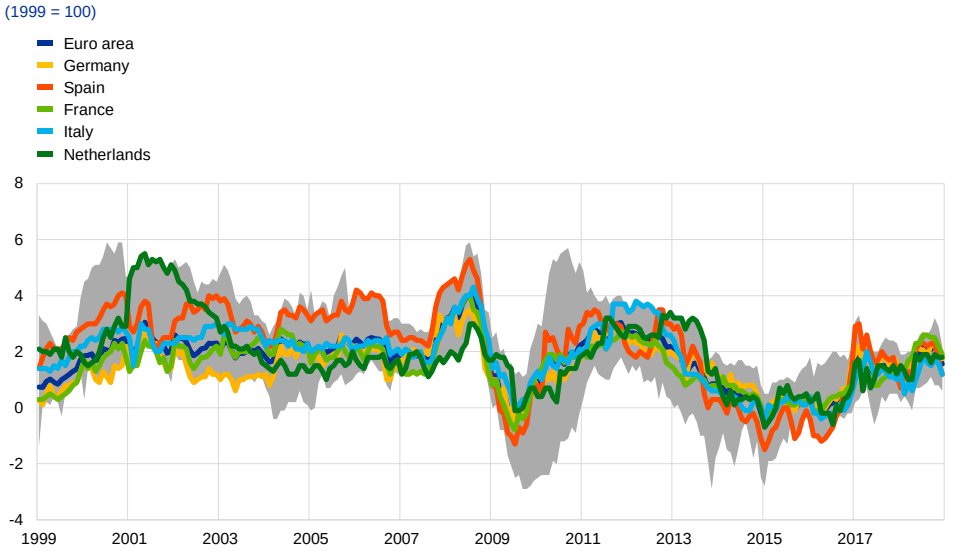
Inflation dispersion has been relatively limited in EMU. Overall the pattern of headline inflation developments in euro area countries seems quite similar (see Chart 19). Based on the standard deviation dispersion of headline inflation as well as of underlying inflation across euro area Member States has been broadly comparable to that across regions of the United States (see Chart 20), with larger deviations in the euro area mainly observable from 2000 to 2003 and 2009 to 2014.

[29] See "Effects of e-commerce on inflation", *Economic Bulletin*, Issue 2, ECB, 2015.

[30] Convergence and dispersion are mainly analysed based on EA 12 data to avoid the results being (partly) driven by a changing composition of the aggregate.

Chart 19

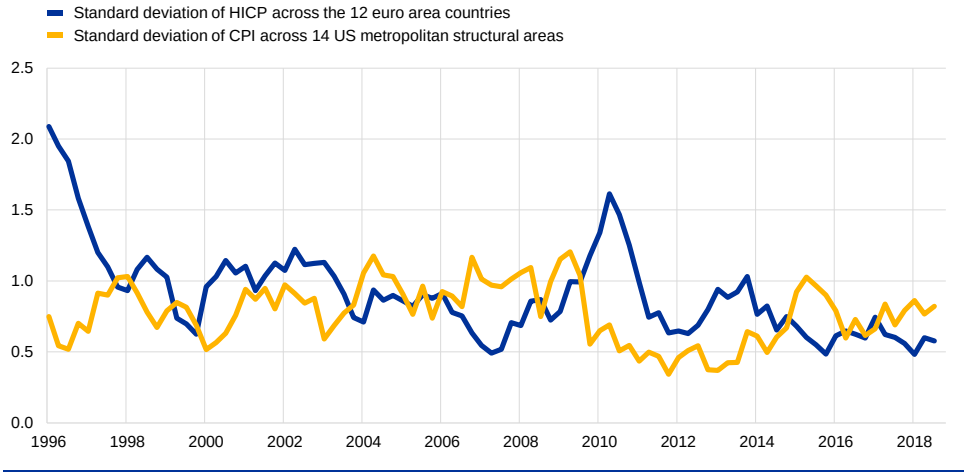
HICP in EA and countries



Source: Eurostat.
Note: The grey range indicates EA12 countries.

Chart 20

Standard deviation of EA HICP and US CPI



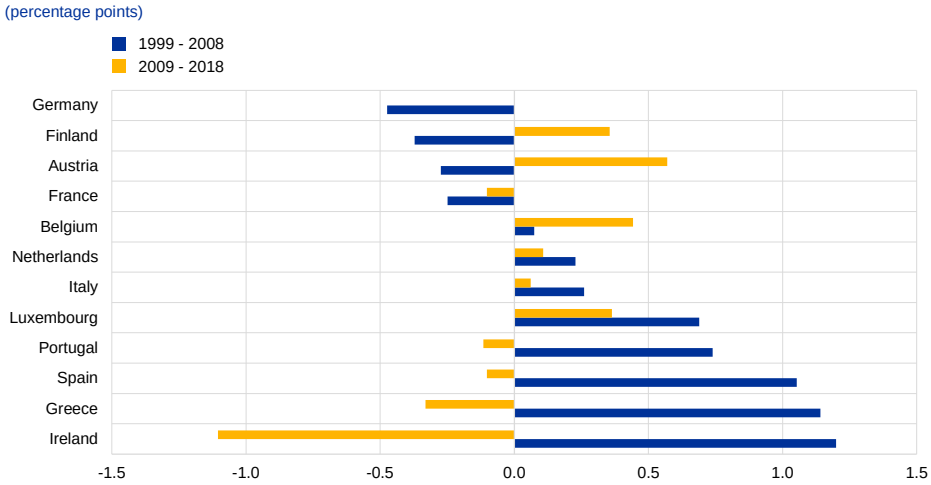
Sources: Eurostat and ECB calculations.

Yet, inflation differentials showed quite some persistence up until 2008 and in most countries only changed their direction after the crisis. Chart 21 shows that inflation differentials – measured here as the average difference of national HICP inflation over EA 12 inflation – were very different across euro area countries. Some Member States, in particular Ireland, Portugal, Greece and Spain, experienced persistent inflation rates above the euro area. With the inception of the global financial crisis as well as in the context of EU/IMF macroeconomic adjustment programmes,

those countries underwent significant macroeconomic adjustment, which was expressed, among other things, in negative inflation differentials.[31]

Chart 21

Average inflation differentials in different periods



Source: Eurostat.
Note: Bars show the average difference in headline inflation of a country compared to the euro area in different periods.

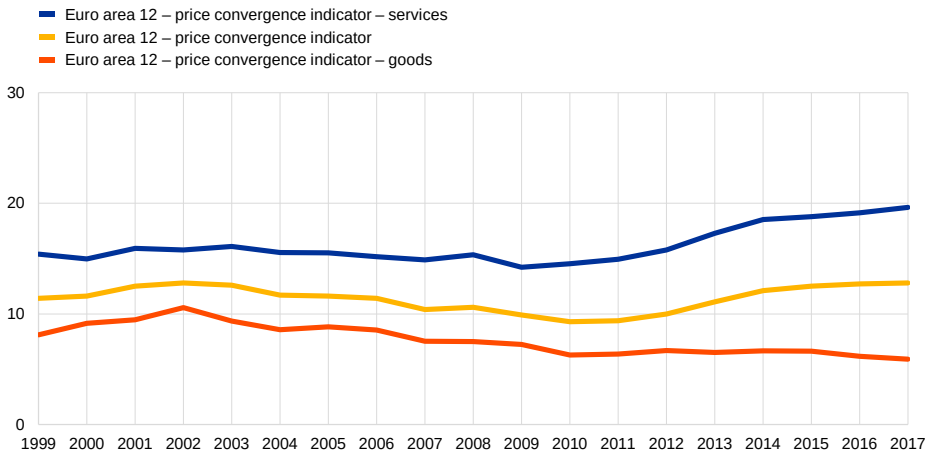
In the first decade of the euro, these inflation differentials contributed to some convergence in price levels. Chart 22 illustrates that this convergence took place in particular via goods, which have a larger share of tradables. However, in the second decade of the common currency, this convergence process was reversed, with services, which are more dependent on domestic cost factors, becoming the driver of an increase in dispersion. This was partly related to the rebalancing needs putting downward pressures on domestic wages, which are an important cost factor for services inflation. Overall, these developments can also be linked to current account developments in the two decades. In the first decade the especially large increase in the imports of countries that built up substantial current account deficits with the rest of the euro area might have contributed to convergence in goods prices. In the second decade reforms to increase competitiveness in order to correct current account imbalances might have contributed to an increase in dispersion of services prices.

[31] For more detail on the build-up and adjustment of macroeconomic imbalances in euro area countries, see Pierluigi and Sondermann (2018), "Macroeconomic Imbalances in the euro area: where do we stand?", ECB Occasional Paper, No 211.

Chart 22

Convergence[32] of price levels in the EA 12

(averages of monthly rates)



Sources: Eurostat and ECB calculations.
Note: Eurostat Price Level Index (PLI) expresses the price level of a given country relative to the EA 12.

Looking at the developments in individual countries shows that convergence in price levels was dominant in 1999-2008, but was at least partly built on unsustainable booms. Chart 23 indicates that inflation differentials indeed were in line with a convergence of price levels, which is a process to be expected in a monetary union as countries with a "lower" price level are likely to face higher than average demand for their tradable goods and services, which then translates into higher than average inflation.[33] However, as the strong correlation of inflation differentials with differentials in growth of unit labour costs (which were often even higher than inflation differentials – see Chart 24) indicates, the economic booms in these countries were not only driven by price convergence effects via tradable goods and services, but also by very strong domestic demand developments. When these turned out to be unsustainable, necessary adjustments in competitiveness were revealed.

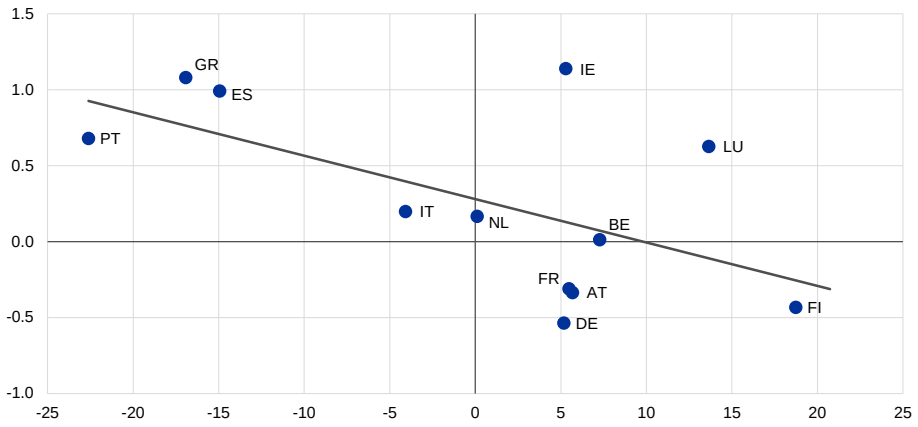
32 The convergence indicator is defined as the coefficient of variation of the price level indices (PLIs) and per capita volume indices (VIs) of gross domestic product (GDP), actual individual consumption (AIC) and household final consumption expenditure (HFCE). It measures the price and volume convergence across countries.

33 For evidence of the so-called Balassa-Samuelson effect in the early years of the euro, see e.g. Wagner, M., "The Balassa-Samuelson Effect in 'East & West'. Differences and Similarities", Economics Series, No 180, Institute for Advanced Studies, December 2005.

Chart 23

Average annual HICP inflation differentials from 1999 to 2008 and price level gaps in 1999

(x-axis: deviation of price level index in 1999; y-axis: average inflation differential from EA 12 1999-2008)

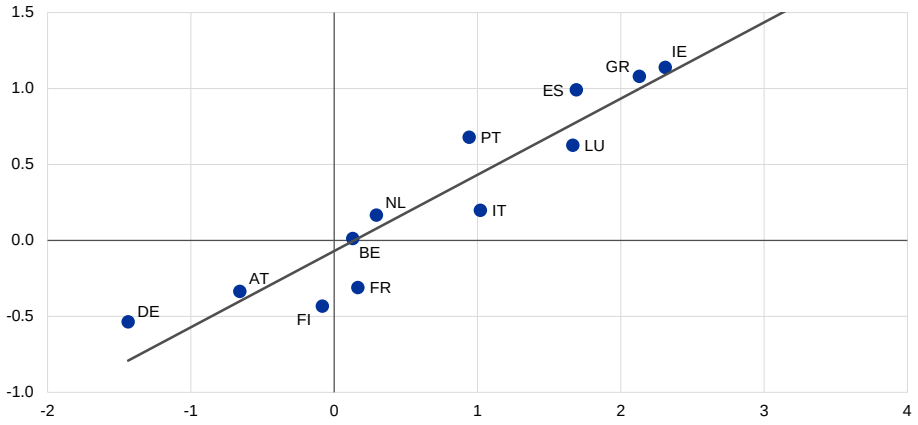


Source: Eurostat.
Note: Eurostat price level index (PLI) expresses the price level of a given country relative to EA 12.

Chart 24

Average annual HICP inflation differential from 1999 to 2008 and differentials in the growth rate of nominal unit labour costs 1999 to 2008

(x-axis: differentials in growth rates of unit labour costs in EA 12; y-axis: average inflation differential from EA 12, both 1999-2008)



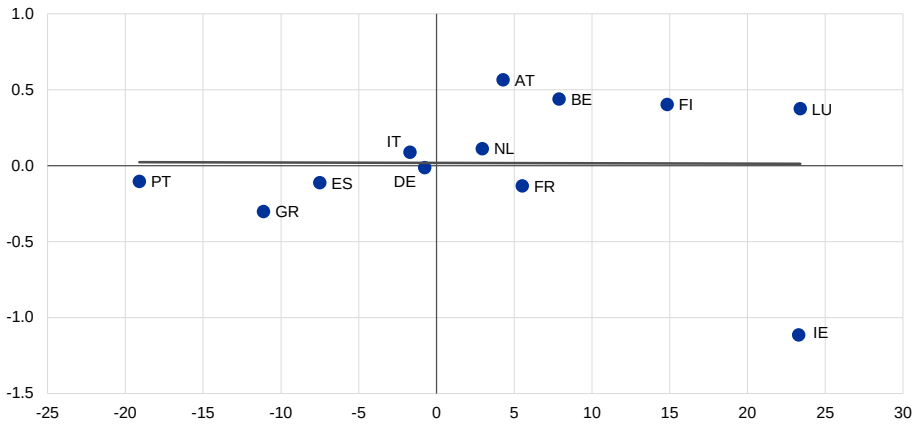
Source: Eurostat.

In 2009-18, rebalancing played a dominant role and led to an increase in the dispersion of price levels. Chart 25 indicates that in the period of 2009-18 price levels increased, especially in those countries with higher than average price levels and decreased in countries with lower than average price levels. This demonstrates the important role of rebalancing with decreasing price levels in Greece, Spain, Portugal and Ireland. These reductions in price levels went hand in hand with a reduction of differentials in unit labour cost growth in these countries (see Chart 26), partly as a result of structural reforms in product and labour markets.

Chart 25

Average annual HICP inflation differentials from 2009 to 2018 and price level gaps in 2009

(x-axis: deviation of price level index in 2009; y-axis: average inflation differential from EA 12 2009-18)

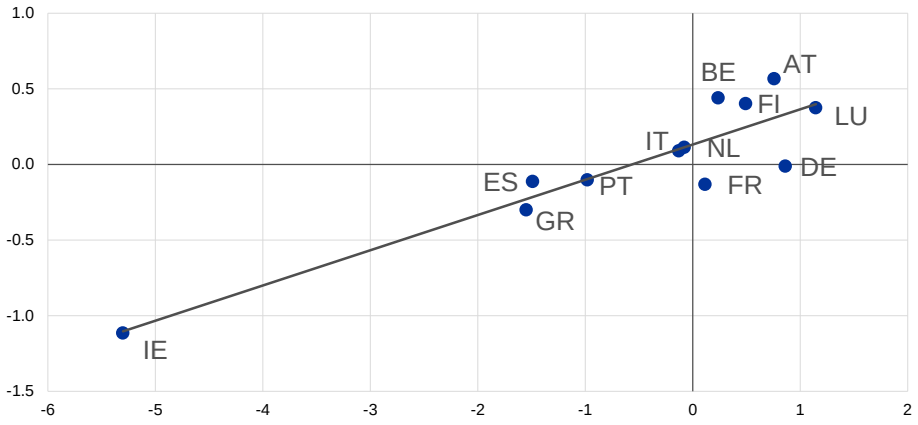


Source: Eurostat.

Chart 26

Average annual HICP inflation differential from 2009 to 2018 and differentials in the growth rate of nominal unit labour costs 2009 to 2018

(x-axis: differentials in growth rates of unit labour costs in EA 12; y-axis: average inflation differential from EA 12, both 2009-18)



Source: Eurostat.

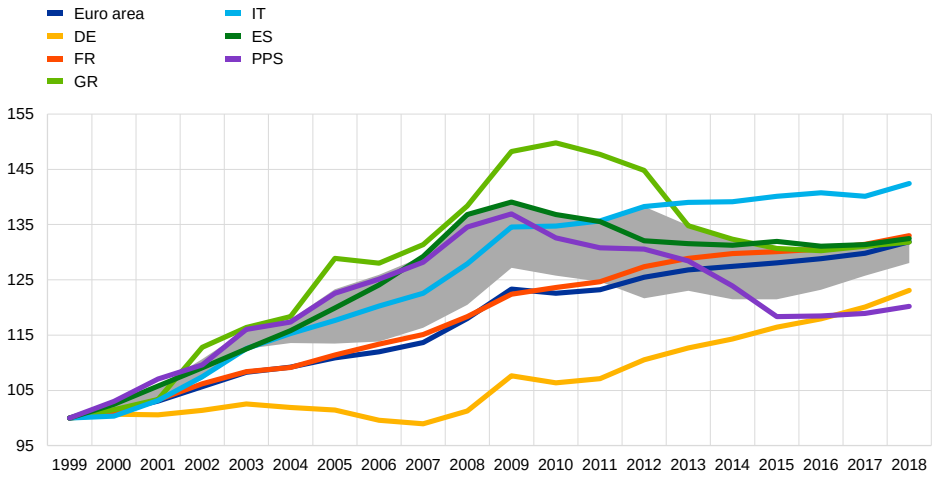
The influence of this rebalancing is also clearly visible in euro area-wide developments of labour costs. Chart 27 demonstrates how the stressed countries (defined here as the group of countries that underwent a macroeconomic adjustment programme and are now under post-programme surveillance, i.e. Spain, Greece, Ireland, Cyprus and Portugal) made a relatively strong contribution to ULC growth in the euro area in 1999-2018, but showed a decrease in 2009-18. Another indication for rebalancing effects are pay freezes and wage cuts in the public sector in many crisis countries, which contributed to public sector wage growth falling behind private sector wage growth in the euro area after 2009. In effect, the contribution of the public sector to average wage growth in the euro area was halved in 2009-18 (when compared to

1999-2008) while the contribution of the private sector was only cut by one-third (see Chart 28). These downward effects of rebalancing on wage growth and ULC developments in turn also contributed to subdued developments in underlying inflation in the euro area as a whole (see discussion in Chapter 3.1).

Chart 27

Growth in ULC in euro area countries

(annual percentage changes; percentage contributions)

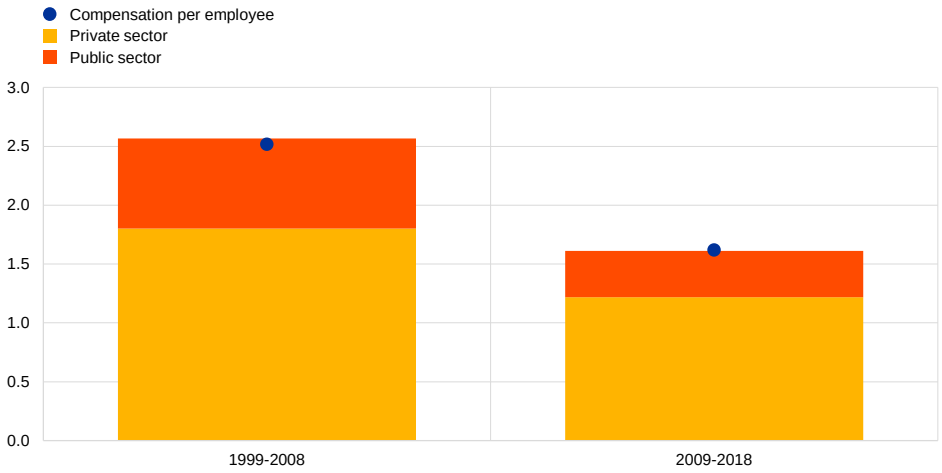


Source: Authors' calculations based on European Commission data (2018 is taken from the Commission's autumn forecast).
Notes: Shaded area is 25th and 75th quartile of the distribution. PPS countries in the chart only include Ireland, Cyprus and Portugal as Greece and Spain are shown separately.

Chart 28

Wage growth – compensation per employee growth in the public and private sector

(annual percentage changes)



Sources: Eurostat and ECB calculations.

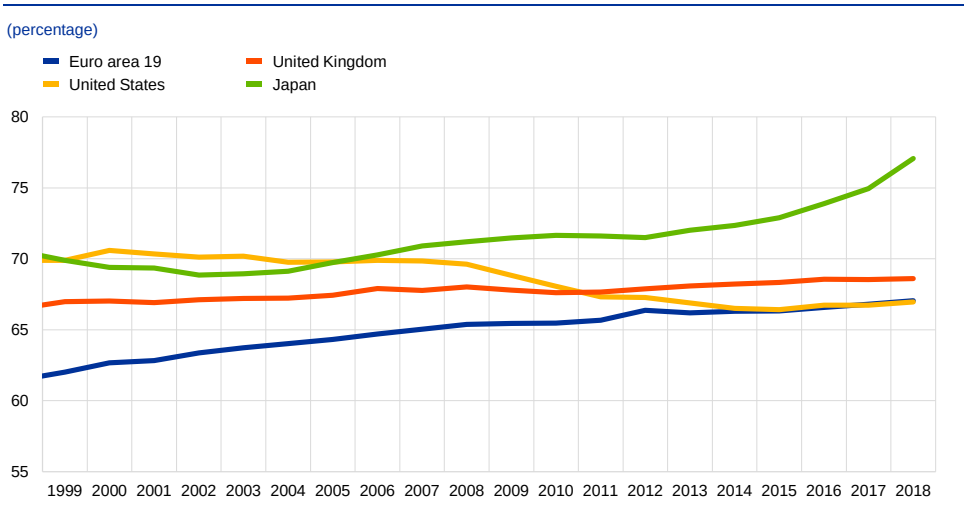
4 Labour markets

Labour market regulations and policies more generally are a key part of countries' economic structures. A deep understanding of the structural features of the euro area labour market is essential in order to gauge euro area economic prospects as well as inflation dynamics going forward. In the euro area, differences in country-specific labour market institutions, more specifically higher degrees of labour market rigidity in some countries, increase susceptibility to adverse shocks and prolong the adjustment process in the economy with significant effects on economic activity and prices.

In the last 20 years, the euro area labour markets have improved in terms of both inclusiveness and job creation. Labour force participation in the euro area was at about 62% of the working-age population in 1999 and it is now at about 67%, which is closer to other advanced countries (see Chart 29). The improvement in labour market inclusiveness has also been broad based across euro area countries. The range of labour force participation rates was between 56% and 70% at the end of 1999 and has more recently shifted up to between 60% and 74%. Meanwhile, euro area employment has been steadily improving in the euro area since 1999. The employment-population ratio has increased from 55% to 62% in the last twenty years and this development has been broad based across euro area countries.

Chart 29

Labour force participation rates



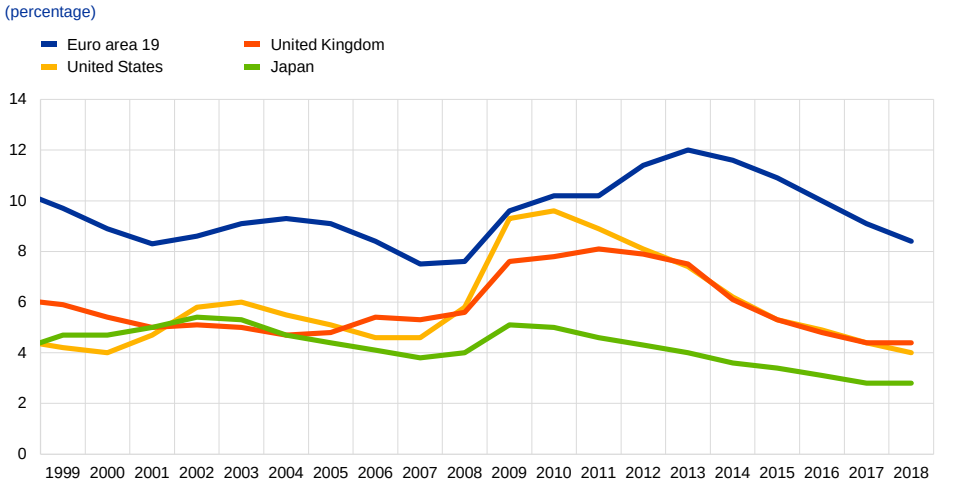
Sources: AMECO, European Commission.
Note: AMECO's total labour force over population (age 15-74)

Nevertheless, the euro area unemployment rate remains high compared to other advanced economies. At the inception of the euro, the unemployment rate followed a downward trajectory, much in line with that of other advanced economies, until the beginning of the global financial crisis. Compared to United Kingdom and the United States, the unemployment rate in the euro area rose significantly less during the initial phase of the crisis. Euro area labour market resilience can be partly

explained by a greater focus on reducing hours worked rather than increasing job dismissals. However, the unemployment rate in the euro area still increased significantly more in the subsequent years (see Chart 30). This can be mostly attributed to the sovereign debt crisis, which was unique to the euro area and exposed severe structural weaknesses in several of its Member States. This notwithstanding, unemployment has now fallen significantly since its peak in 2013 but the current unemployment rate of around 8% still remains elevated compared to other advanced economies.

Chart 30

Unemployment rates



Sources: AMECO, European Commission.

The reduction in structural unemployment rates has not been homogenous across euro area countries as the crisis has led to asymmetric responses.

Structural unemployment is the rate of unemployment that the economy would arrive at in the long run in the absence of shocks.[34] Its level is determined, among other things, by institutional factors, labour market policies (such as unemployment benefits) and fiscal policy measures (such as tax rates), which influence the reservation wage. Thus, from a long-term perspective, a measure of structural unemployment such as the non-accelerating wage rate of unemployment (NAWRU)[35] may provide a comprehensive view of the underlying trends in the labour markets across euro area countries. Chart 31 shows that there was a general improvement in the NAWRU during the first ten years of the euro. Following the global financial crisis, both the high level of country-specific vulnerabilities and the low degree of economic resilience instead led to an increase in the structural unemployment rates in some countries.

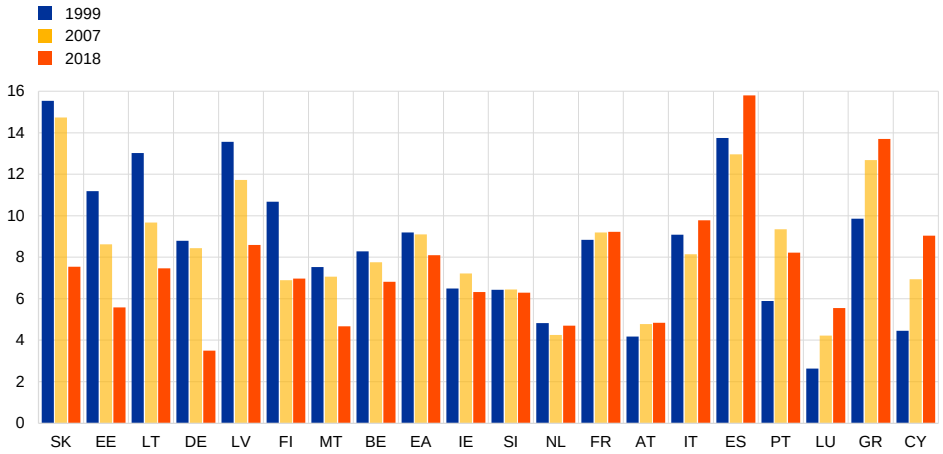
34 The term structural unemployment and NAWRU/NAIRU are used interchangeably in this chapter. However, these concepts feature some important theoretical differences and may lead to different empirical estimates. The NAWRU and NAIRU (non-accelerating inflation rate of unemployment) refer to a level of the unemployment rate which is consistent with non-accelerating wages or inflation, respectively. In some cases, the definition of structural unemployment may refer to real frictions in the labour market and its derivation may not be related to the dynamic of inflation.

35 For a description of the methodology and its related results, see Orlandi, F. (2012), "Structural unemployment and its determinants in the EU countries", European Economy – Economic Paper, No 455, European Commission, May 2012.

This notwithstanding, the reform momentum initiated during the crisis years has more recently led to an overall improvement in the labour market cyclical conditions. Such an adjustment has occurred at a swifter pace compared to the crisis episodes in the 1980s and 1990s, which could signal a lower degree of hysteresis[36] in the euro area labour market.

Chart 31

Structural unemployment rates, percentage



Source: European Commission.
Note: Structural unemployment is here expressed as non-accelerating wage rate of unemployment (NAWRU).

Over the last 20 years, ageing and increased female participation have changed the composition of the labour force. Labour market policies and pension reforms have all contributed to these advancements. Gender and ageing patterns have modified the composition of the labour force as shown in Chart 34 and Chart 35. In line with other advanced countries, female labour force participation in the euro area has been increasing and thereby made the gender composition of the labour force more balanced. At the same time, the impact of ageing has become more pronounced over time, affecting both male and female labour participation.[37] Changes in the composition of the labour force may in turn have implications for labour market variables such as aggregate (i) productivity and (ii) wage growth, which are key factors in the analysis of the nominal side, as described in Chapter 3.

The structure of the labour force and the ongoing digitalisation process pose additional challenges for the future of work. The broader and deeper diffusion of digitalisation and the adoption of more efficient technological processes constitute a major potential source of job creation and reallocation in the euro area economy. The enhancement of the automation process together with the wider use of artificial intelligence may lead to profound structural change in the long-term dynamics of the

[36] Labour market hysteresis is usually referred to a situation in which a shock raising the unemployment rate tends to have long-term effects (see Blanchard O. and L. Summers, 1986, "Hysteresis and the European Unemployment Problem", NBER Macro Annual, Vol. 1). Broadly speaking, hysteresis effects may depend on the persistence of the human and capital accumulation process or on the wage bargaining mechanism, which does not fully account for outsiders (unemployed people).

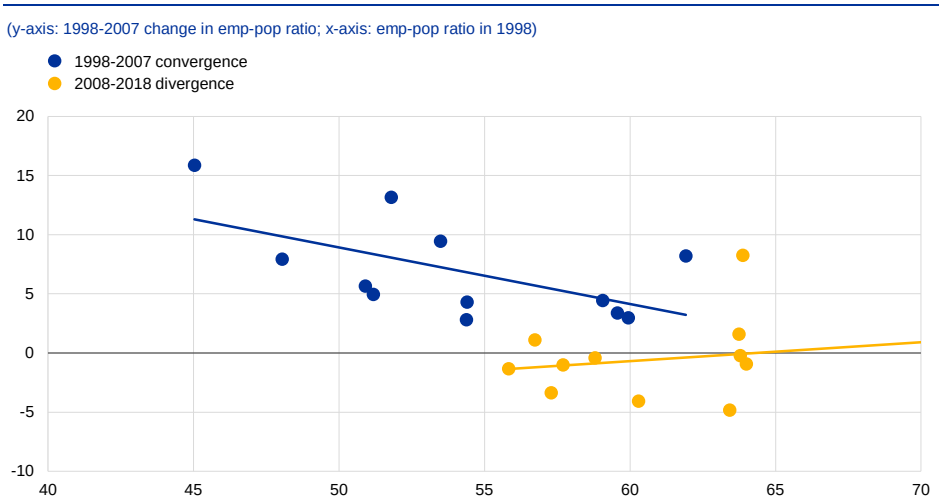
[37] In relative terms, the impact of ageing on labour force participation has been even stronger among women (see Chart 35).

euro area labour market. Higher productivity may lead to higher job creation in certain industries, while determining more job reallocation and displacement among firms which are not fast enough in adopting innovation and new organisational processes.

The convergence in euro area labour markets achieved during the early phase of the euro has somehow slowed down with the crisis. While labour market convergence was robust during the first years of the common currency, since the onset of the financial crisis the process has somehow halted as countries with a lower employment-population ratio have not shown higher employment growth (see Chart 32). Chart 33 shows the overall heterogeneity in the employment-population ratio across euro area countries over the last 20 years.[38] A significant increase in cross-country heterogeneity occurred at the beginning of the euro area sovereign debt crisis. However, more recently this has declined modestly.

Chart 32

Employment-population ratio (1998-2018)



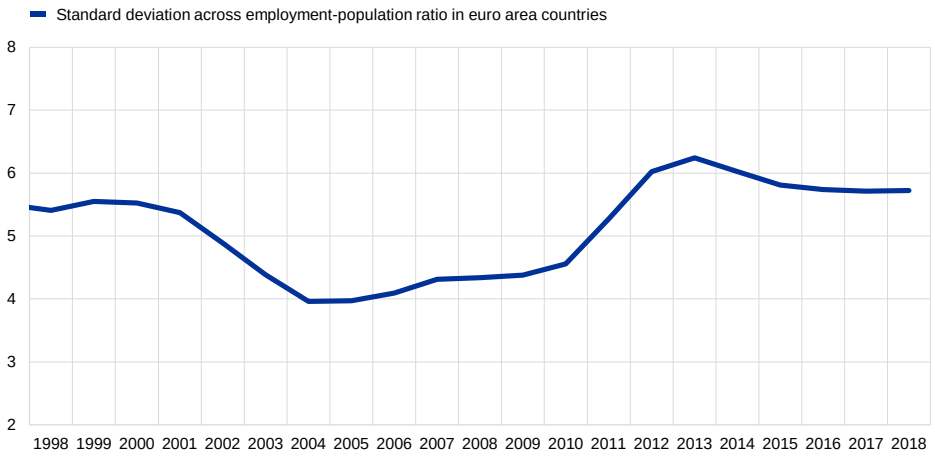
Sources: AMECO, European Commission.
Note: For comparison purposes, this chart covers the aggregate EA 12 only (countries included are DE, FR, IT, ES, NL, BE, GR, AT, PT, FI, IE and LU). It compares the EA 12 level of the emp-pop ratio at the beginning of the period (x-axis) with the change over the specified time span (y-axis).

[38] The previous concept relating growth to the initial starting situation was related to beta-convergence, while heterogeneity measured via cross-country dispersion refers to sigma-convergence.

Chart 33

Cross-country dispersion of employment

(y-axis: 2008-18 change in emp-pop ratio; x-axis: emp-pop ratio in 2008)

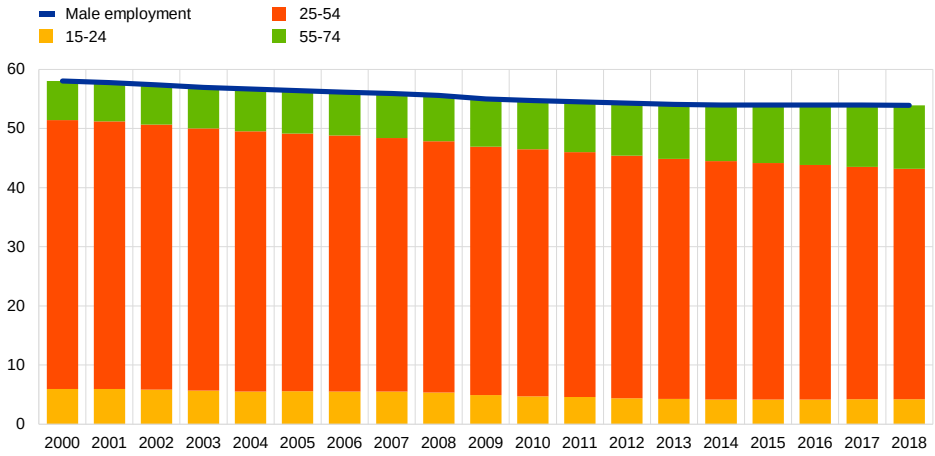


Sources: AMECO, European Commission.
Note: Standard deviation of emp-pop ratio across euro area countries.

Chart 34

Male labour force participation and ageing

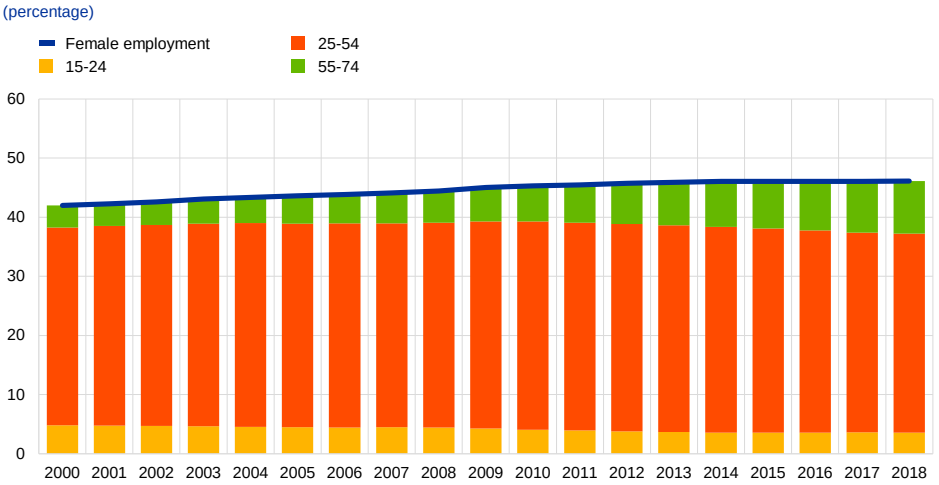
(percentage)



Sources: Labour Force Survey, Eurostat.
Note: Data available since 2000.

Chart 35

Female labour force participation and ageing

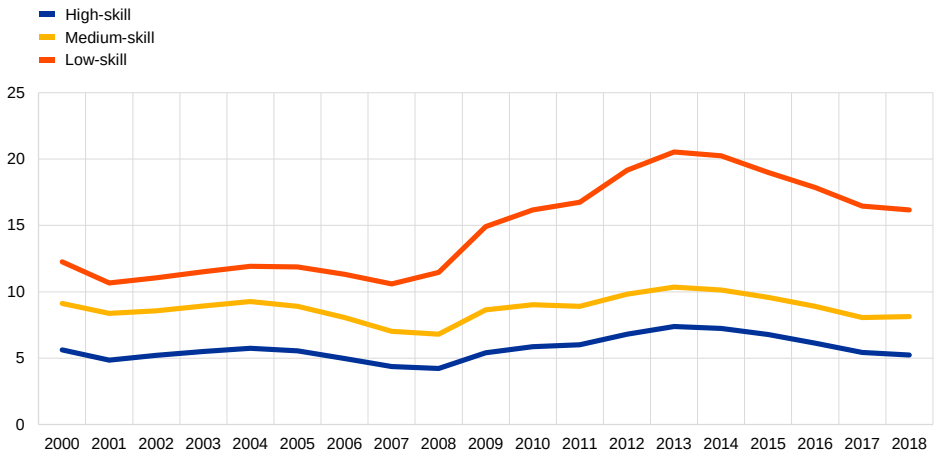


Sources: Labour Force Survey, Eurostat. Note: Data available since 2000.

The skills composition of the euro area workforce has improved, while the global financial crisis has led to an increase in skills mismatch. Over the last two decades, there has been an upgrading in the skills of those in employment. The share of low-skilled workers has gone from 33% to 20%, while there has been a corresponding increase in the share of high-skill employment. This is a positive development as people with lower education attainments are more likely to become unemployed and less likely to get back to work once they become unemployed (see Chart 36). Following the crisis, the low-skill unemployment rate has not come down as much as the unemployment rate for the other skill types. One possible explanation behind the lack of adjustment in the low-skill unemployment rate is that, over time, the demand for low-skilled workers has been on a declining path. Chart 37 shows a synthetic measure of skills mismatch between employed and unemployed people. This measure shows that – at the euro area level – the main driver is the mismatch in the categories with low and medium education attainments.

Chart 36

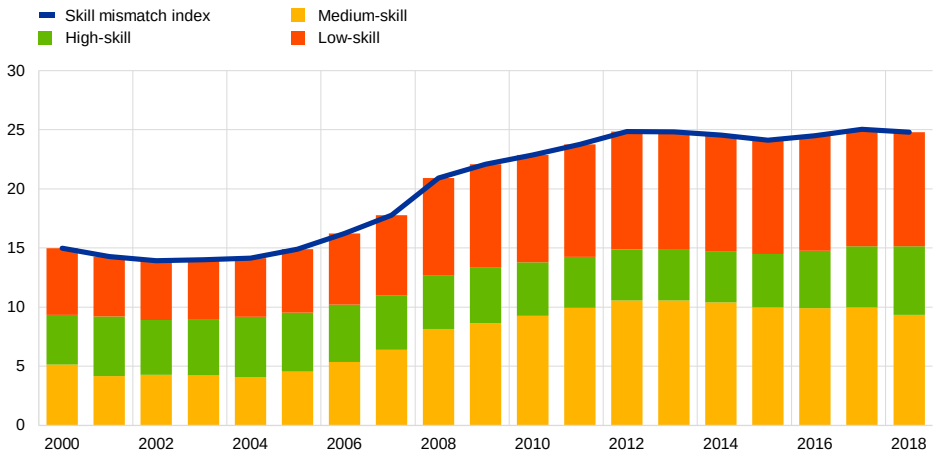
Euro area unemployment rates by skills



Sources: AMECO, European Commission.
Note: Each unemployment rate calculated above is skill specific and does not represent the share of each skill type in the total labour force.

Chart 37

Skills mismatch index and its contributions



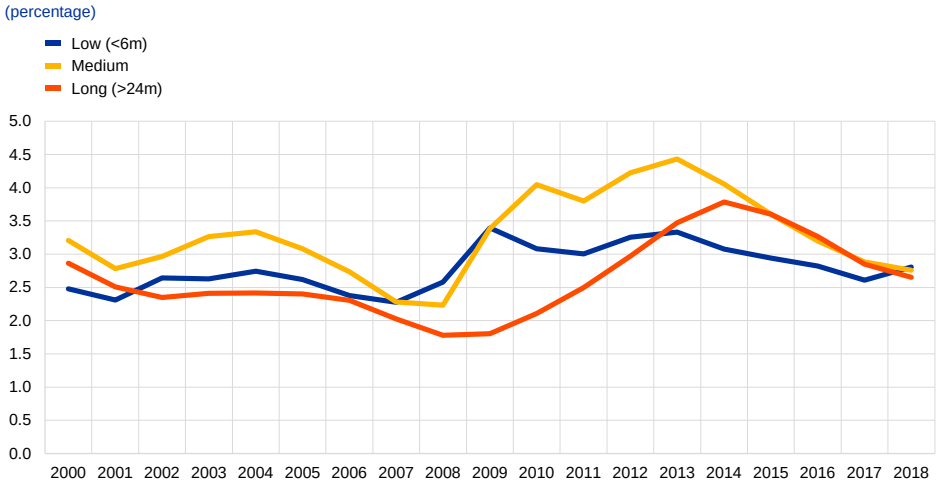
Sources: Labour force statistics, Eurostat and ECB staff calculation.
Note: The skills mismatch index is calculated as the weighted average of deviations between the skill-specific share in the employment and unemployment pool.

The relatively high duration of unemployment spells in the euro area remains notable compared to other advanced economies. A comparison of unemployment duration data with the United Kingdom and the United States since the early 2000s shows a lower degree of labour market churning in the euro area. This reflects the limited adjustment of the economy to shocks, especially during times of crisis. This is a well-known characteristic of the functioning of labour markets that focuses on the interplay between economic factors as well as labour market institutions and regulations. On aggregate, the euro area continues to feature labour market institutions and regulations that delay the absorption of unexpected shocks. Chart 38 shows that before the start of the crisis the three measures of unemployment rates by

duration were equally important. Compared to other advanced countries, long-term unemployment has played a much bigger role in the euro area as shown by the average unemployment duration in Chart 39. Over the last ten years, the increase in long-term unemployment has mostly been driven by the second recession in economic activity following the euro area sovereign debt crisis, more than being a hysteresis effect. The long-term unemployment rate started to increase only after 2011. Since 2014, both the short- and long-term unemployment rates have been steadily declining, supporting the view that hysteresis in the euro area labour market has been declining (see Chart 38).

Chart 38

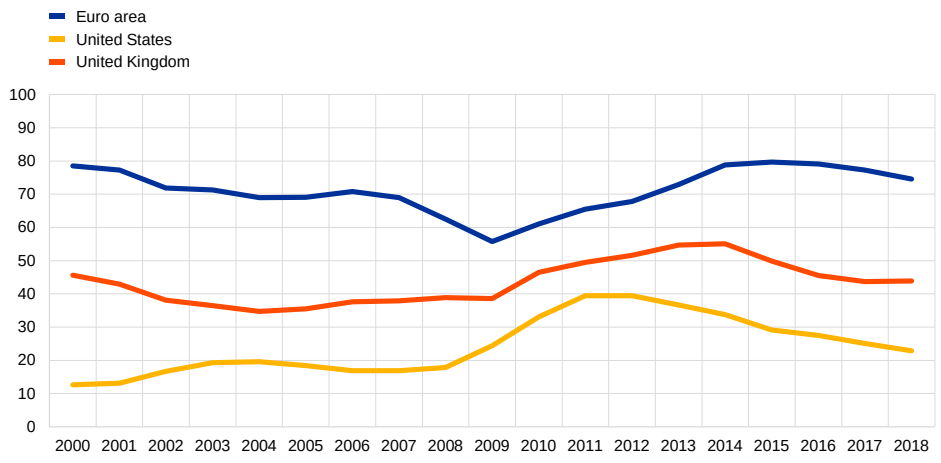
Euro area unemployment rates by duration



Sources: AMECO, European Commission.

Chart 39

Average unemployment duration



Sources: Labour Force Survey database, Eurostat.

Looking forward, the role of immigration flows and the rise of digitalisation and automation are key challenges for the euro area labour market. In recent years, immigration in the euro area has been a significant factor driving working age population. Immigration flows tend to rebalance the age-related cohort effects by introducing younger people into the workforce. At the same time, the skills composition tends to be biased towards lower skilled workers, which may increase the mismatch in the labour market given the increasing share of high-skill jobs. The higher degree of adoption of digitalisation and automation process, while supporting higher productivity, may also require a more specialised workforce. Such a diffusion of technological progress may also lead to large reallocation effects in terms of creative destruction of jobs and firms. Overall, both immigration and technology require appropriate economic policies across euro area countries which can continue to support skill upgrading and the temporary reallocation effects.

Labour market policies fall within the competence of the Member States but are also relevant at the European level. While Member States continue to set their labour market policies independently, the EU Treaty stipulates that national economic policies are a matter of common concern that require coordination at EU level. The European semester, with its country-specific reform recommendations formally approved by the European Council, should predominantly serve this role. Despite some attempts to strengthen it in recent years, the implementation of those reform recommendations continues to be a source of disappointment.

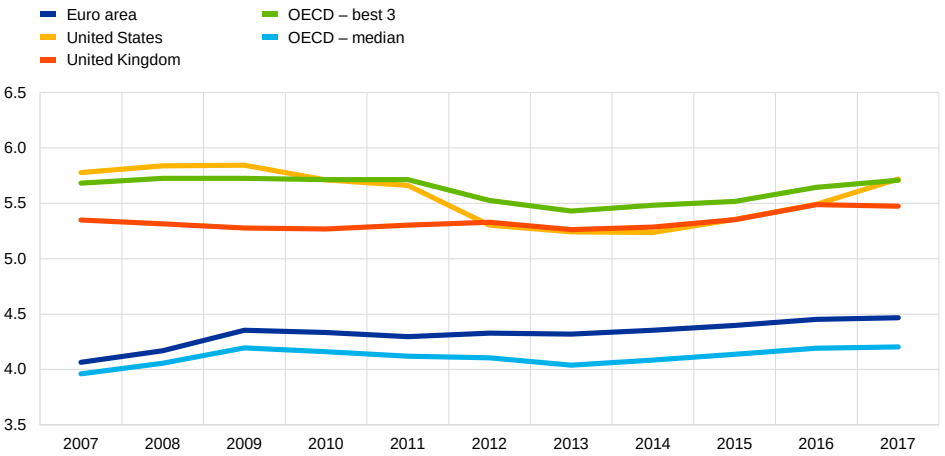
Overall, euro area labour market structures and institutions continue to be somewhat less adaptable compared to other advanced countries. Several indicators of institutional and regulatory quality exist. As regards labour law, Chart 40 shows a rather broad measure of labour market efficiency taking into account wages, labour laws and labour force participation. According to this measure, the euro area labour market institutions have continued to improve during the last two decades. However, significant heterogeneity remains (as shown by the labour market reform summary in Table 4 and Chart 42 below). Rigid labour market institutions and regulations may contribute to large swings in the unemployment rate following an exceptional crisis and prolong its adjustment. This may ultimately lead to higher human capital depreciation and to more persistent labour market disequilibrium. More recently, the reduction in long-term unemployment rates (see Chart 38) provides supporting evidence for the implementation of some labour market reforms. Those reforms can also be seen when looking at a narrower indicator, the EPL index compiled by the OECD, which captures the strictness of dismissal regulations. The latest available data points (Chart 41) for the aggregate EPL index (in 2013[39]) show that, despite a recent decline, euro area employment protection regulations remain less adaptable compared to other OECD economies.

[39] An updated version of the EPL is expected for 2019.

Chart 40

Labour market efficiency index

(index (1-7); a higher value indicates greater efficiency)

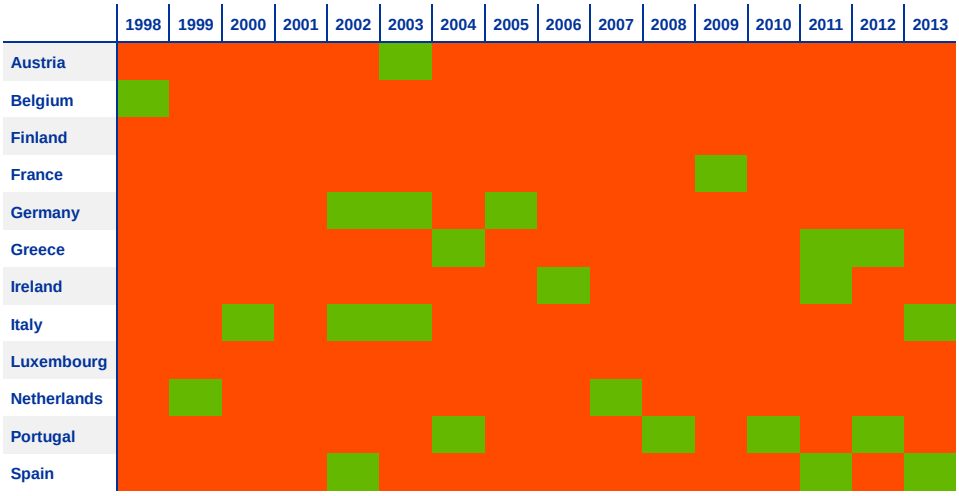


Sources: World Economic Forum, Global Competitiveness Index database.
Note: This indicator measures overall labour market efficiency by aggregating several subcomponents.

Table 4

Labour market reforms from 1998 until 2013

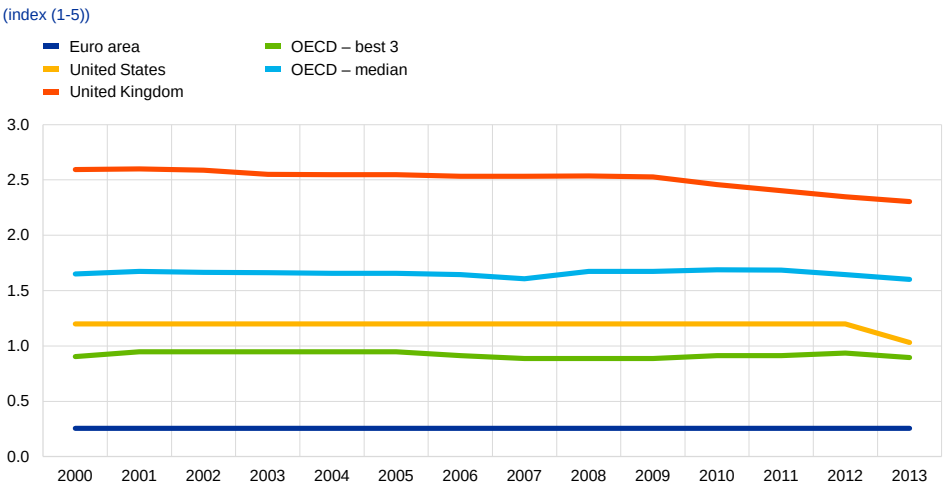
(red: no reforms, light green: one or two reforms)



Sources: Authors' calculations based on Duval et al (2018), A Narrative Database of Major Labor and Product Market Reforms in Advanced Economies, IMF Working Paper No 18/19.
Note: Red denotes that the country has undertaken no reforms. Light green indicates that it has undertaken one or two reforms.

Chart 41

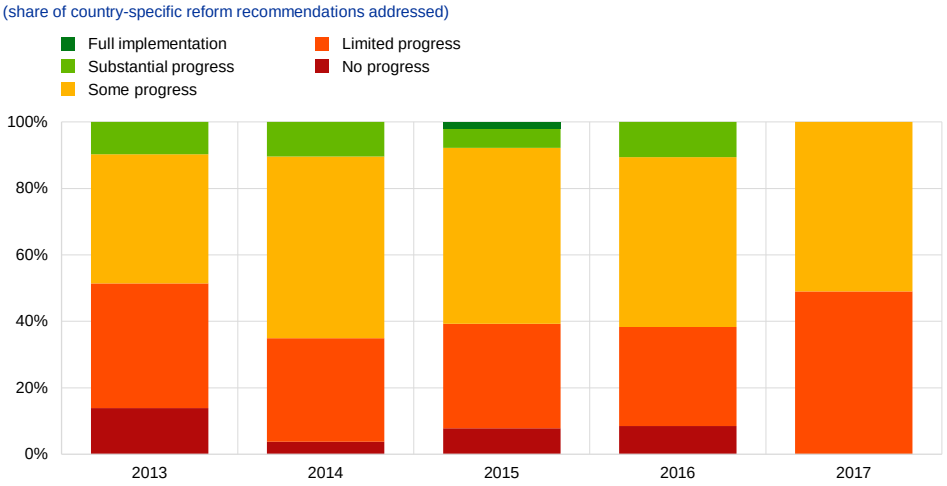
Employment protection legislation index



Source: OECD,
Note: This indicator measures the strictness of regulation of individual dismissal of employees.

Chart 42

Labour market reforms from 2013 until 2017



Source: ECB calculations based on the European Commission's country reports.
Notes: The chart shows the implementation of CSRs as assessed by the European Commission in the overview table of each Member State's annual country report. "No progress" signifies that the Member State has not credibly announced or adopted any measures to address the country-specific recommendation; "limited progress" signifies that the Member State has announced certain measures but these only address the recommendation to a limited extent, and/or it has presented non-legislative acts, yet with no further follow-up in terms of implementation; "some progress" signifies that the Member State has adopted measures that partly address the country-specific recommendation, and/or it has adopted measures that address the recommendation, but a fair amount of work is still needed to fully address the recommendation as only a few of the adopted measures have been implemented; "substantial progress" signifies that the Member State has adopted measures that go a long way in addressing the recommendation, most of which have been implemented; and "full implementation" signifies that the Member State has implemented all measures needed to address the recommendation appropriately. CSRs for implementation of the Stability and Growth Pact are not included.

Overall, the implementation of labour market reforms since the beginning of the euro has, however, been slow. Looking at reforms in various areas of the labour market, including changes to unemployment benefits and employment protection legislation, in the first decade of the common currency only a few cases of reforms can be observed (see Table 4). Most prominent are the various reforms in Germany in the period 2002-05 that increased the adaptability of the labour market. This general lack

of reforms must be viewed against the background of overall less adaptable labour markets in many euro area Member States (see Chart 40 and Chart 41). The lack of more adaptable labour markets can be associated with the significant output and employment losses that many of the more vulnerable euro area countries experienced following the inception of the crisis.[40]

Labour market reforms in the second decade of the euro were mainly undertaken by the countries most affected by the crisis. Table 4 shows that Greece, Portugal, Ireland, Spain and Italy have undertaken reforms, mostly in the context of economic adjustment programmes, that increased the efficiency of their labour markets and improved labour market performance. Chart 42, summarising labour market reform progress since 2013 across the euro area, but excluding programme countries, suggests that reform fatigue has set in in recent years. The share of labour market measures that substantially address the European Council's recommendations fell from only 10% to zero in 2017.

Attempts to deepen EMU should include efforts to make economic policy coordination more effective. The Five Presidents' Report (Juncker et al., 2015) emphasised the importance of identifying best-practice benchmarks in terms of structural reforms with a view to achieving more similarly resilient economic structures. In this respect, the report proposed considering a more binding convergence process as regards structural policies. For the time being, a European Commission proposal for a reform delivery tool is under discussion. This tool is meant to incentivise the implementation of structural reforms identified in the context of the European semester, most notably the CSRs, by allocating a certain part of the EU budget for this purpose.

[40] This is in line with Blanchard and Wolfers (2002) who show that, in the face of a common shock, countries with weaker labour market institutions experience larger and more persistent increases in the unemployment rate.

5 Product markets and framework conditions

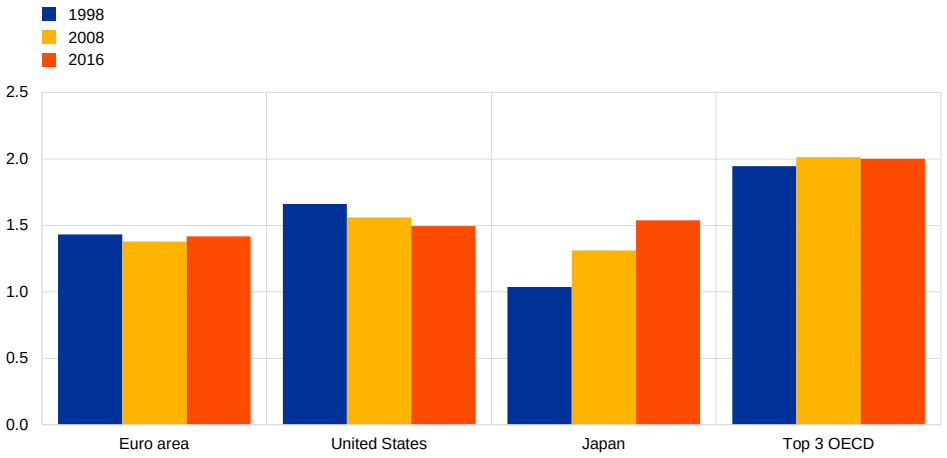
Product market structures and framework conditions for doing business determine the extent to which allocation of resources can be swiftly changed. Be it for cases of adverse shocks that trigger a downturn or more gradual structural change, every day economic actors make decisions that potentially involve reallocating capital and labour to other purposes. The extent to which households and firms can adjust relatively quickly hinges significantly on the adaptability of an economy, including on labour and product market structures. Having discussed the labour market structures (and policy efforts to change them) in the last chapter, the paper will now discuss the developments in product markets and framework conditions across the euro area countries since the inception of the euro.

Framework conditions are here understood as a set of basic institutions and rules that lay the basis for all other sectoral regulations and policies. A prominent example of this is the World Bank Governance indicators which cover measures of the absence of corruption, voice and accountability, the effectiveness of governments, the rule of law, overall regulatory quality and political stability. Chart 43 depicts the average among euro area countries and international peers in 1999 and 2008 as well as the latest data. Given that the World Bank indices are centred at zero and range from roughly -2.2 to 2, the quality of framework conditions in the euro area is – at around 1.5 – relatively good. Overall, this status did not change significantly in the two decades of the euro. Framework conditions in the euro area are not as high quality as in the frontier OECD countries. Looking at country-specific data (see Chart 44) significant differences among euro area countries emerge. While some countries, such as Finland, are at the world's frontier of high quality national institutions that deliver well-functioning framework conditions, several other countries fall significantly short of that, being closer to the average across all countries world-wide. While over time several countries have seen a steady improvement or unchanged level of framework conditions, some Member States even saw the quality of their framework conditions fall, at least according to the World Bank indicators.

Chart 43

Framework conditions for doing business in the euro area and international peers

(average of the four World Bank Governance indicators)

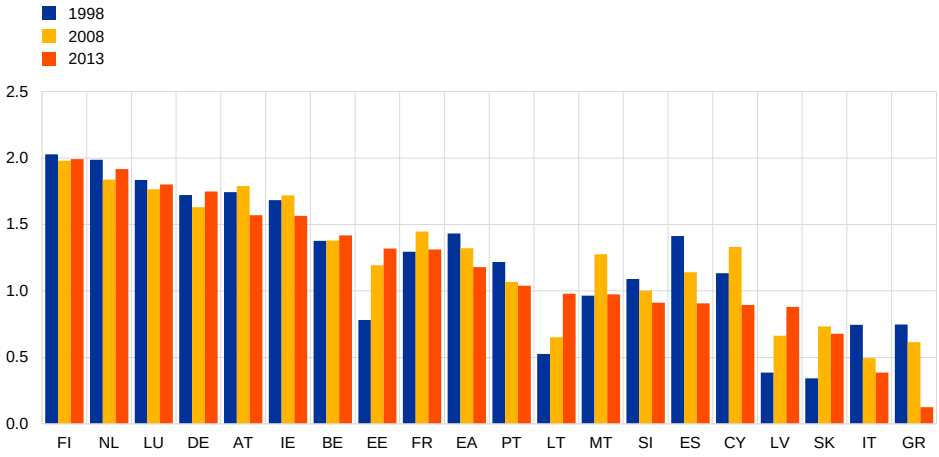


Sources: Authors' calculations based on World Bank data.
Notes: The average covers the four World Bank Governance indicators: absence of corruption, the effectiveness of governments, the rule of law and overall regulatory quality. The top three OECD countries are Finland, Denmark and Luxembourg (1998), Denmark, Finland and Sweden (2008) and New Zealand, Switzerland and Norway (2016). The euro area for each year consists of a simple average of its Member States. A higher index denotes better functioning framework conditions for doing business.

Chart 44

Framework conditions for doing business across euro area countries

(average of the four World Bank Governance indicators)



Source: Authors' calculations based on World Bank data.
Note: The average covers the four World Bank Governance indicators: absence of corruption, the effectiveness of governments, the rule of law and overall regulatory quality. A higher index denotes better functioning framework conditions for doing business.

Building on those fundamental framework conditions, excessive product market regulations are likely to have adverse effects on productivity and GDP growth.[41] A high degree of competition among firms in goods and services markets ensures that prices do not become excessive in relation to the costs of production. Given that markets with higher competition tend to exhibit lower prices than markets

41 See for example Sondermann (2018) who shows that in the face of a common shock countries with weaker product market competition suffer a more severe loss of output than countries with stronger product market competition.

with limited competition, consumers benefit from more competitive markets. This in turn reduces unjustified rents for producers and raises consumer welfare. Moreover, competition also tends to favour variety of products, thereby giving consumers more choice. In addition, it seems that firms in markets with high barriers to entry tend to innovate less. This in turn impedes technological progress, productivity and thus job creation.

Various product market policies exist to facilitate competition. General policies relate, for example, to ensuring a strong and efficient regulation authority that can monitor the state of competition in all relevant markets. Moreover, policies can create favourable broader business conditions to facilitate the entry of new firms and alleviate the administrative burden on existing firms. Sector-specific policies include, for example, competition policies for network industries (e.g. energy, telecoms and transport), the retail sector and closed professions (e.g. notaries, pharmacies and lawyers).

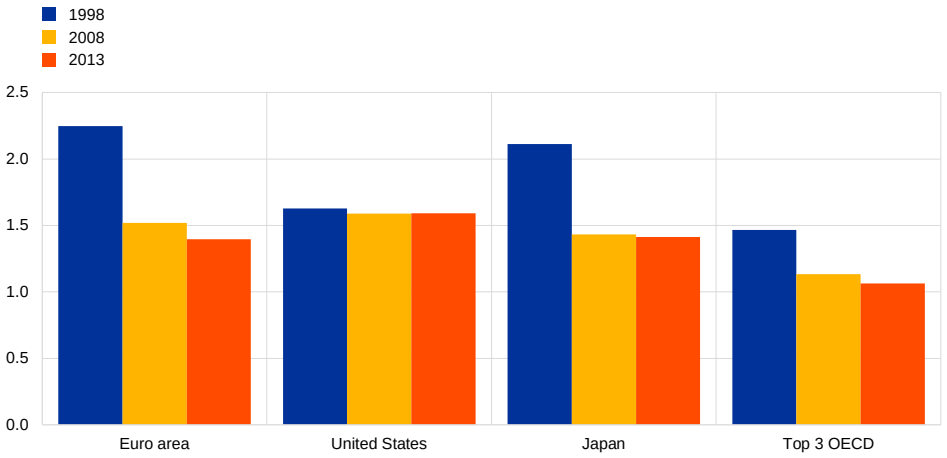
The creation of the EU single market has triggered significant changes to countries' product markets. One of the original core objectives of the European Economic Community (EEC) was the development of a common market offering free movement of goods, service, people and capital. However, it proved difficult to reduce (intangible) barriers with mutual recognition of standards and common regulations. Against this background, in 1986 Member States agreed in the form of the Single European Act that provided for the creation of a true single market by 1 January 1993. In particular by increasing common decision-making in areas that were previously confined to national competences, EU countries' opened the door towards common minimum standards and harmonisation in the area of goods and services provision and access to each other's markets. Through various directives over the years Member States were obliged to grant access to other countries' companies to most of their product markets, not least by converging towards common rules and standards.

Product market competition significantly increased in the first decade of the euro. This becomes clear when looking at a summary indicator of product market regulations (Chart 45). In the first decade of the common currency, Member States implemented a large set of product market reforms, often triggered by EU directives that were transposed into national legislation. Those reforms increased market access and therefore spurred competition in previously sheltered sectors. The impact of those reforms that enforced more competition was a reduction in excess producer rents for the benefit of the average EU consumer, who saw retail prices declining in many industries. The clearest cases are the network industries. Overall, consumers throughout Europe benefited from lower electricity and energy prices as well as lower transport and telecommunication fees. Some further progress was also made in the euro area countries in the second decade. Overall, euro area countries now have product markets that are equally as competitive as those of international peers, e.g. the United States and Japan. This notwithstanding, the euro area is still not yet at the frontier of product market regulations as represented by the top three OECD countries in Chart 46.

Chart 45

Product market regulations in the euro area and international peers

(index 1-6, with 6 being most restrictive regulations)

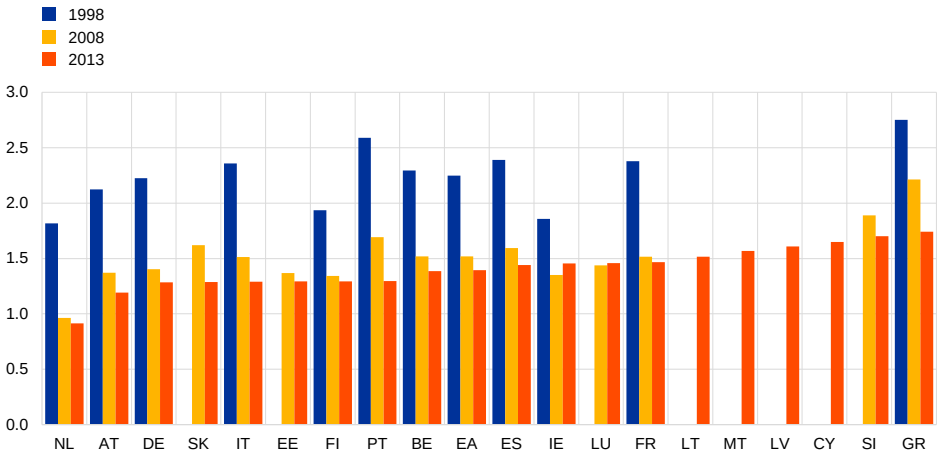


Source: Authors' calculations based on OECD data.
Notes: The top three OECD countries are the United Kingdom, New Zealand and the United States (1998), the Netherlands, the United Kingdom and New Zealand (2008) and the Netherlands, the United Kingdom and Austria (2013). The euro area for each year consists of a simple average of its Member States at that time.

Chart 46

Product market regulation across euro area countries

(index 1-6, with 6 being most restrictive regulations)



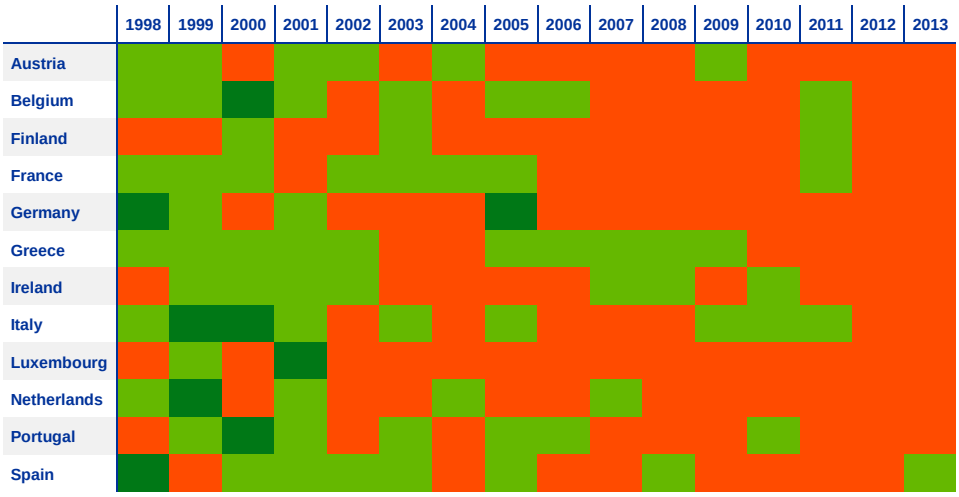
Source: Authors' calculations based on OECD data.
Note: Data are sorted with the country having the lowest index in 2013 coming first.

Heterogeneity of product market competition prevails among euro area countries. The single market and its rules have set common standards and regulations in many areas that facilitated a common trend of more competitive product markets across all euro area countries during the last two decades, as shown in Chart 46. This notwithstanding, some euro area countries exhibit quite dynamic and open product markets, e.g. the Netherlands, while firms in other economies face more barriers to entry and overall a less competitive environment (such as in Greece or Slovenia). The stronger reform momentum in terms of main product market areas mentioned above at the beginning of the euro up until 2008 is specifically captured in Table 5.

Table 5

Product market reforms from 1998 until 2013

(red: no reforms, light green: one or two reforms, dark green more than two reforms)



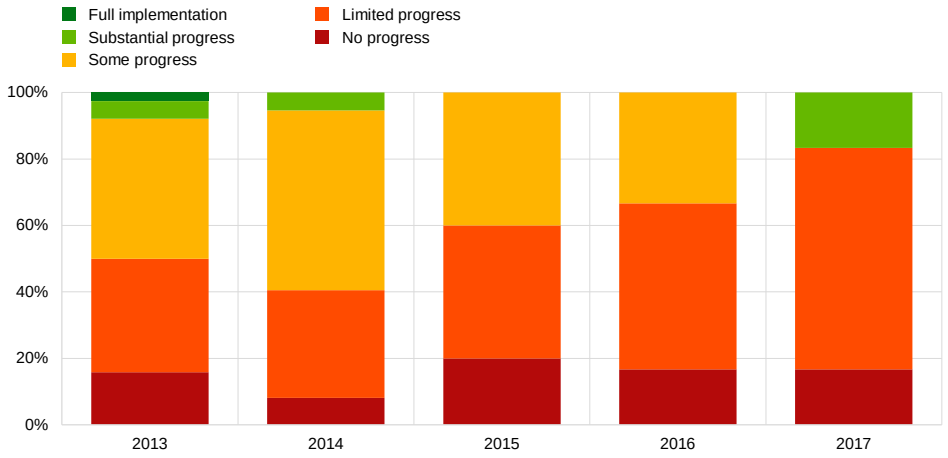
Source: Authors' calculations based on Duval et al (2018), A Narrative Database of Major Labor and Product Market Reforms in Advanced Economies, IMF Working Paper No 18/19.
Notes: Red denotes that the country has undertaken no reforms. Light green denotes one or two reforms. Dark green denotes more than two reforms.

In the second decade, however, it is interesting to observe that Member States tended to stop implementing reforms (see Chart 47). This limited progress to some extent again mirrors the rather weak traction the European semester and its country-specific reform recommendations have on national structural policies. Overall, the majority of countries have not sufficiently addressed the reform recommendations jointly agreed in the European Council, in the context of EU coordination of economic policies. Given the remaining rigidities in national product markets more forceful reform efforts could increase growth potential and boost resilience towards adverse shocks of euro area countries. In this context, the renewed push by the Commission and the Council to deepen the single market for services could also facilitate more competition in this area.

Chart 47

Product market reforms from 2013 until 2017

(share of country-specific reform recommendations addressed)



Source: ECB calculations based on the European Commission's country reports.
Notes: The chart shows the implementation of CSRs as assessed by the European Commission in the overview table of each Member State's annual country report. "No progress" signifies that the Member State has not credibly announced or adopted any measures to address the country-specific recommendation; "limited progress" signifies that the Member State has announced certain measures but these only address the recommendation to a limited extent, and/or it has presented non-legislative acts, yet with no further follow-up in terms of implementation; "some progress" signifies that the Member State has adopted measures that partly address the country-specific recommendation, and/or it has adopted measures that address the recommendation, but a fair amount of work is still needed to fully address the recommendation as only a few of the adopted measures have been implemented; "substantial progress" signifies that the Member State has adopted measures that go a long way in addressing the recommendation, most of which have been implemented; and "full implementation" signifies that the Member State has implemented all measures needed to address the recommendation appropriately. CSRs for implementation of the Stability and Growth Pact are not included.

6 Government sector

Sound and sustainable public finances in the euro area countries are essential as they contribute to healthy economic structures. Sound public finances are particularly relevant for the euro area as the responsibility for fiscal policy (as in the case of labour and product markets) lies with the Member States while monetary policy is set centrally. In the euro area, fiscal policy is the main policy tool available for governments in the case of country-specific stabilisation needs, provided countries have sufficient fiscal leeway to do so. It is even more relevant once monetary policy becomes more constrained. In order to foster sound public finances and in the absence of a supranational fiscal authority, national fiscal policies are governed by a common fiscal framework. Its central element, the Stability and Growth Pact (SGP), subsumes a set of common rules to ensure sustainable public finances.

By contrast, fiscal imbalances are likely to hamper countries' sustainable economic developments. Excessive fiscal deficits and unsustainable public debt are potentially harmful for countries' growth prospects and inflation expectations, in particular if economic agents expect governments to adopt distortionary taxation. Countries with strong fiscal imbalances are potentially more vulnerable to macroeconomic shocks and financial market instability, which can spill over to other Member States. Their room for manoeuvre to use fiscal policy as a shock absorber is usually more limited. Thus, governments would be constrained in letting their automatic stabilisers work fully and in adopting counter-cyclical discretionary policies. Moreover, countries with fiscal imbalances are more prone to adverse confidence effects. As their sovereign debt spreads tend to be higher, this would increase the refinancing cost and the pressure on the banking sector in the case of strong fiscal-financial linkages.

Growth-friendly fiscal policies can be expected to support potential growth and convergence, which in turn is likely to improve the available fiscal space. In particular, reducing distortionary taxation, namely by moving from labour taxation to less distortionary taxes, and ensuring efficient use of public resources and productive public investment can be expected to support economic growth and employment. This, in turn, is likely to enlarge governments' scope for budgetary manoeuvre while preserving overall fiscal soundness.[42]

[42] While there is no commonly agreed approach to measure fiscal space, various concepts are widely discussed with regard to how fiscal space is determined. These include, among other things, fiscal constraints set by the fiscal governance framework and the debt sustainability analysis. See also the article entitled "Conceptual issues surrounding the measurement of fiscal space", Economic Bulletin, Issue 2, ECB, 2017.

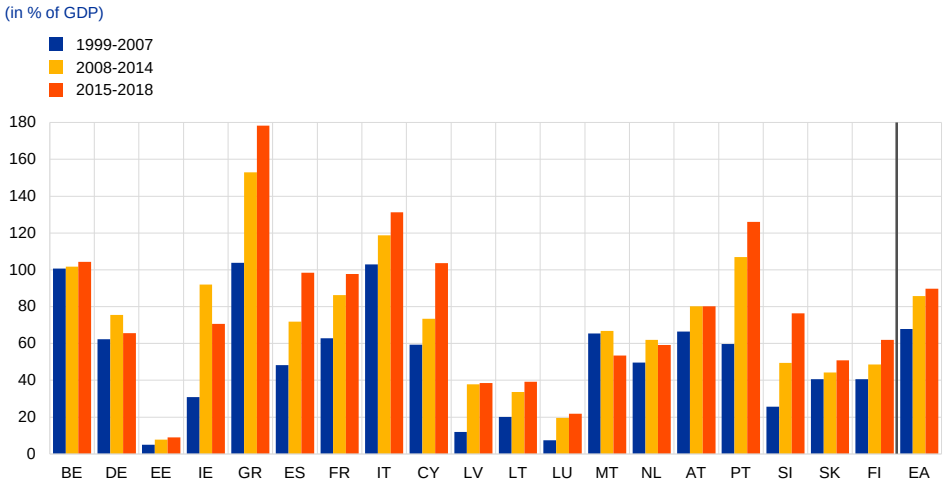
6.1 Fiscal developments

Fiscal developments have been very heterogeneous over the past 20 years, both for the euro area aggregate and across countries. In particular, the public debt-to-GDP ratio has become considerably more diverse across countries compared to 1999. Since the start of stage three of EMU, public finances can be divided into three different phases:

During the first phase from the inception of the euro to 2007, the headline fiscal indicators improved on average. For the euro area aggregate, general government debt declined from 70.6% of GDP in 1999 to 65% of GDP in 2007. This improvement was mainly due to a lower interest burden and a primary surplus, notwithstanding large differences across countries (Chart 48). The euro area general government deficit declined from 1.5% of GDP to 0.7% of GDP during the same time period. However, this improvement in the headline budget balance hides the fact that the fiscal consolidation path that was in place in the run-up to the euro ceased or was even partly reverted. In fact, the lower deficit was driven in several countries by large windfall revenues as a result of favourable cyclical conditions in the years preceding the financial crisis, whereas in structural terms the fiscal situation did not improve or in some instances even deteriorated. Thus, countries did not use the good economic times to build-up fiscal buffers.

Chart 48

General government debt



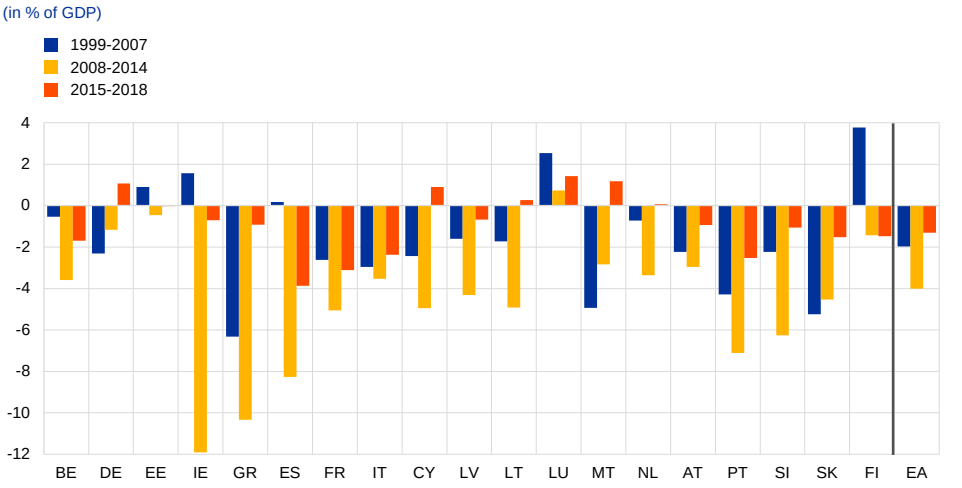
Sources: Eurostat, European Commission.

During the second phase, following the start of the financial and sovereign debt crisis in 2008 until 2014, the debt ratio increased sharply in the euro area. The debt ratio for the euro area aggregate increased from 68.7% of GDP in 2008 to its peak at 94.2% of GDP in 2014. However, debt dynamics differed quite substantially across euro area countries (Chart 49). In 2014, seven euro area countries faced debt ratios above 100% of GDP, compared to only two countries in 1999, while in five countries the debt ratio remained well below the 60% threshold. The reasons for the sharp deterioration in public finances in most euro area countries were manifold: one

important factor was the partly massive discretionary fiscal policy measures that were implemented in 2008-10 to stimulate economic growth.[43] Moreover, the automatic stabilisers that were at work due to the sharp economic downturn accounted in most countries for roughly half of the fiscal impulses.[44] Rising interest payments, in particular in high debt countries, were also contributing to the worsening of public finances. In addition, several governments provided financial support to ailing financial institutions, which further aggravated the countries' budgetary situation. As a result, the euro area fiscal deficit jumped from 2.2% of GDP in 2008 to 6.2% of GDP one year later (Chart 49). In some countries, the fiscal situation was even more adverse and they were forced to undergo an adjustment programme. Between 2011-14, countries partly adopted considerable fiscal consolidation measures, which eventually resulted in a primary surplus of the euro area aggregate as of 2014 (Chart 49). The fiscal adjustment was particularly pronounced in the countries with an adjustment programme.

Chart 49

General government budget balances



Sources: Eurostat, European Commission.

As of 2015, the beginning of the third phase, the euro area debt ratio gradually declined from its elevated level. This improvement was mainly the result of a favourable interest rate-growth differential due to better cyclical conditions and sharply declining interest payments, reflecting an overall more favourable interest rate environment (Chart 50). The contribution coming from fiscal consolidation, which is captured by the primary balance adjusted for the cycle, was instead gradually shrinking and eventually halted in 2018. This was driven, among other things, by several high-debt countries using part of their interest savings to increase primary spending rather than to lower their debt or to build up fiscal buffers. Moreover, the deficit-debt adjustment is projected to have an increasing impact on government debt in 2018. Overall, the debt ratio of the euro area is projected to stand at 86.9% of GDP

[43] These stimulus measures included the European Economic Recovery Plan, adopted at the end of 2008, which alone amounted to EUR 200 billion (i.e. around 1.5% of GDP).

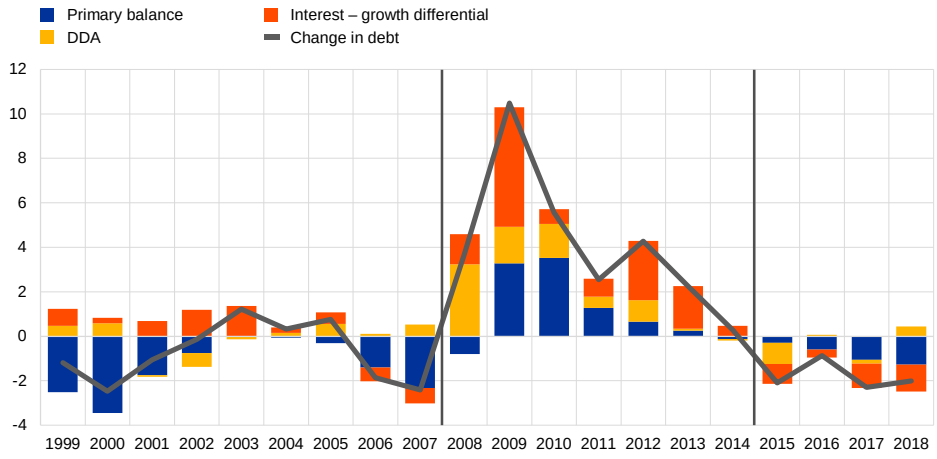
[44] ECB (2010), "Euro area fiscal policies and the crisis", ECB Occasional Paper, 107.

in 2018, with debt ratios remaining very high debt in a number of countries. This suggests that high debt countries did not set their public debt ratios firmly on a downward path in full compliance with the SGP.[45] To better evaluate the fiscal risks prevailing in high-debt countries, the methodological framework for assessing debt sustainability has been further developed.[46]

Chart 50

Changes in general government debt

(in percentage changes of GDP)



Sources: Eurostat, European Commission.
Notes: DDA stands for deficit-debt-adjustment, which is defined as the difference between the change in government debt and the government deficit. The DDA captures for example differences in cash and accrual accounting and the accumulation of financial assets through financial sector support.

Over the past two decades, fiscal policy was partly pro-cyclical and not sufficiently growth-friendly. The first 10 years of the euro were characterised by a period of relatively robust economic expansion and an on average broadly neutral fiscal stance.[47] This, however, was not sufficient to build fiscal buffers and to bring down the partly elevated debt levels. At the start of the crisis, the euro area structural primary balance deteriorated sharply, indicating a fiscal loosening (Chart 51). This was mainly induced by the fiscal stimulus measures adopted during 2008-09, which mainly focused on higher entitlements and wages instead of more public investment. In the period 2010-13, fiscal policy turned on average pro-cyclical as most euro area governments adopted consolidation measures which added to the already strong economic slowdown. The consolidation largely relied on discretionary revenue measures, namely higher distortionary labour taxation (see also Section 6.3, Chart 53). To some extent countries were also cutting expenditure, namely for education and infrastructure, thereby contributing to an even less growth-friendly

45 See the article entitled "Government debt reduction strategies in the euro area", *Economic Bulletin*, Issue 3, ECB, 2016.

46 See Bouabdallah, O. et al. (2017), "Debt sustainability analysis for euro area sovereigns: a methodological framework", ECB Occasional Paper, 185.

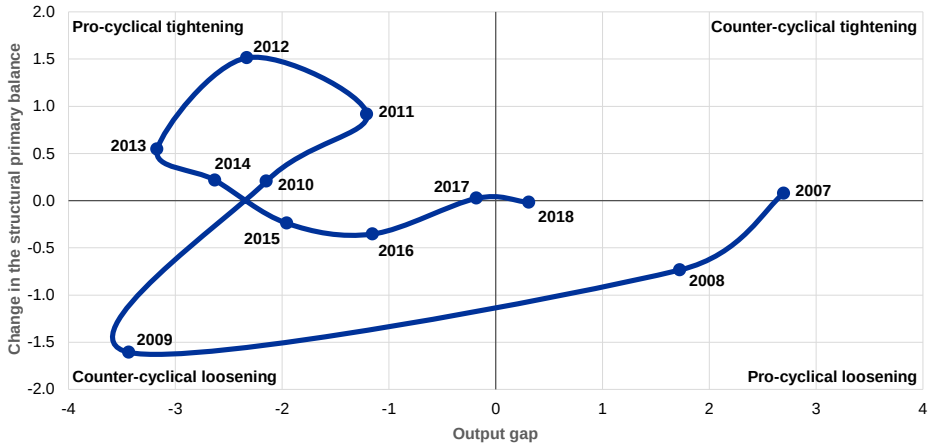
47 The fiscal stance reflects the direction and size of the stimulus from fiscal policies on the economy, beyond the automatic reaction of public finances to the business cycle. It is measured as the change in the structural primary balance, i.e. the cyclically adjusted primary balance ratio net of government support to the financial sector.

composition of public finances.[48] Since 2014, the fiscal policy stance has once again turned broadly neutral for the euro area.

Chart 51

Euro area fiscal stance

(in percentage change of GDP)



Sources: Eurostat, European Commission.
Note: Data for the euro area only available from 2007 onwards.

Finding the appropriate fiscal policy stance is challenging as it requires the right balance between sustainability and economic stabilisation. During normal times a broadly neutral fiscal stance seems appropriate. It is determined by the SGP's medium-term objective of a balanced budget in structural terms. Thus, a broadly neutral fiscal stance implies that countries let the automatic fiscal stabilisers work while being able to safeguard fiscal sustainability. For the euro area the fiscal stance can then simply be aggregated. However, in an environment of very subdued economic growth across countries and monetary policy being at the effective lower bound, as observed after the sovereign debt crisis, the trade-off between long-term fiscal sustainability and short-term economic stabilisation tends to be stronger.[49] Such a situation may warrant a more supportive role for fiscal policy in the form of additional discretionary policies in affected countries, for example through well-tailored public investment spending, while automatic stabilisers alone may not be sufficient for shock absorption.[50] In this context, it is beneficial that fiscal multipliers were found to be stronger in an environment of subdued growth and constrained monetary policy.[51] However, deriving the appropriate fiscal policy stance is challenging. Even if fully in line with the SGP requirements, national fiscal policies might not result in an appropriate fiscal stance. In addition, at the euro area level, this could even pose problems if the aggregate stance appears appropriate. Against this background, this

48 See the article entitled "The composition of public finances in the euro area", *Economic Bulletin*, Issue 5, ECB, 2017.

49 See "Euro area fiscal stance", ECB Occasional Paper, No 182, 2016.

50 See speech by Draghi (2014), "Unemployment in the euro area" in Jackson Hole.

51 See for example Kilponen J. et al. (2015), "Comparing fiscal multipliers across models and countries in Europe", ECB Working Paper, 1760; Eggertsson, G. (2011). "What fiscal policy is effective at zero interest rates?", NBER Macroeconomics Annual 2010 (25); Coenen, G. et al. (2012) "Effects of Fiscal Stimulus in Structural Models," American Economic Journal, 4.

suggests being rather cautious with deriving strong policy recommendations from the fiscal stance, in particular at the euro area level. Moreover, measuring the fiscal stance in real time is still challenging as the output gap is a non-observable variable and revenue elasticities are not constant over the cycle. Thus, for example windfall profits in good economic times can be wrongly captured as a structural improvement, as was the case in the years before the start of the financial crisis.

6.2 The fiscal governance framework

The EU fiscal governance framework aims to ensure sound public finances and to control for the deficit bias. Yet, as described above, fiscal developments in many Member States deviated from the objectives specified in the provisions of the EU fiscal governance framework. Instead, several countries showed a low degree of compliance with fiscal rules, their enforcement was limited and there was an obvious lack of national ownership. More specifically, in the first decade after the start of the euro, countries did not make use of the good economic times to build up fiscal buffers. Most euro area countries were badly prepared once the crisis erupted. Subsequently, all countries, except Estonia and Luxembourg, experienced excessive deficits. Most of them stayed in the excessive deficit procedure for several years as the deadlines for correcting these excessive deficits were extended several times (notably in Spain and France). By now, the excessive deficit procedures have been abrogated in all countries except Spain. Compliance with the preventive arm of the SGP and in particular with the debt rule was even less encouraging. In 2017, only less than half of the euro area countries achieved their respective medium-term objective, while public debt levels were still well above the 60% of GDP threshold in the majority of countries.

Two main waves of SGP reforms aimed to make the fiscal governance framework more effective. In the early years of the euro, Member States were only bound by the requirements of the Treaty on European Union to avoid excessive deficits, which was specified in the SGP. With the reform of the SGP in 2005, the cyclical component was given more prominence. Since then, countries are obliged to pursue their respective, country-specific medium-term objective (MTO) of a close to balanced budgetary position, expressed in structural terms. The MTOs are set such that they allow enough leeway for the automatic stabilisers to operate and have a safety margin to avoid breaching the nominal fiscal rules and ensure sustainable debt levels.

However, the sovereign debt crisis revealed that further changes to the governance framework would be necessary to incentivise fiscal discipline. Consequently, the SGP was further reformed in 2012 by strengthening the enforcement of fiscal rules, introducing an expenditure rule and reviving the debt rule. Moreover, to foster national ownership the two-pack regulation, adopted in 2013, called for national fiscal watchdogs to be established with a broader mandate for monitoring and harmonising the budgetary preparation process across countries. Furthermore, the adoption of the fiscal compact in 2013 was motivated by the idea to complement the balanced budget rule with an automatically triggered correction mechanism to compensate for any substantial deviation from the balanced budget

targets. More recently, in 2015, some flexibility was introduced offering some leeway with regard to public investment and the costs of structural reforms.

Thought is constantly being given to how the current set of rules could be made more effective. As a result of all these recent adjustments the fiscal governance framework has become very complex and even includes some inconsistencies. Against this background further reform steps are currently being discussed to resolve the remaining shortcomings and to arrive at a more effective and consistent framework, which could also strengthen the idea of more risk sharing in the euro area. Against the background of several countries still not meeting their MTO and the debt level in the majority of cases exceeding the 60% of GDP threshold a more forceful application of the fiscal rules would be welcome to ensure that the SGP remains fully credible.

6.3 Fiscal-structural issues

Significant financial sector support by euro area governments impacted fiscal policies during the economic and financial crisis. At the start of the crisis, most euro area governments provided substantial support to their ailing national financial institutions in order to safeguard financial stability and prevent a credit crunch. The support measures mostly involved the acquisition of financial assets and capital transfers, which affected public finances. In addition, in the early years of the crisis, several euro area governments also provided financial guarantees. However, most of these guarantees have expired by now without having been called. Due to financial sector support, general government debt in the euro area increased by 5.3% of GDP over the period 2008-14, which accounts for roughly one-fifth of the total increase in government debt over the same period.[52] However, in some euro area countries the fiscal impact of financial sector support was much more pronounced. For example, in Ireland, Greece, Cyprus and Slovenia financial sector support led to an increase in government debt of around 20% of GDP or more. After 2014, only a few countries, namely Italy, Cyprus, Austria and Portugal, provided significant support to financial institutions, while most of the other countries were able to recover part of their earlier financial assistance. Overall public debt impact of financial sector support even turned slightly negative in the euro area between 2015 and 2017 (Chart 48). The recovery of the fiscal costs was mostly achieved by selling acquired assets or through privatisation. In general, however, at around 50% the recovery rate remains rather low by international standards.[53] Looking ahead, to contain fiscal risks it will be important to further reduce the strong fiscal-financial linkages by, for example, reducing the sovereign debt exposure to domestic banks.

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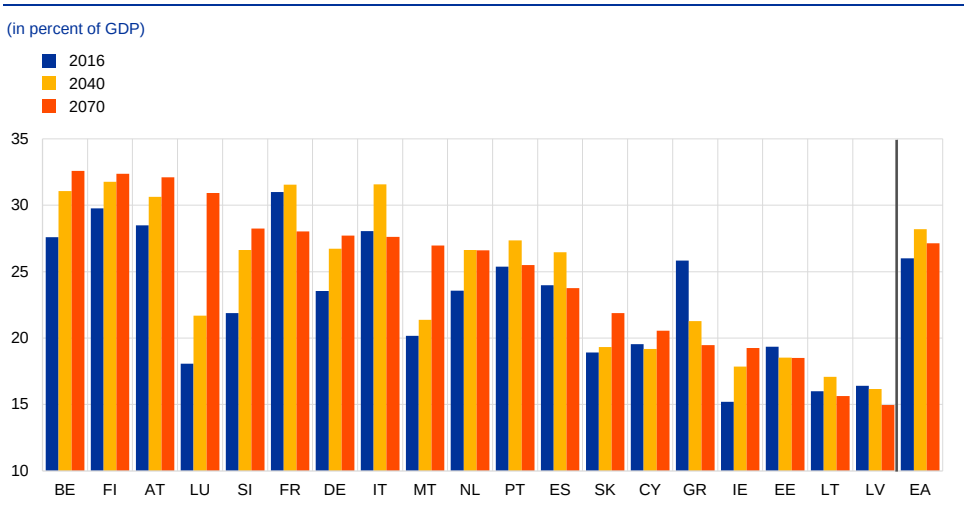
52 For further information on the impact of financial sector support see also the article entitled "The fiscal impact of financial sector support during the crisis", *Economic Bulletin*, Issue 6, ECB, 2015. However, the figures referred to in the article have been slightly revised since the publication of the article.

53 See for example Laeven, L. and F. Valencia (2012), "Systemic banking crises database: an update", Working Paper Series, No 163, IMF, 2012.

Containing risks to debt sustainability is also crucial from a longer-term perspective in view of population ageing. Population ageing is relevant for monetary policy to the extent that it has an adverse impact on public finances as well as on potential growth.[54] As projected in the European Commission's 2018 Ageing Report, total ageing-related public spending, which include pensions, healthcare and long-term care expenditure, will increase from 26% of GDP in 2016 to 27.1% of GDP in 2070 for the euro area aggregate (see Chart 52).[55] The projections, however, vary considerably across countries due to different starting levels of the age-related expenditure items as well as a different degree of policy reform efforts in past years. The reforms mostly concentrated on improving the existing pension systems. Considering the fact that the Ageing Report projections are based on rather optimistic economic assumptions, which might not materialise as expected, and in view of potential reform reversals, currently being considered in a few countries, ageing costs can be expected to put an even more substantial burden on public finances.[56] Thus, to ensure fiscal sustainability in the long run further reforms appear to be necessary, mainly in the area of pensions, which is the largest age-related spending item.

Chart 52

Total ageing-related public spending



Sources: 2018 Ageing Report.

Fiscal-structural reforms can help public finances to become more growth-friendly. By making public finances more effective, reducing distortions and providing better services for the private sector, fiscal-structural reforms are assumed to support economic growth and to broaden the available fiscal space. Fiscal policy can thereby be used for more productive outlets such as public investment. Although the size of the macroeconomic effects is uncertain, public investment can be expected to have positive demand effects and raise potential output by increasing the stock of

54 See the article entitled "The economic impact of population ageing and pension reforms", *Economic Bulletin*, Issue 2, ECB, 2018.

55 See "The 2018 Ageing Report: Economic & Budgetary Projections for the 28 EU Member States (2016-2070)", European Commission, May 2018.

56 See "The 2018 Ageing Report: population ageing poses tough fiscal challenges", *Economic Bulletin* box, Issue 4, ECB, 2018.

public capital.[57] Fiscal-structural reforms include different kinds of reforms, such as taxation policies, measures that improve the functioning of public institutions, including attempts to strengthen tax administrations and reduce tax avoidance, and entitlement reforms. For example, the labour tax wedge, which measures the difference between the employer's total labour costs and the employee's disposable income, is likely to affect employment and economic growth, given its potentially high distortionary impact. Moreover, removing tax subsidies for debt financing can be expected to strengthen the resilience of firms and thereby foster investment and economic growth.[58]

Since the sovereign debt crisis, most euro area countries have adopted fiscal-structural reforms, albeit to a varying degree. The countries that underwent an adjustment programme implemented the most fiscal-structural reforms, including reforms to increase the efficiency of public institutions, while for the other countries the reform efforts were rather mixed. Regarding taxation policies, changes in the labour tax wedge have been driven by opposing effects during the last two decades (see Chart 53): while in the early years of the common currency several countries, namely those with high labour tax wedges, aimed at reducing labour market distortions, some countries addressed the strong consolidation needs during the sovereign debt crisis by increasing taxes, including labour taxation. Only more recently has the labour tax wedge been reduced again. Overall, countries implemented only a small fraction of the various country-specific recommendations issued by the European Council, with the implementation record being particularly poor with respect to fiscal-structural reforms and even deteriorating lately.[59] Looking ahead, further reform efforts are needed and there is room to make the composition of public finances more growth-friendly. On the expenditure side, spending reviews would be a promising way to identify entitlements that do not result in welfare increases. On the revenue side, improving the growth-friendliness of the tax system and reducing tax evasion would be important areas of reform in several countries. In particular, reducing the labour tax wedge, i.e. the tax burden on labour income resulting from personal income tax and social security contributions, can have positive growth and employment effects.

57 See the article entitled "Public investment in Europe", *Economic Bulletin*, Issue 2, ECB, 2016.

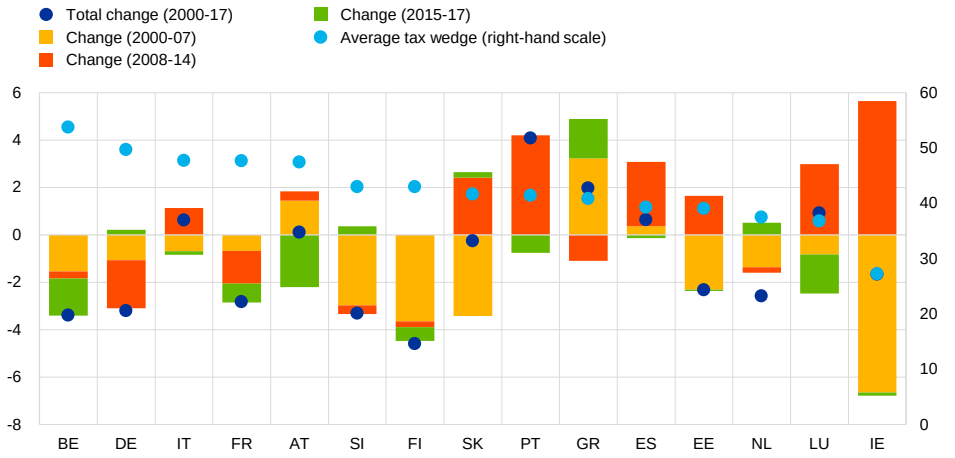
58 See Masuch, K. et al. (editors): "Structural policies in the euro area", Occasional Paper Series, No 210, June 2018.

59 For example, recommendations relating to reducing the debt bias or broadening the tax base ranked relatively low. See Efstathiou, K. and G. Wolff (2018), "Is the European Semester effective and useful?", Bruegel Policy Contributions, Issue 9, June 2018.

Chart 53

Labour tax wedge, level and changes

(in percent)



Source: OECD.
Notes: Change in tax wedge for a single worker earning 100% of average wage. No data available for Cyprus, Latvia, Lithuania and Malta. Average tax wage shown for 2017.

7 External trade

The establishment of EMU and the introduction of the common currency have substantially decreased trade costs. The reduction of transaction costs, the absence of nominal exchange rate volatility among euro area countries and related hedging costs, increasing price transparency across countries and finally the decrease in uncertainty are all factors which contributed to decreasing trade-related costs and hence represent one of the major benefits for euro area exporting firms brought about by the monetary union. Overall, trade integration improved production efficiencies for firms in euro area countries and thus in principle facilitated higher productivity growth. The integration process was not only beneficial for trade amongst Member States, but it also allowed firms in the euro area to efficiently set up cross-border production structures and hence increase their international competitiveness.

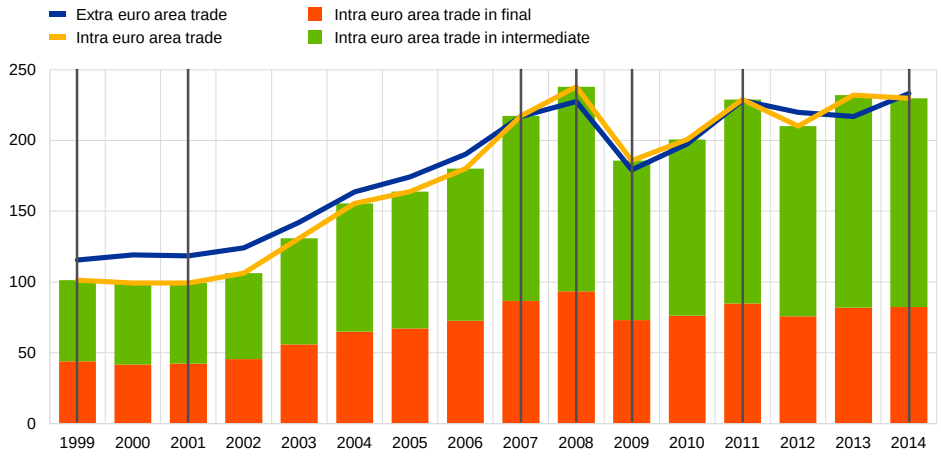
Since the inception of the monetary union, euro area countries have increasingly traded with each other. Before the first years of the euro, intra-euro area countries trade remained broadly at the same level, while trade with advanced economies outside the euro area[60] increased at an annual rate of 4 per cent on average (see Chart 54). After a period of adjustment, intra-euro area trade closed the gap with extra-euro trade and increased at a comparatively higher pace.[61] The market integration achieved through the European Union enlargement clearly contributed to these developments given that those countries became part of the EU single market and its common rules and removed trade barriers. Moreover, trade in intermediate goods has been the main driver of the increase in intra-euro area trade in the pre-crisis years and in the recovery period, especially after the new waves of accession. This could point to an enhancement of euro area cross-border production chains, particularly with countries that entered at a later stage.

60 The sample of extra-euro area trade partners includes Australia, Canada, Denmark, Japan, Sweden, the United Kingdom and the United States and explicitly leaves out countries that have undergone structural changes in trade patterns following waves of trade liberalisation and structural reforms.

61 The chart only represents potential evidence of the effect of the euro on Member States' trade. The empirical assessment of the effect of EMU on trade is widely debated in the economic literature (see Rose, 2017 for a recent survey).

Chart 54

Intra- and extra-euro area trade

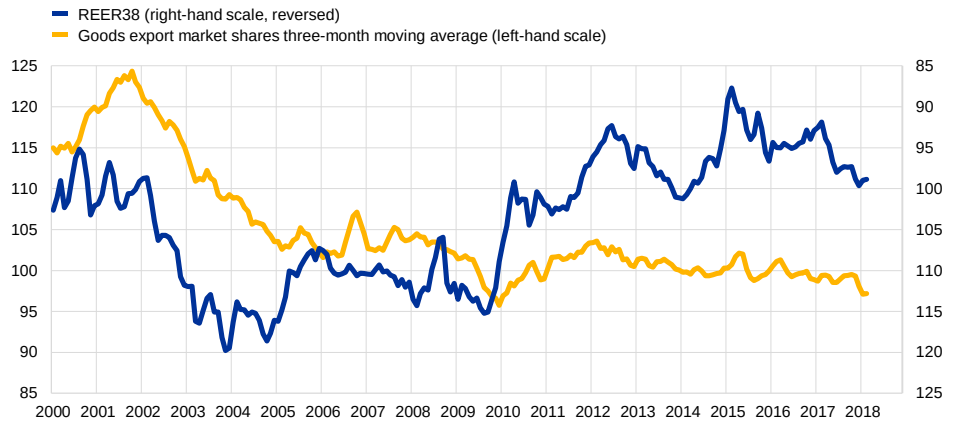


Sources: WIOD, 2013 and 2016 release.
Notes: The series reports aggregate nominal trade in goods and services of the euro area 19 in a fixed composition. Intra-euro area trade collects total trade among euro area 19 countries, whereas extra-euro area trade is the sum of total trade of euro area countries with Australia, Canada, Denmark, Japan, Sweden, the United Kingdom and the United States. Vertical dashed lines indicate the rounds of adoption of the euro: 1999 Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Spain and Portugal; 2001 Greece; 2007 Slovenia; 2008 Cyprus and Malta; 2009 Slovakia; 2011 Estonia; 2014 Latvia.

Market shares of the euro area have decreased over time, partly on account of real appreciation of the euro and the increase in trade openness of emerging markets. In the first three years of the monetary union, euro area exports gained export market shares in foreign markets (Chart 55). However, in the following decade the euro area's international price competitiveness gradually decreased and mostly stabilised at lower levels. The dynamics of euro area export market shares broadly follow developments in the real effective exchange rate, which is a measure of relative price and cost competitiveness (Chart 55). The real appreciation of the euro area vis-à-vis foreign competitors is one of the factors behind losses in market shares, together with the increasing participation in global markets of emerging market economies starting from the early 2000s. Non-price competitiveness has also to be included among the factors explaining market share developments.

Chart 55

Euro area market shares and REER



Sources: Eurostat and CPB.Note: The real effective exchange rate (REER38) is reported in reverse scale, therefore in the chart an increase of the variable means real depreciation and a decrease means appreciation.

Euro area countries are highly integrated in cross-border supply chains and mostly with other euro area countries and the rest of the EU. The globalisation of production has been an increasingly pervasive phenomenon in recent decades. Chart 56 illustrates that the euro area's participation in global value chains (blue line), expanded at a fast pace in the years before the crisis, in particular "backward" GVP participation, i.e. through the use of foreign important inputs rather than through the export of intermediate goods ("forward" participation). However, the building up of global production chains has recently slowed down mainly due to the increase in labour costs in emerging market economies, the rise in trade protectionism, and technological development, which all lead to the on-shoring of production to export markets.[62] Although exports in euro area countries are mostly made up of value added generated in the respective domestic economies[63], the importance of foreign value added including the non-euro area EU countries gradually increased. The shares of value added originating in other euro area countries ranged from just below 20% for Ireland[64] to above 50% in the case of Austria (Chart 57).[65]

62 ECB Trade Task Force (2016), "Understanding the weakness in global trade: What is the new normal?", *ECB Occasional Paper Series*, No 178.

63 The share of domestic value added in exports is 67% for the euro area as a whole.

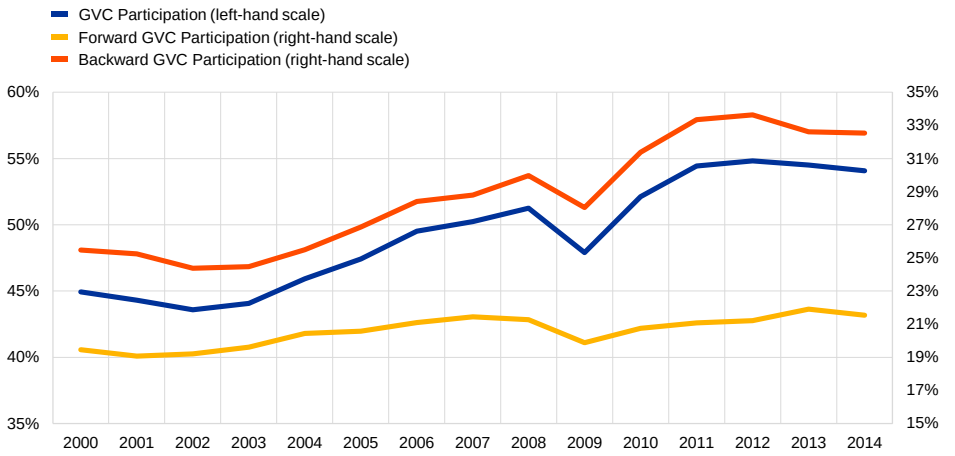
64 In the case of Ireland, the particularly low share of euro area value added is most likely due to the high contribution of US MNE activity in Ireland, in particular the transfer of intellectual property rights to Irish affiliates, and to the consequent sales of manufactured products.

65 For further insight the reader can refer to ECB Working Group in Global Value Chains (2019), "The impact of global value chains on the euro area economy", *ECB Occasional Paper Series*, N. 221.

Chart 56

Euro area's global value chain participation

(share of total exports)

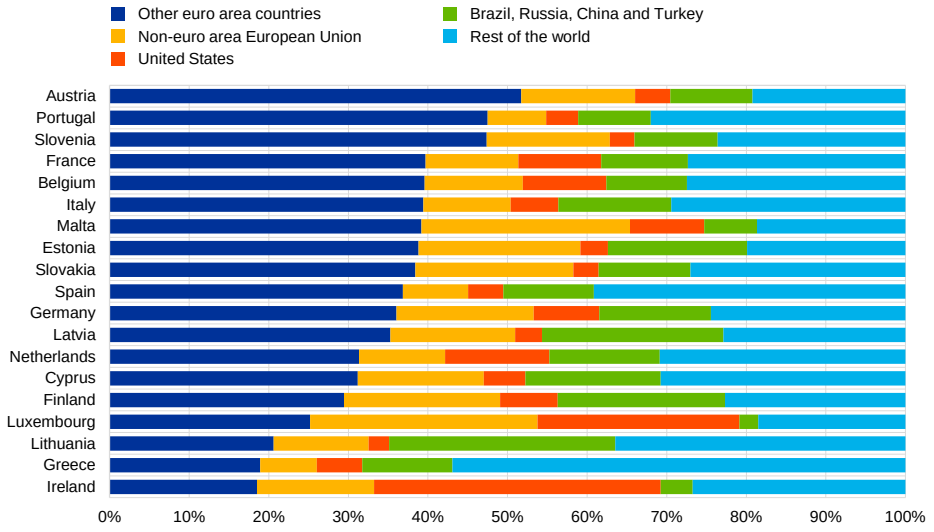


Sources: WIOD, 2016 release and Koopman et al. (2014).
Note: Based on nominal trade in goods and services. "Backward" GVC participation means GVC participation through the use of foreign important inputs rather than through the export of intermediate goods ("forward" participation).

Chart 57

Decomposition of foreign value added in exports by origin

(2014, shares of foreign value added)



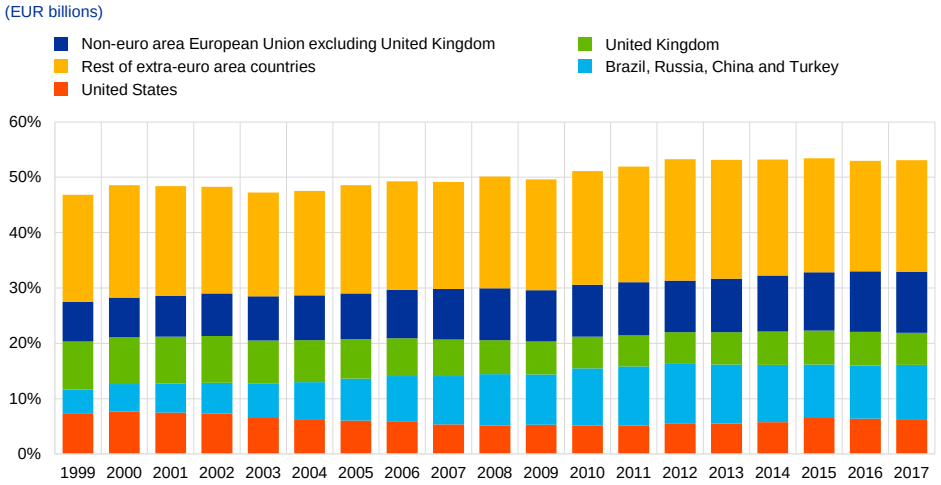
Source: WIOD, 2016 release.
Note: Based on nominal trade in goods and services. Non-euro area EU country comprises Bulgaria, Croatia, Czech Republic, Denmark, Hungary, Poland, Romania, Sweden and the United Kingdom.

Non-euro area EU countries, the United States and China are the euro area's major trading partners (Chart 58). Almost one third of euro area trade in goods is with other non-euro area EU countries and mostly with CEE countries (8.4% of total euro area trade in 2017) and the United Kingdom (5.8%). In 2015, the United States replaced the United Kingdom as the biggest single merchandise trading partner of the euro area and in 2017 it accounted for 6.2% of its total trade. China was the third major partner (5.6%). China's accession to the WTO in 2001 and trade liberalisation in emerging market economies have contributed to a shift of euro area trade towards

these destinations over the 2000s, although in recent years the increase in their importance as trade partners has come to a halt.

Chart 58

Extra-euro area trade by partner

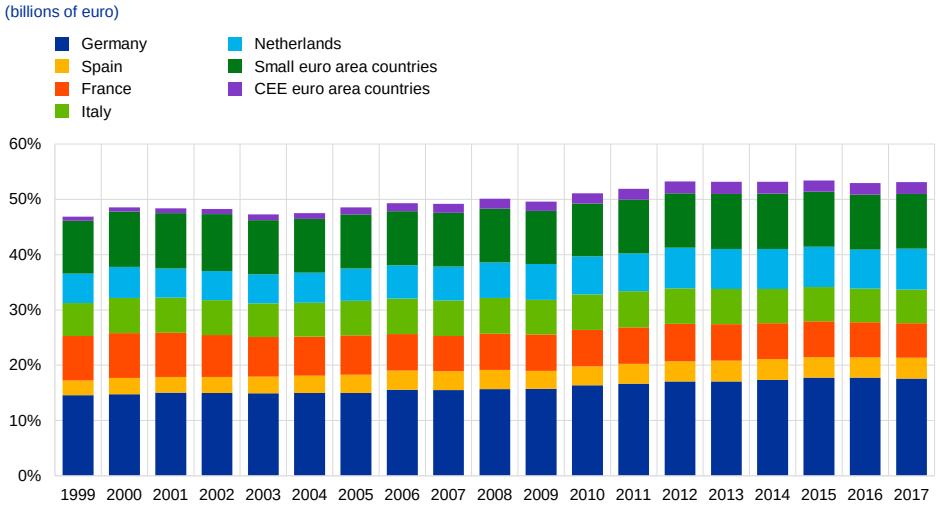


Source: Eurostat.
Note: Trade in goods, sum of imports and exports.

The main contributors to the euro area's external trade have changed over time (Chart 59). Germany is the largest contributor to the euro area's external trade, with a share of 17.6% of total euro area trade in goods in 2017, followed by the Netherlands (7.4%). Their shares – as well as that of Spain – have increased overall over the 20 years of the monetary union. The contribution of central and eastern European (CEE) countries to total euro area trade has increased by one third since 2007. By contrast, the trade share of France, Italy and a number of smaller euro area countries has decreased. Compared to the respective economy's size (in terms of GDP), trade (i.e. total exports and imports in goods and services) is particularly sizeable for small euro area countries (1.2 times the average trade/GDP ratio over the sample) and for the Netherlands (1.3), whereas big countries are less open (0.6).

Chart 59

Extra-euro area trade by origin



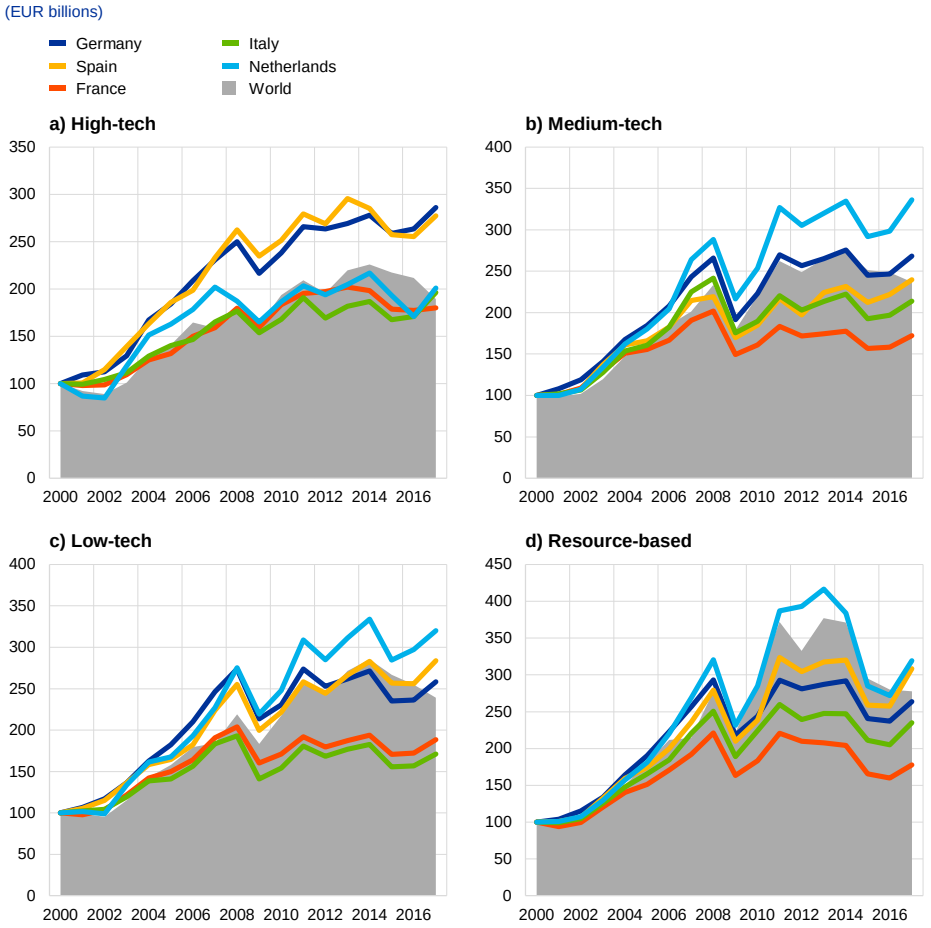
Source: Eurostat.
Note: Trade in goods, sum of imports and exports..

High-tech products are a key driver of export performance in the main euro area export countries (Chart 60).[66] Among the five largest euro area countries, Germany and Spain have systematically increased their market share of high-tech exports over the past two decades. By contrast, since 2004 Italy and France appear to have failed to meet the increase in the world demand for low-tech products; this underperformance worsened and extended to medium- and high-tech products after the crisis.

66 We clustered exported products according to the Lall (2000) classification (SITC rev.3), here converted into the six-digit "harmonised system" (accounting for the changes that occurred in 1996, 2002, 2007, 2012 and 2017). More specifically, products are classified according to five categories: primary (e.g. fresh fruit/meat, wood, crude petroleum); resource-based (e.g. prepared fruit/meat, wood products, petroleum products); low-technology (e.g. textile fabrics, clothing, furniture, plastic products); medium-technology (e.g. automotive products, chemicals, industrial machinery); high-technology (including electronics, pharmaceuticals, aerospace).

Chart 60

Export share by technological content, 2000=100



The trade expansion brought about by the adoption of a single market (see the discussion in Chapter 5 for more detail) and currency has helped boost aggregate productivity growth, particularly that of eastern EU Member States. Trade can facilitate technology transfer, particularly in the context of cross-national production chains where the EU CEE countries are very active. It can also improve resource allocation across firms and facilitate intra-firm productivity growth thanks to "learning by exporting". The literature has shown that the main channels for technology transfer within GVCs are access to a more differentiated variety of inputs (Goldberg et al., 2010 and Halpern et al., 2015) and transfer of tacit knowledge embedded in imported goods (see Koren and Csillag, 2011 and MacGarvie, 2006). Skill upgrading to meet the quality standards of parent firms (Bustos, 2011), and firm reorganisation to meet new demand also matter. Additionally, international competition and larger markets facilitate the expansion of the most productive firms in the economy and the exit of the inefficient ones, fostering aggregate productivity growth. Bernard and Jensen (2004), for example, show that around 40 per cent of aggregate TFP gains after opening to trade resulted from improved resource allocation. Similarly, according to CompNet data referring to 14 EU countries in 1998-2011, an increase in export demand was associated with a rise in total

manufacturing productivity, of which about one third accrued from intra-sector labour reallocation (Berthou et al., 2017).

8 Conclusions

The global financial and sovereign debt crises exposed the limited resilience of the euro area's economic structures right after its tenth anniversary in 2008. Real GDP growth was masking underlying weaknesses in several euro area countries, not least a structural decline in productivity growth. Instead of building buffers, fiscal policies were often even expansionary during the good economic times and governments made only little effort to implement growth-enhancing structural policies during those years. While inflation for the euro area was close to 2% on average, significant inflation differentials among Member States persisted. Those inflation differentials went along with divergences in cost competitiveness, often fuelled by prevailing rigidities in economic structures that led to a misallocation of resources.

National and EU policies strengthened resilience and the smooth functioning of the euro area. National fiscal policies were consolidated to keep the increase in debt contained. At the same time, the structural reform momentum increased notably in the second decade, particularly in those countries most hit by the crisis. The strengthened national economic structures were supported by a reformed EU crisis and economic governance framework, including on banking union. Overall, those measures taken at national and EU level strengthened the euro area's resilience to shocks.

Economic growth in the second decade of the euro was determined by the recovery from the crises. Consolidation efforts decreased fiscal policies' contributions to growth. At the same time, households and firms in many countries started a process of deleveraging, weighing on consumption and investment. This process of adjustment in economic activity also impacted inflation in the second decade, causing it to fall to significantly below 2%. Inflation was impacted by lower services inflation, due among other things to the more subdued wage growth during and after the crises.

Despite past efforts, challenges remain that require further improvements to economic structures in the euro area to raise growth prospects and strengthen resilience. Such challenges include:

- **…the remaining lack of adaptability in labour and product markets as well as framework conditions for doing business.** Reform efforts to improve euro area countries' economic structures have stalled again in recent years, despite the distance to best practices in nearly all Member States. Initiatives at the EU level to strengthen economic policy coordination could help this process.
- **…reviving GDP per capita convergence among Member States.** Several countries did indeed manage to start the process of catching up in the first decade. However, they also experienced divergence in the last ten years, markedly affected by the adjustment needs of their economies. Real convergence could then be expected to also support further convergence of inflation levels among euro area countries.

- **…increasing productivity growth to strengthen euro area growth prospects.** While weaker productivity is a trend that has also been seen in other advanced economies, the decrease is particularly pronounced for euro area countries. In particular, better diffusion of productivity among all firms remains essential.

- **…reducing the overall high public debt burden.** Favourable cyclical conditions should be used to build fiscal buffers, in particular in countries with already high debt levels. Prudent and growth-friendly fiscal policies are needed overall going forward with a view to increasing the sustainability of public finances.

- **…preparing for the projected population ageing.** The demographic projections for the next decades reveal a significant ageing of the EU's population. This will not only reduce labour supply but also increase age-related costs, placing a substantial burden on public finances.

- **…managing the impact of digitalisation.** The trend of digitalisation started decades ago but is increasingly gaining pace. Digital transformation is ongoing and will affect macroeconomic aggregates across economic structures through different channels (such as competition, productivity and employment). Against the changing nature of digitalisation, its impact, including on employment but also on price developments, will need to be carefully monitored.

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Abbreviations

Countries

BE	Belgium	**HR**	Croatia	**PL**	Poland
BG	Bulgaria	**IT**	Italy	**PT**	Portugal
CZ	Czech Republic	**CY**	Cyprus	**RO**	Romania
DK	Denmark	**LV**	Latvia	**SI**	Slovenia
DE	Germany	**LT**	Lithuania	**SK**	Slovakia
EE	Estonia	**LU**	Luxembourg	**FI**	Finland
IE	Ireland	**HU**	Hungary	**SE**	Sweden
GR	Greece	**MT**	Malta	**UK**	United Kingdom
ES	Spain	**NL**	Netherlands	**US**	United States
FR	France	**AT**	Austria		

In accordance with EU practice, the EU Member States are listed in this report using the alphabetical order of the country names in the national languages.

Conventions used in the tables

“-” data do not exist/data are not applicable
“.” data are not yet available

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